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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MCDONNELL  
CONTROL NO. C-116106

MICROFILMED

*MAR 18 1988*

(TITLE UNCLASSIFIED)

GEMINI XII VOICE COMMUNICATIONS

G-GROUND, GROUND-TO-AIR AND ON-BOARD TRANSCRIPTION)

GROUP 4

DOWNGRADED AT 3 YEAR INTERVALS;  
DECLASSIFIED AFTER 12 YEARS

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MANNED SPACECRAFT CENTER  
HOUSTON, TEXAS

*47-1889*  
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*A/G, Ø/B*



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00:00:01 CC LIFT-OFF!  
00:00:04 C The clock is running.  
00:00:05 P Comp Light's ON.  
00:00:08 C ...  
00:00:09 P How about that.  
00:00:10 C Roll Program.  
00:00:12 CC Roger. Roll.  
00:00:25 C Pitch Program.  
00:00:27 CC Roger. Pitch.  
00:00:39 P Cabin pressure is coming up.  
00:00:40 C Good.  
00:00:44 P Look out clouds, here we come!  
00:00:50 CC MARK.  
00:00:52 CC 50 seconds.  
00:00:53 C ... Mode 2.  
00:00:54 CC Roger. Roger. You're looking good.  
00:00:59 P Houston, Gemini XII here. Cabin pressure holding 5.75. Have a Delta-P light on Section 1. No problem.  
00:01:07 CC Roger.  
00:01:37 C Proceed.  
00:01:41 CC MARK.  
00:01:42 CC 1 plus 40.  
00:01:43 C Mode 2.  
00:01:44 CC Roger.

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00:01:48 P DCS Update here.

00:01:50 CC Roger.

00:01:55 C ...

00:02:03 C Are you okay for staging?

00:02:04 P We're okay. We're GO.

00:02:06 C Gemini XII is GO for staging.

00:02:10 CC Roger. You're GO for staging on the ground.

00:02:19 P Got the horizon coming up.

00:02:20 C Okay. ...

00:02:27 C DCS Update in.

00:02:29 CC Roger. DCS.

00:02:36 C Staging.

00:02:39 P Man! That flash! Two or three flashes. Did you see that?

00:02:50 C Yes.

00:02:51 CC You're looking good here, Gemini XII.

00:02:53 C Guidance ...

00:02:59 P Pitch-down error needles are nulling out nicely.

00:03:02 CC Roger.

00:03:09 CC You've got good second-stage thrust, Gemini XII.

00:03:11 P Roger.

00:03:12 C Gemini XII. Roger.

00:03:21 P RCS looks good.

00:03:22 C Good.

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00:03:23 P OAMS is okay and the cryo is good.  
00:03:24 C Good.  
00:03:25 P Fuel cell Delta-P light's out.  
00:03:29 P Houston, that Delta-P light's out now.  
00:03:32 CC Roger. Copy.  
00:03:35 CC You're steering right down the pipe.  
00:03:40 P Man, this is a pretty good visual simulation here!  
00:03:43 CC How do you like that?  
00:03:50 C How about that horizon, Buzz?  
00:03:51 P Beautiful!  
00:03:52 C Isn't that something, though?  
00:03:57 C Second stage ... looking good.  
00:03:58 C ... on the horizon.  
00:04:02 P The right Secondary O<sub>2</sub> jumped up to 6000 right at staging, and it's about 5600 now.  
00:04:10 C Okay.  
00:04:16 C Houston, Gemini XII is GO for insertion.  
00:04:20 CC Roger. You're GO here on the ground.  
00:04:34 C ... 1 more minute to go.  
00:04:43 P Circuit breakers look good.  
00:04:57 C How about .8?  
00:05:11 CC Stand by for .8, Gemini XII.  
00:05:12 P Okay.  
00:05:17 CC MARK.

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00:05:18 CC .8.

00:05:20 C Roger. We're hold safe.

00:05:35 C Look ... Buzz.

00:05:45 C SECO.

00:05:46 CC Roger. SECO.

00:05:48 P Direct ... Attitude ...

00:05:53 C 45, 4.

00:05:54 CC Gemini XII, you're GO for IVAR.

00:05:55 C Roger.

00:05:56 P Roger, Address ... reads 25704.

00:06:00 C 545 - 605.

00:06:04 CC You're GO.

00:06:06 C 95 reads 00032.

00:06:09 CC Roger.

00:06:25 C Your 94 reads plus 00014.

00:06:28 CC Houston. Copy.

00:06:45 C 38645 -- 28 forward, 8 left.

00:06:49 CC Do I understand 24 forward, 8 left? Is that correct?

00:06:52 C 28 forward.

00:06:53 CC 28 forward. Roger. Copy.

00:07:02 P Okay. It's counting down nicely.

00:07:21 C Okay.

00:07:26 P 250. Okay. D-ring, STOW. Put the pin in.

00:07:38 C Stand by.

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00:07:39 P Boost Insert, SAFE.  
00:07:41 C I'm going to get over on this --  
00:07:44 P Okay.  
00:07:47 C Caging, SEF.  
00:08:25 CC Gemini XII, Houston. Nominal 1-Bravo.  
00:08:29 C Roger, Houston.  
00:08:42 P Okay. You ready now? Boost Insert, SAFE.  
00:08:44 C Boost Insert is SAFE.  
00:08:45 P Retro, SAFE.  
00:08:46 C Retro is SAFE.  
00:08:47 P Maneuver Controller, OFF.  
00:08:48 C OFF.  
00:08:49 P Stow.  
00:08:51 C Stowed.  
00:08:52 P Plat ATT, SEF.  
00:08:54 C Plat, SEF, SEF.  
00:08:55 P Okay. Secondary O<sub>2</sub> - CLOSED.  
00:08:58 C Secondary O<sub>2</sub>, CLOSED.  
00:09:00 P Sequence Lights, TEST.  
00:09:06 C Let me get my D-ring in first, Buzz.  
00:09:07 P Okay.  
00:09:31 C How's pressure, okay?  
00:09:34 P Looks good.  
00:09:42 CC Gemini XII, Houston.

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00:09:53 CC Gemini XII, Houston. You're in an 87 by 152.

00:10:00 P Roger. 87 by 152.

00:10:15 P Okay. We're reading in the module.

00:10:26 C Okay. Mark that.

00:10:28 CC Gemini XII, Houston. You're in an 87 by 152 and we're 1 minute to LOS.

00:10:35 C Roger, Houston. 87 by 152.

00:10:43 C Okay.

00:10:44 P Okay. Let's see, where did we leave them off? Sequence-Secondary O<sub>2</sub>, CLOSED.

00:10:46 C Secondary O<sub>2</sub> CLOSED.

00:10:47 P And I think we ought to mention from that - -

00:10:51 C ... how far did they go down?

00:10:52 P Well, it went up to 6000, and it's at 5000 now.

00:10:56 C Okay.

00:10:57 P It was - you know - kind of oscillating up and down.

00:10:59 C Okay.

00:11:01 P Okay. Secondary O<sub>2</sub>, CLOSED. Sequence Lights, TEST.

00:11:05 C Sequence Lights, TEST.

00:11:06 P And we're reading in the module.

00:11:07 C Good.

00:11:08 P Amber - looks good.

00:11:10 C Okay.

00:11:13 P Green - okay.

00:11:15 C Looks good, right?

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00:11:16 P Right. Were all these amber, coming on?

00:11:22 P Okay.

00:11:25 P Arm rest, STOWED?

00:11:26 C Arm rest is stowed.

00:11:29 P Gloves off, belts loose, survival lanyard and window cover.

00:11:36 C ... My window cover was dirty, ... survival lanyard?

00:11:41 P Yes.

00:11:42 C Okay. Stand by.

00:12:03 P Well, how about that? Good old insertion.

00:12:05 C Yes. ... Buzz.

00:12:12 P Right on time and right on the schnozz.

00:12:29 C Okay. What else do we have to do?

00:12:31 C Window cover?

00:12:32 P Go ahead.

00:12:39 P Are you ready to go to 1, Number 1 on the Suit Fan?

00:12:40 C Yes.

00:12:41 P Give it a try.

00:12:43 C Okay. What's that - getting some firing out there, right?

00:12:45 P What? Man, that's light out there, isn't it?

00:12:50 C Okay. Let me finish with my window cover. You all set?

00:12:56 P Right.

00:13:02 C Here we go.

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00:13:03 P It looks pretty good. I can see a little bit of dirt on the outside.

00:13:10 C It must be the window that's reflecting the light.

00:13:14 P I've got a little and it looks like it's in the cover. There might be some on the others.

00:13:21 C Might be the booster that's doing it.

00:13:24 P Okay. Cabin ... CLOSED. Antenna Selector, ADAPTER.

00:13:28 C Okay.

00:13:31 P And I'll go ahead and get my window cover now, too, so I can get it before it's dark.

00:13:37 P There it goes.

00:13:39 P I can't see too much, though.

00:13:42 C What do we do, just put this bag up tight again?

00:13:43 P Yes. I didn't even have to loosen mine.

00:13:48 C I didn't either.

00:14:02 P Electrical check looks good. What time do we start getting - -

00:14:09 C Ascension?

00:14:10 P Yes.

00:14:15 C I'm not too sure. 19, I guess.

00:14:25 P About 23 volts and 22.8, Battery Number 2. That's a good one. 23.8.

00:14:36 C ... perpendicular?

00:14:37 P Yes. I'll get it, just a second. I've got the null here. 23.8, 24 volts.

00:15:11 C Have we got Module 3 in?

00:15:14 P It's on the way. We're standing by for - -

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00:15:17 C PRELAUNCH.  
00:15:18 P Yes. There it is.  
00:15:19 C Good.  
00:15:23 P All right. The time will be - -  
00:15:48 C How about the D-Rings, are the drogue pins - -  
00:15:52 P Yes. I'll get them, just a second.  
00:15:54 C Okay. Okay. 49:45, right?  
00:15:57 P Okay. P-perpendicular was positive and Address 27 will be 9 - -  
00:16:07 C See that light out there in the back. Must be the firing of the thrusters.  
00:16:09 P Yes. I suspect it is.  
00:16:14 P Not much of a horizon out there, is it?  
00:16:19 C We've got our lights on, that's why.  
00:16:38 P 8-1/2 feet per second.  
00:16:40 C Okay.  
00:16:58 C Okay. What else in this first Check List?  
00:17:03 P That's all, except the drogue pins and the survival lanyard.  
00:17:07 C Okay. My survival lanyard is undone. ...  
00:17:13 P Yes. I've got it off. See where it goes?  
00:17:15 C Yes.  
00:17:18 P You probably can't. I'll get it.  
00:17:24 C Okay. Let me write down what I have. We had 28 forward and 9 left - on the IVI's.  
00:17:47 P Okay. How long do you want to keep the tape going?

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00:17:49 C How long do I ...? I want to keep it going for a little bit.

00:17:58 P Climb over here, and see what I can do.

00:18:01 C Okay.

00:18:10 CC Gemini XII, Houston.

00:18:36 C Going to get here?

00:18:37 P Yes. Don't know why I never tried this before.

00:18:49 C Little bit of debris floating around, right?

00:18:51 P Yes.

00:18:55 C Got both of them, Buzz?

00:18:56 P Yes.

00:18:57 C Okay.

00:19:16 P Okay. I've got my lanyard.

00:19:18 C Okay. My lanyard is done.

00:19:30 C Okay. I'll unstow the Flight Plan.

00:19:51 C I can see that with this ... I'm not going to get much done until it comes off.

00:19:58 P Why don't you get rid of it?

00:20:15 P Okay. Everything's done.

00:20:16 CC Gemini XII, Houston.

00:20:19 C We should be picking up Ascension.

00:20:28 CC Gemini XII, Houston CAP COM. Over.

00:20:42 CC Gemini XII, Houston.

00:20:49 C ... off.

00:20:55 P As soon as I can see out here.

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00:20:59 C Can't see ... airglow.  
00:21:01 CC Gemini XII, Houston.  
00:21:07 P Those thrusters really fire away, don't they?  
00:21:09 C Yes.  
00:21:13 C It's spinning, that's why.  
00:21:25 C Okay. We've got Module 3 loaded? It's Load MP-1.  
00:21:30 P Roger.  
00:21:31 CC Gemini XII, Houston.  
00:21:49 CC Gemini XII, Gemini XII. Houston on UHF. Over.  
00:21:51 C We're turning ...  
00:21:56 C Houston, Gemini XII.  
00:22:10 C I'm going to go to PULSE and see if I can't ... little bit.  
00:22:33 CC Gemini XII, Houston. Give me a call on UHF-2 if you're reading me.  
00:23:12 P ...  
00:23:13 C Let's go to UHF-2 and see if we can pick them up.  
00:23:23 P 60.2. We're all loaded.  
00:23:39 C Houston, Gemini XII.  
00:23:57 CC Gemini XII, Houston.  
00:24:01 P Sounds like HF is coming in, doesn't it?  
00:24:05 C Yes. Let's go to UHF-2 and see if we can get it there.  
00:24:32 CC Gemini XII, this is Houston. If you're copying, we're 1 minute to LOS.  
00:24:37 P Man, he's loud and clear!

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00:24:38 C Yes.

00:24:41 C Okay. ... Okay. 49:45. Want to load that and see ...

00:24:47 P It's all loaded.

00:24:48 C Okay. Want to check her out? We'll just check her out.

00:25:09 C Good. ...

00:25:16 C We're venting.

00:25:30 P ... make the change over, okay?

00:25:33 C ...

00:25:34 P ...

00:25:35 C Yes. If you want to.

00:25:38 C Say, let me check this through, and I'll check and see if it's okay.

00:25:43 P Okay. I already did that.

00:25:44 C Oh, you did? Okay, good.

00:26:17 C Oh, no. Our first failure, Buzz. You know my bag - that holds everything - the line just broke.

00:26:37 C We'll probably have to switch bags for EVA.

00:26:56 C What - my footwell bag, that I put all the stuff behind?

00:27:03 P Oh! ...

00:27:19 C Yes. The stars are looking pretty good.

00:27:29 C We never got anything from Ascension.

00:27:46 C Okay. Flight Plan.

00:28:21 C It really fires, doesn't it?

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00:28:22 P Yes. What were you doing?

00:28:24 C PLAT.

00:28:43 P That just barely hits.

00:28:49 P What is it that broke, the whole bag?

00:28:52 C No. The strap broke.

00:28:54 P Oh.

00:28:57 C I'll put it down for now. We'll change it later on.

00:29:16 C ...

00:29:46 C Okay. What are we doing now?

00:29:49 P We're standing by to talk to somebody.

00:29:51 C ...

00:29:55 P Let me transcribe some of those into here.

00:29:58 C Okay. ... change this thing over.

00:30:03 P You have the times out there.

00:30:10 P Dear Doctor: Please don't miss this one. Your hopeful - -  
(Laughter)

00:30:16 C Do you understand that?

00:30:22 C Okay. I'm switching over.

00:30:31 P I see what you mean about kind of being away from everyone up here.

00:30:37 C The world's all down below.

00:31:07 P This is simpler than the one we had before, - -  
- - but I guess it's just as effective, if not more so.

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00:31:27 P Let's see, I forgot one little thing here.  
00:31:48 P Yes. This is a lot easier than I thought.  
00:32:21 C What do you know, I found a washer.  
00:33:16 C How do you read?  
00:33:18 P Loud and clear. Not sure I'm reading you on INTERCOM.  
00:33:23 C How do you read on INTERCOM?  
00:33:36 C Look at this one. ... like have a ball ...  
00:33:44 C That's great.  
00:34:13 P We never did get a picture.  
00:34:27 P Well, we ought to be able to pick it up at Tananarive right about now, 00:34:41 - 51.  
00:34:37 C See if you can get an update, Buzz.  
00:34:57 P ... I don't believe we've heard from them since we switched to ADAPTER.  
00:35:02 C We can go back to REENTRY if we - 34.  
00:35:07 P 34:10.  
00:35:15 C 49:45. We're going to burn 50 feet per second forward.  
00:35:24 P Okay. Proceed as ...  
00:35:37 C There we go.

**TANANARIVE**

00:35:38 CC Gemini XII, Gemini XII. Houston CAP COM through Tananarive. Go REENTRY Antenna. How do you read?  
00:35:45 C This is Gemini XII. Reading you loud and clear now, Houston. How us?

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00:35:49 CC Roger. Do you have a comm problem or was it us?

00:35:54 C We didn't locate any problem here over Ascension. We tried to - we thought you were broadcasting, but we couldn't hear a thing.

00:36:02 CC Okay. Well, we had a low pass at Ascension. Are you ready to copy your N<sub>C</sub>l?

00:36:09 C Roger. Ready to copy. We're on REENTRY Antenna right now. We first heard your transmission on an ADAPTER Antenna, however. Want us to stay on REENTRY?

00:36:18 CC Yes. Let me get the N<sub>C</sub>l to you and then we'll play with your radio.

00:36:21 C Go ahead. Ready to copy.

00:36:23 CC Roger. N<sub>C</sub>l: 49 plus 40; Delta-V, 66.6; Delta-T, 1 plus 28; yaw 0, pitch 0; Address 25, 00666; Address 26, Address 27, all zeros; thrusters aft; Maneuver, Posigrade.

00:36:55 C Get the GET.

00:36:57 P Roger. Understand. N<sub>C</sub>l Update: GET-B, 49 plus 40; Delta-V, 66.6 feet per second; duration, 1 plus 28 seconds; yaw 0, pitch 0, Address 25, 00666, ...; Posigrade.

00:37:23 CC Okay. That burn time was 49 plus 40. I could get you a copy, but I think you have it right.

00:37:31 P Roger. Burn time 49 plus 40.

00:37:36 CC Roger. Your orbit is 87 by 146.

00:37:44 P Roger. Understand the orbit is 87 by 146.

00:37:49 CC Okay. Now go back to - back to ADAPTER Antenna and give me a call, please.

00:37:53 C ... I'll give them a call and tell them about that.

00:38:00 P Okay.

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00:38:01 C Houston, Gemini XII. On ADAPTER Antenna, how do you read?

00:38:04 CC Okay. I read you loud and clear. I think our problem was your low pass at Ascension. You can remain on ADAPTER Antenna and how's everything going?

00:38:14 C Roger. One small anomaly on Lift-off. Our Secondary O<sub>2</sub>, right one, went up to 5600 then dropped to 5000. It's now at 5000.

00:38:26 CC Okay.

00:38:29 P Seemed to go on up to the higher level during high-g.

00:38:34 CC I didn't copy that. Say again, please.

00:38:37 P Roger. The right Secondary O<sub>2</sub> went to the high reading during high-g flight. It is now at 5000. We have the left Secondary O<sub>2</sub> CLOSED and the right Secondary O<sub>2</sub> is OPEN per Flight Plan.

00:38:41 CC You're breaking up pretty badly. You can pass it to Carnarvon.

00:38:52 CC Okay.

00:39:03 C Okay, Buzz. Batteries off and checked.

00:39:11 P Okay.

00:39:13 C I want to go off ... using too much gas.

00:39:17 P It's off Platform ...

00:39:26 C I think that's how those darn things wear out.  
(Singing - "Back in the Saddle Again")

00:39:35 P Hey, look - there's Leo!

00:39:40 C Houston, Gemini XII. Are you ready to copy our ... burn?

00:39:45 CC Say again, Gemini XII.

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00:39:56 C We're probably out of - -  
00:39:57 CC Gemini XII, Houston. Go ahead.  
00:40:00 P Roger. GET burn is 1 plus 1<sup>4</sup> plus 22; Delta-V is  
8.5 feet per second; Address 25 and 26 are 0;  
Address 27, 90085.  
00:40:23 C Right?  
00:40:24 CC Roger. Understand you're out of plane at 01 plus  
1<sup>4</sup> plus - -  
00:40:27 P Did you copy?  
00:40:28 CC - - Delta-V 8.4; Address 25 and 26 are zeros; 27 -  
was that 00084?  
00:40:49 C Roger. Gemini XII here. The time of the burn is  
1 plus 1<sup>4</sup> plus 22; Address 27 is 90085. Over.  
00:41:04 CC Roger. Copy. And we're 1 minute to LOS. Standing  
by.  
00:41:07 C Okay. Let's check and see ...  
00:41:38 P Get the optical sight out whenever you get a chance.  
00:41:41 C Okay.  
00:41:44 C 41:49:40, right? Is that the right - -  
00:41:50 P 49:40. Right.  
00:41:51 C Okay.  
00:41:55 C What have we forgotten so far, Tiger?  
00:41:58 P I think we're doing all right.  
00:41:59 C Okay.  
00:42:03 P I'll get the optical sight out after I make this  
burn.  
00:42:15 C Now the beginning of our problems with the ...

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00:42:21 P I can just see how that's going to be. ... saying CONTINUOUS on the Recorder?

00:42:25 C Yes.

00:42:27 C Okay. We can go on CONTINUOUS now at 42:30. Going on to CONTINUOUS until the Launch phase.

00:42:34 P You want to stay in for the burn?

00:42:51 P Yes. They did give us a plastic shield for the ...

00:43:04 C How about that? One more thing to dump.

00:43:34 C No. You can burn.

00:43:39 P Everything is up-to-date in Kansas City.

00:43:41 C I'm going to burn ...

00:43:46 P Yes. Good deal.

00:43:51 C All check out right?

00:43:52 P 66 feet per ...

00:43:53 C Yes. Evidently, we didn't burn it up at first, which is great because it may mean that we'll have a smaller ...

00:44:03 P I don't know that 66 ...

00:44:15 C Okay. Whenever you're ready.

00:44:17 P But we haven't ...

00:44:20 C Yes. We ought to have ...

00:44:26 P We will do that after the burn.

00:44:28 C Ready yet?

00:44:29 P Where did you get that?

00:44:31 C 35. Be sure the radios are on.

00:44:36 P Okay. We're going to FLOW.

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00:44:37 C Okay.

00:44:40 P And we're going to NORMAL.

00:44:41 C Okay.

00:44:45 P Okay. What's the burn time?

00:44:47 C Okay. 49:45. Right?

00:44:50 P 49:45, right? 49:40.

00:44:56 C Did you write that down about the radiator and ...?

00:44:58 C Right.

00:45:01 P ... Command and C-Adapter, CONTINUOUS.

00:45:07 P C-Adapter, CONTINUOUS. Reentry, COMMAND.

00:45:10 C C-Adapter, CONTINUOUS. Reentry, COMMAND. Okay.

00:45:15 P Got any more goodies?

00:45:27 C I don't think so. I want to look at Carnarvon pretty soon.

00:45:32 C The only thing about ... at Launch that I didn't like is that you go to darkness right away.

00:46:02 P Look at that! See, she's stopped burning now. Are we going to pay for this deal when it ...

00:46:15 C Look at your sunset, Buzz, or your sunrise.

00:46:17 P Hey, beautiful! Look at that!

00:46:25 C It'll come zapping in our eyeballs any minute now. I'd better get my sunglasses on.

00:46:28 P Yes. Not a bad idea.

00:46:32 C Let's see, what have we got out there?

00:46:38 C Well, I'm going to wait until after this burn. Anything else we have to do before this burn?

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00:46:42 P ... out there?

00:46:44 C Probably is.

00:46:51 P You just don't have any sensation of motion whatsoever, do you?

00:46:55 C No. Notice how quiet everything is. Beautiful! Okay. We're going to be kind of rushed after this burn because after the 114 we do this other plan, and we've got to get the word over Carnarvon.

00:47:09 C Yes. We got the Accelerometer Bias Check.

00:47:20 P Sunrise over the Pacific.

00:48:05 C Did you know that you lifted off when the bolts blew?

00:48:07 P Yes, yes.

00:48:09 P Not the instant, but I could sense some motion after that.

00:48:13 C Yes.

00:48:28 C There's the moon out there. Do you see it?

00:48:32 P No. I don't have it on my side yet.

00:48:33 C And there comes the sun.

00:48:36 P See you're looking - you're in sunlight and I'm not yet.

00:48:44 C 48:43. I'd better get ready.

00:48:46 P Looks ... on this window - oh, it's on the inside.

00:48:49 C ... you want a burn here.

00:48:57 P Okay. Coming up on 49.

00:49:07 C Okay. Cut ...

00:49:09 P 40 to burn.

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00:49:10 C Okay .  
00:49:11 P ORB RATE, Platform Mode.  
00:49:15 C ORB RATE Plat ON. Burn forward at 49:40.  
00:49:23 C 22, 26. 10 seconds to go.  
00:49:34 P Is this - -  
00:49:41 C Burn!  
00:49:45 P For some reason, this thing jumped up to 66.8.

## CARNARVON

00:49:51 CC Carnarvon standing by.  
00:49:53 C Tell them we're burning.  
00:49:54 P Roger. We're in the process of burning.  
00:49:56 CC Roger.  
00:50:02 P I can feel that thrust blowing, you know?  
00:50:03 C Yes.  
00:50:12 C Read the attitude while you are in PULSE, right?  
00:50:13 P Yes.  
00:50:14 C I mean PLAT.  
00:50:19 P Okay. 80 is tracking you nicely.  
00:50:22 C Okay. Good.  
00:50:26 P Let's get the Up-Down first after this.  
00:50:28 C Okay.  
00:50:31 P 1 plus 28.  
00:50:33 C Okay .

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00:50:38 P It's going around by two's.  
00:50:53 P Hold on the fuel.  
00:50:54 C Okay.  
00:50:56 P Don't overshoot.  
00:50:58 P We'll get the Up, first.  
00:50:59 C Okay.  
00:51:06 P Okay.  
00:51:12 C Okay. Flood. Down 1.  
00:51:14 P Down 1.  
00:51:19 C Okay. Left 1.  
00:51:23 C Okay.  
00:51:25 P Thrust is right. Third and fourth.  
00:51:30 C A little more.  
00:51:32 P Check it again.  
00:51:40 C They - you overshot 1. Okay.  
00:51:41 P We'll stay off anyway. We might not be able to get it all.  
00:51:49 P Forward.  
00:51:50 C 3. 10.  
00:51:53 C You need a little bit more than that.  
00:52:10 C Son-of-a-gun!  
00:52:13 P ...  
00:52:15 CC Gemini XII, Carnarvon.  
00:52:17 P Okay. Let's go.

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00:52:19 C Carnarvon, Gemini XII. Burn is complete and the residuals are GO.

00:52:24 CC Okay. Standing by for your GO for 15-1.

00:52:28 C Roger.

00:52:38 C Carnarvon, Gemini XII.

00:52:40 CC Go ahead.

00:52:41 C Would you inform the Martin Company it's Happy Hour tonight.

00:52:44 CC I will do that.

00:53:10 C Got it?

00:53:11 P Yes.

00:53:13 C Carnarvon, this is Gemini XII. We're GO.

00:53:15 CC Roger. Your radiator is GO. All systems are GO here on the ground. You're GO for 15-1 Alpha. I'll give you a Mark on GET at 5<sup>1</sup><sub>4</sub> minutes.

00:53:26 C Roger.

00:53:28 P What's the story - plain burn I wonder?

00:53:33 C We should get something from here.

00:53:35 P Yes. We'll still ask them.

00:53:36 P Why don't you give them a call?

00:53:50 C Okay.

00:53:55 CC 5, 4, 3, 2, 1,

00:54:00 CC MARK.

00:54:01 CC 5<sup>1</sup><sub>4</sub> minutes.

00:54:05 P We're right on it.

00:54:06 C Roger. We're right on it. Do you have some

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information on our Out-of-Plane burn?

00:54:07 CC Say again, Gemini XII.

00:54:09 C Roger. Do you have some information on an Out-of-Plane burn?

00:54:13 CC That's affirmative. You are GO for your on-board solution for the Plane-Change.

00:54:18 C Roger.

00:54:19 P Okay.

00:54:21 CC Would you give me a PQI, please?

00:54:23 C Roger. PQI reading 85 percent.

00:54:27 CC Roger.

00:54:33 C Onboard 14:22, right?

00:54:45 P Boy, I never expected to get that.

00:54:46 C Put her on AFT.

00:55:19 P 9, right?

00:55:20 C Yes.

00:55:22 P I'm going to cant-off at 22-1/2 degrees and burn with the right thruster.

00:55:28 P 26 feet ... the left thruster.

00:55:31 P Look at that!

00:55:32 C ... before we get behind, we'd better start getting a couple of things down here.

00:55:36 P Okay.

00:55:37 P He's got the - 1:14. or 14:22, right?

00:55:45 C Yes. 1 plus 14 plus - -

00:57:07 CC Gemini XII, Carnarvon. 1 minute until LOS and standing by.

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00:57:12 C Roger, Carnarvon. We've burned out our NCl and all the residuals.

00:57:17 CC Roger. We copied that.

## HAWAII

01:15:40 CC Gemini XII, Hawaii.

01:15:48 C Hawaii, Gemini XII. Just completed the ... burn and the residuals are nulled.

01:15:54 CC Roger. Thank you. We're going to start an Accelerometer Bias Check at this time then.

01:16:01 C Roger. Understand. We are in PRELAUNCH.

01:16:05 CC Roger. Thank you.

01:16:32 C Hawaii, this is Gemini XII. We're in the process of rotating back to 0 0 0. We're going to have to stop our rotation here shortly.

01:16:39 CC Roger. As soon as you get zeroed out, would you let me know, and we'll start the Accelerometer Bias Check at that time.

01:16:45 C Roger.

01:16:54 P It looks 0 0 0 to me.

01:17:04 C Roger. Go ahead.

01:17:09 CC Roger. Gemini XII.

01:21:12 C Hawaii, Gemini XII.

01:21:14 CC Gemini XII, Hawaii.

01:21:16 C Roger. How much longer will this check go?

01:21:23 CC We're just about to complete it here.

01:21:36 CC Gemini XII, Hawaii. That completes the Accelerometer Bias Check.

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01:21:40 C Roger. Thank you. We're still yawing left some-  
what.  
01:21:44 CC Roger.  
01:22:17 CC Gemini XII, Hawaii. 1 minute to our LOS.  
01:22:21 C Roger, Hawaii.

**CALIFORNIA**

01:25:30 CC Gemini XII, Houston.  
01:25:33 C Roger, Houston. Gemini XII here.  
01:25:35 CC Roger. Would you take a check on your Cryo O<sub>2</sub>  
Pressure? We're standing by. We'll pass you the  
maneuvers when we get them.  
01:25:43 C Roger. Thank you. We're reading 550 on Cryo O<sub>2</sub>  
... and up.  
01:25:48 CC Okay.  
01:25:50 P Houston, Gemini XII here. Be advised we have a  
solid lock-on now - first range we're able to  
read out as to the accelerometer bias - with 235.52  
miles.  
01:26:02 CC Roger. It looks like the radar meets the specs.  
01:26:05 P I guess so.  
01:26:17 CC Gemini XII, Houston. Your accelerometers require  
no update. Everything looks good.  
01:26:22 C Gemini XII. Roger.

**HOUSTON**

01:32:04 CC Gemini XII, Houston.  
01:32:07 C Go ahead, Houston. Gemini XII here.

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01:32:09 CC Roger. Would you turn your ATM off?

01:32:12 C Roger.

01:32:13 CC Thank you.

01:35:30 CC Gemini XII, Houston.

01:35:32 C This is Gemini XII. Go.

01:35:33 CC Roger. Your cutoff will be 16 percent.

01:35:37 C Roger. 16 percent to cutoff and we're standing by for our CSI and our PDH Update.

01:35:42 CC Roger. It's just coming to us now. We'll be right with you.

01:36:55 CC Gemini XII, Houston.

01:36:57 C This is Gemini XII. Go.

01:36:58 CC Roger. I have CSI for you.

01:37:02 C Ready to copy.

01:37:06 CC Roger. GET B: 01 plus 47 plus 52; Delta-V, 7.6; burn time, Delta-T, 00 plus 10; yaw 10 right, pitch 27 up; Address 25, 00067; Address 26, 90035; Address 27, 90011; thrusters aft; Posigrade Up south.

01:37:53 P CSI: 01 plus 46 plus 52; Delta-V, 7.6; duration, 00 plus 10; yaw 10 right, pitch 27 up; 25 is 00067; 26 is 90035; 27, 90011; aft.

01:38:23 CC Roger. That's a Charlie on that. Posigrade Up and south.

01:38:27 P Roger.

01:38:35 CC And I have PDH for you if you're ready to copy.

01:38:39 P Roger. Go ahead with PDH.

01:38:41 CC Roger. GET B: 02 plus 22 plus 54; Delta-V, 49.9; Delta-T, 01 plus 06; yaw 1 right, pitch 4 up;

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Address 25, 00498; Address 26, 90035; Address 27, 90007; thrusters aft; maneuver is Posigrade Up south.

- 01:39:35 P Roger. Houston. PDH at 02 plus 22 plus 54; Delta-V, 49.9; duration, 01 plus 06; yaw 1 right, pitch 4 up; 25 is 00498; 26 is 90035; 27 is 90007; thrusters aft, Up Posigrade.
- 01:40:04 CC Roger. That's Charlie.
- 01:42:28 CC Gemini XII, Houston.
- 01:42:37 CC Gemini XII, Houston.
- 01:42:40 C Houston, Gemini XII. Go ahead.
- 01:42:42 CC Roger. The temperature has gone up on your frog eggs. If you can get to the thermo cover without interfering, would you put it on, please?
- 01:42:50 C Roger.
- 01:42:51 CC Thank you.
- 01:42:57 CC And Gemini XII, this is Houston. Could you give us a report on your left and right windows, please?
- 01:43:14 CC Gemini XII, Houston. Could you give us a report on your windows when you have a chance, please?
- 01:43:18 C Roger, Pete. We've got smudging ... aren't bad right now, though; they're pretty good.
- 01:43:29 CC Okay. Thank you.
- 01:43:45 P Frog eggs are tucked in nicely.
- 01:43:48 CC I thank you.
- 01:45:30 CC Gemini XII, Houston. We have about 1 minute to LOS. Your Delta-H looks like 10 miles.
- 01:45:37 C Roger. Understand 10 miles, Delta-H.
- 01:45:40 CC Roger. Standing by.

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## ASCENSION

01:53:12	CC	Gemini XII. Houston standing by through Ascension.
01:54:01	CC	Gemini XII, Gemini XII. Houston standing by through Ascension.
01:54:05	C	Roger ...
01:54:11	CC	Say again, Gemini XII.
01:54:57	CC	Gemini XII, Houston.
01:55:07	C	This is Gemini XII. Go ahead, Houston.
01:55:10	CC	Roger. Would you check your Agena Control Power circuit breaker and see if it's in the ON position please?
01:55:27	CC	Say again. It is ON. Is that correct?
01:55:40	CC	Could you say it again slowly? You're broken up a little.
02:00:16	CC	Gemini XII, Gemini XII, Houston. 1 minute to LOS.
02:00:21	C	Roger. 1 minute to LOS.

## TANANARIVE

02:10:01	CC	Gemini XII, Gemini XII. Houston standing by through Tananarive.
02:10:06	C	Roger, Houston. This is Gemini XII. The computer is engaged.
02:10:09	CC	Roger.
02:15:18	CC	Gemini XII, Houston. 1 minute until LOS. Standing by.
02:15:23	P	Roger, Houston.
02:15:28	C	Houston, Gemini XII. We've had visual contact

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through the sextant in excess of 85 miles.

02:15:36 CC Roger, Gemini XII. Copy.

**CARNARVON**

02:24:43 CC Gemini XII, Carnarvon. Standing by.

02:24:49 P Roger, Carnarvon. We burned the on-board solution. That's 25, 00495; 26, 90065; 27, 90001. Roger. Over.

02:25:11 CC Roger. Would you give me 25 again, please?

02:25:14 P Roger. 25 was 00495.

02:25:18 CC Okay. Copy that. Thanks.

02:25:20 CC Like PQI also.

02:25:23 C Roger. PQI at this time is reading 75 percent.

02:25:27 CC 75. Roger.

02:27:16 P Carnarvon, Gemini XII.

02:27:17 CC Go ahead.

02:27:18 P Roger. We seem to have lost our radar lock-on at about 64 miles. The Radar Power circuit breaker is on, and we don't seem to be able to get anything through the computer.

02:27:31 CC Roger. Stand by.

02:27:37 CC Okay. We show you lock-on here on the ground.

02:27:41 CC We show you also in Nav mode rather than in Rendezvous.

02:27:56 P We are in the Nav mode. We're waiting to be sure we have a lock-on.

02:27:50 CC Okay. The Agena is receiving you. Evidently you're getting no indication that he's got it.

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02:27:56 P We're getting no observation in the Analog Computer mode.

02:30:43 CC 1 minute until LOS. How are you doing?

02:30:45 P Roger. Still no lock-on. We're viewing a fluctuation on the analog. Still is going back and forth, but we haven't had any lock-on.

02:30:52 CC Okay.

02:30:54 P Roger. Out of the computer.

## HAWAII

02:51:14 CC Gemini XII, this is Hawaii. We have a T/M solid on you.

02:51:19 C Roger, Hawaii. I wish we had lock-on settled on the Agena.

02:51:24 CC You're still having negative luck with all of that?

02:51:28 C Roger. We're proceeding as of a radar failure.

02:51:31 CC Okay. Do you have the up current at the present time to your commands to see if you have command capability?

02:51:37 C Roger. Go ahead.

02:51:39 CC Okay. What we'd like for you to do is give us SDP DIM and BRIGHT; that's Commands 211 and 201. Whenever you're ready, go.

02:51:50 C MARK.

02:51:51 C Negative MAP light.

02:51:53 CC Okay. We have the function.

02:51:56 CC Okay. Would you give us 201?

02:51:59 C MARK.

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02:52:00 C Negative MAP light.

02:52:03 CC Roger. We have MAP on the ground. We also have --

02:52:12 CC Okay. We're showing that command capability is working fine here on the ground.

02:52:17 C Roger. Are you showing that we do have DIPOLE selected?

02:52:23 CC That is affirmative. We do have DIPOLE selected.

02:52:27 C We ought to try SPIRAL.

02:52:31 CC Yes. Go ahead and give it a try.

02:52:45 C It didn't look like that was too good. It didn't help out too much.

02:52:49 CC Okay. Go ahead and go back to DIPOLE.

02:52:56 CC Your commands are going through fine.

02:52:58 C Yes. We're getting them more steady lock-on when we're on SPIRAL, it looks like.

02:53:04 CC Okay. Stand by. I'll see what they want to do, whether they want to stay on SPIRAL or DIPOLE.

02:53:09 C It looks like DIPOLE is the best rate there.

02:53:11 CC Okay. You're still not getting any Range information, right?

02:53:14 C Well, it's intermittent. Let's see; right now I've got the latest one. It is 34.58 miles.

02:53:22 CC 34.58?

02:53:25 C That's roger.

02:53:31 CC We check out --

02:53:32 C That agrees approximately with our angle. Our angle is about 16 degrees. We've got visual on him now, both with the sextant and in optical sight.

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02:53:40 CC Okay.

02:53:48 C It looks from our angle as though we are going to be a little bit later than nominal TPI.

02:53:54 CC Okay.

02:54:23 CC Gemini XII. I have your TPI backup information when you are ready to copy.

02:54:26 C Ready to copy. Go ahead.

02:54:28 CC Okay. GET B: 03:05:51; Delta-T, 026; Delta-V 22.8 Forward; Delta-T, 010; Delta-V, 3.2 Up; Delta-T, 0.08; Delta-V, 2.7 Right. Okay. Your Range will be 24.7 miles; Range-Rate 95 feet per second at Point Charlie.

02:55:23 C Roger. Understand GET of burn 3 plus 05 plus 51; 22.8 Forward; 3.2 Up; 2.7 Right. Range at Point C is 24.7; 95 feet per second.

02:55:40 CC Roger.

02:55:51 CC Okay. We have some more information on your co-ellipticity.

02:55:56 C Go ahead.

02:55:57 CC Okay. It will be 9.4 nautical miles to 10.0 nautical miles, and that will be almost at TPI or a time of 03:04:27.

02:56:12 C Roger. Understand. What will be at TPI?

02:56:17 CC That's the 10.0.

02:56:39 C Roger. Understand. That's how far aft you would be at TPI.

02:56:43 CC That's affirmative.

02:56:54 CC Okay. The information we're getting here on the ground is showing that the computer is accepting the radar data. How does it look to you now?

02:57:06 C It's looking fairly reasonable. Are you showing

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a study? Perhaps we ought to go in the Rendezvous mode.

02:57:57 CC Okay. Flight recommends that you stay in NAV with it.  
02:58:01 C Roger. We agree.  
02:58:03 CC Okay.

**CALIFORNIA**

02:59:46 CC Gemini XII, Houston. Standing by here. We're going to watch your radar to see how well it is operating and see if it will be of any help to you during your Braking Maneuvers.  
02:59:56 C Roger.

**TEXAS**

03:07:46 C We aren't getting any significant lock-on.  
03:07:50 CC Roger. Have you burned TPI?  
03:07:53 C Roger. TPI was on-board burn, 22 forward and 3 up, that was burned at - -  
03:08:02 C We didn't burn any 3 Up, Buzz.  
03:08:04 C - - burned at 2 plus 05 plus 48.  
03:08:14 P I guess I should have put it in there, right? I thought you said forget it. 22 forward.  
03:08:22 CC Okay. Gemini XII, say again. You burned 22 forward. Did you burn the 3 up or not?  
03:08:28 C Negative.  
03:08:30 CC Okay. You burned 22 forward, no out of plane and nothing up at 03:05:48. Is that correct?

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03:08:38 C This is Gemini XII. We burned 22 forward.

03:08:41 CC Okay.

03:10:15 C Okay for the tapes.

03:10:17 CC Stand by for an angle.

03:10:19 P Okay.

03:10:20 C Burn.

03:10:21 P We have 22 forward with TPI. We are getting no Range-Rate whatsoever.

03:10:58 CC Gemini XII, Houston.

03:11:00 P Go ahead, Houston.

03:11:02 CC The best we can tell on the ground is that it is updating correctly, all within 8 seconds. Every once in awhile into 40 seconds, and I don't know what you're reading in the cockpit, but it doesn't look too good on the ground.

03:11:28 C Houston, first correction is 2 up.

03:11:31 CC Roger. First correction 2 up.

03:11:35 C And Houston, we're getting no Range-Rate or Range Analog at all.

03:11:38 CC Okay. Are you getting anything on the computer?

03:11:43 C Occasionally. Intermittent whenever we get a log.

03:11:46 CC Okay. And would you turn the encoder off, please. We want to update the Agena.

03:11:52 C Roger.

03:13:15 C ... a pitch angle ...

03:13:22 C Data 93.

03:13:26 CC Say again, Gemini XII.

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03:13:31 C Go ahead .51.

03:13:39 C No Range-Rate.

03:13:42 CC You're very intermittent, Gemini XII. Would you repeat?

03:13:46 C We're doing ...

03:14:00 C ... data.

03:14:04 CC You say you're getting good radar data?

03:14:07 C Negative. We are not getting good radar data.

03:14:10 C Okay.

03:14:33 P Okay. ...

03:14:51 CC Gemini XII, this is Houston. You can put the encoder back on and you are transmitting UHF on INTERCOM there.

03:14:59 C Roger.

03:15:02 P Roger. We're on VOX. Tell us if we're coming through clear enough.

03:15:06 CC Okay. You're coming through.

03:15:10 CC And would you leave the encoder off, please.

03:15:13 C Encoder is off.

03:15:15 CC Thank you.

03:15:33 P Range is coming in now on the analog, but that Range-Rate is terrible.

03:15:37 CC Yes. Still ... Range-Rate here.

03:15:40 C Angle track is out of this world.

03:15:45 P Range track is 3. Flight, you might be drifting. Let's go back, okay?

03:16:12 P Stand by for pitch. ... 25, 9 ...

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03:16:22 C That's 346.  
03:16:58 P Okay. Bring 3 up.  
03:17:00 C Do it now?  
03:17:01 P 6.  
03:17:05 P 3 up.  
03:17:06 C Right now.  
03:17:18 P Okay.  
03:17:19 C 3 up.  
03:17:20 P 3 up?  
03:17:21 C No.  
03:17:26 P That looks pretty good on the plot there.  
03:17:28 P A little outside.  
03:17:34 P Know for sure what the - main is valid.  
03:18:00 P ... radar.  
03:18:05 C ... radar?  
03:18:07 P I'll look and see.  
03:18:36 CC Gemini XII, Houston. We show you're getting a  
little more solid on the radar.  
03:18:43 C Roger, Houston. We are. Range looks like it might  
be pretty good. Range-Rate is terrible.  
03:18:49 CC Roger.  
03:19:08 P Okay. 10 seconds to reading.  
03:19:13 P I'll check the yaw this time, too.  
03:19:22 P 31.  
03:19:30 P Range is 8.36.

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03:19:33 C That's very good.  
03:19:39 P Yaw is 350.91.  
03:19:45 C No difficulty there.  
03:19:48 C ACQ light stands out very nicely.  
03:19:50 C We have a star pattern out there now.  
03:19:52 P Good.  
03:19:54 P Okay. Got a Range-Rate of 79.  
03:19:56 C Roger.  
03:20:13 P There's a bright ACQ light.  
03:20:16 CC Gemini XII. 1 minute to LOS. You can go to Encoder ON.  
03:20:20 C Roger.  
03:20:22 CC Have fun.  
03:20:29 P Okay. 15 seconds to our mid-point.  
03:20:48 P 57.0.  
03:20:53 P 7.3.  
03:21:00 P 94 feet per second.  
03:21:03 C ... this.  
03:21:11 P Range is okay now.  
03:21:12 C Yes, that Range-Rate looks good ...  
03:27:57 P Okay. 20 seconds to reading.  
03:28:07 C It's not moving much in those stars.  
03:28:10 P 10 seconds.  
03:28:16 P Stand by. Read. 83.0.

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03:28:27 C 22 minutes - 25, I mean. Range-Rate - at least we get good Range-Rate now - between 40 and 50. Is that correct?

03:28:55 C All right. 1 down.

03:28:57 P 1 down.

03:29:09 C Okay. Aft up?

03:29:12 P Yes.

03:29:16 C Yes. I'm going to give you some more aft down.

03:29:19 P Go ahead.

03:29:29 C Okay. 5 aft.

03:29:30 P 5 aft. Okay.

03:29:37 C Set up inertial needles for you?

03:29:39 P Okay. Stand by. Okay.

03:29:54 C Okay. Inertial needles are yours, whenever you want them.

03:29:56 P Okay. I don't want them yet. I'm in COMP and ATTITUDE. Okay. Stand by.

03:30:04 C Okay. Whenever you want them. I've got the running light.

03:30:08 P Yes. I have too.

## ASCENSION

03:30:14 CC Gemini XII, Gemini XII. Houston standing by at Ascension.

03:30:19 P Okay. Inertial needles.

03:30:21 C Mark them.

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03:30:32 C-P Okay. Range-Rate?

03:30:34 P 2.27 miles.

03:30:36 C Okay. And the Range-Rate is 33 feet per second.

03:30:43 P Okay. The light's coming on.

03:30:45 C And the rate is 90 degrees.

03:30:47 P Okay.

03:30:57 P Okay. She's going up slightly.

03:30:59 C Darn it - let it drift up.

03:31:01 P That's right, she should go up 2-1/2 degrees.

03:31:07 CC Gemini XII, Houston standing by at Ascension.

03:31:10 CC Gemini XII, Houston.

03:31:19 C She's coming up. Want to give me - -

03:31:21 P 36 feet per second.

03:31:23 C Okay. 36 feet per second. Okay. At 10,000 feet we will take off 10.

03:31:31 P 1.97 miles.

03:31:33 C Okay.

03:31:38 P She's going up 1.

03:31:40 P Going up 1-1/2. 10,000 feet.

03:31:56 C Keep me in Range and Range-Rate, Buzz.

03:32:04 P Going up slightly. Oh, so slightly. 1.8.

03:32:07 C Okay. 1.8 miles. What's the Range-Rate?

03:32:18 P 29.

03:32:21 P I'm going to take off 10 at 1.8, 10,000. Okay. I'm picking up now. Can you determine it?

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03:32:35 C Looks good.

03:32:45 C Not any more than that.

03:32:47 P What? Okay.

03:32:58 P Looks good, doesn't it?

03:33:00 C She sure does look good, now.

03:33:11 P 10 feet off. Okay. Use your vision, and give me some range.

03:33:14 P Okay. You can contact ...

03:33:38 C Range. Range is 1.4.

03:33:42 P ... the platform.

03:33:45 P Okay.

03:33:50 C Got the running lights - fit in there real nice.

03:33:52 P Okay.

03:33:55 P Do you have an ideal Range-Rate?

03:33:58 C I'll have to ask the computer. 17 feet per second.

03:34:26 CC Gemini XII, Houston. 1 minute to LOS and you're unreadable.

03:34:31 C Roger.

03:34:43 P Roger. We're at about 1 and a quarter miles, about 17 feet per second, closing well under control.

03:34:50 CC Roger. Copy. 1 and a quarter miles. Say again your closing rate.

03:34:59 C Roger. Closing at 17 feet per second. Flight rates are well under control.

03:34:04 CC Roger. Copy.

03:35:30 C Range?

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03:35:38 P 1.08.

03:35:40 C Okay.

03:35:52 P How about going through the rest of the Check-Off List?

03:36:45 C Range?

03:36:49 P All right. 89.

03:36:52 C Okay.

03:37:09 C Range-Rate?

03:37:16 P Range-Rate still 17.

03:37:19 C Okay.

03:37:43 P Inertial needles?

03:37:45 C I'm using the stars now.

03:37:47 P 3/4ths of a mile.

03:37:50 C Still 17?

03:37:57 P Are you getting new inertial needles?

03:38:02 C Stand by.

03:38:04 C Okay. Switch AUTO back in. Okay. Anytime you want.

03:38:15 C Now.

03:38:16 P Okay. I have them.

03:38:28 P .64.

03:38:29 C Okay.

03:38:35 P 20 feet per second showing now.

03:38:38 C 20 feet per second? ... a little bit.

03:39:15 P 1/2 mile.

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03:39:18 P Okay. I'm going to take off something. 5 feet.  
03:39:35 P Okay. Range-Rate?  
03:39:45 C Shows 12. Try to slow down a little.  
03:40:28 C Okay. Range-Rate now is 10 feet per second.  
03:40:33 P Okay.  
03:40:40 C Looking good. P-System's looking clean, right?  
03:40:47 C Yes. Sure is. This I got out of the computer, fortunately. Shows us coming up on 2,000 feet here.  
03:40:55 P 2,000. Okay.  
03:41:02 C 2,000 - 10 feet per second.  
03:41:09 P 70 percent of the PQI.  
03:41:14 C Okay. Coming up on 2.  
03:41:18 P Okay.  
03:41:23 C Cross 2,000 feet.  
03:41:24 P 2,000.  
03:41:26 P Okay. ... it off.  
03:41:28 C That was 1 minute and 50 seconds.  
03:41:33 P Okay. That shows we had about 9 feet per second, which is not bad.  
03:41:41 C Okay. 1500 - 463.  
03:41:45 P Okay. 1500 feet.  
03:41:53 C We're not there yet.  
03:41:55 C Range-Rate at 9 feet per second.  
03:41:59 P Okay. Maybe. It shows 12 here.  
03:42:01 C Little noisy maybe. Turn on your light again.

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Okay. I believe it's going to bring a little bit more here.

- 03:42:24 C Okay. 1500 feet.
- 03:42:28 P All right. 1 minute.
- 03:42:32 C Range-Rate analog still isn't working.
- 03:42:34 P It isn't?
- 03:42:38 P 5 feet per second shows here.
- 03:42:40 C Okay.
- 03:42:43 P And this shows about 8 - 9.
- 03:42:54 C Yes. They are GREEN.
- 03:42:56 P Yes, I see them.
- 03:42:57 C Check and see how fast we're closing. I don't have analog.
- 03:43:01 P Shows 5.
- 03:43:02 C 5.
- 03:43:12 C Looking for 1000 feet. We're not there yet.
- 03:43:22 P A nice rendezvous.
- 03:43:34 P Coming up on 1000 feet. Looks real good. Lots of stars out there.
- 03:43:52 C Range-Rate?
- 03:43:58 P Shows about 5.
- 03:43:59 C Okay.
- 03:44:01 P Look at that. Solid as a rock.
- 03:44:02 C Okay. We're about 800 feet now.
- 03:44:09 P Okay. I'll tell we're still closing, right?

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03:44:11 C Yes.

03:44:16 P Still closing. Closing nicely. Still closing.  
How about a Dock light, want that?

03:44:28 C Yes.

03:44:33 P Does it do anything?

03:44:35 C No.

03:44:43 P Still closing. Still closing.

03:44:58 C That analog is no good.

03:45:00 P Still closing. Still closing. Still closing.  
Still closing.

03:45:11 C Okay.

03:45:14 P Start taking it out.

## TANANARIVE

03:45:17 CC Gemini XII, Gemini XII. Houston standing by through  
Tananarive.

03:45:23 P Still closing. Still closing. Just a little bit.  
Still closing.

03:45:35 CC Gemini XII, Gemini XII. Houston standing by  
through Tananarive.

03:45:41 C Here we are.

03:45:42 P Still closing. Let me just check that.

03:45:47 C Lafayette, we are here.

03:45:49 P Still closing. Just a little bit.

03:45:54 CC Gemini XII, Houston. Understand you are there.  
Is that correct?

03:45:59 P There she is. Beautiful!

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03:46:06 P Hey, do I see 69 percent?

03:46:07 C 69 percent. Okay.

03:46:16 P We still may be closing a little bit, right?

03:46:20 CC Gemini XII, this is Houston. Would you go to PUSH TO TALK, please?

03:46:23 C Okay. Let's get out a few little procedures, here.

03:46:26 P Yes. You get them out while I look at this thing.

03:46:29 CC Gemini XII, Houston. Would you go to PUSH TO TALK, please?

03:46:31 P Hold it here for a minute.

03:46:35 P We never did get a picture of this. It was f:2, wasn't it?

03:46:41 C Yes. You recall?

03:46:43 P Gemini XII. Over.

03:46:45 CC Gemini XII, Houston. Would you go to PUSH TO TALK, please?

03:47:14 CC Gemini XII, Houston is standing by at Tananarive.

03:47:15 C I guess you can turn off the ACQ lights.

03:47:17 P Okay.

03:47:22 P Okay. Read it 60 -

03:47:24 C I have a MAP light.

03:47:26 P Okay. 68 percent.

03:47:29 CC Say again, Gemini XII.

03:47:30 P You son-of-a-gun. (Laughter)

03:47:31 C I'm going to roll her around, Buzz.

03:47:33 P Hey, you are rolling a little!

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03:47:36 C Yes.

03:47:38 P Look at that crazy work station!

03:47:42 P Hey, I think the old - I think - No. I can't see it.

03:47:47 C No. It's on the other side.

03:47:48 P Yes. I look - isn't that great?

03:47:53 C Beautiful!

03:47:57 P Sun's coming up.

03:47:59 C Just a little bit.

03:48:01 C Camera. Never had an eye. Whee, look at that!

03:48:09 P Yes. This is just a little bit. I want to get the camera going.

03:48:10 CC Gemini XII, Houston. Would you go to PUSH TO TALK, please?

03:48:20 C Take some pictures of it.

03:48:32 CC Gemini XII, Houston. Do you read?

03:48:53 P Man, that baby's bright!

03:48:54 C Yes.

03:48:55 P Looks beautiful!

03:48:58 C All right now, let's see - let me get around to see where we are here.

03:49:05 P We're straight up, aren't we?

03:49:07 C Dock light - Well, we don't need the Dock light anymore, do we?

03:49:09 P No.

03:49:15 CC Gemini XII, Houston.

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03:49:16 C Okay. Want to record the fuel here, and the time, now that we're here?

03:49:26 CC Gemini XII, Houston. Do you read?

03:49:28 C Okay. Purge light's on 141.

03:49:30 P Okay.

03:49:34 CC Gemini XII, Houston.

03:49:35 P ... 201 MAP light.

03:49:40 P ... 9. 220.

03:49:49 CC Gemini XII, Houston.

03:49:57 CC Gemini XII, Gemini XII. Houston.

03:50:18 P I still don't know where the heck I am. I reckon the bottom of the Agena.

03:50:27 C Yes. You dipped around.

03:50:28 P I don't want to go that way - -

03:50:29 CC Gemini XII, Houston.

03:50:30 C We're going to have to ...

03:50:35 CC Gemini XII, Houston.

03:50:49 CC Gemini XII, Gemini XII. Houston.

03:50:52 C Okay. Let's move around so we can see what the lights look like.

03:50:54 P Okay. Let me up there where I can get out of this area.

03:51:16 C All right. Move up to the engine, Buzz.

03:51:21 CC Gemini XII, Houston.

03:51:30 P Well, for radar that was lousy, that wasn't bad.

03:51:33 C Not bad at all.

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03:51:38 CC Gemini XII, Houston.  
03:51:40 P You do good work.  
03:51:43 CC Go to PUSH TO TALK, will you? You're GO for docking.  
03:51:54 C A solid UDH burn.  
03:51:57 P I'd try and take it easy on the fuel.  
03:52:06 CC Gemini XII, this is Houston. 1 minute to LOS.  
You're GO for docking.  
03:52:07 P Here we go! Here we go! That's right on there.  
03:52:29 C What have you got, 1/250th?  
03:52:34 P Yes, f:11.  
03:52:38 C I ought to use f:16 on it.  
03:53:12 C Okay. Why don't you nudge on in, in front of them?  
03:53:16 P Yes.  
03:53:18 C There, look at the terminator going by.  
03:53:21 P Yes. Man, you can see we're really moving now!  
03:53:35 C Well! Well!  
03:53:42 P Couple of specks over there, right underneath us -  
see that?  
03:53:45 C Yes. It sure looks like it anyway.  
03:53:52 P What are you doing with all that gas?  
03:53:54 C I'm trying to save it, Buzz.  
03:54:09 P That's the flap on the outside of our - -  
03:54:20 C I'll bet it's back at work station.  
03:54:54 P I'm going to bring it down a little bit.  
03:55:10 P Get out the camera. Here's the 17mm - get a

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picture of that - -

- 03:55:21 C Well, there is too much light now.
- 03:55:52 P Supposed to do that?
- 03:55:53 C No.
- 03:55:59 P Well, it did.
- 03:56:02 C Never knew of that failure.
- 03:56:19 C ... sun right here in my face.
- 03:56:21 P I'll try.
- 03:56:33 C Going to run out of film there.
- 03:56:45 P Look at that loop sitting out there, will you?
- 03:56:47 C Take a picture of that loop, if you can.
- 03:56:54 P Just look at that loop sitting out there!
- 03:57:16 P What time is it? Do we have much time left?
- 03:57:28 C Got an ATTITUDE light, MAIN GREEN, SECONDARY HIGH, POWER and a DOCK.
- 03:57:35 P We're all set.
- 03:57:36 C Okay.
- 03:57:40 C Okay. Do you want to go in, or should we take a picture of the engine?
- 03:57:42 C Well, let's not - -
- 03:57:47 P We're 65 percent.
- 03:57:48 C - - horse around too much.
- 03:57:50 C Okay. Let's go in. Get the Docking procedure, and we'll have them in.
- 03:57:53 P Okay.

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03:57:54 P We're all set to send Command 141.  
03:57:56 C We didn't get a GO for Docking, though.  
03:57:58 P Oh, that's right. We didn't.  
03:58:02 P Where are we, anyway? Usually - why don't you find out where we are and let me know.  
03:58:04 C We don't need the Approach lights.  
03:58:33 C We need the Index bar and stuff, though.  
03:58:38 P You know, that's one thing that this procedure didn't say anything about.  
03:58:40 P You know that. Didn't say a thing about that.  
03:58:59 C Your Flight Plan say anything about that?  
03:59:02 P I'll go take a look at it right now.  
03:59:08 C You stopped looking at things at TPI, right?  
03:59:11 P Yes. I was a busy one-armed bandit. When I saw it, I didn't want to lose it.  
03:59:18 C Save gas.  
03:59:20 P I don't think this says anything here.  
03:59:26 P ACQ lights, SPC, and a disabled 240 MAP light.  
03:59:30 C Okay.  
03:59:36 C First dock.  
03:59:42 P What didn't we do?  
03:59:49 C Okay. We've got to put the Bus Arm switch to DOCK, right?  
03:59:52 P Yes. You got - is it in now?  
03:59:57 C Can we do that?  
03:59:58 P Okay.

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03:59:59 C Okay. Bus Arm to DOCK. Index EXTEND.

04:00:03 C All right?

04:00:04 P Okay.  
(Laughter)

04:00:11 C No doubt about that.

04:00:14 P Started looking ... How about the radar?

04:00:18 C Well now, I've got to send 141 if we're going in to Dock.

04:00:23 P Where is the thing?

04:00:26 C All right. What time is it?

04:00:28 P 4 hours.

04:00:30 C Tananarive LOS at 03:52.

04:00:33 P How soon do you get to Carnarvon.

04:00:35 C We get nobody until CSQ at 04:08. 8 minutes.

04:00:40 P Okay. I'll tell you what we can do. We can drift around here a little bit. How about the engine station? Hey, get up a camera and take some pictures of that thing. Take a little water --

04:00:50 C Save water. Shower with your steady.

04:00:54 P (Laughter)

04:01:03 P ... take the picture.

04:01:19 C Look. I've got to purge some fuel cells here.

04:01:28 P Beautiful firing ...

04:01:31 C Mind if I go ahead and do that.

04:01:35 P Is it time to?

04:01:38 C I guess they want me to do that right over the

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- site there, don't they?
- 04:01:40 P Yes.
- 04:02:14 C Going to crank this down about 25 feet, or a little less.
- 04:02:17 P Down to 15 feet.
- 04:02:23 P Hear a jet going by out there. Hear it?
- 04:02:24 C Yes, yes.
- 04:02:26 P Coming from the Agena. It must be.
- 04:02:30 C I'll be darned!
- 04:02:35 P Now I'm going to take pictures of the sun here.
- 04:02:38 C Well, I'm going to go up above to get the horizon, Buzz.
- 04:02:57 P Your work station is leading you.
- 04:02:59 C Yes.
- 04:03:02 C There's a good shot of that - Look, can you get that? - that's a beautiful shot of it.
- 04:03:11 C Okay.
- 04:03:13 C Just keep taking them.
- 04:03:15 P Man, we could keep taking them all day with this.
- 04:03:18 C I've got to get it back aways. Otherwise, the sun will go right in it.
- 04:03:26 P Okay.
- 04:03:35 P You're going to go right in on it, right?
- 04:03:39 C I don't want to.
- 04:03:41 P I won't be in the sun.
- 04:03:45 P Gee, I wonder if I lost my glasses?

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04:03:59 P Well, we got a first, anyway.

04:04:02 C What's that?

04:04:03 P No-closed-loop.

04:04:04 C Oh yes. A first no-closed-loop.

04:04:13 C How about this radar, Buzz?

04:04:16 P Looks all right.

04:04:20 P I don't think we want to turn that T/M ON until we get a GO for docking.

04:04:24 C Okay.

04:04:26 P That's the only thing I'm waiting for.

04:04:31 C It's unrigidized.

04:04:33 P Let me just check this again. MAIN RED is off, MAIN GREEN on. SECONDARY - all right, SECONDARY LOW is on; ATTITUDE is on; DOCK is on; and POWER is on. What are we going over?

04:04:50 C We should be over Carnarvon or - on China I guess.

04:04:57 P Island down there.

04:05:00 C See what kind of film I've got left.

04:05:02 P All right.

04:05:04 P Hey, listen! Keep taking some close-up pictures of this work station.

04:05:14 P Take pictures.

04:05:22 P Same setting, right?

04:05:24 C Yes. Well, yes - you could even use f:16.

04:05:27 P Yes, f:16.

04:05:38 C I don't have lot of these ... right now.

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04:05:57 C Could you give me a sunset time because we don't want to be - we'll probably want to be docked by then.

04:06:26 P A sunset time? All right.

04:06:33 P Not until 04:47.

04:06:47 P That's pretty bright there right now.

04:06:49 C Which station are we at?

04:06:52 P We're about CSQ.

04:06:57 P Until 04:12.

04:07:02 C Wait a minute! Lets see.

04:07:54 C Why don't we get ready to go right in and Dock.

04:07:59 P Okay.

04:08:21 P Now, that ought to be a pretty good shot.

04:08:26 C At 25 feet.

04:08:28 C That's pretty good. Hey, take some stills, Buzz. Stills are the thing. These movies don't come out at all. Just keep taking shots.

04:08:38 C Movies aren't worth a darn. That's a beautiful shot right there, 25 feet. That's f:11, 1/250th.

04:08:43 P Right on it.

## COASTAL SENTRY QUEBEC

04:08:47 CC Gemini XII, CSQ.

04:08:49 C Roger, CSQ. Gemini XII here.

04:08:53 CC Roger. How are you doing up there?

04:08:55 C Oh we're taking pictures of the beautiful Agena here. Everything's okay.

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04:09:03 C We've got about 67 percent left of the PQI.

04:09:07 CC Roger.

04:09:09 CC Do you want to turn your encoder off and we'll set the tape dump.

04:09:12 C Roger.

04:09:49 CC Gemini XII, CSQ.

04:09:51 P Roger. CSQ.

04:09:52 CC We're giving you a GO for Docking.

04:09:54 P Roger. Thank you.

04:09:57 CC I want to send you a TX.

04:10:02 CC You want to switch your T/M switch to COMMAND and your Adapter C-Band to COMMAND.

04:10:07 C T/M COMMAND, Adapter C-Band COMMAND.

04:10:18 CC Stand by for your fuel cell purge.

04:10:22 C Roger.

04:10:28 P Okay. Let me send 141. Let me get the radar to 041, okay? RECORD DATA.

04:10:36 C MAP light.

04:10:37 P Okay.

04:10:39 C Okay.

04:10:40 P Radar's going on STAND-BY.

04:10:41 C Okay. Be sure to be ready on the Docking.

04:10:58 C Okay. I think I'll go ahead with that purge.

04:11:02 P Hey, you want to get the Docking? I'm just about out of film here. 35mm camera. Why don't you get the Docking with the 18mm?

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04:11:10 C Okay.  
04:11:12 C Need a little film?  
04:11:16 P Now it's just got 30.  
04:11:23 C Okay. Section 1, H<sub>2</sub>.  
04:12:00 C Is everything ready for Docking, Buzz?  
04:12:04 P Stand by a second.  
04:12:42 P Yes. We're all set.  
04:12:43 P Okay.  
04:12:54 P Got a bit of gas here.  
04:12:59 C Are we in position?  
04:13:40 P Rigid light on?  
04:13:42 C Rigid light on.  
04:13:47 C CSQ, this is Gemini XII.  
04:13:49 CC Go ahead.  
04:13:52 C We are docked.  
04:13:53 CC Roger.  
04:13:54 C OAMS Control Power, OFF?  
04:13:56 P OAMS Control Power OFF.  
04:13:58 C Attitude Control, RATE COMMAND.  
04:14:00 C O<sub>2</sub> and H<sub>2</sub> Ring.  
04:14:03 P Arm/Stop has gone on.  
04:14:06 C O<sub>2</sub> ON now.  
04:14:07 C Now OFF.  
04:14:12 P Sounds great. Radar's OFF.

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04:14:16 C H<sub>2</sub>.

04:14:32 CC Say, would you give me an on-board reading of H<sub>2</sub>?

04:14:35 C Roger. We're over 100 percent on H<sub>2</sub> and the pressure is reading 550.

04:14:43 CC How about O<sub>2</sub>?

04:14:45 C O<sub>2</sub> we're reading 97 percent and we're exactly 600 psi. I'll pump it up a little.

04:14:52 CC Roger. And we're 1 minute to LOS.

04:14:55 C Roger.

04:14:58 CC You can turn the encoder back on.

04:14:59 C Roger.

04:15:04 P You mean I didn't have the encoder on?

04:15:09 P Must have -

04:15:12 P Turn the ACQ light on.

04:15:16 C The encoder's on now.

04:15:17 C Okay. Let's go through those check lists. We've got everything on Dock checked off.

04:15:22 P Yes. I'm doing two things at once here and I don't want to foul it up.

04:15:25 C Okay. Give me the Flight Plan. I'll do that for you.

04:15:33 P We don't need this thing do we?

04:15:34 C Okay.

04:16:18 P Okay. Maneuver Controller OFF. Well, wait a minute, we may want to Undock here before too long.

04:16:24 P Scanner off, though. External lights are off. Standing by to stop the fuel cell purge.

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04:16:34 C Hey, I've got the fuel cell purge first here.

04:16:40 P What I don't want to do is - leave that - I - forget it, there goes the oxygen.

04:16:49 P Okay. Things look pretty good on the fuel cells.

04:17:06 P Okay. I think maybe the thing to do is to power-down. Right?

04:17:13 C Well, do you to undock? Yes, we don't need anything.

04:17:18 P The only thing I want to do is check 88 ...

04:17:42 C Okay. Well, that's all for the first part of the Flight Plan.

04:17:47 C Now let's go to Section 2.

04:17:48 P Let's see if we can't get ahead of the game a little bit here.

04:17:52 P 04:17. Shall we gyrocompass the Agena?

04:17:59 P ... dock gyrocompass.

04:18:01 C I think we ought to stay with this on-board don't you?

04:18:04 P On-board, okay?

04:18:08 P There we go. There we are.

04:18:10 P Hand me the Flight Plan and I'll just see what we do.

04:18:14 C Okay. First Docking . . . Well listen, I think we're just about right on the PQR area.

04:18:21 P Okay.

04:18:22 C Radar?

04:18:23 P Okay.

04:18:25 P Now. Let's - move the Agena, right?

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04:18:32 C Okay.

04:18:36 C Okay. Gyrocompass is 010 to Agena 0 0 0. Okay.  
Okay. I'll go right over here and get the stuff.

04:18:47 C Lets see - Gyrocompass Agena.

04:18:52 C Let me see.

04:18:56 P Okay. Agena. Bring it forward, right?

04:19:02 P Let me grab the EN.

04:19:04 C Yes.

04:19:05 P The Posigrade burn. Right?

04:19:07 P Yes, let me get something here.

04:19:11 C Okay. We're now - we're now south, right?

04:19:15 P We're heading south.

04:19:17 C Okay.

04:19:18 C Okay. That's TDA forward, thrusters GEO RATE NORMAL.  
361.

04:19:24 P 361.

04:19:25 C MAP lights. Roll right, scan right. 3.0.

04:19:29 P 310. MAP light.

04:19:30 C We're in at 321.

04:19:32 P 321. MAP light.

04:19:37 C ACS ON. 301, ON HORIZON SCANNERS. GEO RATE ON.  
HORIZON SCANNERS. GEO RATE ON. 351.

04:19:44 P 351. MAP light.

04:19:46 C GYROCOMPASSING ON. 341.

04:19:48 P Okay. Let's see how long she takes. 341 MAP light,  
19.

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## HAWAII

04:26:15 CC Gemini XII, this is Hawaii.

04:26:18 P Hello, Hawaii. How are you? Gemini XII here.

04:26:21 CC Mighty fine. You are looking good from down here. Have you completed gyrocompassing?

04:26:27 P Roger. Have completed gyrocompassing. We are now BEF for the Agena O O O.

04:26:35 CC Roger. Very good.

04:26:40 CC Okay. And we have one question. We had LOS at CSQ before you completed your purge. How did the rest of the purge go?

04:26:49 P Roger. Purge appeared to be normal in all respects.

04:26:54 CC Roger. Very good.

04:28:14 CC Gemini XII, Hawaii. We're showing that the computer is still on.

04:28:19 P Roger. Computer going off at this time.

04:28:21 CC Roger.

04:28:24 C I'd like to leave it on for the Undocking here and then we'll turn it off right after that.

04:28:29 CC Roger. You broke up there for a few seconds. Would you say again?

04:28:33 C Roger. We'd like to leave the computer on until we have completed the Undocking, which we are going to start right away, and then we'll turn the computer off.

04:28:39 CC Roger. Very good.

04:30:33 C Move right about 5 feet and then stop.

04:30:35 P Okay. Good. Now wait just a second.

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04:30:47 P Okay.

04:30:49 C How the heck did I get 1 in here.

04:30:51 P What did you do?

04:30:57 P Okay. I'll set Booster Command, 220.

04:30:59 C OAMS control power on. What do I do now?

04:31:05 P Send Command 220. Ready?

04:31:06 C Yes.

04:31:09 P Okay. Go ahead.

04:31:16 C Okay?

04:31:17 P Yes.

04:31:19 P Okay. 220. MAP light. Very good. The camera.

04:31:33 C Boy, you can be very easy with it, Buzz, if you really save the gas. Watch.

04:31:36 P Okay. Now stop it. Right here.

04:31:42 P Okay. Gently.

04:31:45 C Look at that, Buzz.

04:31:55 CC Gemini XII, Hawaii. We show that you are undocked at present.

04:32:00 C Roger, Hawaii. We're sitting about 2 feet away from the vehicle.

04:32:04 CC Roger.

04:32:11 P Okay. Ready.

04:32:13 C Hawaii, this is Gemini XII. Please inform the people that the loop on the Agena tether is deployed and looking good.

04:32:19 CC Roger.

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04:32:29 C Okay. Thrust forward just a tap.  
04:32:37 P That's zero.  
04:32:43 P That's zero.  
04:32:51 P Okay. Good.  
04:32:52 C Thruster's up. We don't want to go up.  
04:32:54 C Okay. That's good enough.  
04:32:57 P Yes.  
04:32:59 P Let's see now. Pre-Launch in OFF.  
04:33:01 C Okay. You've got that OFF. Wait til we get to  
the Diagnostic Check.  
04:33:08 C We're going to get to Hawaii at 04:46 we're going  
to get to -  
04:33:17 CC Gemini XII, Hawaii. We'll have LOS in about a  
minute.  
04:33:20 C Roger, Hawaii.  
04:33:27 P ...  
04:33:39 P Not too low. I wonder if I can get around to - -  
04:33:42 C Okay. We want to get ready for the experiment here -  
X-Ray, ON; Beta, WITH MAG and all that jazz.  
04:33:49 C We don't want to go that way, Buzz.  
04:35:15 P Did we clear that?  
04:35:17 C Yes.

## CALIFORNIA

04:35:22 CC Gemini XII. Houston is standing by through  
California.

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04:35:28 C Roger, Houston. We've undocked. We're flying formation preparing for the second docking.

04:35:34 CC Okay. Sometime in there you can turn your X-ray on when you are ready.

04:35:39 C Roger. Will do.

04:37:32 CC You let Buzz fly that thing there?

04:37:35 C Say again, Houston.

04:37:37 CC I say, are you letting the Pilot fly?

04:37:40 C Yes. He'll have plenty of opportunities.

04:37:44 P He hasn't used up his share of the fuel yet.

04:37:48 CC Yes, watch him; he's a time hog.

04:37:51 P I'm seeing that.

04:38:08 C We're right around the tail of the Agena now, looking right at the engine.

04:38:11 CC You can really put that thing where you want to, can't you?

04:38:14 C Right. And did you get the word about the Agena tether? It's out and waving in the breeze.

04:38:19 CC Yes, we got the word.

04:40:38 CC Gemini XII, Houston.

04:40:39 C Go ahead, Houston.

04:40:43 CC We seem to have a little problem with the Frog Egg Experiment, and they would like the Pilot to reach up there and jiggle the electrical connector to the box, please, while we are looking at you.

04:40:55 P Roger. Will do. We'll jiggle the electrical connector.

04:40:59 CC Thank you.

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04:41:05 P Just getting a chance to do some flying.

04:41:08 CC Say again.

04:41:11 P I just had a chance to do some flying.

04:41:13 CC Sorry about that.

04:41:19 P What electrical connector do you have in mind?

04:41:22 CC The one that goes into the back of the box.

04:41:46 P Okay. It's being pushed to full.

04:41:50 CC Okay.

04:42:16 CC Gemini XII, Houston.

04:42:19 C Go ahead.

04:42:21 CC Roger. Jim, we saw an anomaly in the PPS Engine when it was being burned into orbit, and we are still going over the data right now. The problem appears to be one that indicates a possible turbine pump problem. We are going to give you a GO a little bit later on as to whether you can make the PPS burn or not. We'll keep you advised and we are still looking at the data right now.

04:42:56 C Roger. Understand you have a problem with the turbine and that you will give us a GO later on.

04:43:02 CC That's affirmative.

04:45:13 CC Gemini XII, this is Houston. We have about 1 minute until LOS. You have anything?

04:45:18 C Negative, Houston. We're coming in position now.

04:45:25 CC Okay. This is the last time we will talk to you through the States. Have fun.

04:45:30 C Roger. Thank you for your cooperation.

04:45:34 CC You're welcome.

04:45:47 CC And Gemini XII, this is Houston. You can turn your

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Quantity - Cryo switch OFF now.

04:45:54 C Roger. Thank you, Houston. Has my wife had that baby yet?

04:45:58 CC Yes, I think so. It was during some flight. I talked to both of them, and they are extremely pleased with your rendezvous.

04:46:21 C Who turned the radar off?

04:46:24 CC Joe Shea says he didn't.

04:46:26 C (Laughter).

## ROSE KNOT VICTOR

04:55:30 CC Gemini XII, RKV.

04:56:32 CC Gemini XII, RKV.

04:56:34 C Go, RKV.

04:56:35 CC Okay. We're having a little bit of trouble locking up on your T/M. I'll give you some information while I've got you, though. I'd like you to confirm that your X-Ray is on. Do you copy?

04:56:55 C Yes, it's rolling ...

04:57:04 CC Gemini XII, RKV. Did you copy?

04:57:15 CC Gemini XII, transmit in the blind. We'd like to confirm that you have the X-ray in the ON position, Beta, WITH MAG. And we'd like to advise you that the experiment time for Mike 408 is nominal.

04:57:26 CC We have LOS from Gemini XII.

04:57:48 C Roger. Stand by. We have a little trouble with control.

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## TANANARIVE

05:20:27 CC Gemini XII, Gemini XII, Houston through Tananarive.  
Over.

05:20:32 P Roger, Houston. We hear you.

05:20:36 CC Roger. How's everything going?

05:20:39 C We had a little difficulty at night, Houston. We attempted a docking and we went through the ... we thought we lost our roll command. We backed out and went into SECONDARY on the Roll Rate Gyro. Got it back again and we have docked with it during the night. We only have about 4 minutes of M-408 Experiment, which we're doing now. We've just completed that and we're now BEF.

05:21:12 CC Roger. Did you confirm that you had a Primary Rate Gyro problem or what?

05:21:20 C No, we didn't. We went back to PRIMARY on the Rate Gyro to see. What we might have done in the night Docking was to distract the Agena; it was not in the original position but was actually rotating around. And we had to let it damp itself out for while; then we came back in.

05:21:40 CC Okay. You were in FCl, right?

05:21:43 C That's affirm. FCl and it looks like a slight disturbance in the Agena if you don't get docked because of radar.

05:21:51 CC I see.

05:21:53 CC Can you give us a PQI reading and also would you check your Cryo O<sub>2</sub> Pressure for us, please?

05:22:01 C Roger. Cryo O<sub>2</sub> is reading about 650 psia and the PQI is reading around 56 percent. We're a little low and we're contemplating forgetting the second docking practice to save fuel.

05:22:20 CC Roger. We concur.

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05:22:27 CC Are you satisfied with your control system now?

05:22:34 C Roger. It appears our control system is adequate at this time. We're not too sure. We feel that it might have been what caused us to disturb the Agena. It ... trying to fly with the Agena made us feel like it may have been a control valve.

05:22:51 CC Okay.

05:23:05 C Houston, Gemini XII.

05:23:07 CC Go ahead.

05:23:12 CC Go ahead, Gemini XII. This is Houston.

05:23:22 CC Gemini XII. This is Houston. Go ahead.

05:23:26 C Roger, Houston. We're contemplating another Docking just to try the control system again. The Agena doesn't seem to be maintaining its position too accurately. We noticed that in the daylight. It's gone about 40 degrees off its nominal heading.

05:23:41 CC Okay.

05:23:45 CC Are you still in Flight Control Mode 1?

05:23:49 C Roger. We are in Flight Control Mode 1.

05:24:27 CC Gemini XII. This is Houston.

05:24:33 CC Gemini XII, Houston.

05:24:37 C Go ahead, Houston.

05:24:39 CC Roger, Jim. When it gets off like that in FC1, it doesn't come back very fast. Why don't you go to FC2 and gyrocompass to your heading. Set up the command GYROCOMPASSING ON and FC2 to what you want.

05:24:55 C Roger. Sounds like a pretty good idea.

05:25:06 CC Gemini XII. This is Houston. Have you been using RATE COMMAND for your Stationkeeping and Dockings, or did you do them in PULSE, or what?

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- 05:25:16 C This is Gemini XII. We've been using PULSE. In our final Docking Maneuver, we went to RATE COMMAND. That's where we probably had the discrepancy. While we were Undocking and trying to figure out what was wrong, we went to RATE COMMAND to see what the situation was.
- 05:25:34 CC Okay. When you undock, are you using your maneuver thrusters to undock with?
- 05:25:40 C That's affirmative.
- 05:25:41 CC Okay. Listen, we've found that the - if you undock, don't touch anything and just send the UNDOCK Command. The TDA will shove you out, and then you don't have to use any control at all. You just set it in RATE COMMAND. Hit UNDOCK, and it will push you out just fine. You don't - you may be disturbing it in FC1 with your - with your forward-firing thrusters.
- 05:26:08 C Roger. That's an idea.
- 05:26:21 CC Gemini XII, this is Houston.
- 05:26:24 C Go ahead.
- 05:26:26 CC Why don't you go ahead and gyrocompass in FC2 and see if that's doing the job for you, and if you get it all back to where it should be?
- 05:26:37 C Roger. Will do.
- 05:26:38 CC Then you could go ahead and do your Undocking again if you feel that you have the fuel. I recommend that if you do it this time, when you send the UNDOCK Command, just let the TDA push you out. You don't need to fire the aft-firing - I mean the forward-firing thrusters to back out of there.
- 05:26:58 C Roger.
- 05:27:13 CC What we'd like you to do, when you undock, is to do it over the CSQ, which will be your next station. And just back on out until you feel yourself that the control systems are okay and then you can go back and Dock again.

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05:27:30 C Roger.

05:28:17 CC Gemini XII, Houston.

05:28:20 C Go ahead, Houston.

05:28:21 CC Roger. We have 1 minute until LOS and before you undock. We'll give you a GO for that over the CSQ. We'd like to look at you a little bit.

05:28:30 C Roger. Take a look at the Agena, too.

05:28:32 CC Yes. That's what we are doing.

05:28:37 CC I think if you'd been backing out using your forward-firing thrusters in FCl, though, you might upset the Agena.

05:28:45 C Roger.

## COASTAL SENTRY QUEBEC

05:44:34 CC Gemini XII, CSQ.

05:44:37 C Gemini XII. Go ahead, CSQ.

05:44:39 CC Roger. Both vehicles look good. We'd like to go ahead and undock, and we'd like to do it slowly.

05:44:47 C Roger. Be informed at 44:30 we just got a center fuel cell Delta-P light.

05:44:55 CC Roger.

05:44:56 C We're checking our on-board pressure ... now.

05:45:01 CC Well, let's solve that one first.

05:45:25 C CSQ, this is Gemini XII. Do you want us to undock over your station?

05:45:28 CC Let's take a look at these Delta-P lights first.

05:45:32 C Roger.

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05:47:43 C CSQ, Gemini XII.  
05:47:46 CC Go ahead, Gemini XII.  
05:47:47 C Roger. The fuel cell Delta-P lights just went off.  
05:47:51 CC Roger.  
05:47:53 C No change in the Delta-P meter reading.  
05:47:59 CC What was it?  
05:48:06 C Roger. Both H<sub>2</sub>'s were reading about .55, and H<sub>2</sub>O readings on both 1 and 2 were about 2.1, .15.  
05:48:18 CC Roger.  
05:50:04 CC Gemini XII, CSQ.  
05:50:08 C CSQ, Gemini XII.  
05:50:10 CC Go ahead and undock.  
05:50:11 C Roger.  
05:51:14 CC 30 seconds until LOS, Gemini XII.  
05:51:16 C Roger. We're going to undock as soon as we can.  
05:51:25 CC Gemini XII, CSQ.  
05:51:28 C This is Gemini XII. Go.  
05:51:29 CC Let's hold off on the Undocking until you get to Hawaii.  
05:51:32 C Roger. We'll hold off until we get to Hawaii.  
05:51:34 CC Roger.

## HAWAII

06:01:57 CC Gemini XII, Hawaii.  
06:01:59 C This is Gemini XII. Go ahead, Hawaii.

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06:02:01 CC Roger. We'd like to have you turn the encoder off so we can get a tape dump started. Wait a minute. Stand by.

06:02:18 CC Okay. I guess we're locked-in here real good and solid. You can go ahead with the Undocking Sequence.

06:02:24 C Roger. It appears that while we are under Agena control, Flight Control Mode 1, that we have actually rolled about 15 degrees during this pass between CSQ and Hawaii.

06:02:38 CC Roger. Okay.

06:02:40 C Roger. We'll commence with the Undocking.

06:02:42 CC Okay.

06:04:01 C Hawaii. This is Gemini XII undocking from the vehicle.

06:04:05 CC Roger. Very good.

06:04:08 C I think we'll give our control system just a slight workout before we dock again to see if there is anything wrong.

06:04:14 CC Okay. We're standing by.

06:06:05 CC Gemini XII, Hawaii. At the present time we are transmitting RESET TIMER RESET to the Spacecraft - correction, to the Agena.

06:06:11 C Roger.

06:06:24 CC Okay. You can turn your encoder back on.

06:06:34 C Encoder was on, Hawaii.

06:06:37 CC It was? Oh, we have indication on the ground that it wasn't.

06:06:51 C The encoder has been on.

06:07:30 CC Gemini XII, Hawaii. You might be advised that our command got into the Agena okay.

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06:07:39 C Roger. Do you feel there is anything wrong with our encoder?

06:07:43 CC Yes. It's beginning to look that way.

06:08:05 CC Gemini XII, Hawaii. Have you done any controlling recently, from the ... Oh, we got lock now.

06:08:12 C Say again, Hawaii.

06:08:13 CC Roger. We're showing encoder locked at the present time.

06:08:20 P Okay. Roger. We concur.

06:08:22 CC Roger. Okay.

06:08:37 CC Gemini XII, are you satisfied with the control system?

06:08:45 P Roger. We checked it out and PULSE and RATE COMMAND in the control system are GO.

06:08:50 CC Okay. It looks like you turned it back off.

06:08:54 P Now control system is off.

06:09:02 CC Gemini XII, Hawaii. You are NO-GO at the present time on the PPS burn. Instead of doing that, we are going to do a SPS retrograde burn of approximately 54 feet per second at elapsed time of 5 hours - 7 hours and 5 minutes to Rendezvous with the eclipse.

06:09:40 CC That's roger. And it will be a 54-foot-per-second burn.

06:09:46 C Roger. The eclipse got to us after all.

06:09:49 CC Yes, it looks like it.

06:10:09 CC Gemini XII, Hawaii. We'll have LOS here in about another 30 seconds.

06:10:14 P Roger. Hawaii.

06:10:18 CC Yes. Does the Agena look stable to you from where you are?

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06:10:24 P This is Gemini XII.

ROSE KNOT VICTOR

06:28:30 CC Gemini XII, RKV.

06:28:34 P Go ahead, RKV. Gemini XII here.

06:28:35 CC Okay. I have the information for your burn. Are you ready to copy?

06:28:40 P Roger. Stand by.

06:28:58 CC Right, RKV.

06:29:09 CC ADTD: 07:05; 06 Delta-V, 43 feet per second; Delta-T, 51 seconds; Core 25, 90430. Thrusters SPS Unit 2. Your V/M word that you will toggle in will be 531, 000, 100, 101, 000, 000. Did you copy?

06:30:05 P Roger. Understand the program for the burn is horizontal retrograde SPS. GET of the burn is 07:05; 06 Delta-V, 43 feet per second; Delta-T, 51 seconds; 25, 90430; Thrusters 26 and 27 are 0; Thruster SPS Unit 2. Maneuver and retrograde V/M word 531,000, 100, 101, 000, 000. ...

06:30:51 CC Roger. You copy correct.

06:30:56 CC Roger. Would you load the V/M and verify it?

06:30:59 P Roger.

06:31:09 CC Roger. Is the PPS getting high or dark?

06:31:14 P Dead-band is wide but the pressure is low. 0 0 0.

06:31:32 CC Gemini XII, RKV. When you have this V/M word in, would you gyrocompass around to 0 180 0?

06:31:40 C Gemini XII. Roger.

06:31:52 P RKV, Gemini XII. The V/M word is in if you can check it.

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06:31:57 CC Roger.

06:34:41 CC Gemini XII, RKV. We're at LOS minus 1 minute. The V/M checks on the ground.

06:34:47 P Roger. Understand the V/M checks on the ground. Thank you. We're gyrocompassing around now.

## TANANARIVE

06:56:17 CC Gemini XII, Gemini XII, Houston through Tananarive. Over.

06:56:22 C Roger. Houston, this is Gemini XII.

06:56:25 CC Okay. I have a little word for you here. After your burn, we'd like you to, at your convenience, purge Fuel Cell Number 2 and Fuel Cell Number 1, and you can go ahead after you purge and power-down. We intend to give you your Flight Plan Update for the rest of the evening at the CSQ. And if you're ready, I'll give you a Mode Update here.

06:56:55 C Roger. ... We're having some trouble with the gyrocompass in the Agena. She doesn't want to seem to hold the heading that we have gyrocompassed to.

06:57:06 CC Are you in Flight Control Mode 1 or 2?

06:57:09 C It's been going from 6-1/2 to 30 degrees either side of the proper heading.

06:57:13 CC Okay. Are you in Flight Control Mode 1 or 2?

06:57:17 C Flight Control Mode 2.

06:57:19 CC Okay.

06:57:30 CC Gemini XII, Houston. Has it been doing this in Flight Control Mode 2?

06:57:35 C That's affirmative. And it does the same thing in Flight Control Mode 1.

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06:57:39 CC Okay. You're telling me that you don't think it is satisfactory to do the burn, is that correct?

06:57:50 C Say again.

06:57:52 CC I say you are indicating to me that you don't think it is satisfactory to do the burn.

06:57:57 P Affirm ... Spacecraft control.

06:57:59 C That's affirm. Now, when I'm getting the roll - and right now she just rolled 40 degrees to the left of proper heading.

06:58:07 CC Did you say roll or did it yaw?

06:58:10 C Sorry. Yawed 40 degrees. She rolled about 15.

06:58:14 CC Rolled about 15?

06:58:18 C Affirm.

06:58:21 P It seems the gyrocompass is all right now. It corrects, but then it overshoots when we get it settled down. Then it just starts to test off about 30 or 40, whether we are in Flight Control Mode 1 or 2.

06:58:35 C On the burn I think we can probably do it with the Spacecraft in RATE COMMAND.

06:58:40 CC Okay. Why don't you quickly go to GYROCOMPASSING ON at the proper heading there in FC7 once and see if it holds at FC7.

06:58:52 C Roger.

07:00:42 CC Gemini XII, Houston.

07:00:44 C Go ahead, Houston.

07:00:46 CC How's FC7 doing?

07:00:49 C We're trying to get it back to the proper heading with the Spacecraft control, so we'll put it in FC7 and see if she will hold it.

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07:00:56 CC Okay. When you say, get it back to the proper heading, now are you satisfied that you have a good Platform Alinement?

07:01:04 C Roger. We have a good Platform Alinement just out the window here.

07:01:09 CC Okay.

07:01:29 CC Gemini XII, Houston.

07:01:32 C Go ahead.

07:01:33 CC Okay. We only have about 2 minutes and 30 seconds on this pass. If it doesn't look good in Flight Control Mode 7, we want you to make the burn with your OAMS system, but set up 41.5 feet per second for the OAMS.

07:01:59 C You want us to use our OAMS fuel to set up this burn?

07:02:03 CC Say again.

07:02:06 C You want us to use our OAMS fuel to set up this burn?

07:02:09 CC That's affirmative. And on your computer, set up 41-1/2 feet per second in Address 25. ... the number of feet per second given you in the velocity meter load.

07:02:27 C Roger. If we burn SPS, what do you want us to have in Address 25?

07:02:31 CC What we passed you.

07:02:34 C Okay. ...

07:02:37 CC Okay. And we'd appreciate it if you could get in a FC7 before this pass is over. We have 1 minute and 30 seconds. We'd like to know which way you are going to go.

07:02:46 C Roger. We're in Flight Control Mode 7 right now, and it looks like it is holding within about 5 degrees ...

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07:03:01 CC Okay. Gemini XII. Is it oscillating 5 degrees?

07:03:08 C Negative. It seems to be holding pretty steady right here.

07:03:11 CC Okay. Because in FC7, boy, it should be locked-in tighter than a drum!

07:03:38 CC Okay. We only have 30 seconds. What do you think?

07:03:42 C We're going to burn in Flight Control mode; we're going to burn into your SPS. Stand by.

07:03:46 CC Okay. Just use your Check List there: Attitude Control, RATE COMMAND and the power switches, OFF. If it gets away from you, why take it over with the Gemini.

07:03:56 C Roger.

07:19:32 CC How's it look to you? Is attitude all right?

07:19:35 C This is Gemini XII. Say again.

## COASTAL SENTRY QUEBEC

07:19:49 CC Gemini XII, CSQ.

07:19:51 C Gemini XII here, CSQ. Over.

07:19:53 CC Roger. How did your burn go?

07:19:55 C Roger. We burned the SPS. Buzz has the figures for you.

07:20:03 P Roger. We burned in Flight Control Mode 7 with Agena Control Address 80. This was with the Platform that would not align in Rendezvous. The Address 80 reads 00012; 81 reads 00028; 82 reads minus 00019. Held attitude very good. We have Realized the Platform in the Agena now. Looks like it was about 2 or 3 degrees off and it's holding attitude quite well now.

07:20:41 CC Roger.

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07:21:14 C CSQ, Gemini XII. Could you tell us whether it was a V/M shutdown, or whether we shut it down.

07:21:19 P ... stop?

07:21:23 CC Say again.

07:21:26 CC Did you turn your encoder off?

07:21:30 C Encoder is off.

07:21:49 C CSQ, Gemini XII. Go ahead.

07:21:51 CC ... I've got a Block Update and a Flight Plan Update for you when you are ready to copy.

07:22:00 C Roger. Stand by.

07:22:15 C This is Gemini XII. Ready to copy.

07:22:17 CC Okay. Area 6-3 Alpha: 08:35:01; 19 plus 17, 24 plus 50. All bank angles for this Update are roll left 80, roll right 100. The weather in all areas is good, and a Sep Maneuver is required for all areas. Area 7-3 Bravo: 10:10:47; 18 plus 49, 24 plus 36. Area 8-Alpha Charlie: 11:06:38; 20 plus 04, 22 plus 44. Area 9-Alpha Charlie: 12:40:24; 20 plus 06, 22 plus 41. Area 10-2 Bravo: 14:14:08; 20 plus 04, 22 plus 39. Area 11-Alpha Charlie: 15:50:31; 19 plus 59, 23 plus 53. Area 12-Alpha Charlie: 17:26:18; 19 plus 48, 24 plus 38. Do you copy?

07:24:37 P This is Gemini XII. I copy the update.

07:24:40 CC Okay. And I've got a Flight Plan Update for you.

07:24:46 P Roger. Go ahead.

07:24:48 CC Time: 7 plus 30, start your sleep period; 8 plus 05, ground DCS S-12 door will be open; 14 plus 20, ground DCS S-12 door closed and locked; 14 plus 40, end of sleep period; 14 plus 42, Flight Plan Update over Canaries. Did you copy?

07:24:31 P Roger. Have copied 7 plus 30, sleep; 8 plus 05, S-12 open; 14 plus 20, S12 closed; 14 plus 40

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end of sleep; 14:42, Flight Plan Update.

07:25:45 CC Roger. We realize you guys are pretty busy, but have you had a chance to eat or drink any water?

07:25:51 P Roger. We had some water and drink and ate Meal LA - 1 Charlie.

07:25:57 CC That was Meal Charlie?

07:25:58 C Except for the brownies.

07:26:01 CC Roger.

07:26:03 P The Pilot finished everything and had plenty of water.

07:26:08 CC How much water?

07:26:16 P The gun is now reading 814. Do you by any chance have our initial readings?

07:26:21 CC Stand by.

07:26:25 CC 715.

07:26:26 P Say again, Flight.

07:26:28 CC 715.

07:26:29 P We don't read you, Flight. Say again.

07:26:31 CC 715.

07:26:34 P Roger.

07:26:54 CC Gemini XII, CSQ.

07:26:57 P CSQ, Gemini XII. Go.

07:27:00 CC Did the purge go all right?

07:27:07 P Negative. We haven't got to the purge as yet. Sorry.

07:27:11 CC We were coming up in LOS.

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## HAWAII

07:37:26 CC Gemini XII, Hawaii.

07:37:30 P This is Gemini XII. Go ahead.

07:37:32 CC Roger. We've got a bunch of items we'd like to clean up here. First of all I'd like to get a purge started. We're all for showing O<sub>2</sub> to H<sub>2</sub> Delta-P lights on.

07:37:41 P Roger. We have just completed a purge and with the power system now powering down, both Delta-P lights are on. Would you believe that?

07:37:50 CC Roger. We sure would.

07:37:52 CC Okay. Mighty fine on that.

07:37:56 P Seems like I've seen this light before.

07:37:59 CC Yes, yes.

07:40:45 CC Okay. Gemini XII. Could we get the PQI please?

07:40:55 P Roger. PQI reads 55 percent.

07:40:59 CC Roger. Copy 55. Thank you.

07:43:15 CC Gemini XII, Hawaii.

07:43:17 P Go ahead, Hawaii.

07:43:18 CC Roger. It's been a busy day. Thanks much. That about does it and Flight says to tell you good night.

07:43:27 P Thank you and I'm sure glad that Flight gave us a good Delta-P light. I'd feel lonely without them up here.

07:43:32 CC (Laughter)

## CANARY ISLANDS

14:42:31 CC Gemini XII, Canary CAP COM.

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14:42:40 CC Gemini XII, Canary CAP COM.

14:42:50 CC Gemini XII, Canary CAP COM.

14:42:56 C Canaries, this is Gemini XII. You're loud and clear. How do you read me?

14:42:58 CC Oh, you're loud and clear. Good morning! Have you had a good sleep?

14:43:02 C Oh, so-so. About that.

14:43:04 CC Okay. Could you turn your encoder off, please? We're going to uplink the V/M load for a burn.

14:43:10 C Roger.

14:43:19 CC Okay. We have a long Flight Plan Update for you. Hate to give it to you when you first wake up. Let me know when you are ready.

14:43:45 C Roger, Canaries. This is Gemini XII. Ready to copy.

14:43:48 CC Okay. First of all I would like to check the positions of your Spectrometer switches.

14:43:58 P Roger. X-ray is ON and the Beta is WITH MAG.

14:44:06 CC Okay. Would you turn both of them to the OFF position, please?

14:44:12 P Roger. They're both OFF.

14:44:15 CC Okay. We have a good T/M word in your - you can turn your encoder back on.

14:44:28 CC And I'll give you your Agena Maneuver Update here. The purpose is Eclipse Phasing. The GET B is 15:16:18; Delta-V is 15.0; Delta-T, 18 seconds; thrusters are SPS Unit 2; Maneuver TDA, Forward Posigrade. Over.

14:45:11 P Roger. Understand. Eclipse Phasing: GET Burn, 15:16:18; Delta-V, 15.0; Delta-T, 18 seconds, thrusters, SPS Unit 2; TDA, Forward Posigrade.

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- 14:45:30 CC Okay. Now here comes the Flight Plan Update, and if I don't get it all to you, we'll pass it over Kano.
- 14:45:38 CC Okay. Here's your eclipse procedure: the camera configuration, the 16mm Maurer; we want the 18mm lens, f:2 at 1/50 seconds, 6 frames per second. Use SO368 film. The 70mm Maurer: f:9.5 back, no filter. On the Super Wide Hasselblad: use 80mm lens, and f:11 at 1/250, range infinity, film SO368.
- 14:46:38 CC Okay. Have you copied so far, Gemini XII?
- 14:46:44 C Roger. Except for one thing. We don't have an 80mm lens for the Hasselblad.
- 14:46:49 CC Okay. I'll go on with the rest of it and we'll get back to that.
- 14:46:58 CC Okay. The procedure is: prior to the eclipse, Command Pilot install the window filter and the Pilot install the opaque sleep shade. Want the ACS off and aline the Spacecraft on the sun. Do you copy?
- 14:47:25 P Roger. We have that.
- 14:47:27 CC Okay. At 15:48, you'll have sunrise. At 15:51:33, enter the umbra. At 16:00, the 16mm Maurer on. At 16:01:44, start total eclipse. Take the following as possible with the 70mm Maurer: (A) one minimum time exposure; (B) one 1-second exposure; and (C) one 4-second exposure.
- 14:48:21 CC Have you copied up to this point?
- 14:48:25 P Roger. Say again the time after the sunrise.
- 14:48:28 CC Okay. 15:51:33, you enter the umbra.
- 14:48:36 P Roger. 15:51:33, the umbra.
- 14:48:38 CC Roger. Okay. At 16:01:52, end total eclipse. Maneuver Spacecraft to photograph ground shadow. Pitch down 25 degrees, yaw left 135 degrees. Keep sun off windows. Reset the 16mm Maurer to f:16, 1/200th; range, infinity; 1 frame per second.

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14:49:16 P Roger. Say again after 16mm Maurer.

14:49:19 CC Okay. Set it at f:16; your time will be 1 - 1/200th; your range, infinity; 1 frame per second.

14:49:31 C Okay. Bill. I think you're going - -

14:49:33 P 16mm Maurer: f:16, 1/200, infinity, 1 frame per second.

14:49:39 CC Roger. Track and photograph the moon's shadow with your 16mm and your Hasselblad.

14:49:46 P Roger.

14:49:48 CC We'll send you a Tx.

14:49:52 CC Okay. About 30 seconds to LOS. I'll keep reading - -

## KANO

14:50:08 CC Gemini XII, Houston CAP COM through Kano. Do you read?

14:50:13 C Roger. Go ahead, Houston. This is Gemini XII.

14:50:17 CC Roger. Continuing your update at 16:10:33. Exit the umbra. Set up Spacecraft 0 0 0, Agena 0 180 0. Do you copy?

14:50:43 P Roger. 16:10:33: exit the umbra. Spacecraft 0 0 0; Agena 0 180 0.

14:50:51 CC Okay. Our O<sub>2</sub> usage is slightly ahead of schedule and, with your concurrence, we'd like to make this SPS burn with your platform powered down. Over.

14:51:04 C Roger.

14:51:06 CC Okay. We'll be giving you a Flight Plan Update at Canaries at 16:16 and, at your convenience, can you take your S3 thermal cover off?

14:51:19 C Roger. We'll take the frog egg cover off.

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14:51:22 CC Okay. And I'm standing by for a GE time hack at 14:51:30.

14:51:30 CC MARK.

14:51:31 CC 14:51:30.

14:51:33 C Roger. We're right on.

14:51:36 CC Okay.

14:51:38 C Houston. This is Gemini XII. We still have both Delta-P lights on.

14:51:44 CC Roger. We understand, and as far as your Super Y goes, use the lens you have. Go with the other settings.

14:51:42 C Roger. That's for taking the shadow. Take them at the same settings?

14:51:55 CC Roger. With the - use the lens you have on now and use the settings that we gave you.

14:52:02 C How about turning off the Fuel Cell Delta-P circuit breaker?

14:52:07 CC Stand by. You're GO for your burn. You want to check your Water Heater circuit breaker?

14:52:12 C How about turning off the Fuel Cell Delta-P circuit breaker so we can turn the lights off?

14:52:19 CC Stand by.

14:52:24 CC We'd like to keep them off unless it's bugging you too bad.

14:52:32 C We'll leave it the way it is right now, Houston.

14:52:34 CC We've got 30 seconds to LOS.

14:52:42 CC And I say again on your Super Y Hasselblad, use the lens you have; use your updated settings.

14:52:51 C Roger. Understand.

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14:52:53 CC That'll keep you busy.

## ANTIGUA

16:06:20 CC Gemini XII, Houston CAP COM through Antigua. Over.

16:06:24 C Roger, Houston, Gemini XII.

16:06:26 CC Roger. How'd the eclipse photography go?

16:06:29 C Well, we hit the eclipse right on the money.

16:06:33 CC Very good. When you get the Agena squared away, we'd like to have you turn the encoder off. We'd like to do a tape dump and a - and reset the timer.

16:06:44 C Roger. We were unsuccessful at picking up - picking up a shadow, Houston. We couldn't pick it up by the time we got around to the eclipse.

16:06:52 CC Roger. We figured it would be a long ways off, but let me know when you get the Agena lined up.

16:06:58 C Roger.

16:07:00 CC If you can't get it here, we'll get it over Canaries.

16:07:06 CC And if you have a chance - we'd like to know - was the H<sub>2</sub>O Heater circuit breaker on and is it on now?

16:07:19 C H<sub>2</sub>O Heater circuit breaker is on.

16:07:21 CC Okay. And in case you're worried about it, we had the S-12 door closed prior to waking you up. We're sorry we didn't tell you that over Canaries.

16:07:31 C Say again.

16:07:32 CC We had the S-12 door closed by DCS prior to waking you up, and we're sorry we didn't tell you that over Canaries.

16:12:38 CC Gemini XII, Houston CAP COM.

16:12:42 C Go ahead, Houston.

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16:12:44 CC Roger. We've got about 30 seconds to LOS. You have your encoder on before we can terminate the dump, would you send T/M OFF, 030, and T/M ON, 021?

16:13:04 CC Copy?

16:13:08 C Roger.

## CANARY ISLANDS

16:17:26 CC Gemini XII, this Canary CAP COM.

16:17:31 C Go ahead, Canary.

16:17:32 CC Okay. Send me a TX this time.

16:17:35 C Roger.

16:17:38 CC Okay. I have a Nodal Update and a Flight Plan Update for you when you're ready to copy.

16:17:49 C Roger. Go ahead.

16:17:51 CC Okay. Your Nodal Update Time: 16:05; Rev 11; 71.0 degrees west; Right Ascension, 11 plus 32, Okay. Your Flight Plan Update: from 16:20 to 17:30, eat period. At 16:55 at Carnarvon, you'll have a GO/NO-GO for 30-1. Purge the fuel cells Section 1, then Section 2. We get a cryo O<sub>2</sub> plus H<sub>2</sub> readout at that time, and I'll give you Block 3 PLA Update. At 16:30, start EVA - stand-up EVA preparation. At 17:45 at Antigua, I'd like the F3 heater on. At 19:43:30, sunset, first type stand-up EVA. At 13-Gamma, Cassiopeia, yaw 87 degrees north, pitch 30 degrees up. Have you copied so far?

16:19:40 C Roger.

16:19:42 CC Okay. At 21:13:31, sunset, second night; S-13 Deneb; yaw 150 degrees north, pitch 45 degrees up. We have a note here, "Due to the change in the orbital period, activities in the Flight Plan have shifted forward approximately one-half hour at 17 hours GET and are shifted forward about an hour at 24 hours GET".

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16:20:26 C Roger. Understand.

16:20:28 CC Okay. That's the end of the Flight Plan Update.  
I'd like to get a water gun count from you.

16:20:42 C Roger. Our water gun has 863.

16:20:46 CC Copy. 863.

16:20:59 CC Okay. Gemini XII. You're GO down here on the  
ground. We'll be standing by.

16:21:04 C Roger. Thank you very much. We'll be eating.

16:21:06 CC Roger.

16:21:48 CC Gemini XII, Canaries.

16:21:51 C Go ahead.

16:21:52 CC Would like to know whether you took any water  
during the night at all? That is, prior to waking  
up.

16:22:02 C Roger. Perhaps 10 counts.

16:22:04 CC Roger. Copy.

16:24:29 CC Gemini XII, Canaries. About a minute to LOS.

16:24:33 C Roger, Canaries.

**CARNARVON**

16:54:51 CC Gemini XII, Carnarvon.

16:54:55 C Carnarvon, Gemini XII.

16:54:56 CC Roger. Standing by for your GO for 30-1.

16:55:03 C Roger. Stand by.

16:56:01 C ... Gemini XII here.

16:56:03 CC Go ahead, Gemini XII.

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16:56:05 C Roger. Fuel cells ... 1 amp. Do you want all these to be read out?

16:56:11 CC No, we don't need them. Just give us a GO.

16:56:13 C Say again.

16:56:14 CC Just give us your GO.

16:56:15 P Roger. We're GO. We do report a little discrepancy. The RCS B is about 2800 psi at temperature of 58.

16:56:26 CC Roger.

16:56:33 CC Okay. It looks pretty steady down here.

16:56:36 C Roger.

16:56:37 CC Okay. We'll give you a GO for 30-1. We'd like an on-board section - we'd like an on-board O<sub>2</sub> to water, DELTA-P both sections.

16:56:41 CC We'd like an on-board O<sub>2</sub> to water, DELTA-P both sections.

16:56:57 C Roger. Section 1 is 2.1. That's O<sub>2</sub> to water and Section 2 is 2.1 also. The Fuel Cell Delta-P lights are out now.

16:57:08 CC Okay. You can start your purge, Section 1 and then Section 2.

16:57:16 C Roger.

16:57:17 CC And I have a PLA Update for you.

16:57:41 P Go ahead with the update.

16:57:43 CC Okay. 13-1 Bravo: 18:52:00; 21 plus 00, 24 plus 48. All bank angles are roll left 80, roll right 100. 14-1 Bravo: 20:27:59; 20 plus 31, 25 plus 30. 15-1 Alpha: 22:03:58; 19 plus 56, 26 plus 08. 16-4 Bravo: 24:51:47; 21 plus 01, 26 plus 42. 17-4 Alpha: 26:27:46; 20 plus 32, 26 plus 04. 18-4 Bravo: 28:03:43; 19 plus 59, 25 plus 21.

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## GRAND TURK ISLAND

17:39:53 CC Gemini XII, Houston CAP COM through Grand Turk.  
Over.

17:39:57 P Roger, Houston through Grand Turk. Loud and clear.

17:40:01 CC Roger. I'm ready to continue your Block Update.  
What was the last one you copied?

17:40:10 P Stand by. We've got to dig out the book again.  
We're in our EVA preparation.

17:40:15 CC Okay. While you're doing that, be advised your  
RCS B pressure looks good on the ground. We figure  
it's just cooling off.

17:40:24 CC And we'd like your estimate of when the Delta-P  
lights went off prior to Carnarvon and was that  
associated with drinking any water?

17:40:37 C This is Gemini XII. It might have been, Bill,  
because we were drinking breakfast at that time  
and taking quite a bit of water out of the tanks.

17:40:46 CC Okay. About how long prior to Carnarvon was it?  
Do you have any estimate?

17:40:49 C Just prior to Carnarvon, we believe.

17:40:52 CC Okay. Would you cycle your Cryo Quantity Read  
through O<sub>2</sub> and H<sub>2</sub> for about 10 seconds each?

17:40:59 C Roger. We're in O<sub>2</sub> at this time.

17:41:01 CC Okay. Would you go to H<sub>2</sub>?

17:41:24 CC Also, we'd like a Crew Status Report from you when  
you have a chance, and is your S3 heater on?

17:41:36 C Negative. S3 heater is not on yet. Wasn't that 45?

17:41:41 CC Okay. Give us a call when you - you can go on now  
or give us a call when you get it.

17:41:45 C Roger. Do you want a Mark on it?

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17:41:49 CC No. Just turn it on.

17:41:51 C S3 heater coming on. 2, 1,

17:41:53 C MARK.

17:41:54 CC Roger.

17:41:57 P Standing by for the update.

17:42:01 CC Okay. What was the last one you got?

17:42:09 CC Gemini XII, Houston CAP COM. What was the last area you copied?

17:42:13 P Stand by.

17:42:33 CC Gemini XII, Houston. You can go to OFF on your Cryo Quantity any time you want.

17:42:37 C Roger. Going OFF. Do you want the frog egg cover put back on? I assume you do for the EVA.

17:42:44 CC That's affirmative.

17:42:45 C Roger.

17:42:46 P 18-4 Baker, last one.

17:42:49 CC Roger. Got one more. 19-4 Charlie: 29:40:03; 19 plus 15, 24 plus 08. Over.

17:43:11 P Roger. I copied that 19-4 Charlie.

17:43:14 CC Roger.

17:43:34 CC We're standing by for a Crew Status Report when you're ready, Gemini XII.

17:44:08 C Houston, Gemini XII.

17:44:10 CC Go ahead, Gemini XII.

17:44:14 CC Go ahead, Gemini XII. Houston here.

17:44:16 C Roger. We have both completed Meal Alpha. Water gun is reading 985. We have consumed about the

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same amount of water. Sleep was about 2 hours solid apiece.

17:44:36 CC Roger. Copy.  
17:48:07 CC Gemini XII, Houston CAP COM. 1 minute to Antigua LOS and standing by.  
17:48:12 C Gemini XII. Roger.

## CANARY ISLANDS

17:51:58 CC Gemini XII, Canary CAP COM, standing by.  
17:52:02 C Gemini XII. Roger.  
17:52:03 CC Sending you TX.  
17:59:38 CC Gemini XII, Canaries. About a minute to LOS.  
17:59:42 C Roger, Canaries. We're in EVA preparation.  
17:59:44 CC Roger.

## KANO

18:01:24 CC Gemini XII, Houston through Kano, standing by.  
18:01:28 C Roger.  
18:03:05 CC Gemini XII, 1 minute to Kano LOS.  
18:03:14 C Gemini XII. Roger.

## CARNARVON

18:27:48 CC Gemini XII, Carnarvon. Standing by.  
18:27:55 C Gemini XII. Roger.  
18:35:07 CC Gemini XII, Carnarvon. 1 minute until LOS. Standing by.

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18:35:13 P Gemini XII. Roger.

## TEXAS

19:11:02 CC Gemini XII, Houston CAP COM through Texas and standing by.

19:11:07 C Roger, Houston. We're going through our Suit Integrity Check now.

19:11:11 CC Roger.

19:13:06 C Get this side ... of. First EVA at 18:23, ... check okay. ... about 3/10ths.

19:17:02 CC Gemini XII, Houston CAP COM. Over.

19:17:07 C Gemini XII. Houston, this is Gemini XII.

19:17:10 CC Roger. We'd like you to pump up your O<sub>2</sub> pressure. Will you go to manual O<sub>2</sub> heater until you get 850 psi?

19:17:19 P Understand. Pumping up the O<sub>2</sub> to 850.

19:17:23 CC Correction. That's 700.

19:17:26 P ... about .3 to .4 and the Command Pilot's was .4.

19:17:33 CC Understand. Make that O<sub>2</sub> pressure 700.

19:17:37 P Understand. 700. At 650 now.

19:18:07 CC Gemini XII, Houston. Over.

19:18:10 P Gemini XII. Go ahead.

19:18:12 CC Gemini XII, you're GO for depress on your schedule.

19:18:18 P This is Gemini XII. Roger. We will depress at about 19:23.

19:18:21 CC Roger.

19:19:02 C At 19:19 checks are complete. First Stand-Up EVA

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giving the ECS Heater coming up.

19:19:08 P ... Stand Up EVA 23:30.  
19:19:15 P Houston, is there anything you want to add to our jettison bag?  
19:19:19 CC Stand by.  
19:19:38 CC Gemini XII, that's negative. Over.  
19:19:42 P Okay. Be advised the right mike in the Pilot's helmet appears to be inoperative. I'm using just the left.  
19:19:53 CC Understand.  
19:22:29 CC Gemini XII, Houston. Over.  
19:22:33 C Go ahead, Houston.  
19:22:35 CC Roger. Will you check your audio UHF TR Number 2 circuit breaker?  
19:22:44 C Roger. Number 2 Audio is up and on.  
19:23:34 CC Gemini XII, Houston. 1 minute until LOS. See you in Canaries in about 3 minutes.  
19:23:39 CC Roger.  
19:24:12 C We could try it.  
19:24:14 C Okay.  
19:24:16 C ... Event check valve open.  
19:24:26 C Slowly repress the ...  
19:24:27 C All set.  
19:24:31 P Delta. All ready to go.  
19:24:40 C Check your suit pressures.  
19:24:45 P 5 psi.

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19:24:51 C 4.  
19:25:02 C Okay. That's 3, right?  
19:25:06 P Right.  
19:25:08 C How's your suit pressure looking?  
19:25:10 P Looks good for about 4.  
19:25:12 C Okay. Mine is 3.6.  
19:25:14 C Okay.  
19:25:18 P ... again.  
19:25:27 C Okay. I'm - we're going all the way down, Buzz.  
19:25:31 P Okay.  
19:25:49 P Your pressure is holding ...  
19:25:51 C Mine is holding.  
19:25:54 P Ready on the Red light.  
19:26:02 P 1 psi.  
19:26:16 P Okay. We'd best get this exercise out of the way.  
19:26:20 C Okay.  
19:26:28 C Suit pressure is holding.  
19:26:31 P That would be best. Okay.  
19:26:32 C Okay. Good.  
19:26:37 C Okay. Run a Pressure Check, Buzz.  
19:26:39 P Okay. Stand by your Mark for 1 minute.  
19:26:43 C Okay. 26:43 started working.  
19:27:02 P Is this when we're supposed to do it?  
19:27:03 C Yes.

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19:27:04 P Are we over Canaries?  
19:27:07 C No, we're not over Canaries yet.  
19:27:17 P Heck, this is a piece of cake.  
19:27:33 C Okay?  
19:27:37 P 5 more seconds.  
19:27:39 C Right.  
19:27:43 P Okay. Stop exercise.  
19:27:45 C Right.  
19:27:48 C Okay. Rest for 10 minutes.

## CANARY ISLANDS

19:27:54 CC Gemini XII, Canary CAP COM. Standing by.  
19:27:58 C Roger. Cabin depressurized. Exercise completed. Resting.  
19:28:03 CC Roger. Looking good down here.  
19:28:19 P Most of the dirt is on the inside of my window. I made the mistake of wiping it off.  
19:28:25 P I guess I don't have to see out of it for anything now.  
19:28:40 C Okay. Let's stand by to open the hatch.  
19:28:45 C Are you ready?  
19:28:47 P All set.  
19:28:49 C We've got to make sure this is clear and everything.  
19:28:52 P Okay. You hold it for the first part - -  
19:28:55 C Okay.

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19:28:56 P - - and I'll get it for the second.  
19:29:03 C Okay. Now get that out of the way. Got it?  
19:29:06 P I've got it.  
19:29:09 C Let me get this out of the way. Make sure those - -  
19:29:12 P Okay. I've got the bottom of the - -  
19:29:13 C Okay.  
19:29:16 P Okay. Hatch is coming open. Man! Look at that!  
19:29:29 P Okay. Hatch pawls are in the LOCK position.  
19:29:31 C Right.  
19:29:37 P Hatch is open all the way.  
19:29:42 P And let me stow the Hasselblad.  
19:30:07 C Watch out for the Jett Fairing.  
19:30:12 P Roger. I think it'll stow there all right.  
19:30:14 C Okay. Bring your hand down. Okay. That's good.  
19:30:17 P All right. Ready to throw some waste bags?  
19:30:20 C Jettison waste.  
19:30:24 P Let me see if I can hit the dipole.  
19:30:28 P Hey, how about that?  
19:30:30 C What?  
19:30:31 P You see it going?  
19:30:33 C No.  
19:30:34 P Right past the dipole.  
19:30:38 C Is that right?  
19:30:39 P Don't you see it there?

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19:30:42 C Oh, yes.

19:30:47 P Okay. We're in LOCK now.

19:30:50 P Waste is jettisoned. Just missed the dipole.

19:30:54 C Okay. Set up for the tape.

19:31:26 P Okay, baby. Don't come apart.

19:31:49 P It's all set and the lights are checked out.

19:31:52 C Okay.

19:32:00 P Man, I'm watching your attitude thruster fire. It's really something!

19:32:04 C Yes. We're going about fourth now, aren't we?

19:32:12 P I see stars right behind us.

19:32:14 P Would you believe I see stars all around us.

19:32:18 C Sure it's not ...

19:32:22 P Stars in the daylight?

19:32:26 P I don't think so.

19:32:33 P Now wait a minute, that one star was that waste pouch I jettisoned.

19:32:37 C Yes.

19:33:02 P We've got some of that primer cord hanging around me.

19:33:06 C We do?

19:33:08 P Yes.

19:33:10 C Look at the urine dump. On the other side.

19:33:29 P Yes, it looks like I might have to pull some of that stuff away when I get back to the adapter.

19:33:32 C Evaluate standing dynamics.

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19:33:34 P Okay. I'm just drifting here. It looks like I have a small tendency to float out, but very little. I'm completely free. I pushed myself away and it seems to - bounce away from the hatch. Doesn't seem to be any tendency at all to want to leave the hatch.

19:33:59 C Okay.

19:34:04 P Now there went one of those washers. I can see some particles coming out of the cockpit, but they don't seem to be pushing me out. I imagine there's a little bit of tension on my hoses now, but otherwise I'm floating now, completely free. My feet are just above the seat.

19:34:25 C Okay.

19:34:28 P What a beautiful view!

19:34:32 P The snow on the mountains over there.

19:34:37 C ... Buzz.

19:34:39 P Okay.

19:34:42 C ... see anything.

19:34:51 CC Gemini XII, Canaries. About a minute to LOS.

19:34:54 C Roger. Can you hear us in VOX?

19:34:56 C Canaries, this is Gemini XII. Can you hear us in VOX?

19:35:02 CC Read you loud and clear.

19:35:04 C Roger.

19:35:08 P What a thrill!

19:35:12 C Are you in good position, Buzz?

19:35:15 P For what, the pictures?

19:35:16 C Yes.

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19:35:18 P Excellent.

19:35:20 C Okay. Now can you tell about going SEF? I can't see out this window. Can you tell me?

19:35:25 P Yes. You're going SEF.

19:35:27 C Okay by cloud patterns. Okay. Go into RATE COMMAND, Buzz.

19:35:35 P Okay. Let me drop back down in the hatch a little bit - get in a position to - put the Agena Inertial.

## KANO

19:35:55 CC Gemini XII, Houston CAP COM through Kano and standing by.

19:36:02 C Gemini XII. Roger.

19:37:00 P Yes, it looks like we're going just about SEF now.

19:37:04 C Okay. I'm in RATE COMMAND and holding right there.

19:37:09 P Can you notice any motion of the Spacecraft combinations when I move around just a little bit?

19:37:14 C Yes, a little. That's how I think we got turned around.

19:37:19 C Okay. At 20 minutes go ahead with first star field. I've got the first star, which is Cassiopeia. I have exposures of two at 20 seconds, two at 50 seconds, and both in 10 minutes.

19:37:45 CC Okay. You give me the Mark.

19:37:48 C Roger. Give you the Mark.

19:37:50 C Stand by.

19:37:52 P Set on TIME. It looks like the camera is nice and secure - secure as it can be.

19:37:57 C As soon as we get there, I'm going to have to give you the - -

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19:38:24 C Careful, Buzz.

19:38:26 P Okay. I'm just getting into position to fire 1.

19:38:57 C Do you hear this thruster firing when you move around?

19:38:59 P Say again?

19:39:02 C I say, do you hear those thrusters firing when you move around?

19:39:07 P I didn't hear you.

19:39:09 C Do you hear those thrusters firing when you move around?

19:39:11 P Oh, no.

19:39:13 C Well, I do.

19:39:31 P It's amazing the amount of garbage there is up here just floating all around us.

19:39:40 P Looks like some of the paint has peeled on the Agena.

19:39:45 C Roger. It's burnt paint.

19:39:47 P Yes. And looks like maybe some of the Velcro covering on the head rest melted.

19:40:23 P There's something - just flew out of the cockpit.

19:40:28 CC Gemini XII, Houston CAP COM. We have about 1 minute to Kano LOS. Your VOX is going loud and clear. And Buzz, will you confirm that you can see stars in the daylight?

19:40:38 P Negative. I won't really confirm that. It looked like there were stars when I first got out, but closer examination - there is so much moving away from both vehicles, I hate to say it, but it appears to be going up.

19:40:57 CC Think fast.

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19:40:59 C ... Bill.

19:41:02 P It may be going in other directions too, however. That happens to be the way that I am looking most of the time.

19:41:04 CC Yes.

19:41:10 P And I think I mistook that for the stars.

19:41:15 CC Roger.

19:41:16 P We are about to pass the terminator now.

19:41:19 C Okay. Could you look back to see how our attitude is? I can't tell now. I'm in RATE COMMAND.

19:41:30 P From the looks of the sun, we might be a little bit too far to the right.

19:41:35 C I'll move it over.

19:41:55 C Are we moving?

19:42:01 P Can't prove it by me.

19:42:03 C You can't look back and see the earth?

19:42:08 P Yes, it's getting black.

19:42:21 P Getting pretty dark on your side now?

19:42:23 C Yes.

19:42:26 C Okay. Now the yaw commands and pitch commands are 87 plus 30, up. So take a look to your left and see if you can pick up Cassiopeia or ... (star?)

19:42:40 P Okay.

19:43:23 C Sunset is about 30 seconds, it must be.

19:43:28 P Looks like that's about right.

19:43:31 P I think - it looks kind of like we're about broad-side to the sun now. We probably ought to go to the left a little. Okay. There goes the sun.

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19:43:46 P That goes down in a big hurry.  
19:43:47 C Yes.  
19:43:59 P Okay. There's a star.  
19:44:02 C Okay.  
19:44:03 P No.  
19:44:05 C Can you get illumination yet?  
19:44:14 P Not too well. Stand by.  
19:44:16 P Wait till that sun goes down a little bit.  
19:44:53 P Looks like it will take awhile to get my eyes dark-adapted.  
19:44:59 C Yes, it does.  
19:45:24 P There's some lightning down there.  
19:45:43 C Isn't that Orion deadahead of us?  
19:45:47 P Is it what?  
19:45:50 C Isn't that Orion deadahead of us?  
19:45:56 P I don't see all of them.  
19:46:50 P Okay. I've got the summary triangle now on Vega. ...  
19:46:57 C Okay. Look straight ahead.  
19:47:02 P Not good.  
19:47:44 C Do we have a horizon down below us now?  
19:47:46 P Right. Yes. We're pitched up to 50.  
19:48:02 P Cassiopeia is off to the left, about 90 degrees left.  
19:48:04 C Okay. To the left.  
19:48:37 C Okay. I've got Taurus the Bull.

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19:48:55 P That's the attitude of Pleiades, right down in front of us - -

19:48:57 C I've got the Pleiades.

19:49:02 P And high to the left is - Gad, what just came on?

19:49:06 C Fuel Cell O<sub>2</sub>.

19:49:09 P Delta-P?

19:49:10 C Yes.

19:49:34 P I've got Orion over there.

19:49:50 C Okay. Cassiopeia should be coming straight ahead. See it on the left?

19:49:52 P It's a little to the left, Jim, perhaps a little high for you, I'm not sure.

19:49:57 C Okay.

19:49:58 P Not very much high.

19:50:00 C Okay. Coming over.

19:50:02 P Got it?

19:50:04 C Haven't got him yet.

19:50:06 P ...

19:50:08 C Okay.

19:50:09 P You have the Milky Way ...?

19:50:22 C I've got Cassiopeia.

19:50:23 P Okay. Good show.

19:50:28 P What do you think we ought to do about that Delta-P light?

19:50:31 C I don't know. I think I'd better check the pressure and the oxygen too.

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19:50:47 C Is it too bright to take pictures, you say?  
19:50:50 P Too bright, what do you mean?  
19:50:52 C Shall I leave it on - I mean - -  
19:50:57 P No, no.  
19:51:01 P Well, I don't know. I don't really see how it can  
get in the way. I think the camera is going to  
shield it.  
19:51:28 C Careful now.  
19:51:38 P Okay. Stand by a second.  
19:51:45 C You all set to send 401?  
19:51:47 P Yes.  
19:51:50 C Stand by.  
19:51:55 P How's the time going?  
19:51:57 C Okay.  
19:51:59 P If you want to give some time to it - -  
19:52:05 C Send it.  
19:52:09 P MARK.  
19:52:10 C Okay.  
19:52:14 P Okay. There it is. I've got Orion ...  
19:52:19 P They're right on there. They're - yes. They're  
right on.  
19:52:25 C Okay. Let's give it awhile to stand by.  
19:52:28 C It's staying right there in the field now.  
19:52:33 P Remarkable. It must be the GEO RATE of the hori-  
zon scanner that's causing it to wander around.  
19:52:37 P Yes.

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19:52:43 C Okay. Stand by. Two exposures at 20 seconds each.

19:52:59 C I'll give you Mark.

19:53:02 P All set.

19:53:04 C All set?

19:53:05 P All set.

19:53:07 C Stand by.

19:53:11 C MARK.

19:53:13 P Okay.

19:53:14 C I'll give you a count down to Mark.

19:53:26 C 5, 4, 3, 2, 1,

19:53:31 C MARK.

19:53:32 P Okay. Let's see if it took. All right, it took.  
Camera is advanced.

19:53:40 C Stand by.

19:53:41 P All set for another one.

19:53:44 C Stand by.

19:53:46 C MARK.

19:53:48 P First Delta-P lights are on now.

19:53:50 C Yes.

19:53:53 P Okay. I think it's liable to get bothersome to the  
prism.

19:54:00 C 5, 4, 3, 2, 1,

19:54:05 C MARK. All right. Good 60 seconds each.

19:54:16 P Okay.

19:54:17 C I'll put my hand over it. Stand by.

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19:54:26 C MARK.

19:54:35 P How's it holding?

19:54:38 C Good. Right on.

19:55:02 P This is a pretty good glove exercise in itself.

19:55:09 C Yes.

19:55:22 C 4, 3, 2, 1,

19:55:26 C MARK. Is that a pretty nice one?

19:55:29 P Okay. Wait a minute.

19:55:56 C Let's go. All set?

19:55:58 P All set.

19:56:00 C Stand by.

19:56:01 C MARK.

19:56:26 C This wire lanyard is out there almost parallel to the line of sight of the camera.

19:56:33 C Oh.

19:56:37 P I don't think it could get in the way in any way though.

19:56:49 C Stand by. 5, 4, 3, 2, 1,

19:57:00 C MARK.

19:57:02 C Okay. Let's check the setting to see if it is at 120.

19:57:14 P Okay.

19:57:16 C Stand by.

19:57:17 P Hold on.

19:57:33 P Okay.

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19:57:35 C MARK.

19:57:57 P Where do we go next?

19:57:59 C To Sirius.

19:58:03 P I've got - - I think I've got it.

19:58:15 P How are we doing on time?

19:58:19 C I don't have - I can't see my Event Timer.

19:58:38 C 4 minutes by the board.

19:59:10 P Long 2 minutes. How's the attitude holding?

19:59:16 C Like a jewel.

19:59:31 C Stand by. 4, 3, 2, 1,

19:59:35 C MARK. One more, 2 minutes. Let me turn this light on a second. I want to see what this vapor is doing. Okay.

19:59:50 P Right.

19:59:51 C While Agena is getting ... control I get my ... again.

19:59:54 C Stand by. Are you all set?

19:59:57 P Yes.

20:00:02 C MARK.

20:01:03 C 4 minutes by the board.

20:01:31 C 20 seconds to go.

20:01:56 C 5, 4, 3, 2, 1,

20:02:01 C MARK. Okay. We're going to Sirius.

20:02:04 P Okay. Let me get the command in.

20:02:18 C We're not going to get all of them today, Buzz.

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20:02:22 P Okay. 400.  
20:02:28 P MARK.  
20:02:29 C Okay.

## CARNARVON

20:02:39 CC Gemini XII, Carnarvon. Standing by.  
20:02:43 C Roger. Be advised that we have two Delta-P lights on.  
20:02:45 CC Roger. We just saw that.  
20:02:52 CC Gemini XII, Carnarvon. How about turning off that Delta-P circuit breaker?  
20:02:59 C Stand by.  
20:03:03 CC I rather doubt that it could affect pictures taken by the grating, but it just might interfere with the prism.  
20:03:11 CC Okay. Stand by and I'll get a reading on that.  
20:03:18 CC Roger. Go ahead and turn it off.  
20:03:20 P Okay. Could you turn the Cabin light on, Jim?  
20:03:22 C Yes.  
20:03:28 C They can't see where I'm going, Buzz.  
20:03:33 C Okay. Tell me when I'm in the right spot.  
20:03:38 P Yes.  
20:03:39 P It went out?  
20:03:40 C Yes.  
20:03:43 P What do you know! I got the right circuit breaker. Okay. Turn around.

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20:03:46 CC Roger.

20:03:59 P Can you see some land?

20:04:07 C Yes. Off to the left.

20:04:14 P Bring it hard left. Oh, well, I guess it's up as much as it is left.

20:04:21 C Yes. I should be going towards it.

20:04:24 P Okay. You're coming up on the Pleiades.

20:04:26 C I see. I've got it. I've got the Pleiades.

20:04:28 P Okay. Now you come to Orion next.

20:04:31 C We're way behind time. I don't know how they expect us to do anything; they want everything done at one time.

20:05:02 P Got Orion now?

20:05:04 C To the right a little bit. Okay. There it is.

20:05:07 P Keep going the same direction. You'll pick it up.

20:05:09 C Okay.

20:05:16 P Maybe gone up just a little bit too much. Off to the left now. Do you see it?

20:05:22 C Yes.

20:05:52 P Do you want to stop it with the Agena?

20:05:54 C No. No, I can roll. Watch out for your knees.

20:06:02 P What's the matter with it?

20:06:04 C I'll do it. Don't get them in the way.

20:06:11 P Are my knees getting in the way?

20:06:14 C It's getting in the way of the computer.

20:06:15 P Okay. All set for Florida.

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20:06:18 C Okay. Let me roll out on it.  
20:07:10 C All set for Florida?  
20:07:12 P All set.  
20:07:13 C Stand by a second.  
20:07:35 P Man, that lightning down there is really something!  
20:07:40 C You said it!  
20:07:44 P 401 MAP light.  
20:07:52 C That's a ... Buzz.  
20:07:54 P What's that?  
20:07:56 C That was a ... Okay. Stand by 20 seconds.  
20:08:06 C All set?  
20:08:11 P Darn. Okay, it's all set.  
20:08:18 C Stand by.  
20:08:21 C MARK.  
20:08:35 C 5, 4, 3, 2, 1,  
20:08:40 C MARK.  
20:08:42 C Stand by for the next one. Have to hurry a little bit.  
20:08:50 C Stand by.  
20:08:52 C MARK.  
20:08:57 P I missed that one.  
20:08:58 C Okay.  
20:08:59 P I guess it slipped down.  
20:09:01 C Give you the other one.

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20:09:03 P Okay.

20:09:04 C Stand by.

20:09:06 C MARK.

20:09:23 C 4, 3, 2, 1,

20:09:28 C MARK.

20:09:29 C Stand by for 60 seconds.

20:09:35 C Stand by.

20:09:40 C MARK.

20:09:57 P How is it holding?

20:09:59 C Good.

20:10:14 P My feet are getting cold.

20:10:26 CC 1 minute to LOS. We're standing by.

20:10:28 C Stand by. I'll put the light on a second. You got - okay, stand by now. 5, 4, 3, 2, 1,

20:10:41 C MARK.

20:10:42 C Okay. Stand by for another minute. Let me know when you're ready.

20:10:51 P All right.

20:10:53 C Stand by.

20:10:54 C MARK.

20:11:02 C I sure hope this camera isn't moving too much on the mount.

20:11:50 C 5, 4, 3, 2, 1,

20:11:55 C MARK.

20:11:59 C Okay. 2 minutes. Tell me when you're ready.

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20:12:01 P All right.  
20:12:09 C Stand by.  
20:12:11 C MARK.  
20:12:45 P How's the arrow doing?  
20:12:47 C I can't tell.  
20:12:49 C I'll check it after this run.  
20:12:56 P ... anything on ...  
20:12:59 C I doubt it. And try it right now.  
20:13:30 P I can tell that I pushed this cable release right  
on the Mark, but I'm not sure that it released it  
there exactly.  
20:13:38 C Stand by. That's it. Hold on. I think the sun's  
coming up behind you.  
20:14:04 C MARK.  
20:14:08 P Okay.  
20:14:11 C Buzz, is that the sun coming up behind you?  
20:14:14 P It's getting light over there.  
20:14:17 C We've got another 2 minutes, but I don't believe  
we can hack it.  
20:14:21 P Yes, that's the sun coming up. Go ahead. We'll  
give it a try.  
20:14:26 C Okay. Stand by.  
20:14:30 C MARK.  
20:14:45 P How's it holding in attitude?  
20:14:49 C Like a dream!  
20:14:50 P Looks solid.

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20:14:54 C What was wrong yesterday with the thing?

20:15:02 C Specifically, we sent it the commands; I don't know how many times.

20:15:04 P I don't know. I bet it was in the gyrocompassing loop somewhere.

20:15:09 C Yes.

20:15:11 P Sure enough there's nothing wrong with the Flight Control Mode - Flight Control Mode 2 inertial.

20:15:42 C That dipole can make the whole thing up.

20:15:47 P Yes. I may - I wonder if we maybe ought to stop here.

20:15:50 C Yes. I'll stop it at - Okay. Stand by.

20:16:00 C MARK.

20:16:02 P Okay.

20:16:03 C That was 1 minute and 40 seconds of the last 2-minute one.

20:16:06 C Okay. Let's get a little light on the subject.

20:16:23 C We're at 650 pounds.

20:16:38 P Okay. Let's turn it on.

20:16:40 C I've got a blip on radar.

20:16:50 C Stand by.

20:16:52 P Yankee 1 dropped 400, right?

20:16:54 C Maneuver Spacecraft to a head-stop configuration. 43 and 48 ... Install EV camera.

20:17:02 P Okay. You ready for 400?

20:17:06 C Yes.

20:17:08 P 400 MAP light.

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20:17:11 C Okay.

20:17:12 C Do you have the horizon?

20:17:15 P Yes.

20:17:16 C Good. That tallies.

20:17:18 P Oh now, just a minute. Yes. Yes, you're almost vertical. I guess the best way is to roll over and pitch up. Why don't you get moving first and pitch down and then roll?

20:17:57 P Okay. Ready to mount the camera?

20:17:59 C Right.

20:18:02 P Well, I'd best put my visor down.

20:18:18 C Boy, that sun really does everything. You can't see a thing.

20:18:23 P The visibility is beautiful for me.

20:18:28 C Okay. Are you having any trouble at all? Here, let me have the - -

20:18:33 P No. I'm in great shape now.

20:18:35 C You don't want to hit anything. Just stay like that, right?

20:18:38 P Yes.

20:18:39 C Okay. Just do the stand-up pattern. Looks pretty good from here.

20:18:45 P Okay. I've got the camera loose now.

20:19:05 P Right. The camera is installed.

20:19:09 C Okay.

20:19:10 P And a - let's see. 6 frames a second. Do you want to do it a little looser? I don't know how I could get much looser.

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20:19:18 C No. I think you're just about too loose. Do you want it a little tighter?

20:19:22 P I don't know if there is much to be gained by doing that. I'll just take it out again.

20:19:29 P All right, it comes out nice and easy.

20:19:31 C Okay.

20:19:32 P Just a little bit of twist and I put my hand on the back of the seat here.

20:19:35 C Okay. No trouble with the camera. All right. Are you just about at the full of your - of the tether? Do you have any float-out tendencies at all?

20:19:45 P No. It seems to hold pretty stable here.

20:19:48 C Do you have any problems?

20:19:51 P No. Never held ... on the back and real well.

20:19:52 C How's the camera?

20:19:55 P All right, it's mounted again. And let me throw it back to 1/250th.

20:20:02 C Be careful of your foot.

20:20:04 P Okay. 1/250th, 6 frames per second.

20:20:09 C Okay.

20:20:10 P Do you want to hit it on once and feel the way it's going?

20:20:14 P Okay. I can hear it going.

20:20:16 C Okay. Now can you give me an idea where the horizon is?

20:20:21 P I - yes, you're still pointing way up.

20:20:29 P All right. What's next on your little list?

20:20:32 C Okay. Apply the adapter handrail, verify. Now, is

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- the camera all set? What range is it set at?
- 20:20:43 P I sure fixed things. The handrail's deployed.
- 20:20:50 C Okay. How does it look?
- 20:20:53 P It looks good. Nice and smooth. Timer is at 1/250th and 6 frames per second. And I'm eyeball to eyeball. The - -
- 20:21:02 C That's good.
- 20:21:03 P - - spring looks like a - the spring looks like it ought to hold it fairly tight.
- 20:21:10 P All right, how about - -
- 20:21:11 C You dismount the 70mm camera and bracket and hand it to me. We'll then configure the S-13 for the B Mode.
- 20:21:21 P All right.
- 20:21:23 C I've got to take the recorder tape and say this comes on again. I have to change tapes.
- 20:21:28 P Then I'll have to move the Hasselblad to get the - -
- 20:21:30 C Is that in the way - is that in your way at all?
- 20:21:33 P What's that?
- 20:21:34 C The 70mm camera?
- 20:21:36 P What? The Hasselblad?
- 20:21:38 C No, no, the Maurer.
- 20:21:40 P No, not too much. It's just fine.
- 20:21:42 C Okay. I was just wondering, because when I get in here, it might be in the way when I'm just going down.
- 20:21:47 P You'll take a picture when I'm dismounting it?
- 20:21:50 C I'll take a picture of radar for you.

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20:21:52 P Okay. Well, I just hammered it loose.

20:21:57 P Just about loose.

20:22:05 C Do you have any problems?

20:22:08 P No.

20:22:09 C Are we pitching down now?

20:22:16 P Wait a minute. Okay. Now you are; it's clear.

20:22:21 P You got it?

20:22:22 C Okay.

20:22:28 P Yes, we're pitching down. We're coming down on the right side.

20:22:35 P We have some pointing commands?

20:22:39 C Yes. We're allowed to go - go to 0 0 0 eventually here.

20:22:46 P Well, that will bring you around to the right.

20:22:50 C Check your suit pressure. How is it?

20:22:52 P It's good. 3.7.

20:23:02 C ...

20:23:04 P ...

## CANTON

20:24:17 CC Gemini XII, Houston CAP COM through Canton is standing by.

20:24:21 C Okay. Stand by. I can't do anything now.

20:24:26 CC Gemini XII, Houston.

20:24:28 C I have to change tape recorders.

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20:24:32 CC Gemini XII, Houston CAP COM through Canton and standing by.

20:24:50 P ...

20:24:55 C Okay.

20:25:00 C Take pictures.

20:25:12 CC Gemini XII, Houston CAP COM through Canton and standing by.

20:25:19 C Roger. We're in daylight again.

20:25:22 C ... before we do not get - we didn't have time until we get oriented without platform.

20:25:29 CC Roger. Copy.

20:25:49 P All right now.

20:25:52 C All right. Why don't you turn the camera on? I've got the lanyard out. I'm going to put the lanyard on the S-12 now.

20:25:59 C Okay. It's on.

20:26:02 C And the S-12 is coming off.

20:26:11 P Okay.

20:26:27 C Tape is out.

20:26:28 P Camera is in the pouch.

20:26:36 C Flipping up.

20:26:38 P Okay. Flip it up and let me know. I'll turn the camera off.

20:26:42 C I think all it's getting is my back. Now go ahead and turn it off.

20:26:52 C Oh, good enough. The S-12 is all stowed away and put to bed. And it looks like it's going to stay in shape pretty well.

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20:26:59 C Okay. Are you picking up anything on the ground yet?

20:27:02 P Yes. I've got the ground below here.

20:27:09 P Oh, oh.

20:27:14 C All I see is water. Let me go ahead with the handrail. Okay.

20:27:18 P Stand by. I - -

20:27:23 C What's the trouble?

20:27:26 P - - I think my - my hold-down strap just came up a little bit. I hope that's it.

20:27:38 P Okay. Let me go ahead with the handrail.

20:27:45 P All I see is water ahead right now.

20:27:50 C Let me know when you get started.

20:27:54 P No. It's not both. Okay. The lanyard and the bit pin are getting the old deep six.

20:28:02 C Okay. I'm going to put the camera on.

20:28:04 P All right. I'm coming around to the - start deployment now.

20:28:18 P Okay. I have the first one in the telescope.

20:28:33 P All right. The second pin is in. The alinement marks are coming out and ... the attitude.

20:28:46 P All right. The third pin is in.

20:28:50 C Okay.

20:28:52 P I've got it in the cone. And now, let's see - get this bolt in.

20:29:04 P Beautiful!

20:29:07 C Is she in?

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20:29:09 P Is she in? All set. How does it look to you?

20:29:11 C Looks good from here.

20:29:14 CC Gemini XII, this is Houston. 1 minute to LOS.

20:29:18 P Where are they calling from?

20:29:20 C I don't know. Roger. Houston, can you hear us?

20:29:23 CC Roger. Reading you five by.

20:29:27 C Roger. The nose handrail is in. Tapes have been changed. I'll put on the prism now on the S-13.

20:29:39 CC Roger. We've been copying.

20:29:41 C I'm going to pump up the oxygen here pretty soon.

20:29:45 P Houston. Can you give us a position - where we are right now?

20:29:47 CC Okay.

20:29:59 P You got the camera off?

20:30:02 C Camera coming off.

20:30:04 P I don't know how much - let's see how much film you have left.

20:30:09 C Okay. I have the S-13 ready for deployment.

20:30:11 P What's that?

20:30:14 C No. I don't either.

20:30:16 P Well, let me see. It looks like we're pointed in the wrong way to pick up the States. From the sun, from what I can see, we ought to pitch down and roll left. Right.

20:30:28 C Okay. Stand by.

20:30:33 P Could that be Hawaii right there?

20:30:34 C Could you put this camera back up?

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20:30:38 P Yes. Why don't we do that close to the sunset?

20:30:40 C Because I can't do anything with this camera.

20:30:52 C I'm pitching down.

20:30:54 P All right. You want to turn on the other camera?

20:30:57 C Yes.

20:31:04 P All right. I've got the S-13 in place.

20:31:10 C Is there a place?

20:31:12 P There's a place.

20:31:16 C Okay.

20:31:23 P And give me something to take a picture of.

20:31:26 C Okay. I'm turning around this - I'm going to rotate - yawing right, all the way around till the sun is behind you.

20:31:33 C Okay?

20:31:35 P Yes. Yawing around to the right. All right.

20:31:50 C ...

20:31:52 P They're all set.

20:31:56 C All right. Turn off the camera.

20:32:01 C My suit tie-down popped up, and it's going to make it more difficult for me to transfer.

20:32:28 P Roger. I'm going to have to take this camera off. I've got it around on the wrong side of the Hasselblad.

20:32:35 C Okay. We've got plenty of time. No, wait a second. Your hoses are mixed up in there. Okay.

20:32:47 C Hey, look if you might be - I think you're going to lose this one - no, no. Okay.

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20:32:52 C I thought you might be losing that one lock on the hose.

20:32:59 P Okay. That makes a little bit more sense.

20:33:14 P Lots and lots of water out here.

20:33:21 P Might as well start taking pictures.

20:33:28 P Looks like we're BEF. Are you swinging around to the right now?

20:33:33 C That's right.

20:34:17 C Okay. Listen. When I'm in good position, how about my taking some pictures of your taking pictures?

20:34:23 P All right.

20:34:24 C I'll let this camera run out then so we won't have to change it.

20:34:28 P You're not in good position yet.

20:34:33 C What?

20:34:34 C I was - -

20:34:35 P You're still going to BEF, right? I can't see where we're coming up to. Keep going around to the right.

20:34:45 P Lots and lots of Pacific Ocean down there.

20:34:54 P Yes, bring it around to the right.

20:34:56 C Coming around.

20:35:57 P Did you get a voice tape change? Okay?

20:35:59 C Yes. Voice tape - tape has been changed.

20:36:06 P Keep here going to the right.

20:36:09 P Lots of luck.

20:36:21 P Real good handhold on this camera.

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20:36:28 P I just can't turn it in every direction.

20:36:35 P You see that little compass right over the work station, about 2 feet?

20:36:40 C Yes. It looks - -

20:36:42 P It looks like a piece of metal. That thing has been there for the past 10 minutes.

20:36:45 P When we move, it moves.

20:36:47 C You mean that white piece of metal?

20:36:49 P Yes. That thing that's going end over end. You see it?

20:36:52 C Oh, no! Oh, yes.

20:36:57 P You've got ... of myopia.

20:36:59 C ...

20:37:06 P "Water, water everywhere and not a drop to drink".

20:37:37 P You'll probably have to bring it around a little bit because I think the best picture-taking is going to be across the Agena. In other words, more towards your window.

20:37:52 C Okay. Let's see if we have everything. The 70mm camera has been re-installed, adapter handrail deployed, nose handrail deployed.

20:38:01 P Right.

20:38:04 C The EVA camera is installed in place. I can hold that camera out here pretty soon.

20:38:09 P Now - well, don't - don't run it out of film yet.

20:38:13 C You've got the GLV strips, right?

20:38:16 P I've got two of them. Two white ones are in place. And I have two black ones standing by there. They're on the back of the seat.

20:38:23 C Okay.

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- 20:38:42 P It's hard to get pictures pointed straight up. So don't roll too much.
- 20:38:49 C How are we going now?
- 20:39:01 P Well, we're certainly not over anything but water.
- 20:39:04 C Pacific.
- 20:39:09 C Well, you don't seem like you're breathing hard.
- 20:39:13 P Well, I'm not. My feet are cold.
- 20:39:16 P Keep pitching it up. And yawing around to the right just a little bit.
- 20:39:23 P In the direction we're going, we have about 90 degrees more to go. We're going - just about broadside now.
- 20:39:44 P Too bad we're not at 450 miles.
- 20:39:47 C Yes.
- 20:39:52 C I wonder what's wrong with our Agena.
- 20:39:57 P Look at that. That piece of metal is still there. Maybe it's another one.
- 20:40:09 C Okay. I'm going to go ... the yaw, but I'm going to point the nose down so - -
- 20:40:11 P Yes. Okay. It looks good the way we're moving right now.
- 20:40:23 P There's quite a bit of black paint burned off on the Agena.
- 20:40:42 P Okay. I think that looks pretty good as far as yaw goes.
- 20:40:45 P Did you go over the lid?
- 20:40:52 C No.
- 20:40:57 P ...
- 20:40:58 P ... suit camera, handrail.
- 20:40:59 C Just take pictures of anything ... camera to pull you in.
- 20:41:04 P Okay. I have taken 13 pictures of water so far. I'll try and be a little choosy from now on.

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## GUAYMAS

20:41:28 P Will you worry if I take a picture in your window?

20:41:29 C No.

20:41:37 P Can you see the camera over here by your window?

20:41:40 C Yes.

20:41:41 P Unfortunately, I can't reach it to you.

20:41:42 C Right.

20:41:47 CC Gemini XII, Houston CAP COM through Guaymas. Standing by.

20:41:52 C Roger, Houston. This is Gemini XII here. We're standing by too.

20:41:57 P Oh, there you are. There we are.

20:41:59 C Everything's been completed except retrieving the EVA camera. Buzz is out there taking all kinds of pictures of water.

20:42:08 CC Roger.

20:42:16 P Yes. This looks like a good heading here, Jim. There's Baja California.

20:42:23 P Southern California coming up then.

20:42:25 C Houston, without a platform, it might be a little difficult to get all of these star fields. It takes a little while to get from one to the other. Does the experimenter have any choice of which of the three star fields in the second night pass he doesn't want to "Hass"?

20:42:40 CC Affirmative. If you want to drop one, drop the second one, Algol.

20:42:47 C Roger. We'll drop Algol if we don't have time.

20:42:49 CC That's affirmative.

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20:43:21 P I don't suppose you can reach this tether a little bit. Right?

20:43:23 C Right.

20:43:25 C What do you want me to do?

20:43:28 P Is it - can you loosen it just a tad?

20:43:30 C Watch out for your feet. No, it's way up there, Buzz. It's already loosened, and it's doubled up.

20:43:33 P It's all the way loose.

20:43:34 C You'll have to come on down. I can't even see the other end of it.

20:43:40 P Can you get it? Get the blue now?

20:43:45 C I've got the blue.

20:43:47 P Okay. Let's just loosen it, I guess. Right?

20:43:49 C Okay.

20:43:52 C I know, but it's always too loose for me to do anything.

20:43:54 P Okay.

20:43:59 P Let's see. Am I loosening it any?

20:44:01 C Hey, look at that! There's - there's California. Why don't we get a shot of it - of Mexico? Why don't you get one or two?

20:44:09 P What a geographer you are!

20:44:13 C I can't see anything with this tiedown strapped up on me. I understand this - the reticle.

20:44:28 P Sure are pretty clouds down there.

TEXAS

20:45:01 P How many do we have in here? 50?

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20:45:04 C Yes.

20:45:21 P How's the weather in Houston?

20:45:25 CC Roger. It's cloudy. We have a front lying just off the coast.

20:45:28 P Yes. I think I can see it.

20:45:37 C What'd I tell you, Buzz? Four days vacation with pay, seeing the world. You know.

20:45:42 P (Laughter)

20:45:47 P Okay. Tell everybody to smile down there.

20:45:49 CC Smiling.

20:46:23 P Want to pitch down just a little more, Jim?

20:46:25 C Pitch down?

20:46:26 P Yes. I'm getting a little bit too much of the Agena.

20:46:35 C Okay.

20:46:42 P Let me get a shot over here to the south.

20:46:57 P There's the Yukatan.

20:47:13 C What's that coastline there to the - on our left?

20:47:18 P That's Mexico.

20:47:45 P Got any idea how much is left in the 16mm?

20:47:47 C No. But let's take some pictures of it. We're going to reach Cuba pretty soon.

20:47:54 P Well, we ought to come over Florida this time.

20:48:01 C Are we coming over the Gulf now?

20:48:02 P Yes.

20:48:06 CC You're passing over the southern tip of Florida,

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Gemini XII.

20:48:09 P Roger.

20:48:11 C Oh!

20:48:16 C Too bad we can't be a little higher.

20:48:21 CC Roger.

20:48:30 CC Was there a definite turbine problem or was it just concern about the attitude control that scrubbed the burn?

20:48:37 C What?

20:48:42 C Hey, Buzz, you see the contrail down there?

20:48:47 P No. Where?

20:48:49 C Look over there - no, right over the nose. See it?

20:48:54 P Yes. You think that's a contrail?

20:48:55 C Sure.

20:48:59 P Okay. Looks like Florida is coming up. How about pitching down just a little bit more - yes, there are the Keys.

20:49:13 C That's that National flight to Houston.

20:49:16 P Roll right a little, too, if you can.

20:49:21 CC That's the backup crew.

20:49:23 P Right. Tell them they're going the wrong way.

20:49:28 CC No. That's the backup crew.

20:50:01 CC Gemini XII, Houston. There is nothing wrong with the Agena attitude control. We're just not going to make any PPS burns.

20:50:09 C Roger to that.

20:50:11 P Want to pitch down a little more, Jim. Roll right.

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20:50:13 C Yes. Roll right?

20:50:16 P Yes.

20:50:18 P Let me see if I can get the hatch out of the way here.

20:50:28 C Hey! Look at that!

20:50:33 P You recognize that?

20:50:35 C That looks like - let's see ... of Mobile?

20:50:42 P Would you believe Tampa?

20:50:45 C Okay. Yes, I'll believe Tampa.

20:50:52 C I can't see a thing.

20:50:54 P Roll right and pitch down a little more.

20:50:56 CC Sounds like a typical Navy navigator.

20:50:57 C-P (Laughter)

20:51:01 C I was only fooling, Buzz.

20:51:03 P Boy! Look at that beautiful water.

20:51:09 P Sure would like to --

20:51:11 C Well, now there's the Cape. I can see that.

20:51:16 P Sure would like to do a little skin diving now.

20:51:18 P Looks like there are a few clouds over the Cape, too.

20:51:25 C Looks like we went up on the right day.

20:51:57 CC Gemini XII, Houston. Ought to have some pretty good cloud cover in the 16-l area.

20:52:01 C Roger.

20:52:04 P Roll right a little.

20:52:13 CC Try to get a picture of that if you can.

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way

20:52:37 P Did you log in all of these, Jim?

20:52:40 C Yes, I'm writing them all down. (Laughter)

20:52:54 P Well, I'm up to 45 - and I'm almost standing on my head.

20:53:13 C There's the sun to the right, there. The sun behind those clouds is pretty good.

20:53:33 P I don't think that's such a very good pattern.

20:54:11 P This ought to be an interesting one.

20:54:13 C What's that?

20:54:42 P See you next pass.

20:54:47 C Are you all finished?

20:54:49 P Do you suppose these are the clouds he's talking about?

20:54:54 C I don't know what's down there. There's a 16-l into the water. (Laughter)

20:54:59 P Yes. I can see the longitude lines.

20:55:04 C Yes. This must be it right here.

20:55:13 P Well, I might as well use up what we have left in this little thing.

20:55:18 C Hold still while I'm taking your picture.

20:55:25 CC You're about over 16-l now, Gemini XII.

20:55:28 P Okay. There are a lot of clouds out here.

20:55:30 C Roger. We can see - see a lot of clouds.

20:56:09 P Are you ready to smile?

20:56:11 C Hello, there.

20:56:13 P There went one.

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20:56:16 C Did you get the right setting?

20:56:18 P What are you - what are you guessing?

20:56:23 P .5 - .6 maybe.

20:56:28 C What?

20:57:04 P Okay. Smile.

20:57:06 C Okay.

20:57:18 C You're going to have to this time because I can't see a thing, Buzz. It is very hard for me to aline because - you know my tiedown strap, Buzz?

20:57:30 P Yes.

20:57:33 C Well, I'm having a hard time getting out of them.

20:57:42 P Well, maybe we ought to make one more trip to Moorhead.

20:57:47 CC Gemini XII, Houston. 1 minute to LOS. We'd like to have you do the next exercise period over Carnarvon, if possible.

20:57:57 C Roger. Could you give us a GET?

20:58:01 CC Right. I'll give it to you over Canaries.

20:58:18 P Well, I have 50 showing on here. I might as well take a couple until it's all over. Right?

20:58:28 C Yes.

20:58:37 P I don't know whether we got any pictures of this stuff to the back of us. Have you used up what's in the camera?

20:58:45 C Yes. It's out.

20:58:47 P Well, we've taken pictures of each other.

20:58:54 C I don't know whether it's all done or not, but let it run out, Buzz.

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20:59:01 P Now let me raise my visor and I'll smile.  
20:59:23 C Let me see if it's still running.  
20:59:25 P I guess it'll keep cranking away, won't it?  
20:59:28 C Okay. It's 35 minutes. Do you want to start bringing the camera in and getting it all squared away?  
20:59:35 C Okay. Turn it off.  
20:59:36 P I can hear it still running.  
20:59:37 C Yes. I know, but it'll run forever.  
20:59:38 P Yes.  
20:59:39 C I'd just turn it off.  
20:59:52 P Well, we still have a lot of daylight.  
20:59:54 C Well, I want to get lined up. You can probably help me.  
21:00:14 P Well, it looks like the camera is all set.  
21:00:18 P Probably.  
21:00:28 P Which camera do you want in?  
21:00:30 C What did you say?  
21:00:33 P Which camera do you mean you want to get in?  
21:00:35 C I want to get in the EVA 16mm.  
21:00:40 P Okay.  
21:00:42 P Well, the Hasselblad's just about empty.  
21:01:06 P I never did think about taking a picture of myself.  
21:02:25 C Our experiment says to check the circuit breakers. Check your suit pressure.  
21:02:35 P Suit pressure is good.

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## CANARY ISLANDS

21:02:47 CC Gemini XII, Canary CAP COM.

21:02:49 C Roger, Canaries. How do you read us?

21:02:54 CC Loud and clear.

21:02:56 CC Okay. Your Carnarvon acquisition will be 21 plus 38.

21:02:59 C Roger. 21 plus 38.

21:03:04 CC That's affirmative. We will be standing by.

21:03:06 C Roger.

21:03:42 C Look at that old machine bolt, or something like that.

21:03:47 P Yes. I think that looks just like the one that was there before.

21:03:54 C Okay. Everything coming up on SEF ...

21:04:01 P What did you say?

21:04:04 C We're coming up on SEF.

21:04:06 P Yes. I believe you're right.

21:04:40 C You're out of film now?

21:04:42 P Yes.

21:04:54 P There's Africa coming up.

21:05:01 C Let me back this one over to your window.

21:05:06 C See it now?

21:05:08 P Yes.

21:05:11 P What a billiard shot!

21:05:18 P There's no sun, in effect, on those things.

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21:05:54 C The pressure is dropping. We have a pressure gage fluctuation.

21:06:01 P What pressure is that?

21:06:02 C O<sub>2</sub>.

21:06:08 C Okay.

21:06:11 P You have the heater on?

21:06:13 C Canaries, Gemini XII.

21:06:16 CC Go ahead, Gemini XII.

21:06:17 C Roger. We just saw a drop in O<sub>2</sub> psia fluctuating. Did you read that on the ground?

21:06:23 CC It's bouncing a little bit, but it's holding pretty steady down here.

21:06:25 C It's holding at 700 now, but it bounced down to about 400 and then came forward to 600 for awhile.

21:06:32 CC Okay. We have not noticed any big fluctuations in it. We'll keep an eye on it for you.

21:06:37 C Okay. It might be just a gage problem.

21:06:42 P Okay. I'm going to get the camera in.

21:06:52 P Camera is on.

21:06:54 C Okay. I'm going to RATE COMMAND to stop these rates.

21:07:01 P Camera stowed on the seat.

21:07:08 C Watch it, watch it!

21:07:09 P Okay.

21:07:11 C Get your foot out of the way.

21:07:13 C Get your foot out of the way.

21:07:16 P Okay.

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21:07:23 C Okay. You're on the switches to the fuel cells.

21:07:28 P Now we don't want to get those - -

21:07:30 C I can see three of them. Can you look down and see the other three on board?

21:07:37 P The stack switches?

21:07:38 C Yes.

21:07:40 P What do you want?

21:07:49 P Yes. They're all up.

21:07:56 P Why don't you cycle the Delta-P gage? Can you reach down under there?

21:08:04 C Cycle the what?

21:08:06 P The Delta-P gage.

21:08:08 C I can't reach around there now.

21:08:09 P Down low. A little lower. Okay. Forget it.

21:08:12 C No. I can't reach it. I wish my feet hadn't slipped.

21:08:56 P Okay. I'm going to tighten up on my waist tether now.

21:09:11 C Boy! I don't know if I'll be able to get any stars the way this seat is ...

21:09:25 C If you can, get the same position you had before and put - I'll put the strap on the same spot it was before.

21:09:37 CC Gemini XII, Canary CAP COM. About 1 minute to LOS. That O<sub>2</sub> pressure is holding real steady down here.

21:09:42 C Okay. Canaries. Thank you.

KANO

21:11:04 C Can you see the ground, Buzz?

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21:11:11 C Buzz?

21:11:13 P I'm looking. I see nothing. It's pitch-black.

21:11:18 C Okay. We better get started on the stars.

21:11:20 P Okay. What's the first star?

21:11:23 C The first star is Deneb. Let's go to our old friends again. We're going up --

21:11:32 CC Gemini XIII, Houston CAP COM through Kano.

21:11:37 C Roger. Houston.

21:11:42 CC Now, in reference to your exercise over Carnarvon. It'll conflict with S-13, but do the exercise on your schedule. We'll get it off the tape.

21:11:49 C Roger.

21:11:52 C Okay. Looks like we're set for Plan Number 30.

21:12:37 C It's getting near lunch time.

21:12:40 C How does that S-12 look in the pod? Does it have any tendency to go sideways?

21:12:44 P No. It's in good shape, lying flat.

21:13:23 P We were still taking pictures of the sunrise on the first standup. Right?

21:13:28 C Okay.

21:13:32 P Yes.

21:13:40 P Well, there goes the sun.

21:13:44 P We're on our back.

21:13:46 C What?

21:13:48 P I say, we're on our back.

21:13:52 C Okay. That's what I want to know.

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21:13:56 C Do you have the horizon?

21:14:01 P Well, I have the one behind us.

21:14:06 C I have Taurus and Pleiades.

21:14:08 P You do?

21:14:09 C Yes.

21:14:13 P Say, you're in pretty good shape then.

21:14:16 C Well, I don't know if I am or not.

21:14:18 P Are you sure that isn't a lightning bolt?

21:14:23 C It may be. We are on our back, aren't we?

21:14:30 P Right.

21:14:31 C Right.

21:14:32 P That's right.

21:14:35 C Something ...

21:14:36 P The only horizon I can see is exactly behind me.

21:14:40 C I've got the ...

21:14:44 P Yes. It's beginning to come into sight now.

21:15:06 P I don't think you saw stars, did you?

21:15:07 C Yes.

21:15:08 P I'll be darned! Boy, it sure takes me awhile to get dark-adapted being out here - -

21:15:13 C You haven't been out of the sun long.

21:15:14 P Yes.

21:15:20 P It's like coming in out of a snowstorm.

21:15:35 C Look, there's Capella.

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21:15:49 P I'm beginning to pick them up now.

21:15:56 C Man, I tell you, it's hard to see!

21:16:08 P Okay. You're coming up on Talitha now. But you don't want that, do you?

21:16:13 C I want to go off Talitha so just keep it the way it is.

21:16:16 P Okay. You want Deneb. Right?

21:16:23 P Yes. Deneb and the Swans. You're coming right toward it.

21:16:28 C What do you have now?

21:16:32 P You have Talitha right there now, don't you?

21:16:35 C I think I have. I don't quite have - I can barely see all the flight data. I think I can see it, Buzz. I am going to look now. I don't know.

21:16:40 P Have - you've gone right by Talitha now.

21:16:42 C Okay.

21:16:44 P Just keep going the same direction.

21:16:47 C Okay. Good. Do you have - yes, we should hit Deneb now.

21:16:56 P Yes. I think you're heading right for it.

21:17:16 P Okay. It should be that star that's coming into your view now.

21:17:37 P You have her coming up now?

21:17:39 C Yes. I think so.

21:17:40 P Okay. I'm going to stop pretty soon now.

21:17:42 C Right there. Right?

21:17:44 P That should be it - right there.

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21:17:46 C Okay. Stand by. I'll wire it myself.

21:17:49 P Okay. You have it now? You have the right one?

21:17:52 C Yes.

21:17:53 P Okay. That should be right straight ahead now.

21:17:56 P Okay. Let me turn around and get into position now.

21:18:06 P Man, it's black!

21:18:11 C Okay. Stand by for 401.

21:18:16 P All set.

21:18:18 C Send it.

21:18:20 P MAP light.

21:18:25 P How is it holding?

21:18:28 C It had a little drift in there. Wait a second; wait for awhile. Let me see if I can take it off again ...

21:19:16 C Send it.

21:19:18 C Stand by.

21:19:19 P Okay. 401 MAP light.

21:19:25 C Okay. Stand by.

21:19:28 P Yes. There's only one problem. I've got to get hold of it now. Okay.

21:19:35 C 20-second exposures. On my Mark.

21:19:37 P All set.

21:19:40 C MARK.

21:19:42 P Okay.

21:19:56 C 5, 4, 3, 2, 1,

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21:20:01 C MARK.  
21:20:04 C Whenever you're ready.  
21:20:20 C Let me know when you're ready.  
21:20:22 P All set.  
21:20:23 C Stand by.  
21:20:25 C MARK.  
21:20:44 P I think we're rolling just a little bit.  
21:20:47 C Stand by.  
21:20:49 C MARK.  
21:20:54 C That was a 25-second exposure.  
21:20:56 C Okay. 1-minute exposures.  
21:20:59 P Now wait a minute - that one must not have taken.  
21:21:11 P Let's try that one again.  
21:21:13 C Okay. Are you all set?  
21:21:16 P All set.  
21:21:17 C Stand by.  
21:21:18 C MARK.  
21:21:35 C Stand by.  
21:21:40 C MARK.  
21:21:42 P Okay. It took that time.  
21:21:44 C Okay. 1-minute exposures. Keep your feet down.  
Let me know when you're ready.  
21:21:52 P Any time.  
21:21:54 C Stand by.

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21:21:56 C MARK.  
21:22:06 C She is holding on.

**TANANARIVE**

21:22:52 CC Gemini XII, Houston CAP COM through Tananarive.  
21:22:54 C Stand by.  
21:22:56 C MARK.  
21:22:59 C Okay. Set up another 1-minute exposure. Let me know when you're ready.  
21:23:13 P All set.  
21:23:14 C Stand by.  
21:23:16 C Mark it.  
21:23:20 C She is holding right on, Buzz.  
21:23:35 P I'm not so sure the camera is holding right on.  
21:23:40 P I think we could do a little improving on this cable release.  
21:23:54 C Stand by.  
21:23:59 C MARK.  
21:24:00 C 2-minute exposures. Let me know when you are ready.  
21:24:13 P All set.  
21:24:16 P Stand by.  
21:24:20 C MARK.  
21:24:59 P 2 minutes?  
21:25:01 C Yes.  
21:25:13 C Stand by.

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21:25:18 C Mark it.  
21:25:20 P What was that?  
21:25:24 C Recorder tape.  
21:25:26 P Okay.  
21:25:28 C Another 2 minutes.  
21:25:31 P All set.  
21:25:33 C Stand by.  
21:25:35 C MARK.  
21:25:52 P Looks like it holds pretty well.  
21:26:05 CC Gemini XII, how do you read?  
21:26:06 P This is the last one here. Right?  
21:26:08 C Yes.  
21:27:32 C Stand by.  
21:27:35 C MARK.  
21:27:40 C Okay.  
21:27:45 C Okay. We're going to turn the light on for a second.  
21:28:00 C Okay. We're going over to ...  
21:28:07 P Do you think you can find it?  
21:28:09 C Maybe.  
21:28:10 P ...  
21:28:11 C ...  
21:28:24 P It's not very far ...  
21:28:32 P ...

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21:28:37            ...  
21:28:45    C     Look to the right ...  
21:28:48            ...  
21:28:54    P     ...

## TANANARIVE

21:29:19    CC     Gemini XII, Houston CAP COM. 1 minute at  
              Tananarive LOS.  
21:29:26    C     Roger. ... 2 hours. Now ...  
21:29:32    CC     Roger. Understand.

## CARNARVON

21:37:38            ...  
21:37:42            ... Stand by.  
21:37:45    C     Let's take it off a little bit.  
21:37:48    P     You want me to take it off?  
21:37:49    C     No. Just let it settle down.  
21:37:53    C     ...  
21:37:54    P     Okay.  
21:37:55    C     The best I can do, Buzz. ... see ... my microphones  
              are in my eyes.  
21:38:24    C     Okay. Stand by for 20-second exposure.  
21:38:33    C     All ready?  
21:38:34    P     All ready.  
21:38:36    C     MARK.

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21:38:48 P You know, when I rub my gloves together, there is static electricity between them.

21:38:54 C Stand by.

21:38:56 C MARK.

21:39:08 C Stand by.

21:39:10 C MARK.

21:39:26 C Stand by.

21:39:28 C MARK.

21:39:32 C These are 1-minute pictures.

21:39:38 CC Gemini XII, Carnarvon standing by.

21:39:41 C Roger.

21:39:43 C All set?

21:39:45 C Stand by.

21:39:47 C MARK.

21:40:44 C Stand by.

21:40:46 C MARK.

21:40:52 P Next one.

21:41:01 C Stand by.

21:41:03 C MARK.

21:41:17 P How is it holding? Pretty well?

21:41:23 C Yes. I had it just a little bit left, but it stayed ...

21:41:28 C But that's okay.

21:42:01 C Stand by.

21:42:03 C MARK.

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21:42:04 C ... second on ... 10-minute one.

21:42:24 C Stand by.

21:42:26 C MARK.

21:42:38 CC Gemini XII, Carnarvon.

21:42:44 CC Gemini XII, Carnarvon.

21:42:45 C Go ahead.

21:42:46 CC Roger. We request that you record a GET and start a Pilot Exercise.

21:42:49 C Roger. Will do.

21:43:02 P Time the exercise involved in holding this cable release down for 2 minutes.

21:43:07 CC That doesn't count.

21:43:08 P It doesn't count?

21:43:15 P No useful work is being done.

21:43:20 C Just keep your feet out of the Fuel Cell switches.

21:43:25 P ...

21:44:01 P I do believe the sun is coming up.

21:44:12 C Is it?

21:44:14 P Now, we'll get one more and I may not ...

21:44:20 C 5 seconds to go. Stand by.

21:44:25 C MARK.

21:44:28 C Say when you're ready.

21:44:35 P Okay.

21:44:37 C Stand by.

21:44:39 C MARK.

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21:44:47 P ...  
21:44:48 P Just took the sun on the dipole.  
21:44:49 P We'll make this a 1-minute exposure.  
21:45:34 CC 1 minute to LOS and standing by.  
21:45:37 C Roger. Stand by.  
21:45:41 C MARK.  
21:45:42 P That's just 13 exposures, Carnarvon, with 1 minute  
on ... Hawaii a bit of the sunrise.  
21:45:48 CC Okay.  
21:45:49 C To record this one.  
21:45:53 P Okay.  
21:45:54 P Okay. Let me know when you're ready with the camera.  
21:45:58 C Okay. Stand by a second. Let me --  
21:46:03 C Just better hold there, Buzz. We'll just - we'll  
keep it.  
21:46:29 C Is that the 70mm Hasselblad, Buzz?  
21:46:32 P ...  
21:46:35 C Okay.  
21:46:39 P ... two pictures ...  
21:46:44 C Okay. Do you feel that you ... just a few minutes?  
21:46:47 P What?  
21:46:48 C Do you feel that you have ... a few minutes?  
21:46:51 P No, man!  
21:46:54 C ...

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## CANTON

21:57:52 CC Gemini XII, Gemini XII, Houston through Canton.  
Over.

21:57:57 C Roger, Gemini XII. We're about ...

21:58:05 CC Gemini XII, this is Houston. Say again, please.

21:58:08 C Roger. We hear you loud and clear through Canton.  
How us?

21:58:13 CC Okay. And when you have a chance, would you pass  
us the GET of your exercise on the Pilot, please?

21:58:22 C Roger. Sorry. That's 21:52 ... 21:51.

21:58:30 CC Roger.

21:58:51 C ...

21:59:17 P What's making all that noise?

21:59:18 C The Canton remote.

21:59:19 P Okay.

21:59:25 C What's your suit pressure?

21:59:30 P ...

22:01:54 P ...

22:02:00 CC Gemini XII, Houston. How's the hatch-closing go?

22:02:03 C ...

22:02:04 P ...

22:02:11 C The first time I had it made, once I picked up those  
stars.

22:02:16 P The problem is it takes so long for me to get dark-  
adapted.

22:02:20 C Yes, and see I'm dark-adapted already.

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22:02:22 P ...  
22:02:31 CC Gemini XII, Houston.  
22:02:35 C Go ahead, Houston. This is Gemini XII.  
22:02:37 CC Roger. How'd the hatch-closing go?  
22:02:41 C Roger. We're at 2 psi right now. We want to hold off until we build up some pressure.  
22:02:46 CC I didn't quite copy that. Would you say again, please?  
22:02:52 C We're at 2 psi ... continue pressurizing the cockpit.  
22:03:02 CC Houston. Copy.  
22:03:06 C Houston, Gemini XII here. The hatch closed rather easily.  
22:03:12 CC Houston. Copy.  
22:03:36 C ...  
22:03:41 P ...  
22:04:05 C ...  
22:04:36 C There it is, coming up again.  
22:05:07 C ...  
22:05:17 P ...  
22:05:24 C ...  
22:05:43 CC Gemini XII, Houston. 1 minute to LOS. Standing by.  
22:05:46 C Roger. We're ...  
22:05:53 CC Houston, copy.  
22:06:16 C ...  
22:06:41 C ...

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22:06:46 P I don't know.  
22:06:49 C Yes. I can read you.

## CALIFORNIA

22:15:48 CC Gemini XII, Houston standing by at California.  
22:16:04 CC Gemini XII, Houston.  
22:16:07 C Go ahead, Houston.  
22:16:09 CC Roger. Would you turn your Delta-P circuit breaker on and let me have an idea how you're coming there? I've got a rather lengthy update. If you don't want it now, we'll give it to you later.  
22:16:19 C Okay. The Delta-P circuit breaker is up and on; we still have the two lights and we're right in the middle of stowing all this stuff, so how about giving it to us later?  
22:16:29 CC Okay. We're standing by.

## TEXAS

22:23:04 CC Gemini XII, Houston.  
22:23:22 CC Gemini XII, Houston.  
22:23:27 C Go ahead, Houston. Gemini XII.  
22:23:29 CC Roger. Would you check your Delayed Time circuit breaker, please?  
22:23:35 C Stand by.  
22:23:45 C Roger. Appears to have been bumped, but we put it forward.  
22:23:49 CC Okay. Thank you very much. And while you're listening, we have an eat period for you starting at 23:00 to 23:50, and during that eat period at

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23:17 over Carnarvon, we'd like you to purge the fuel cells, Section 2 and Section 1; we'll update the rest of your Flight Plan at Carnarvon.

- 22:24:13 C Okay. That's purge fuel cells over Carnarvon. We'll be standing by for a call for them to do that.
- 22:24:17 CC Okay. That will be 23:17:00.
- 22:24:24 C 23:17. Okay. Is there any S-5/S-6 of interest on this pass?
- 22:24:27 CC That's a negative. We're going to delete it. That's in the Flight Plan Update that we'll pass to you whenever you're ready to copy it.
- 22:24:36 C We're getting set up on this stateside pass right now.
- 22:27:37 CC Gemini XII, Houston.
- 22:27:38 C Go ahead.
- 22:27:40 CC At your convenience, would you go back to FCI, please?
- 22:27:46 C Roger. Will do. What is our orbit now?
- 22:27:50 CC Wait 1.
- 22:28:00 CC Gemini XII, Houston. You're still in a 139 by 163.
- 22:28:07 C 139 by 163. Thank you.
- 22:28:11 CC Jim, for your information, as you pass Bermuda there, the Blue Angles are putting on a little show right now.
- 22:28:17 C Right.
- 22:28:18 CC Excuse me, over GBI.
- 22:28:24 C We'll be the sixth man.
- 22:28:38 CC And Gemini XII, this is Houston. If you have a chance, could you give us 15 seconds on what happened to your tiedown?

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22:28:47 P Yes, Pete. It wasn't the tiedown I found out after we depressurized, by the way. It was a lap belt let go.

22:28:51 CC Roger. Did it break, or did it just come loose?

22:28:54 P It looks like it maybe wasn't fastened correctly or something like that. It just came loose. I tried it again after we got down and it was okay.

22:28:59 CC Okay. Thank you.

22:29:02 P ... up against the top and it made it very difficult to see anything, but we may have to get the stars on the second pass.

22:29:12 CC Okay. Thank you.

## BERMUDA

22:30:33 C Houston, Gemini XII.

22:30:34 CC Go ahead.

22:30:38 CC Go ahead, Gemini XII. We're listening.

22:30:49 CC Gemini XII, this is Houston. We're listening.

22:30:53 C Roger. A possible problem popped up before EVA. We attempted a urine dump and weren't too successful. We'll give this another try here as soon as we get squared away.

22:31:07 CC Okay.

22:31:18 CC Gemini XII, Houston.

22:31:21 P Did you guess what the Command Pilot did not jettison on that last EVA?

22:31:30 CC Yes, we can guess. Would you check your Secondary Coolant Valve circuit breaker, please?

22:31:57 CC Gemini XII, Houston. Did you copy that?

22:32:18 C Gemini XII, negative.

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22:32:20 CC Roger. Check your Secondary Coolant Valve circuit breaker. The solenoid to the urine dump is wired to that.

22:32:49 CC Gemini XII, this is Houston. Check your Secondary Coolant Loop circuit breaker.

22:33:01 C Roger. Understand you want the Secondary - wait a minute. We've got that one on.

22:33:11 C Houston, Gemini XII. Say again?

22:33:14 CC Roger. Check that it's on. Is that on?

22:33:42 CC Gemini XII, Houston. We have 1 minute to LOS.

22:34:03 CC Gemini XII, Houston. How do you read me now?

22:34:05 C Much better now, Houston.

22:34:09 CC Okay. Check the Secondary Coolant Loop circuit breaker on.

22:34:19 C All Coolant Loop circuit breakers are on.

22:34:21 CC Okay. And have you tried it - the urine dump, or are you going to?

22:34:25 C We haven't tried yet. We'll give her a try here.

22:34:30 CC Okay. We're coming up on about 30 seconds to LOS at Antigua.

22:34:34 C Okay. It's beginning to fall into place now. I heard somebody saying that when you have that Secondary Coolant Valve circuit breaker open, that you can't do a urinal. Is that right?

22:34:45 CC That's affirmative. That's affirmative.

22:34:47 C That's the configuration we're in.

22:34:49 CC Okay.

CANARY ISLANDS

22:39:10 CC Gemini XII, Canary CAP COM.

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22:39:15 C Canary, Gemini XII. Go ahead.

22:39:17 CC Roger. We'd like to check the status of your RCS heaters.

22:39:22 C Roger. RCS heaters have been on since ... Check List.

22:39:26 CC Okay. And I'll verify that your T/M switch is in COMMAND position.

22:39:35 C T/M in COMMAND.

22:39:36 CC Roger. Sending you a TX.

22:42:30 CC Gemini XII, Canaries. About a minute to LOS. Standing by.

22:42:34 C Roger, Canaries. We'll be able to take an update here shortly.

22:42:41 CC Okay. I guess we'll give it to you over Carnarvon. And we'll see you in the morning.

22:42:51 C Roger.

## KANO

22:45:53 CC Gemini XII, Gemini XII, Houston through Kano. Over.

22:45:59 C Roger, Houston. Gemini XII here.

22:46:01 CC Roger. Did you get the - did Buzz get the CLV strips on the EVA?

22:46:09 C Naturally.

22:46:11 CC Very good! Very good!

22:46:30 CC Gemini XII, Houston. We have about a 5-minute pass here at Kano. We're standing by. You'll be updated over Carnarvon.

22:46:39 C Roger. Understand.

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22:50:10 CC Gemini XIII, Houston. 1 minute to LOS; Kano standing by.

22:50:16 C Roger, Houston. We're breaking up somewhat now.

22:50:18 CC Okay.

22:52:15 C At 22:52, finished first ... of EVA breaking out the B02 ... DOB and ... Additional amount of air and water. At 22 hours and 56 minutes after using water for food preparation, Delta-P lights both went out.

## TANANARIVE

22:57:24 CC Gemini XII, Gemini XIII, Houston through Tananarive standing by.

22:57:26 C Gemini XII. Roger.

22:58:04 C Houston, Gemini XII here. We won't be copying because you got us - a brief résumé of what we have coming up.

22:58:10 CC Okay. We'll do that. We have you eating as you are now. And around 24:13 elapsed we'd like an S-11, Mode A, and then on the next revolution at 25:43 another Mode - S-11, Mode B. Along about 27:05, we'll get the X-Ray Experiment back on, and at 27:13 and S-29 on Fomalhaut. And then we have you at another eat period. We'll update your PLA Update at 28:13 over the CSQ and get a few things at that time over Hawaii a Crew Status Report, 28:27. You'll have another fuel cell purge and right around 29:00 we'd like to catch that M-408 again, which we missed yesterday. And then we're going to have you go to bed at 29:30.

22:59:19 P Okay. Very good. Thank you.

22:59:21 CC Okay. We'll give you the exact details of that, whenever you're ready to copy. You can get it at Carnarvon, or we'll give it to you at the States again.

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22:59:34 P Okay. Was that S-29 at Fomalhaut?

22:59:39 CC That's affirm.

22:59:55 C This is Gemini XII.

23:00:05 CC Go ahead, Gemini XII.

23:00:11 C All those experiments are done.

23:00:15 CC Say again, Gemini XII. I'm not reading you.

23:00:24 CC Gemini XII, Houston. Say again. I didn't copy that.

23:00:31 C I said; with all the experiments, can we get the job done?

23:00:38 CC Roger.

23:00:51 CC Gemini XII, Houston.

23:01:02 P Go ahead, Houston.

23:01:03 CC Roger. Now on your EVA tomorrow, you'll be going a revolution later, but it will be approximately the same GET as scheduled. You realize that since you have not gone into high orbit you'll pick up about one whole revolution in time, but we are going to keep the Flight Plan going according to the GET. This also means you'll recover a revolution later, but it will be approximately the same GET as originally scheduled.

23:01:43 P Roger. Understand.

23:04:37 CC Gemini XII, Houston. 1 minute until LOS Tananarive. Standing by.

## CARNARVON

23:13:04 CC Gemini XII, Carnarvon.

23:13:08 C Roger, Carnarvon. Gemini XII here.

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23:13:10 CC Okay. I'm shipping up a Tx.

23:13:17 CC Okay. And I'd like you to turn your encoder off a minute so we can get a RESET TIMER RESET command to the Agena.

23:13:24 C Roger.

23:13:42 P Now we're standing by for the update.

23:13:43 CC Okay. You can turn your encoder back on.

23:13:49 CC All right. We have a fuel cell purge Section 2, followed by Section 1 and you're ready to copy the update. Is that affirmative?

23:13:58 C Roger. We'll start the fuel cell purge. You'll give us the update.

23:14:01 CC Okay.

23:14:04 CC 23:13:22: S-11, Mode A. 25:43:33: S-11, Mode B. 27:05:00: X-Ray, ON, Beta, WITH MAG. 27:13:36: S-29, Fomalhaut at yaw south 50 degrees, pitch up 50 degrees. From 27:50 to 28:30, eat period. 28:12:00 at CSQ, a PLA Update. 27:27:00: at Hawaii you'll have a Crew Status Report; a fuel cell purge, Section 1 then 2, and leave the Cryo Read in H<sub>2</sub> for the sleep period. At 28:57:00: M-408, Mode A. 29:30:00: start the sleep period. H<sub>2</sub> heater off for the sleep period.

23:16:10 CC At 38:40:00: end sleep period. Did you copy that?

23:16:22 C Roger. We got everything except about leaving the Cryos. Is that H<sub>2</sub> at Hawaii with the Crew Status Report?

23:16:30 CC That's affirmative.

23:16:35 C Roger. Be informed that our Delta-P lights on the fuel cells go out while we consume water in making the meals.

23:16:43 CC Okay. We copy that.

23:17:25 CC Okay. And would you let us know when you're through

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with the fuel cell purge?

23:17:28 C Will do.

23:19:25 P Carnarvon, Gemini XII is through with the fuel cell purge.

23:19:28 CC Okay.

23:21:11 CC Gemini XII, Carnarvon. You have 1 minute to LOS. We'll be standing by. You should be coming into daylight.

23:21:16 C You're right.

23:21:17 CC What kind of a day do we have?

23:21:20 C Well, it looks pretty good up here.

23:21:23 CC Great!

23:21:29 C What have you got down there?

23:21:32 CC Haven't had a chance to look at it yet.

23:22:00 C Did anybody ever find out what was wrong with the radar?

23:22:04 CC No. Not to my knowledge. Seems like it was sort of a problem in transmission.

## CANTON

23:33:48 CC Gemini XII. Gemini XII, Houston through Canton. Over.

23:33:55 C Roger. Houston through Canton. Over.

23:33:59 CC Roger. Could you tell me how many S-29 film pictures you used on your eclipse photos?

23:34:13 C Roger. I took about four of them. One was ... time and I think the one taken there was probably a fairly good picture. The one at ... I guess when it was beginning to break out at that time, so I

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... one more short one.

23:34:35 CC Roger. Understand about four photos.  
23:34:39 C Roger. That's from the S-29 camera.  
23:34:44 CC Okay. Thank you.  
23:34:46 C And how were we supposed to make that through an opaque window shade?  
23:34:51 CC I didn't copy that. Say again, please.  
23:34:54 C Roger. The update said that the right window was supposed to have an opaque shade on it.  
23:35:02 CC I'll have to check on that for you. I wasn't here when all that was going on.  
23:35:06 C Yes. We just ... that.  
23:35:21 CC Gemini XIII, Houston. We have about 6 minutes here at Canton. We're standing by.  
23:35:27 C Roger.

## HAWAII

23:39:26 CC Gemini XII, Hawaii. Standing by. We have nothing for you.  
23:39:30 C Roger. Hawaii.

## CALIFORNIA

23:49:10 CC Gemini XII, Houston.  
23:49:15 C Go ahead.  
23:49:17 CC Roger. I've got a few things to pass to you here. First, if you haven't turned on your Manual O<sub>2</sub> Heater, would you turn it to ON, please? And pump it up to 700.

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23:49:35 C Okay.

23:49:37 CC And on your S-29 Experiment, between each series of photos would you skip one frame?

23:49:53 C Okay. Will do.

23:49:55 CC And I have a Node Update if you're ready to copy.

23:50:04 C Houston, ... now. We'll get it a little bit later.

23:50:10 CC Okay. And also, I'd like to talk to you about your fuel cells when you have time.

23:50:17 C Okay.

23:50:20 CC You want it now?

23:50:22 C Go ahead.

23:50:24 CC Okay. What we feel is happening here on the ground is that you are leaking some O<sub>2</sub> into the water line from the fuel cell, and as you drink water, you relieve the pressure. We feel that you've put enough oxygen into the water by now that you've completely expanded the N<sub>2</sub> bladder, and therefore you're building up some higher water pressure. And as you drink water, it can go down to its normal level and turn out the Delta-P lights as you fill the Spacecraft tank. Now to get rid of as much water as possible, we're going to ask you to purge oxygen once every revolution for 30 seconds and then we will continue normal hydrogen purges. But in doing that, the feeling is that when you first open the Oxygen Purge Valve, you jettison what water is in there with the oxygen flow, and by doing a 30-second purge each revolution you will get rid of as much product water as possible. And we will call you when we want you to do the 30-second purge over a station once a revolution. Do you have any questions on that?

23:51:55 C Roger. What does that do to our oxygen supply?

23:51:59 CC It won't effect it because you're purging for 30 seconds once per revolution, and that's the same as for 2 minutes every 6 hours.

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23:52:10 C Okay.

23:52:11 CC We are watching your oxygen very carefully and have the feeling that we'll be able to keep you okay on O<sub>2</sub>. No problem. ...

23:53:02 C ...

23:53:08 CC Gemini XIII, Houston. Would you pass me a PQI at your convenience?

23:53:17 C We have 52 percent.

23:53:20 CC Roger. Understand 52 percent.

23:53:24 C Right.

## GUAYMAS

23:55:11 C Gemini XIII, Houston. In about a minute and a half, I'm going to ask you for a short count. We're trying to remote through an aircraft here at Texas just to check it out and you need not acknowledge this transmission. I'll call you in about 2 minutes.

23:57:08 CC Gemini XIII, Houston. Would you give me a count to 10 and down, please? That's all we need.

23:57:17 C ... 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1. ... and out.

23:57:30 CC Gemini XIII, Houston. Outstanding! Thank you.

## ASCENSION

24:17:28 CC Gemini XIII, Houston. Standing by at Ascension. Over.

24:18:13 CC Gemini XII. Gemini XII, Houston. Standing by at Ascension. Over.

24:18:21 C Busy.

24:18:25 CC Gemini XIII, this is Houston. Say again. Oh, busy!

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I got you; never mind.

24:23:51 CC Gemini XII, Houston. 1 minute to LOS as Ascension.  
Standing by.

**TANANARIVE**

24:34:31 CC Gemini XII. Gemini XII, Houston standing by at  
Tananarive.

24:35:23 C Houston, Gemini XII.

24:35:29 CC Go ahead, Gemini XII. This is Houston.

24:35:32 C Roger. We seem to be having the same problem that  
we were having yesterday in getting the Agena to  
hold ... gyrocompass ... with ...

24:35:55 CC Roger. Did you use an FCI?

24:36:00 C Negative. ...

24:36:03 CC Okay.

24:36:34 CC Gemini XII, this is Houston. The last time we were  
able to look at you, you had not stabilized at the  
time that you turned the ACS off. And the horizon  
sensors were still on. You might go over your whole  
set of commands again and ensure that it has damped  
itself before you turn it off.

24:37:02 C Before we turn it on, you mean?

24:37:05 CC Do you have it on now?

24:37:09 C Negative. It's not on now.

24:37:15 CC Okay. But what you're telling me is that when you  
did have GYROCOMPASSING ON, it didn't seem to be  
responding. It was overshooting and coming back.  
Is that correct?

24:37:25 C That's affirmative.

24:37:26 CC How far was it overshooting?

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24:37:31 C 90 degrees.

24:37:33 CC 90 degrees?

24:37:35 C Yes. We had stopped it at the proper heading, Pete, and sent the proper commands to it for TDA forward. Damped all rates ... 90 degrees ... double-checked our commands.

24:37:58 CC I see. Okay. Well, let us kick it around for a little bit.

24:38:40 CC Gemini XII, Houston. When did this happen? Were you over the States? Was this while you were still over a section and over the range?

24:38:53 C This occurred just after ...

24:39:59 CC Okay.

## CARNARVON

24:48:25 CC Gemini XII, Carnarvon.

24:48:29 C Go ahead, Carnarvon.

24:48:30 CC I'm going to send you a TX.

24:48:37 C Roger.

24:48:43 CC Okay. We've got an Agena Clock Reset Load. I'd appreciate it if you'd turn your encoder off.

24:48:51 C Encoder off.

24:49:48 CC Okay. Gemini XII, Carnarvon. You can turn your encoder back on again.

24:50:33 CC Gemini XII, Carnarvon.

24:50:35 C Go ahead.

24:50:37 CC Okay. We show you in FC2, Agena 0 0 0, you're BEF. Is that affirmative?

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24:50:44 C Roger. We're not too sure yet where that area - we can't see the ground at all. We're just about ready to ask you what you have down there.

24:50:52 CC Right. We show the ACS is on, the horizon sensors are on and you are gyrocompassing the TDA forward. Everything looks pretty steady down here. Can you get any idea from up there?

24:51:02 C Yes. We're steady from here, too. I guess maybe that's just given us time to gyrocompass around and get settled down.

24:51:08 CC Okay.

24:52:17 CC Gemini XII, Carnarvon.

24:52:19 C Go ahead.

24:52:20 CC Okay. Just to remind you that when you go through that Check List and it comes to HORIZON SENSORS OFF, you might put it in there. It seems as though you went over the States with the thing still on and they didn't notice the OFF command.

24:52:33 C Roger.

24:52:34 CC Okay. And right now you're perfect. You're there, TDA forward and no yaw ... rates at all. You're real great! So you might just have to give it a little more to gyrocompass.

24:52:47 C Right.

24:56:08 CC 1 minute to LOS at Carnarvon and standing by.

24:56:13 C Roger.

## HAWAII

25:14:16 CC Gemini XII, Hawaii. We'd like to do a 30-second fuel cell purge whenever you're ready.

25:14:26 C Roger. Go ahead.

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25:14:33 C Which section would you like?

25:14:35 CC Well, we'd like both sections. You can start out with Section 1 first.

25:14:39 CC Roger. ... Section 1, 30 seconds.

25:14:50 CC And that's oxygen only on this.

25:14:53 C Roger. O<sub>2</sub> only.

25:15:19 C Pressure on Section 1.

25:15:22 CC Roger.

25:15:34 C Pressure on Section 2.

25:16:04 C Purge off ...

25:16:07 CC Okay. Roger. Thank you. It looked good. We have nothing further for you ... We'll be standing by.

25:16:13 C Roger.

25:16:46 C And we have no Delta-P lights at this time, and no Delta-P lights during the purge.

25:16:53 CC Were they on before the purge?

25:16:55 C That's negative. They were off the whole time.

25:17:27 CC Gemini XII, Hawaii. Was the EVA Jettison List normal, or were there any exceptions on it?

25:17:39 C It was normal. Except the Command Pilot's UVD was not jettisoned.

25:17:45 CC Thank you.

25:21:51 CC Gemini XII, Hawaii. We'll have LOS in a minute.

25:21:57 C Roger.

CALIFORNIA

25:25:43 CC Gemini XII, Houston. How's everything going?

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25:25:50 C Roger. This pass looks a lot better, Houston, than the last one. We have it pretty well stabilized.

25:25:58 CC Okay. I kind of think that from what we could see on the ground, that you may not have had enough time for the Agena to settle down. That's all. And if you can get her set up 15 minutes or so in advance, why I think it'll work all right for you.

25:26:15 C All right. We're following the procedures of the S-11. We're upside down now.

25:26:22 CC Okay. I've got an S-6 Update for you, which the weather people are quite interested in. Can I give it to you now?

25:26:34 C Go ahead.

25:26:35 CC Okay. Time is 26:49:45; will be in S-6. The yaw is 0, pitch down 30. And it seems to be some peculiar air mass phenomena. I haven't quite got it defined - I guess there are some clouds associated with it. They'd like to get a picture of it.

25:27:00 P Okay. I'll give a try.

25:27:03 CC Okay. And have you gotten your Node Updates?

25:27:08 C ...

25:27:10 CC Okay. Time, 25:04:17: Node, Rev 16; 151.0 east and the right ascension is 11 hours, 21 minutes.

25:27:32 C All right. Thank you.

25:27:34 CC And in the world of sports today: Notre Dame 64, Duke nothing; Mississippi 14, Tennessee 7. And we'll have some more for you in a little while.

25:27:45 C Sounds great!

ANTIGUA

25:42:02 CC Gemini XII, Houston. Do you have time to copy another update or not? I don't want to bother you.

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25:42:21 P A quickie.

25:42:23 CC Okay. It's another S-6. 28:09:54: S-6; yaw 0, pitch down 30. It's a centralized storm near the Philippines. We'd like to get those pictures, if possible.

25:42:47 P All right.

25:42:49 CC Thank you.

25:45:01 CC Gemini XIII, Houston. 1 minute to LOS. Antigua standing by.

25:46:17 C The camera already on? I mean, is the lens all the way out? 3 minutes.

25:46:53 P I thought it was all the way out. Maybe it isn't. I keep doing the same thing. It won't release.

25:47:11 C Oh, shoot! We're missing the pictures.

25:47:25 P All right. We'll go the way it is.

25:47:28 C 4 minutes and 20 seconds.

25:47:30 P Do we have to wait that long?

25:47:32 C Mark it. We're right there right now.

25:47:37 P Right now?

25:47:38 C Yes. Hit it.

25:47:53 P ... When they don't release, the darned thing shakes all over the place when you try and hit them. ...

25:47:58 C Mark it.

25:47:59 P Oh, shoot! That won't work.

25:48:01 C 5 minutes and 40 seconds.

25:48:25 C 10 seconds to go.

25:48:35 C Mark it.

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25:48:57 P How many seconds?

25:48:59 C 40.

25:49:14 C Mark it.

25:49:17 C We're non-filter now.

25:49:19 P Go without filters. Wait a minute. All right.

25:49:26 C Take the filter off.

25:49:50 C 5-foot exposure.

25:50:21 C Stand by.

25:50:32 P Cleaned out.

25:50:33 C Mark it.

25:50:34 P Right.

25:50:47 C Mark it.

25:50:54 C No release?

25:50:59 P No. Now it released, finally.

25:51:06 C All right, a green filter.

25:51:54 P How long?

25:51:56 C 3 - 4 minutes.

25:51:58 P ...

25:52:01 C Yes. Just pull on it before you change it.

25:52:34 P Let me know as we come close.

25:52:39 C Okay.

25:52:52 C Are you taking good ... shots?

25:53:06 P Is that good?

25:53:07 C No.

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25:53:09 P Oh.

25:53:10 C ...

25:53:14 CC Gemini XII, Gemini XII. Houston is standing by to talk to you.

25:53:18 C Roger. We're in the midst of an S-11.

25:53:23 CC Houston. Copy.

25:53:25 P ...

25:53:38 P Now I've got a green filter up. How many seconds?

25:53:42 C 20. Coming up on 11 minutes. 25 seconds to go.

25:53:57 P Well, shoot. ...

25:54:04 C 30 seconds.

25:54:06 P We tried it.

25:54:07 C A trial one.

25:54:16 P This is a good one.

25:54:17 P Well, what happened?

25:54:18 C Something wrong with that lens? Are you uncocking it to put the lens in?

25:54:26 P What? No. I can't get it to take the darn picture.

25:54:37 C Can you take one now?

25:54:39 P Well, I might.

25:54:41 C Okay. Take one any time. ... Okay.

25:54:52 P Looks like - feels like it might come out.

25:55:02 C Mark it.

25:55:04 P How about that? Better not fool with it, ...

25:55:06 C Without filter?

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25:55:07 P Yes. That's what I was afriad of. Just as soon  
as I get the filter off, it will move.

25:55:18 C Have you got the lens on real far?

25:55:20 P What?

25:55:21 C Okay.

25:55:22 P If you put it on real tight, it won't take.

25:55:24 C Okay.

25:55:33 P Okay. Without filter.

25:55:36 C Stand by. 3-second exposure.

25:55:37 P How many?

25:55:38 C 3.

25:55:44 C MARK.

25:55:46 C MARK.

25:55:51 C Okay. 50 seconds.

25:55:55 P What color?

25:55:57 C Yellow.

25:56:21 C Any time. You all set?

25:56:23 P All set.

25:56:24 C Mark it.

25:57:10 C Stand by.

25:57:15 C Mark it.

25:57:16 P Okay. How long do we have?

25:57:21 C We wait 8 minutes.

25:57:22 P Okay. Filter?

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25:57:24 C Yellow.

25:57:26 P Just what we have on, right?

25:57:28 C Yes.

25:58:10 P I looked down and I discovered a lens position. The shutter was on trigger and another position would not release.

25:58:42 C With lens tight, the shutter wouldn't release?

25:58:45 P Yes.

25:59:04 CC Gemini XII, Houston. 1 minute to LOS. Antigua standing by.

25:59:14 C Roger.

25:59:16 P Would you believe a problem or two with the Maurer?

25:59:23 CC This is Houston, Gemini XII. I didn't copy that.

25:59:29 P Roger. We're having a little difficulty with the shutter not always opening when depressed and not always closing when released.

25:59:39 CC Roger. Understand.

26:00:21 P (Singing)

26:07:17 C S-l1 again. We're on the refiller.

26:07:23 P I hate this experiment.

26:07:26 C (Laughter)

26:07:28 P I hate it with a passion!

26:07:31 C All set?

26:07:35 P All set.

26:07:37 C Stand by.

26:07:39 C MARK.

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26:07:51 P How long?

26:07:52 C 20 seconds.

26:08:01 C MARK.

26:08:04 P ... monsieur.

26:08:07 C That's it.

26:08:09 P Okay. Well, look here's Fomalhaut coming up here. Why don't we take a look at what we're going to be getting on the next run?

26:08:14 C Okay. Fine.

26:08:16 P As a matter of fact, we can get that thing right here. You know that?

26:08:23 C We could probably do it.

26:08:30 C There's 29!

26:08:42 P Now. We want GEO RATE OFF here, right?

26:08:46 C What?

26:08:49 P 350?

26:08:54 C Yes. Wait - hold it now - hold it now. What do you want it off for?

26:09:00 P To go inertial. Is that right? 350?

26:09:04 C Yes.

26:09:08 P Okay. Now 40.

26:09:11 C Can you see Fomalhaut out there?

26:09:14 P Yes.

26:09:23 P Oh, shucks!

26:09:26 C What's the matter?

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26:09:28 P What are we supposed to take a picture of now?  
26:09:34 C Nothing. We're finished with the 29.  
26:09:37 P What?  
26:09:38 C We're finished with this 29.  
26:09:39 P No. I took 11.  
26:09:40 C Or S-11.  
26:09:43 P Yes. Well, what are we supposed to be taking a  
picture of this time?  
26:09:47 C Oh. You mean dash 29?  
26:09:48 P Yes. Here, I'll see what I can see.

## TANANARIVE

26:09:54 CC Gemini XII, Gemini XII, Houston at Tananarive.  
Over.  
26:10:01 C Roger, Houston.  
26:10:04 CC Roger, Gemini XII. Could you tell me how much  
S-29 film you have remaining? And with respect  
to your camera problem, you might check that the  
f-stop has not slipped underneath the tape at the  
top of the detent. It is possible that the shutter  
won't operate quite correctly, and also, if the  
lens isn't rotated all the way into the detent on  
the camera, this also may happen.  
26:10:36 P Yes. We finally figured a way to get it to work.  
26:10:42 CC Say again, please.  
26:10:44 C Just tell them what happened.  
26:10:46 P Roger. We got it.  
26:10:49 CC Houston copies.

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26:10:52 P Okay. What are we taking now?

26:10:59 P We have about between 10 and 15 S-29 and S-11 shots left on this magazine, and we have another full magazine.

26:11:10 CC Houston copies.

26:11:33 P Well, I wonder if that's Saturn or is that Seturn?

26:11:42 C No. This is Fomalhaut here.

26:11:48 P Oh. Yes. Okay. I've got Fomalhaut. Yes. But it's between Saturn and Fomalhaut.

26:12:01 C Which way?

26:12:02 P Well, I don't know. Well, look. Let's just wait until we go around and get the doggone thing. We have time and we can.

26:12:11 C Okay. Well, that's bound to be Saturn over there - to the left.

26:12:15 P Yes. I'm quite sure. I can't see.

26:12:18 C Well, then we must be coming right down on Pegasus.

26:12:21 P Pegasus.

26:12:22 C I see - right there.

26:12:23 P Can you see it out to the left?

26:12:27 C Yes. Well, part of Pegasus is set, I think. Yes.

26:12:32 P Yes.

26:12:33 C It's setting now.

26:12:41 P Oh yes.

26:12:45 C ...

26:12:46 P I see one square just about to go. Right?

26:12:49 C Let me see what the pattern is. Well, Alpheratz

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is setting, too.

- 26:13:04 P Why, is it - -
- 26:13:05 C It's down.
- 26:13:06 P -- down towards an equilateral triangle, or something like that?
- 26:13:09 C Just about, yes. 30 to 39.
- 26:13:16 P Well, why don't we go inertial right here and we'll pick it up on the way in our next pass. Right?
- 26:13:24 C We'll go inertial, but let's find out what the story is here.
- 26:13:26 P Go inertial on the Agena.
- 26:13:28 C Yes. Go 41. That's GEO RATE OFF and GEO RATE - oh, yes. The best I - no, we have to do it this way.
- 26:13:52 C Yes. Yes. Did you go inertial?
- 26:13:56 P Gone inertial.
- 26:13:58 C Okay. Because we'll pick it up at seven - sunset, that's where - sunrise, or starrise, or whatever they call it.
- 26:14:04 P We'll just trace them all the way around.
- 26:14:06 C Yes. There's only one problem.
- 26:14:12 P What's that?
- 26:14:13 C We have something between here.
- 26:14:15 P What?
- 26:14:20 P We have what?
- 26:14:21 C We have something in between there.
- 26:14:33 P No. What do we have?

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26:14:39 C ...

26:14:41 P ...

26:14:49 C 26:49:45. Yaw's zero; pitch 3 degrees down.

26:15:04 CC Gemini XII, Houston. 1 minute to LOS. Tananarive standing by.

26:15:11 P Roger.

26:15:13 C Hey. We don't have to answer him all the time.

26:15:18 C Okay. Yaw zero, pitch 30 degrees down ... so let's take this Agena now and get her around here. It's 26:15 and we've got 26:49.

26:15:33 P Let's get out of these cotton-picking filters.

26:15:39 C We could do that after we start yawing and drive ... Agena around. That's our trouble.

26:15:42 P Okay.

26:15:44 P Where you want to go?

26:15:47 C Okay. I want to go 0 0 0. That's where I want to go. I want to roll upright and yaw all the way around. Or we could pitch straight on through, couldn't we?

26:15:59 P Yes. You want to go 0 0 0?

26:16:01 C Yes. Can we go inertial now?

26:16:02 P Let's see, we should be BEF about.

26:16:09 C Okay. Send 400 and roll.

26:16:16 P 400.

26:16:17 C Okay.

26:16:45 C All we have to do is yaw zero and pitch 30 degrees down until we get 30 degrees down, go inertial again. I'll go inertial and GEO RATE what? NORMAL. Right? REVERSE? No, GEO RATE ON is 351.

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- 26:17:05 P Same way it is now, I guess. Unless we roll it, it would be the same.
- 26:17:27 P Right? GEO RATE REVERSE is what we were using then.
- 26:18:09 P Right. Now in the next S-11 that we do, the yellow filter is the only one that we need. Right?
- 26:18:13 C I don't know. I'll find out.
- 26:18:16 P Yes. I think it is.
- 26:18:45 P We have to start snapping up that Hasselblad film.
- 26:18:51 C I know.
- 26:19:42 C I sure didn't want to whiz around this Agena. That other Flight Plan would have been really great.
- 26:19:45 C Man, that's really something. Standing outside looking ...
- 26:19:58 P ... would have been the greatest, really. Bar none.
- 26:21:09 C Are we pitching down, or aren't we?
- 26:21:44 C Yes. Now there's the ground right below us.
- 26:22:28 C Okay. Let's fix cameras.
- 26:22:33 P Which camera?
- 26:22:34 C I'll get it ready. That's fixed.
- 26:22:42 C Read it out to me.
- 26:22:47 P Take 10 minutes - 45 minutes after sunrise. Attitude control ..., Hasselblad camera, 35mm lens ring sight, UV filter, film magazine, several camera lens filters, ... attitude ... Place record in our log GED sequence, significant observation, ... to keep glare off the window.
- 26:25:04 C Heck, let's save this. Let's save our gas.
- 26:25:10 P You going to horse around trying to get him?

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26:25:14 C What?

## CARNARVON

26:25:32 CC Gemini XIII, Carnarvon standing by.

26:25:36 P Roger, Carnarvon.

26:29:06 CC 1 minute to LOS and standing by, Gemini XIII.

26:29:09 C Roger.

26:29:52 CC Gemini XIII, Carnarvon. Turn the A-Pump on in the Primary Loop.

26:29:59 C Carnarvon, Gemini XIII. Roger.

26:30:01 CC Okay. We're getting fluctuation on your primary temperature in your control valve.

26:30:06 C Roger. You want the B-Pump off. Right?

26:30:09 CC Roger.

## HAWAII

26:50:02 CC Gemini XIII, Hawaii. We have a 30-second purge to do sometime during this pass. We have intermittent T/M at present and we'd like to wait a minute later into the pass to do it.

26:50:13 P Roger, Hawaii. You having some pretty bad weather down there today?

26:50:22 CC It's been doing quite a little raining. It's raining pretty heavy outside right now.

26:51:09 CC Gemini XIII, Hawaii. Our T/M is looking good and solid at the present. Whenever you're ready to start that purge, let us know.

26:51:38 P Hawaii, would you say which section first again, please?

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26:51:42 CC Want to start Section 2 on this one?  
26:51:51 CC Roger. Let's start with Section 2 and then Section 1.  
26:51:55 C Roger. Section 2.  
26:52:05 C Purge on.  
26:52:06 CC Roger.  
26:52:33 C Let me know when it's off.  
26:52:36 CC Roger.  
26:52:45 P Section 1, purge on.  
26:52:49 CC Roger. Thank you.  
26:53:18 P Purge off.  
26:53:20 C Lots of luck!  
26:53:22 CC Roger. Thank you, Gemini XII. Looks good from here.  
26:54:37 CC Gemini XII, Hawaii. We just sent you a Tx.  
26:54:44 C Roger.  
26:56:53 CC Gemini XII, Hawaii. We'll have LOS in approximately 1 minute.  
26:56:57 P Roger.

## CALIFORNIA

26:59:09 CC Gemini XII, Houston. Over.  
26:59:13 P Go ahead, Houston.  
26:59:15 CC Roger. We'd like you to power-down your A-Pump in the Primary Loop and bring the B-Pump back on again so we can watch it over the States. And we'll give you a call when to do that when we have telemetry.

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26:59:31 C Well, we just did that, Houston. We just powered-down the A and burned the B. You want us to reverse that?

26:59:37 CC No. Leave it on.

26:59:48 CC I don't have much else for you. Navy 30, Vanderbilt 14. I'm still waiting on the Army score.

26:59:56 P About time the Navy won!

26:59:59 CC Roger.

27:01:39 C Say Houston, Gemini XII.

27:01:42 CC Go ahead, Gemini XII.

27:01:43 C We're still trying to operate the Agena correctly and no matter what we try, the doggone thing just keeps going around. There must be something wrong with it. We've gone through the commands a dozen times and if we fit the thing up perfectly, get right on the old heading, stop all the rates with our own control system, and then set it up, she's okay; otherwise, she just keeps on traveling.

27:02:10 CC Roger. We copy.

## GUAYMAS

27:02:29 C We just found our B has to go to TDA south and yawed around and did a 360 and we're BEF again. That's the kind of thing that happens.

27:02:41 CC Roger. Did it stop or did you have to stop it?

27:02:44 C Well, it never does stop at any particular reasonable heading. It went up to pitch-up of about 40 degrees or so and it was going past SEF.

27:02:56 CC Roger. Is this in FC1 or 2, or have you tried both?

27:03:02 C Seems to me it doesn't make too much difference.

27:04:37 CC Gemini XII, Houston. We're waiting to acquire you

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in Texas where we can look at the telemetry and see if we can see anything on it, and we'll keep you advised.

- 27:04:48 C Roger. We're just taking over control again so we can get ready for S-29. That's the only thing we could do.
- 27:04:57 CC Roger. One other thing - have you tried to stabilize it with the horizon sensors, with the GEO RATE OFF, to determine if your gyros are working all right? And maybe that would help us isolate the problem.
- 27:05:17 C We will give it a try when we get some time here.
- 27:05:20 CC Okay. I think that one thing that would be a help to us is to go inertial on it with GEO RATE OFF and HORIZON SENSORS OFF and stay in FC2 and see if it will hold the fixed heading, whatever attitude you're in, and then bring on your GEO RATE and then your HORIZON SENSORS and then your GYOCOMPASSING.
- 27:05:43 C Yes. It does real well in holding inertial reference and it also does quite well with GEO RATE NORMAL or REVERSE without HORIZON SENSORS - it's only when you tie HORIZON SENSOR in with the GYROCOMPASSING that it doesn't seem to want to play the game right.
- 27:06:02 CC Well, it sounds - then maybe you do have something in the gyrocompassing circuit and we'll see - you're coming up on the time for S-29. You can try and power it - and power it up for us while we're looking at you. We have you here for about 5 minutes.
- 27:06:29 C Okay. We have the attitude system off on the Agena now.
- 27:06:34 CC Roger. Understand it's off. We're seeing that - the pitch horizon sensors at their yaw channel.
- TEXAS
- 27:07:13 C Pitch right, sensor yaw, when we wanted to go TDA south. That's when we did the 360.

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27:07:20 CC Roger. Understand.

27:12:06 CC Gemini XII, Houston. You can leave the B-Pump and the Primary Loop. It looks all right now.

27:12:42 CC Gemini XII, Houston. You can leave your B-Pump on. That looks pretty good.

27:12:47 C Roger. Primary-B, ON; Primary-A, ON.

27:13:34 CC Gemini XII, Houston. Would you put your Quantity Read switch to O<sub>2</sub>, please?

27:14:26 CC Gemini XII, Houston. You can put your Quantity Read switch to OFF. Thank you.

27:14:36 C Roger. Houston, be advised the Update: S-29, 27:13:36. Sunrise - sunset came just after that time and it's impossible to see any stars enough to get a shot of the ...

27:14:55 C We are now indicating 27:14:57.

27:15:02 CC Roger.

27:15:21 C We can attempt to track and see if we can't get a shot of it at a little later time.

27:15:29 CC Gemini XII, this is Houston. Roger.

27:15:56 CC Gemini XII, Houston.

27:15:59 C Go ahead.

27:16:00 CC Roger. We just want you to point there at that region and go inertial.

27:16:06 C ... Roger.

27:16:32 CC Gemini XII, Houston. You have about 1 1/2 minutes. 1 minute to LOS. Standing by.

27:16:44 CC Gemini XII, Houston. X-Ray, ON; Beta, WITH MAGS.

ASCENSION

27:29:35 CC Gemini XII, Gemini XII. Houston at Ascension. Over.

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- 27:29:44 C Roger.
- 27:29:46 CC Roger, Gemini XII. Would you check your X-Ray, ON; Beta switch WITH MAGS, please?
- 27:29:53 C Roger.
- 27:29:58 CC And Gemini XII, we're going to try to get you to do a little Gyrocompassing Exercise over the CSQ. We would like you to be either TDA north or TDA south as you arrive over the CSQ and then set up the commands to GYROCOMPASS so that the TDA is aft or Spacecraft SEF so we can watch the gyrocompassing circuit on the telemetry.
- 27:31:04 C We fly across CSQ ... Spacecraft SEF. Is that correct?
- 27:31:10 CC Roger. We want to have you gyrocompass for 90 degrees then - so we can watch the circuit there. So you can be TDA south or north and plan to set up your commands so that you gyrocompass in FC2 to Spacecraft SEF. That is correct.
- 27:31:28 C ... darkness ... You'll have to wait till the stars come up.
- 27:31:41 CC Roger. I think I copy you. You said your pointing commands are not good enough for that - for your platform. Is that what you're saying? You're not sure where you're pointed.
- 27:31:51 C That's affirmative. When you're going into darkness, 50 degrees up and 50 degrees down means nothing when you can't see a thing.
- 27:31:59 CC Roger. I copy. We'll work this out and see if we can't give you something better than that. And we can talk to you at Hawaii.
- 27:32:10 C Roger. We'll save those for a 545 Update flight.
- 27:32:16 CC Gemini XII, this is Houston. I didn't copy that last one. The comm's pretty bad.
- 27:32:34 CC Gemini XII, Houston. We're about 1 minute to LOS.

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Standing by.

- 27:32:38 C Roger.
- 27:34:06 C ... Stand by.
- 27:34:18 C MARK.
- 27:34:50 C Mark it.
- 27:34:52 P Now do you want a frame exposed between each one?  
Oh, shoot!
- 27:34:58 C What?
- 27:35:05 C Did it take?
- 27:35:06 P Yes. It took but it won't wind all the way now.  
Okay. Let's get a ... I think maybe it's ready.
- 27:35:34 C Stand by.
- 27:35:45 C MARK.
- 27:36:26 P Is this another 30-second one?
- 27:36:27 C 1 minute.
- 27:36:45 C Mark it.
- 27:36:51 C Did it go?
- 27:36:59 P Fine.
- 27:37:12 C Okay. That first 30-second exposure was 27:34:34  
for 30 seconds and the 1-minute was at 27:36:45.
- 27:37:21 P Okay. Let's get the rest of them.
- 27:37:22 C Stand by for the 2-minute exposure.
- 27:37:26 P We've got to double this now. And the update said  
something about taking a frame between each one  
or something like that.
- 27:37:34 C Okay. Take a frame between each one.

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27:37:45 C You all set?  
27:37:46 P Yes.  
27:37:48 C Stand by.  
27:37:51 C MARK.  
27:39:21 C 30 seconds.  
27:49:36 C 20 seconds coming up.  
27:39:37 P ... nothing flat.  
27:39:38 C What?  
27:39:39 P ...  
27:39:46 C Stand by.  
27:39:50 C MARK.  
27:39:55 P Get another one real fast.  
27:39:56 C That's it.  
27:39:57 P What? You are supposed to get two sets.  
27:39:59 C Two sets?  
27:40:00 P Yes. 30 seconds.  
27:40:03 C Okay. Wait until I get the time. Otherwise, they don't mean a darn thing.  
27:40:11 P Doesn't mean much if you don't have the pictures.  
27:40:15 C Stand by.  
27:40:20 C MARK.  
27:40:51 C MARK.  
27:40:56 P Get another one real quick.  
27:41:03 P Good? ...

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27:41:07 C Okay. ...  
27:41:24 P ...  
27:41:29 C Stand by.  
27:41:31 C Mark it.  
27:41:39 P Okay. ... horizon right now.  
27:42:18 P Yes. I think that's about it.  
27:42:21 C Mark it.  
27:42:54 P Okay. What's next?  
27:43:06 P That should be the end of that magazine.  
27:43:19 C He didn't say what time they were going ... CSQ.  
27:43:26 P Looks to me like we better ...  
27:43:29 C 28:12 is CSQ. What time is it now?  
27:43:34 C 27:43. Let's get this baby gyrocompassed.  
27:43:39 P ... gyrocompassed, I think we want to get it in  
that attitude.  
27:43:42 C Yes.  
27:43:44 P When we get there at our Spacecraft control.  
27:43:49 C Okay.  
27:43:52 C Okay. ... 41?  
27:43:54 P Yes.  
27:43:55 C ... on?  
27:43:57 P Yes.  
27:43:58 C Okay. Let's go. Go ahead. Go on.  
27:44:09 P ... commands. Which way are you going to go?

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27:44:14 C I'm just going to roll over first. We have a light from someplace.

## TANANARIVE

27:44:19 CC Gemini XII, Houston through Tananarive. Over.

27:44:47 CC Gemini XII, Houston through Tananarive. Over.

27:44:51 C Go ahead, Houston.

27:45:01 C Go ahead, Houston.

27:45:15 C I just saw a meteor in our course. I wonder if that's Leopoldville or Victoria or something like that.

27:45:24 CC Gemini XII, Houston through Tananarive. I'm not reading you. Are you reading me? To give you a little more on this test over the CSQ, we would like you to send all of the commands to gyrocompass to 90 degrees to the SEF position while over the CSQ, and if you'll send the commands slowly, they can verify that each and every command is going in and verify that we are getting the correct response. Then we can watch it from there.

27:46:02 C Roger.

27:46:08 P Okay. Why don't we do that ...?

27:46:34 C Have we got a ...?

27:46:38 P ...

27:46:48 C Man, I'm really mad!

27:47:16 C Okay. You're right side up. Easy. Easy.

27:47:21 CC Roger. Gemini XII, Houston. How do you read me now?

27:47:28 C Read you loud and clear.

27:47:30 CC Roger. Did you copy my last? Over.

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- 27:47:35 C Roger. We'll send orbit commands over CSQ and we'll be in VOX. We'll send them slowly so they can verify each one.
- 27:47:44 CC Okay. And as Ascension, I didn't quite copy the last thing about your problem you were having pointing. Is there something that we can give you a little help in? Or did you say that you were having difficulty locating that region from Fomalhaut?
- 27:48:02 C My only comment there, Houston, is that in something like S-29 where you are getting a region that is high in the sky at sunset, we can't get to that without a platform. We have no horizon to go by. We're going into darkness, and the light is reflecting off the Agena, so we have nothing to look at. It requires a lot of attitude fuel on the Spacecraft's part to determine where we are after sunset, to line up the stars and to get in position to take the pictures, which means that we're late in doing S-29. In fact, we finished it just as the light ... in there is setting, which is too late.
- 27:48:47 CC I copy. I guess the only thing we can do for you here - better wait until you're dark-adapted and then go as rapidly as possible to Fomalhaut. Over.
- 27:48:59 C Roger. Either that or have a platform, one of the two.
- 27:49:02 CC Roger. Well, we want to save that oxygen, so we'd like to leave it down.
- 27:49:08 C Roger.
- 27:49:09 P For hindsight - we were set up on it at the end of the night - last night pass if we hadn't had the S-5 or the S-6, we could have stayed inertial the whole time.
- 27:49:20 CC Roger.
- 27:49:22 P Where the heck's the horizon?
- 27:49:41 C Here it is over here. All right, now you should be just about --

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27:49:50 P I'm trying to get the TDA north.  
27:49:51 C All right. You should be just about TDA north now. Stop it.  
27:49:57 P Well, I must be high or low or --  
27:50:00 C No. It's all right. See it. Over this way.  
27:50:07 P No. Can't see it.  
27:50:08 C That's west. You can't see the horizon?  
27:50:10 P No.  
27:50:14 C Can't you see the sun?  
27:50:15 P No. Now I can't see it.  
27:50:23 C Here, let me take it.  
27:50:24 P Okay. You take it.  
27:50:55 CC Gemini XII, Houston. We have about 1 minute to LOS. Standing by.  
27:51:14 C Well, let's see. That's west.  
27:51:19 P ... I don't think we ... enough. We're still going BEF.  
27:51:49 C All right, we're going to be TDA north, Spacecraft south. Get the commands off that, will you, Buzz?  
27:52:03 P Okay. Now, how do you understand what they want us to do? Do you just align the Spacecraft and Spacecraft control and then let the Agena take over there?  
27:52:15 C Well, we're going to put the --  
27:52:16 P Gyrocompass north?  
27:52:17 C We're going to put the Agena TDA north.  
27:52:18 P Right.

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27:52:19 C Spacecraft south.

27:52:21 P With Spacecraft control?

27:52:25 C We could give Agena control, as a matter of fact.

27:52:26 P That's what I'm wondering. Because as soon as we do that, we haven't even given - -

27:52:29 C Without gyrocompassing it.

27:52:30 P - - it the command to gyrocompass around and it's going to take off. See?

27:52:54 P I think we ought to start it out.

27:53:08 C How does that look over there now?

27:53:11 C How does that look over there?

27:53:12 P That looks okay. First, get the roll. We're not rolled right.

27:53:53 P Now we have a darn Delta-P light again.

27:53:59 C Time to eat.

27:54:39 P Son of a gun! Boy ... you go up in the air.

27:54:58 C All right. What did they say about Flight Control Mode 1 or 2?

27:55:05 P They didn't say.

27:55:06 C Okay. Let's go to 1. 360, 370, 451 ... 1.

27:56:14 P I don't know why - I don't know why that son of a gun doesn't go down. I just can't get the nose down. There it goes. There goes that son of a gun down! 28:12.

27:57:21 C Yes. 28:12.

27:57:23 P ... PLA. Sure we're supposed to be eating? You got the meals for today? You got 401 on? You sure? 401 on?

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27:58:01 C No, I don't. There is no attitude control on the Agena. I just --  
27:58:19 C Okay. Send ... 401.  
27:58:22 P Well, let's see.  
27:58:25 C What have you got centered now?  
27:58:27 P All I've got is Flight Control Mode 1. What I was going to do was just run right over in VOX to CSQ. TDA aft, Spacecraft ... GYROCOMPASSING ON. Gyrocompass to prevent adding around to the left.  
27:58:46 C Okay. We'll yaw to the left just a little bit.  
...  
27:59:20 P You have the meals?  
27:59:24 C I guess so. Just a minute. Let's forget about the meals for a second.  
27:59:31 P I have a water Crew Status Report here in a minute.  
27:59:34 C Don't tell them we haven't eaten them yet. Okay. Now look at that.  
27:59:54 P Maybe 10 degrees more left.

## COASTAL SENTRY QUEBEC

28:07:34 CC Gemini XII, CSQ.  
28:07:36 C Roger, CSQ. Gemini XII here.  
28:07:38 CC Roger. Before we start this test, we'd like to turn the encoder off.  
28:07:43 C Roger. Encoder is coming off and our situation is this: the Spacecraft controls a combination of the TDA north, Spacecraft south. Spacecraft now on, and that situation - at any time you're ready, we'll go and send command to gyrocompass the Agena around in Flight Control Mode 1 to Spacecraft SEF, TDA west.

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28:08:08 CC Okay. Now previously we've been having this difficulty in Flight Control Mode 1. Is that correct?

28:08:13 C We've been having it in both Flight Control Modes 1 and 2.

28:08:17 CC Okay. Well, let me test 1.

28:09:03 CC Gemini XII, CSQ.

28:09:06 C Go ahead.

28:09:07 CC Okay. Give us a call when you are ready to go and I'll call the commands out as you execute them.

28:09:44 CC Go ahead, Gemini XII.

28:09:46 C Roger. 360, GEO RATE REVERSE; 310, ROLL HORIZON SCANNERS YAW; 320, HORIZON SCANNERS PHASE OUT; ACS ON, 401.

28:10:15 CC Say again?

28:10:16 C My ACS just went on.

28:10:18 CC Roger.

28:10:19 C HORIZON SCANNER ON, 301. My Agena RATE ON, 351. Got my GYROCOMPASSING ON, 341.

28:11:24 P We're not going SEF. We're going BEF.

28:12:32 CC Gemini XII, CSQ. I'm transmitting you a Tx.

28:12:35 C Roger.

28:13:07 CC You say you're fairly stabilized at that attitude?

28:13:11 C Well, let's say yawing to the left now.

28:14:30 CC Gemini XII, CSQ.

28:14:32 C Right, CSQ.

28:14:33 CC If you don't get attitude by our LOS, which is about 30 seconds, let it go and we'll pick it up

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over Hawaii.

28:14:40 C Roger. Seems to be fairly well behaved at this time.  
28:14:43 CC Roger.  
28:14:49 C Of course it kept us pretty nicely last night, during SEF position. It may possibly be, when we try to gyrocompass to either a north or a south position, that is where we get our problem.  
28:15:02 CC Roger.  
28:15:05 C And seems to be slowing down now with SEF attitude.  
28:15:10 CC Is it coming SEF?  
28:15:16 CC Let's just leave it alone and see how it works.

## WHEELING

28:21:25 CC Gemini XII, Gemini XII. Houston through the Wheeling. Over.  
28:21:49 CC Gemini XII, Houston through the Wheeling. Over.

## HAWAII

28:25:27 CC Gemini XII, Hawaii.  
28:25:30 C Hawaii, Gemini XII.  
28:25:33 CC Roger. Looks like you came around okay.  
28:25:38 C Roger. I'm thinking we might want to try that to a north or south heading, but we got this - 480 coming up shortly.  
28:25:47 CC Yes. Roger. Also, we're going to have - another one of the 30-second purges, plus I have a Block 4 Update for you, too - and a Crew Status Report.

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28:26:02 C Okay. We're in the process of working on the meals. We'll have to delay the Crew Status Report.

28:26:07 CC Roger.

28:26:11 C Wheeling, we're on Meal 9 now and I'll have my partner copy the PLA Update.

28:26:15 CC Okay. What we want to do is start with Section 1, Section 2 and then also do a normal purge on the H<sub>2</sub> this time.

28:26:25 C Okay. You want to start out with the H<sub>2</sub> purge, Section 1 and then 2, and then we'll do the O<sub>2</sub> for 30 seconds. Right?

28:26:35 CC Yes. That's Roger.

28:26:37 C Okay.

28:26:39 CC Okay. Let me know when you are ready to copy.

28:27:03 C Delta-P light, hydrogen purge, Section 1.

28:27:07 CC Roger. We copy.

28:27:08 CC And it's out.

28:27:11 P Ready to copy.

28:27:13 CC Okay. Area 20, 3-Alpha: 30:56:58; 20 plus 41, 26 plus 09. Area 21, 3-Alpha: 32:32:56; 20 plus 08, 25 plus 35. Area 22, 3-Bravo: 34:09:17; 19 plus 23, 24 plus 45. Area 23, Alpha-Charlie: 35:03:12; 20 plus 53, 27 plus 22 - 27. Area 24, Alpha-Charlie: 36:38:31; 21 plus 07, 26 plus 26. Area 25, 2-Alpha: 38:12:14; 21 plus 11, 26 plus 41. Area 26, Alpha-Charlie: 39:48:37; 21 plus 07, 26 plus 33. And that will be roll left 80, roll right 100. Weather is good in all areas with the exception of 2-4, which is marginal, and it does include the Sep Maneuver. Over.

28:29:17 P Roger. Weather good except for 2-4, which is marginal.

28:29:21 CC Roger.

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28:31:06 CC Gemini XII, Hawaii. Flight recommends that - you stay like you are and go ahead and do that M-408 Experiment. Once it's been completed, then you can go ahead and try your Plus or Minus 90-Degree Maneuver.

28:31:27 C Roger.

28:31:33 CC Okay. It looks like we have about a minute and a half if you're going to have any of your Crew Status Report information available.

28:31:55 P We're in the process of eating our last meal. We'll give you the Status Report when we finish that.

28:32:01 CC Okay. And would you place your Quantity Read to the H<sub>2</sub> position, please, for us?

28:32:08 P Roger. Thank you.

28:32:25 CC Okay. Could you turn your encoder off for a brief moment and we'll send SPC DISABLE here.

28:32:33 P Encoder off.

28:32:42 CC Okay. You can turn it back on. We have it. It looks like we have about 30 seconds to LOS.

28:32:47 P Roger.

## CALIFORNIA

28:34:41 CC Gemini XII, Houston. Standing by at California.

28:35:15 CC Gemini XII, Houston. Over.

28:35:47 CC Gemini XII, Houston.

28:35:56 C Houston, Gemini XII. Go ahead.

28:35:59 CC Roger. We would like to have you spend about 20 minutes on your 408; and then if you would like to go ahead and do some more gyrocompassing to either south or north and wind up SEF, and you can let the CSQ know how you're doing. We have

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looked at all the data, and as best as we can determine, all of the control systems in the Agena are working correctly. In FCl, with all that fuel aboard it may take quite awhile. And if you do have this excursion get off more than 40-45 degrees, I just recommend you just go ahead and resend all the commands again. We had that happen once or twice on our flight and, as I say, the best we can determine, it looks like it's running okay.

- 28:36:55 C Roger. Understand.
- 28:36:58 CC And - you can give us a call through Tananarive or CSQ on how you make out with your yawing to the north or south headings.
- 28:37:02 C Roger. We'll proceed doing that after M-408.
- 28:37:14 CC Houston. Roger. Standing by.
- 28:37:43 CC Gemini XII, Houston. When you get done - why - go on back into FCl and go ahead and go back to your ACS GAIN LOW so that we can save control gas.
- 28:38:02 P Houston, Gemini XII. You're fading out.

## GUAYMAS

- 28:38:12 CC Gemini XII, this is Houston through Guaymas now. We were losing you at California. I say again, when you get done with your test, make sure you go back to 460, ACS GAIN LOW, so you save your control gas.
- 28:38:34 CC Did you copy, Gemini XII?
- 28:38:36 P Roger, Houston. We'll go back 460.
- 28:38:39 CC Houston. Thank you.
- 28:38:49 CC Gemini XII, Houston. Would you pass how many S-29 pictures you took and how many S-6 pictures, please?
- 29:39:06 P Stand by.

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28:39:08 CC You can pass it later.  
28:41:27 CC Gemini XII, Houston. 1 minute until LOS. Standing by.

ROSE KNOT VICTOR

28:52:47 CC Gemini XII, RKV.  
28:52:51 C Roger. RKV.  
28:52:53 CC Okay. Like to have you pump up your O<sub>2</sub> to - build up the pressure a little bit. Turn your O<sub>2</sub> heater on, please.  
28:53:08 P Roger. O<sub>2</sub> heater's on.  
28:53:22 CC We have nothing further for you at this time, Gemini XII. We'll be standing by.  
28:53:25 P Roger.  
28:53:27 C Roger. Did you want the ECS indicator back to H<sub>2</sub> during our manual heating?  
28:53:33 CC Stand by, Gemini XII.  
28:54:04 CC Gemini XII, RKV. Yes. Would you leave the Cryo switch in H<sub>2</sub> for a degree reading, please?  
28:54:09 C Right!  
28:56:49 CC Gemini XII, RKV. In about 1 minute, LOS. Would you give me the position of your Heater switch at this time?  
28:56:57 C Roger. The Heater went back to AUTO. I'll give you a reading in a second.  
28:57:01 CC Roger.  
28:57:03 C We're reading 750.  
28:57:05 CC Say again?

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28:57:07 C 750, the O<sub>2</sub> pressure.

28:57:10 CC Roger. Roger.

## TANANARIVE

29:19:20 CC Gemini XII, Gemini XII, Houston through Tananarive. Over.

29:19:41 CC Gemini XII, Gemini XII, Houston through Tananarive. Over.

29:19:47 C Go ahead, Houston.

29:19:49 CC Roger. Need a few things from you before you go to bed, please. Could I have a PQI reading now?

29:19:59 C Roger. PQI looks like 49 percent.

29:20:04 CC Roger. 49 percent. I'd like your Crew Status Report, if possible. I have a Node Update for you and a couple of other questions, when you are ready to copy.

29:20:44 C Roger. Houston. Crew Status Report: the water gun reads 01236. We've drunk just about an equal amount of water. Finished Meal A2, Meal C. Completed all three meals today.

29:21:05 CC Houston, copy.

29:21:13 CC Gemini XII, this is Houston. You can advise the Pilot that Army won 6 to 3 over California today.

29:21:24 P They're getting in shape for the big ones.

29:21:27 CC Roger. I've got your Node Update if you're ready to copy.

29:21:37 P Ready to copy.

29:21:39 CC Roger. Time is 31:03:39: Node, Rev 20, 59.1 east; right ascension; 11 hours, 13 minutes. Over.

29:22:06 P Roger. Understand the time 31:02:39: Node, Rev 20,

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- 59.1 east; 11 hours, 13 minutes, right ascension.
- 29:22:18 CC Roger. On the S-29, do you think that you got some pictures without having hit the airglow? We want to know whether we should schedule another one tomorrow or not.
- 29:22:31 C Say again?
- 29:22:33 CC Roger. I'd like to know if you think that you got a good S-29 picture or not, so we can decide whether to schedule another S-29 for tomorrow.
- 29:22:48 C Roger. At the end there, it's the libration ... you want to know --
- 29:22:54 CC Roger. I know it's the libration, but you said that it went over the horizon and I want to know if you think you got a good picture of the libration point. Over.
- 29:23:08 C -- Roger. It was in the second series of 30-second, 1-minute, 10-minute shots that we lost a 2-minute one because it was going in the horizon.
- 29:23:21 CC Houston. Copy. Roger. And did you get that one S-6 shot?
- 29:23:27 C Roger. We did. We weren't sure what lens you wanted us to get a picture with. There seemed to be several very interesting clouds down there so we got them with the wide-angle.
- 29:23:39 CC Roger. And how is your Agena operating?
- 29:23:46 C It seems to be --
- 29:23:50 CC Say again?
- 29:23:51 C -- ... from M-408 and we're going to ... around here to ...
- 29:23:58 CC Okay. You can - if everything is going all right there now - you do not have to contact the CSQ if you don't want to. You can go ahead and go to sleep. I talked to both of your wives and they say good show so far and good luck for tomorrow,

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and we'll see you all in the morning.

29:24:20 C All right. Roger.  
29:24:24 CC Houston, standing by. And good night!  
29:27:37 C Houston, Gemini XII.  
29:27:41 CC Go ahead. Houston standing by.  
29:27:45 C Roger. We let - we have Delta-P lights on tonight.  
How about if we turn the circuit breaker off?  
29:27:56 CC Roger. Stand by a second.  
29:28:10 CC Gemini XII, Houston. Would you please leave the  
circuit breaker closed?

## ROSE KNOT VICTOR

36:49:29 CC Gemini XII, RKV CAP COM.  
36:49:35 P Good morning, RKV. Gemini XII.  
36:49:38 CC Good morning, Gemini XII. We have a little problem  
here with your Stack 2-Bravo.  
36:49:45 P Roger. Go ahead.  
36:49:48 CC Okay. We'd like you to do a normal purge on O<sub>2</sub>.  
36:49:59 CC We'd like to do this after we get an open-circuit  
voltage on the Stack 2-Bravo.  
36:50:08 P Roger.  
36:50:41 P Is that nominal voltage?  
36:50:43 CC Yes. We'd like to have an Open-Circuit Check on  
the 2-Bravo.  
36:50:57 C Okay. That's with the stack turned off, right?  
36:51:00 CC That's affirm.

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36:51:01 P Roger.

36:51:09 P Open-circuit voltage is 29.7.

36:51:22 CC 29.7.

36:51:26 P Yes. It's still going up. It's about 30 volts.

36:51:36 CC Gemini XII. Did you do that in the WARM-UP position?

36:51:38 P Negative.

36:51:41 CC Would you give it to us in the WARM-UP position, please?

36:52:15 P That's about 30.7.

36:52:16 CC 30.7 with Section 2 in WARM-UP.

36:52:21 P Roger. Section 2 is in WARM-UP.

36:52:24 CC Roger. Understand.

36:52:40 CC Okay. Gemini XII, RKV. Would you do an O<sub>2</sub> purge on Section 2? O<sub>2</sub> only.

36:52:48 P Roger. You want Section on for that, right?

36:52:52 CC Just go through a normal purge.

36:53:01 CC Roger. That's your Static Section on OFF.

36:53:07 CC That's Section at ON, Gemini XII.

36:53:25 P I just woke up. Would you say again - I thought you said normal purge and O<sub>2</sub> only.

36:53:30 CC That's affirmative, Gemini XII.

36:53:33 P Okay. 2 minutes of O<sub>2</sub> purge.

36:54:55 CC Gemini XII. It's less than 1 minute to our LOS.

36:55:00 C Roger.

36:55:02 CC Canary Islands will pick you up in a little while.

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So if we don't finish they will finish it all up with you.

36:55:09 C Okay.  
36:55:48 P The O<sub>2</sub> purge is complete on Section 2.  
36:55:51 CC Roger. Understand.  
36:56:08 CC Gemini XII, would you go back to ON on Section 2 now?

## CANARY ISLANDS

37:08:49 CC Gemini XII, Canary CAP COM.  
37:08:53 C Canary, this is Gemini XII. Go ahead.  
37:08:55 CC Okay. How did the purge go?  
37:08:59 P Purge okay.  
37:09:00 CC Okay. Can you turn your Encoder to OFF? The reset timer timed out over the night and I'd like to reset a few functions in the Agena.  
37:09:08 P Roger. The encoder is off. That purge was Section 2, O<sub>2</sub> only.  
37:09:12 CC That's affirm.  
37:09:28 CC Okay, Gemini XII. We have Agena reset; you can turn your encoder back on.  
37:10:14 CC Gemini XII, Canaries.  
37:10:16 C Go ahead.  
37:10:17 CC Okay. What's the position of your Spectrometer switches at this time?  
37:10:27 C They're OFF.  
37:10:28 CC They are OFF?

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37:10:30 C Affirm.  
37:10:32 CC Okay.  
37:10:38 CC I've got a PLA Update if you're ready to copy.  
37:11:02 C Ready to copy and do you want a GO/NO-GO?  
37:11:06 CC Roger. Have you had a chance to test the batteries?  
37:11:10 C Roger. We'll do that after the fuel ...  
37:11:14 CC Okay. They'll catch you with a Flight Plan Update over Kano.

## KANO

37:13:18 CC Gemini XII, Houston CAP COM through Kano. Over.  
37:13:23 C Good morning there, Houston. Gemini XII here.  
37:13:27 CC Good morning, Jim.  
37:13:29 CC We are interested to know whether you guys would like to take a nap for another revolution, or would you like to eat early and do some S-5 and S-6? Our recommendation would be to sleep, but that is up to you.  
37:13:47 CC Do you copy?  
37:13:49 C Roger. We slept like a couple of logs last night. We're just about slept out.  
37:13:54 CC Okay.  
37:13:57 CC I can give you a correction to the PLA's we've given you so far. On 30-1 Alpha, RET 400K should read 20 plus 16.  
37:14:15 C Roger. Understand this other would be kind of hard to roll back to before you get to 400K.  
37:14:21 CC Right.

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37:14:23 CC Okay. Let me give you a Flight Plan Update here and we can get these other PLA's, if necessary, later on.

37:14:31 CC Ready to copy?

37:14:37 C Roger. Stand by.

37:14:38 CC Okay. Well if you've got your PLA out, I'll give you whatever you like.

37:14:45 C Ready for the Flight Plan Update.

37:14:47 CC Okay. To get your Flight Plan in kilter, simply add 10 minutes to the nominal times. We'd like for you to start an eat period now and at 38:35 do an S-6, Sequence A - correction - Sequence 8 north of track. 38:40: at CYI, we'll give you a GO/NO-GO for 45-1 Alpha. 38:55: S-5, Mode Alpha, Sequence 04. At 40:30, power-up platform and gyrocompass to 0 - 90 0; that's 0 90 0 on the Agena. 41:17: sunrise. Platform to FREE, Agena inertial. 42:47:28: EVA sunrise. Okay, that's the end of the Flight Plan Update. I'd like a note here before we lose you. If Stack B - Stack 2-B current goes below 1 amp, turn Stack 2-B to OFF and monitor open-circuit voltage until the next site. You're holding at 1 amp right now on ground T/M.

37:17:19 C All right. We're showing about zero on it now.

37:17:21 CC You're showing zero?

37:17:25 C Roger.

37:17:27 CC Okay, let's turn it off. Now, be advised your Flight Plan is also one revolution off, so add one revolution and 10 minutes.

37:17:40 C Roger, Bill. What was the EVA sunrise time again?

37:17:45 CC 42:47:28. We've got 30 seconds to LOS. We'll give you the PLA Update at Carnarvon.

37:18:00 CC Could you give me an open-circuit voltage real quick-on Stack 2, Section 2?

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37:18:20 CC Understand 30.

## COASTAL SENTRY QUEBEC

37:41:54 CC Gemini XII, CSQ.

37:41:58 C Go ahead, CSQ.

37:42:01 CC Roger. We'd like to run a little test on the fuel cells. What we'd like you to do is to go through and give us a readout at each stack current and give us enough time here to get a ground correlation readout. Would you give us a readout on Stack 1 Fuel Cell?

37:42:24 P Roger.

37:42:33 CC 2-Alpha?

37:42:41 P Drop is 2.3.

37:42:48 CC 3-Alpha?

37:42:52 P Now we have 2.6.

37:43:00 P You want to start over again?

37:43:07 CC Stand by.

37:43:11 CC 1-Bravo?

37:43:17 P 1-Bravo is 3 amps showing.

37:43:26 CC 2-Bravo?

37:43:31 P Bravo is off - zero.

37:43:40 CC Okay. We'd like you now to measure the open-circuit voltage on 2-Bravo.

37:43:56 P Roger. The open-circuit voltage is zero.

37:44:10 P I've turned it off.

37:44:11 CC Okay.

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37:44:13 CC I've got a Nodal Update for you.  
37:44:35 CC Time to 38:32:53.  
37:44:42 CC Rev 25; 55.9 west; right ascension, 11:04. You are 1 minute to LOS. I'll transmit you a Tx.  
37:45:00 C Roger. Rev 25; 59.9 - 55.9 west; right ascension, 11.04.  
37:45:14 CC Roger.

## ROSE KNOT VICTOR

38:23:16 CC Gemini XII, RKV.  
38:23:19 C Go ahead, RKV.  
38:23:20 CC Okay. We have you GO on the ground here. We have nothing further for you. We'll be standing by.  
38:23:27 C Roger. We're coming up on an S-6.  
38:23:29 CC Roger.

## CANARY ISLANDS

38:41:19 CC Gemini XII, Canary CAP COM.  
38:41:22 C Canary, this is Gemini XII. We are GO.  
38:41:25 CC Roger. You're GO on the ground here for a 45-1A.  
38:41:30 C Roger. Say on ...  
38:41:32 CC Okay. We'd like to get a normal fuel cell purge; Section 2 and then Section 1.  
38:41:37 C Understand normal fuel cell purge; Section 2 than 1.  
38:41:41 CC Roger. We're standing by for you.  
38:42:29 CC Gemini XII. Canary sending you a Tx.

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38:42:32 C Roger.

38:42:39 CC And can we have a PQI, please?

38:42:48 C Roger. We're reading about - between 48 and 49 percent.

38:42:53 CC Roger. Thank you.

38:48:10 CC Gemini XII, Canaries. Would you move your Cryo Quantity switch to the O<sub>2</sub> position, please?

38:48:15 CC Thank you.

38:48:21 CC Okay. Gemini XII, would you vent your H<sub>2</sub> tank at this time? Move the switch to the VENT position and then to SAFE.

38:48:35 C Roger.

38:48:52 CC Did you get the vent, Gemini XII?

38:48:55 C Roger. We heard the reaction back there in the adapter.

38:48:58 CC Okay. Put your Cryo Quantity switch to OFF and your H<sub>2</sub> Heater switch to AUTO.

38:49:08 C Roger.

38:49:10 CC We've got about 30 seconds to LOS and we'll be standing by.

38:49:14 C Roger.

## KANO

38:49:35 CC Gemini XII, Houston CAP COM through Kano. Over.

38:49:40 C Roger.

38:49:44 CC Will you leave your Cryo Quantity switch in H<sub>2</sub>, please?

38:49:49 C ...

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38:49:55 CC Gemini XII, Houston CAP COM. I'm not copying.  
If you read, leave your Cryo Quantity switch on  
H<sub>2</sub>.

38:50:06 C We are back to H<sub>2</sub>.

38:50:08 CC Mighty fine.

40:05:02 CC Gemini XII, Houston CAP COM. Over.

40:05:06 C Hello, Houston. Gemini XII here.

40:05:08 CC Roger. Pretty lonely pass there wasn't it.

40:05:11 C Yes it was. Something interesting happened.

40:05:20 CC We didn't copy, Jim. Say again.

40:06:28 CC Gemini XII, Houston CAP COM. Over.

40:06:31 C Go ahead, Houston.

40:06:32 CC All right. You were cut out after you saw something  
interesting. What did you see?

40:06:38 C I didn't see anything. I said that after S-5, we  
took the photograph on the Sequence 04. We attempted  
to get Spacecraft control and it appeared from our  
analysis that there was no system - that Thrusters  
2 and 4 are not operating.

40:06:59 CC Roger. Copy.

40:07:07 CC Gemini XII, Houston. We'd like to have you start  
a gradual power-up by turning on the A-Pump in both  
the Primary and Secondary Loop. We'd like you to  
leave this on for at least a revolution. We'll give  
you more items over Canaries, and then we'd like to  
have you follow your normal EVA Prep and Flight Plan  
Power-Up. Over.

40:07:30 C Roger. Understand that you want us to put our  
Primary A, and both Primary B and EVA, on at this  
time. Is that correct?

40:07:38 CC Negative. Only Primary A in each loop.

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- 40:07:42 C Roger. Only Primary A in each loop. Going to ON at this time.
- 40:07:46 CC Also, we'd like to have you do a 30-second O<sub>2</sub> purge in Section 2. We'd like to have you start one now, and we want you to do one each revolution. We'll advise you when to do them on the following revolution. Do you copy?
- 40:08:05 C Roger. Purge on Section 2. Coming on at this time.
- 40:08:10 CC Okay. We're ready for a Crew Status Report.
- 40:08:28 C Roger. Water gun count of 1361. Water consumed about equal and we've both eaten Meal 3, our Day 3 Meal A.
- 40:08:42 CC Roger. Make that a 30-second purge for both sections.
- 40:08:46 C Roger. 30-second purge, both sections.
- 40:08:49 CC Roger. We'd like to have each of you try drinking about a pint of water now, and we'll be asking you to drink more as late in the EVA Prep as possible. Over.
- 40:09:06 C Roger. After fuel cells?
- 40:09:10 CC Roger.
- 40:09:13 CC Also, we'd like to have you turn your encoder off now so we can reset your timer.
- 40:09:20 C Encoder, off.
- 40:09:23 CC Okay - and a note to - in order to conserve attitude gas on the Agena, we'd like you to make sure that before you turn ACS on that you kill all your rates.
- 40:09:38 P Roger. You read about our Thrusters 2 and 4, didn't you?
- 40:09:42 CC That's affirmative. We're thinking it over.
- 40:09:53 C Fuel cell purge is complete. You want us to really load up on water, right?

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40:09:58 CC That's affirmative.

40:10:01 P How come I didn't get any of that from the ground briefing? I was asking these questions before.

40:10:08 CC We'll give you a briefing when you get back.

40:10:10 P I guess I will.

40:10:13 CC Okay. You can turn your encoder back on again.

40:10:17 CC And did you give us an evaluation of your sleep period?

40:10:22 P Roger. Sleep time was very good.

40:10:26 CC Mighty fine.

40:10:28 P We slept at least six hours.

40:10:31 CC Copy.

40:10:47 CC Gemini XIII, Houston. Where is your Roll Logic at this time?

40:11:01 C Roger. Roll Logic is in PRIMARY.

40:11:07 C Okay. You mean Roll Jets, they are in YAW.

40:11:11 CC Roger. Understand.

40:11:12 C Roger. We've had both in YAW and PITCH. We've had it in PITCH after additional rendezvous trouble, a day or so ago, and then we went back to YAW.

40:11:25 CC Copy.

40:11:31 P It may have been out for awhile. Or at least they may have been intermittent. At least I was a little familiar with some of the things we had with the first Undocking.

40:11:48 CC Roger. Understand.

40:12:13 CC Gemini XII, Houston. You have about 1 minute to your LOS.

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40:12:17 P Roger.

## CANARY ISLANDS

40:16:16 CC Gemini XII, Canary CAP COM.  
40:16:18 C Roger, Canaries.  
40:16:20 CC Okay. I've got a list of items here for you to turn on.  
40:16:26 CC Your AC Power switch to IGS.  
40:16:30 C Roger. AC going to IGS.  
40:16:32 CC Your Attitude Indicator to WITH FDI.  
40:16:35 C WITH FDI.  
40:16:37 CC Rate Gyro 3 to PRIMARY. Rate Cyro ... Your T/M switch to REAL-TIME ACQ-AID.  
40:16:49 C T/M is REAL-TIME and ACQ.  
40:16:51 CC And your Cryo Read switch to the O<sub>2</sub> position.  
40:16:56 P Okay. We've got it.  
40:16:58 CC Roger.  
40:18:09 CC Gemini XII, Canaries.  
40:18:12 C Go ahead.  
40:18:13 CC I'd like to know if you are getting anything out of Thrusters 2 and 4 at all. Are they degraded, or are they off?  
40:18:21 P Okay. Here is the sequence we went through. We intended to control the Spacecraft to a dip position for S-5. We noticed that we were getting roll every time we put it in PITCH or YAW, so we finally went around and checked all the thrusters by turning off all the circuit breakers, then turning them on one at a time. We put our Rate Gyros to ON and checked

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our needles for deflection. We could hear the thrusters ... open up, of course, and both 2 and 4 had no response at all - they had no response. But only those circuit breakers were on one at a time.

- 40:19:04 CC Okay. Copy that.
- 40:19:06 P It's difficult to get a good evaluation because we didn't know whether our unusual attitude response to control movement was due to that offset CG, due to the Agena being aboard, or whether it was the thruster problem. ... for some time before, it dawned on us what the situation was.
- 40:19:27 CC Roger.
- 40:19:31 C We tried secondary attitude driver to no avail.
- 40:19:34 CC Roger.
- 40:19:53 CC Gemini XII, Canary.
- 40:19:55 C Go ahead.
- 40:19:56 CC Okay. Would you send Command 460, ACS GAIN LOW, to the Agena, please?
- 40:20:01 C Roger.
- 40:22:38 CC Gemini XII, Canaries.
- 40:22:41 C Go ahead.
- 40:22:42 CC Okay. We recommend that you open the circuit breakers on Thrusters 2 and 4 and leave them open.
- 40:22:50 C Okay. Thrusters 2 and 4 circuit breakers coming to OPEN.
- 40:22:53 CC Roger.
- CARNARVON
- 40:54:25 CC Gemini XII, Carnarvon.
- 40:54:27 C Go ahead, Carnarvon.

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40:54:29 CC Okay. We're showing your O<sub>2</sub> pressure as NO-GO.  
You're a little low.

40:54:35 C Okay. We'll pump it up a little.

40:54:38 CC Let's get it about 710 on-board.

40:54:41 C Very well.

40:58:37 CC Gemini XII, Carnarvon.

40:58:40 C Go ahead.

40:58:41 CC Roger. Confirm you have Delta-P lights, Sections 1  
and 2 up to the water.

40:58:46 C They're on now.

40:58:48 CC Okay.

40:58:52 CC When did they come on?

40:58:55 C I would say about 13 minutes ago.

40:58:59 CC Okay. Thank you.

40:59:02 CC We show your O<sub>2</sub> quantity as GO and O<sub>2</sub> pressure as  
GO at 875 pounds readout. And you ... check and  
all that your Spacecraft is GO for depress.

40:59:14 C Okay. ... And up.

40:59:20 CC Roger.

40:59:27 C Carnarvon, we're just going to recheck with you, but  
we have sunrise eclipse time of 45:47:28. Do you  
concur?

40:59:36 CC That's affirmative.

40:59:38 C Roger.

TEXAS

41:37:55 CC Gemini XII, Houston CAP COM. Over.

41:37:58 C Go ahead.

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- 41:38:00 CC Roger, Gemini XII. We'd like to get a water gun count from you and we'd also like to try to correlate your drinking after your last Canaries pass with the Delta-P lights. Would you tell us what you drank after Canaries?
- 41:38:21 C Okay. Water gun count is 1420 and I believe the lights went out - I think the lights went out after drinking and now they're back on again.
- 41:38:35 CC Roger. You reported they came on 15 minutes prior to Carnarvon. Is that about right?
- 41:38:45 C There is a definite correlation between drinking water and those lights.
- 41:38:49 CC You say negative correlation?
- 41:38:51 C No. I say there's a definite correlation between drinking water and those lights.
- 41:38:55 CC Understand. You feel that the --
- 41:39:02 C Everytime we use water to prepare food or drink, quite a quantity of it, the lights go out.
- 41:39:10 CC Roger. We have an indication here on the ground that you drank water after the Canaries pass and before Carnarvon and the lights came on prior to Carnarvon. Is that correct?
- 41:39:22 C Roger. The lights were on at Carnarvon and prior to that they came on.
- 41:39:27 CC Roger. Did you drink prior to their coming on?
- 41:39:35 C I believe it was after, Bill. I'm not sure.
- 41:39:38 CC Okay. With respect to the Agena control situation, just a little rundown here. As you know, the Agena is heavy with fuel and therefore has a pretty high moment of inertia. This results in effectively low ACS control authority and in order to avoid any high gas usage with your control problem, we'd like to recommend that you use RATE COMMAND when you attempt to kill all rates prior to turning ACS on. You understand?

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- 41:40:17 C Roger. We are now inertial according to the Flight Plan, and will stay in this condition until after EVA.
- 41:40:25 CC Roger. We suggest using RATE COMMAND after EVA. Also, we'd like to have you each drink another pint or so of water as late as possible in the EVA Prep.
- 41:40:43 P Houston, Gemini XII here. What is the reason behind this? Is it for the fuel cell or for body conditioning?
- 41:40:53 CC We're trying to condition the fuel cells.
- 41:40:56 P Yes. Well, I'd just as soon not get super-saturated with water when I'm going to be exposed to a warmer environment. Why don't you check that out? Right now I think I've been drinking an adequate amount of water to get through the day's activities.
- 41:41:22 CC We agree with that. If you can drink any water, it will help us on the fuel cell.
- 41:41:27 P Okay. I'll sacrifice.
- 41:41:34 CC Roger. If you can get rid of any, that might help.
- 41:41:37 P I'll take care of that, too.
- 41:41:39 CC Okay. Also, if it's convenient for you, we'd like for you to fix the S-3 frogs on your Mark. That's just one unit.
- 41:42:06 C Roger. Can you read me? Can you read me?
- 41:42:10 P What did you do?
- 41:42:12 C I don't know. I just heard something click.
- 41:42:16 CC Gemini XII, did you call Houston?
- 41:42:20 C Roger. I thought I'd lost communication there for a minute. Are you ready for the Unit 1?
- 41:42:26 CC Roger. On your Mark.
- 41:42:30 C Houston, Gemini XII. ... You read me, don't you?

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41:42:37 P Yes.

41:42:39 C All right. Houston, Gemini XII.

41:42:41 CC Go ahead.

41:42:45 P Did some switch get hit, maybe?

41:42:52 C Houston, Gemini XII.

41:42:54 CC Roger. Read you fine, Gemini XII.

41:42:57 C Roger. We're having a little bit of a problem here with an electrical switch. I guess, because we're losing communication with you. Let's go back on again.

41:43:04 CC Roger. Looks like your T/M switch was stuck. You can fix Unit 1 in the S-3 at your convenience. On your Mark.

41:43:14 P Roger. Can you read me now, Houston?

41:43:16 CC Read you five by.

41:43:19 P Houston, Gemini XII. Can you read?

41:43:21 CC Roger. That's five by and we're not getting BIO MED. You might check your lead and your circuit breaker.

41:43:30 C Okay. How about now?

41:43:32 CC Looks good.

41:43:33 C Okay. Unit 1, on my Mark, 3, 2, 1,

41:43:39 C MARK.

41:43:41 CC Mighty fine.

41:44:10 CC Gemini XII, Houston. Over.

41:44:12 C Go ahead.

41:44:13 CC Roger. We'd like to get your feelings on how you feel about the possibility of dumping some water through the urine system, if possible.

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41:44:23 C Well, we might do it after EVA, Houston. We're right in the middle of EVA Prep now.  
41:44:30 CC Okay. We won't bug you on that then.  
41:44:32 C We've got hear all over the cockpit, as per standard procedure.  
41:44:36 CC Roger.  
41:46:11 CC Gemini XII, Houston. 1 minute to LOS.

## CANARY ISLANDS

41:52:39 CC Gemini XII, Canary CAP COM.  
41:52:41 P Go ahead.  
41:52:42 CC Okay. We'd like to get a 30-second O<sub>2</sub> purge only on both sections if you have time.  
41:52:50 P Roger.  
41:52:59 P What section do you want first, Barry?  
41:53:02 CC 1.  
41:53:05 P What section do you want first?  
41:53:06 CC 1.  
41:53:08 P Section 1. Section 1 coming up.  
41:54:19 CC Gemini XII, Canaries. Your O<sub>2</sub> pressure is coming down a little bit. Do you want to pump it up to ... please?  
41:54:24 P Roger. It came on down while we were checking out the LSS. I haven't got the water heater on now - we're building it up.  
41:54:30 CC Roger.  
41:54:33 P Purge complete.  
41:54:35 CC Roger.

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41:59:07 CC Gemini XII, Canaries. About a minute to LOS. Your O<sub>2</sub> pressure is looking real good now.

41:59:13 C Roger. We'll ...

KANO

42:00:45 CC Gemini XII, Houston CAP COM through Kano standing by.

42:01:13 P Roger, Houston.

42:01:15 CC Roger, Gemini XII. Be advised that your performance curves on your remaining stacks have been looking good since power-up.

42:01:25 P Very good.

42:01:31 P Houston, Gemini XII here.

42:01:34 CC Go ahead, Gemini XII. Reading you weak.

42:01:39 C Houston, Gemini XII.

42:01:41 CC Roger, Gemini XII. Go ahead.

42:01:43 C Roger. Would you have Chris get a bedtime story for me? I kind of miss them since the last flight.

42:01:49 CC Roger. We'll have one for you.

42:01:56 CC Maybe we can do better than that.

42:03:41 CC Gemini XII, Houston CAP COM. 1 minute to Kano LOS. Have fun on your EVA.

42:03:47 P Roger. Thanks very much.

42:03:50 CC Roger.

CARNARVON

42:28:34 CC Gemini XII, Carnarvon. We're checking out your systems now.

42:28:39 C Roger. Carnarvon.

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42:29:44 C In preparation for Umbilical EVA at 42:30. We've just about completed all connections except umbilical and for the Pilot's Integrity Check.

42:30:01 P ...

42:30:48 CC Gemini XII, Carnarvon. Have you completed your Sensitivity Check yet?

42:30:52 C This is Gemini XII. The Command Pilot has. The Pilot has not. We are still getting ready for it.

42:03:58 CC Okay.

42:31:01 C I am pumping up the oxygen a little bit. We're already on ... and he'll have ...

42:31:08 CC Okay.

42:31:31 CC Gemini XII, this is Carnarvon. We're indicating you on the ground with both A-Pumps in Primary and Secondary Loop. We want to remind you to just continue on with your Check List.

42:31:46 C Roger. We are supposed to put Primary A-Pumps on. Is that correct?

42:31:50 CC That's the way you are right now. But give a - as per Check List.

42:31:54 C Roger.

42:33:28 CC Gemini XII, Carnarvon. Confirm you are on manual O<sub>2</sub> heater.

42:33:32 C That's affirmative. I am. I just can't keep pumping it up ... We have the Repress OPEN, of course.

42:33:36 CC Okay.

42:33:40 C It's holding about 620.

42:33:43 CC Roger that.

42:33:47 C Do you want us to go off Repress to pump it up?

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42:33:53 CC I'd just follow your Check List.

42:33:55 C Roger.

42:34:38 CC Gemini XII, Carnarvon. We have 1 minute to LOS.  
All your systems are GO with the exception of the  
cryo O<sub>2</sub> pressure. Just keep above high on that  
thing and get it up to 710 on-board before EVA.

42:34:52 C Roger. It doesn't seem to be going up, Carnarvon.  
I've got the manual O<sub>2</sub> heater on.

42:34:56 CC Roger. Just before we go up, you can go to CLOSE  
on your Repress.

42:35:00 C Roger.

42:35:19 CC You're GO for depress just as long as that pressure  
does not decrease, Gemini XII.

42:35:26 C Roger, Carnarvon. But it's not increasing at all  
with the manual O<sub>2</sub> heater on. It's still at just  
about 600.

42:35:33 CC Roger.

42:45:35 C Okay. I'll ... the umbilical ...

42:45:42 C Verify Cabin Recirc Valve, DOWN, CLOSED.

42:45:46 C All clear. Valve CLOSED.

42:45:57 P Vent Check Valve, OPEN.

42:46:11 C Fully open Cabin Vent to depressurize cabin at 3 psi.  
Are you all set?

42:46:16 P All right.

42:46:18 C Can you read that cabin pressure?

42:46:20 P Yes, I can see it. Okay, it's coming down. 5 psi.

42:46:28 P Are you in VOX now?

42:46:30 C Yes.

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42:46:33 P Fore and aft.  
42:46:45 P 4 psi.  
42:46:49 P Okay. We're up to 700 pounds on the oxygen now.  
42:46:52 C Okay.  
42:46:54 C And how's the time doing?  
42:46:57 P Hey, it looks pretty good! Just about 44, right?  
42:46:59 C Okay. Check the seats.  
42:47:04 P My ... showing now 5 -  
42:47:09 C ...  
42:47:11 P 7 psi.  
42:47:14 P Okay. I'm going all the way.  
42:47:35 C Okay. I'm down to 6 now.  
42:47:40 C There's the sun coming up.  
42:47:52 P How about that for timing; 1 psi.  
42:48:02 C Okay. Look at those vent handles.  
42:48:09 P Okay. Watch and make sure that the umbilical,  
both parts, over here are loose.  
42:48:16 C You see? Okay. I've got that part of it.  
42:48:18 C Okay. I've got to get my hand up you know -  
(Laughter).  
42:48:23 C Okay. ...  
42:48:28 P All right. I'm getting some water out of the ELSS.  
42:48:33 C Do you have disposable bags?  
42:48:35 P Do you see that coming up? Do you see that from the  
window over here?

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42:48:40 C Yes.

42:48:50 C I think it's open.

42:48:52 P Okay.

42:48:57 C Now you grab that umbilical there, and I'll push it open the rest of the way.

42:49:04 P Okay.

42:49:20 P Our Gain and Drive selector to LOCK.

42:49:28 C Okay.

42:49:33 P Hatch is fully open?

42:49:35 C ... in high?

42:49:38 P It's in high and there's quite a bit of ice forming on my waist tether that came out of the condenser.

42:49:42 C Glad I noticed that and also on the window.

42:49:45 P All right. Here goes one by. Oops! What did I tell you about that tether coming undone?

42:49:52 C Undone?

42:49:54 P Yes. I think maybe I'd better get up a little higher to do it.

42:50:11 C Okay.

42:50:14 P I've got one more bag there.

42:50:15 C Throw it out.

42:50:16 P You want to turn the camera on and get a picture of it going?

42:50:21 C Okay.

42:50:22 P Got the camera going?

42:50:23 C Okay.

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42:50:26 P Okay. Here it goes.  
42:50:38 C ...  
42:50:57 P I'm hooking up the umbilical tether.  
42:51:02 P All right. It's hooked up now.  
42:51:04 C Okay. Is the hatch already open?  
42:51:06 P The hatch is all the way open.  
42:51:08 C Okay.  
42:51:09 P Okay. Let me get free here and I'll see if - what kind of differences there are. So far, I haven't really been impressed that there are any.  
42:51:16 C How's the heat?  
42:51:18 P How's the what?  
42:51:20 C How's the heat?  
42:51:21 P The heat?  
42:51:22 C Yes.  
42:51:23 P I'm cool as a cucumber.  
42:51:28 P Okay. Do I look free here?  
42:51:30 C Hold it a second.  
42:51:33 C Yes. You're free.  
42:51:35 P All right. I'll leave this position myself and --  
42:51:38 C Just about the circuit breakers.  
42:51:39 P Okay.  
42:51:52 C Are you okay?  
42:51:54 P I'm all set. I'm just holding on to the rest here.  
42:51:57 C Watch out that you don't step on the circuit breakers.

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42:51:59 P Okay. Do you see that I'm moving any?

42:52:02 C No. You're not moving a bit. I'm holding on to you a little bit though.

42:52:04 P Okay. Well, let go.

42:52:06 C Okay.

42:52:09 P Okay. There may be a very small amount. I can still see particles coming out of the cockpit.

42:52:14 C Okay.

42:52:16 P All right. Am I touching anything?

42:52:18 C No. You're not touching anything.

42:52:21 P Okay. I'm free now and the only thing that's holding me is the one hand on the handrail.

42:52:26 C Roger.

42:52:27 P And I'm letting go of that now. And I don't appear to be drifting very far. Maybe out just a small amount.

42:52:33 C I understand now. Roger.

42:52:34 P It's very ...

42:52:35 C I'm holding on to you very loosely ... with the tether.

42:52:38 P Okay.

42:52:39 C I'll let it go.

42:52:40 P I'm just floating here, no particular tendency to to any way.

42:52:44 C Yes. You ... go of tether.

42:52:45 P All right. You want to give me a job to do?

42:52:47 C Yes. Rest for 2 minutes.

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42:52:49 P Okay.

42:52:54 C I'll tell you when to quit.

42:52:57 P Well, it's kind of a waste of time right now, I think.

42:53:09 P ... I'm squeezing the ice off this waist tether.

42:53:16 P What's the first thing on the docket? The camera?

42:53:18 C Right. You're checking the ELSS outflow and float-out tendency. All right?

42:53:25 P That's what I've been doing.

42:53:27 C Right. The evaluation ... because we've got plenty of time.

42:53:30 P I'm not holding onto a thing and I'm standing right in the cockpit.

42:53:35 C All right. How's the heat?

42:53:37 P Fine. Cool as can be.

42:53:40 C Okay. Good.

42:53:45 C Okay. I'm going to turn on the auto heat vent.

42:53:47 P All right. Let's put the camera out there. Okay?

42:53:49 C Okay.

42:54:06 P I'm spreading my legs apart so I can use two hands on the camera to get a good grip on it. I've got a good grip on it now. Okay, now. I'm holding on to the back of the seat. Okay. ... it. Is my foot up against anything?

42:54:25 C Yes.

42:54:28 P Okay. I'll get ... Camera's coming in.

42:54:33 P Camera's in? And it's not particularly a problem doing it from this position. It's about the same position I was in during the stand-up EVA.

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42:54:42 C Okay. You're loosely tethered.

42:54:47 P Okay. I'll take the camera off. The camera came off nicely. With my hand I'm still holding on to the back of the seat.

42:54:57 C Okay. Good.

42:54:59 P Are you going to unloose me a little bit more?

42:55:01 C Anything your little heart desires ... Here, I'm giving you some more tether.

42:55:04 P Okay. Just make sure my feet don't kick against anything too much. ...

42:55:06 P All right. A little bit more. Okay. That's good. Now I can still say I'm in the cockpit but - -

42:55:16 C The tether - your umbilical is loose.

42:55:18 P Fine. Okay. There is definite desire to want to have something - to have your feet bounce against. The camera's in.

42:55:28 C Okay.

42:55:29 P And it's in good shape.

42:55:31 C Camera's in, right? Okay. Do you want to go outside again?

42:55:37 P Yes. My gloves are a little tight. I'm going to loosen them around the knuckles.

42:55:45 P All right. I'm going to go out. Let me get my - let my feet clear the hatch closing device. Are they clear now, do you think?

42:55:59 C I can't see that. I can only see your bottom foot.

42:56:04 P All right. I've got both feet out.

42:56:06 C Okay. I'll give you a little more tether.

42:56:11 P All right. I'm going to go over to the handrail.

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- 42:56:13 C Okay.
- 42:56:16 P I've got hold of the handrail now with my right hand.
- 42:56:21 C Okay.
- 42:56:22 P And I'm going to pull my body down. My right and left feet are touching the Retro-Adapter. I'm taking the camera out with my left hand now.
- 42:56:30 C Okay.
- 42:56:33 P The camera's out. I'm holding on with one hand; putting my body back into position. My feet are going crossways when I let go of that. All right. Now to put the camera in. I've got to pull down on the rail, brace my arm against it so that I've got good ... My arm is along the retro handrail.
- 42:56:57 C Okay.
- 42:56:58 P My right foot is touching it. That gives me enough so that I can push the camera in.
- 42:57:04 C Okay.
- 42:57:05 P The camera's in now and I'm setting it to 1/250th.
- 42:57:09 C Okay. Got your ...
- 42:57:11 P 6 frames per second.
- 42:57:12 C 6 frames per second?
- 42:57:14 P I'm going to move over here and you can turn it on and I'll verify it's operation.
- 42:57:16 C Okay.
- 42:57:21 P Right. I'm holding onto it. Turn it on.
- 42:57:23 P Okay. It's running fine.
- 42:57:25 C Okay. Now do you know what you're going to do?
- 42:57:30 P Go ahead. Clue me in.

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- 42:57:32 C You'll get a rest for 2 minutes. How about that, sports fans?
- 42:57:33 P Fine. Let me yaw around here to the right; the rest of me.
- 42:57:46 C Roger. I want you to completely rest.
- 42:57:47 P Okay. That means we've got to hold on to something.
- 42:57:52 P Okay. Let me ... ... is holding on.
- 42:57:59 P All right. I'm resting.
- 42:58:01 P Take a picture of this position I'm resting in.
- 42:58:04 C Okay.
- 42:58:06 P Absolutely no effort is required, just the pressure of my glove holding me on the handrail and on the strap on the hatch. My feet are just flying freely toward the nose. Small pressure on my fingers will raise my feet up or lower them down.
- 42:58:35 C Okay. Just rest.
- 42:58:37 C Okay. I can hear you breathing.
- 42:58:39 P I'm not breathing.
- 42:58:47 P The seat area looks pretty clear. The S-12 looks okay. Got a little ice on the windshield here.
- 42:58:54 C ...
- 42:58:59 P And as far as the sun position coming in the hatch, it looks like - well, you can see what's coming in on the upper instruments there. Just a very little red. I think we've got it shielded in pretty well.
- 42:59:21 C Okay.
- 42:59:22 P You're not still running the camera, are you?
- 42:59:25 C No. I shut it off.
- 42:59:28 P All right. I'm resting with just one hand holding

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on now.

- 42:59:30 C Okay. One hand. All right.
- 42:59:33 P And I'm not exerting - that's in the strap so I'm just letting it fly loosely.
- 42:59:37 C Okay.
- 42:59:39 P I think my foot is resting against the handrail.
- 42:59:42 C Okay. ... That first ... did take 8 minutes to do, so ...
- 42:59:54 P I'll be going up in the nose. Okay?
- 42:59:57 C Yes. Just a minute now. Okay. We're going to feed the umbilical out. Umbilical's coming out.
- 43:00:01 P Yes. Not too much.
- 43:00:04 C I won't.
- 43:00:06 P I don't think we need any more than 11 or 12 feet.
- 43:00:09 C ... out of it?
- 43:00:11 P Yes. I've got enough ...
- 43:00:13 C Okay. Good.
- 43:00:28 P Okay. Can you ... comfortably keep the rest of it in there?
- 43:00:30 C I can keep the rest of it, if you want me to.
- 43:00:33 P Yes. Why don't we see how this goes. I can call for a little bit more. Maybe a couple more feet.
- 43:00:40 C You want a couple more feet?
- 43:00:41 P Right.
- 43:00:45 P Okay.
- 43:00:46 C All right.

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43:00:47 P That's good.

43:00:52 P All right. Now I'm all set to move up along the handrail.

43:00:57 C All right. Now wait a second. Okay ... move slowly along the handrail and stand by because I want to get a picture.

43:01:04 C Okay. ...

43:01:06 P Right. Moving in a right-hand ... handrail.

43:01:09 C Camera is going.

43:01:11 P Slight tendency to go head-over. I'll just apply a little bit of torque with my fingers and I can counteract that. Okay. I'm up by the nose on the handrail and now I'm going to turn around so that I can get the waist tether into position.

43:01:33 C Okay. Attach tether to handrail.

43:01:40 P All right. I'm in good position now and I'm going to put my finger in one of the rings here and take off the right waist tether.

43:01:51 P And the right waist tether is in the handrail ring.

43:01:54 C Okay. Sounds pretty good. Now, how about doing a little ... evaluation on that?

43:02:01 P Okay. I've got to get the left one in.

43:02:04 C Oh, okay.

43:02:06 P But I might, just might lose this bar in the process. All right, I've got the left waist tether in.

43:02:10 C Okay.

43:02:16 P And let - okay, why don't you take a picture if you want one?

43:02:21 C I've got the camera going.

43:02:22 P I'll get the full extension on the waist tethers.

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43:02:24 C Okay.

43:02:40 P I'm ...

43:02:42 C Okay. Cameras are off now.

43:02:45 P Okay. I'm just as cool as I was yesterday.

43:02:47 C You are?

43:02:49 P Yes.

43:02:50 C No difference, right?

43:02:52 P No difference.

43:02:53 C Okay. What is your ELSS ... on?

43:02:54 P It's in HIGH.

43:02:59 C Well, now we're supposed to go to MEDIUM and BYPASS. I don't think you're breathing much at all.

43:03:01 P I see no reason to.

43:03:03 C Are you cool?

43:03:04 P Fine. My feet are getting cool.

43:03:05 C Your feet are getting cold, right?

43:03:06 P So are my fingers.

43:03:07 C Your fingers are getting cold. All right. I don't think you're breathing hard. I can't even hear you breathing; so take it easy.

43:03:16 C Okay. Let's see now.

43:03:25 C Okay. Stand by. Are you going to start the Agena tether?

43:03:28 P Yes.

43:03:30 C All right. I want to get a picture.

43:03:33 P Got it?

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43:03:34 C Yes. Go ahead. Put your Agena tether on.

43:03:42 P All right. The tether is on the docking bar and I'm pulling up this way.

43:03:49 C Make sure it doesn't go around that handle on the right-hand side.

43:03:54 P All right. It's pulled up tight and ... the ball is engaged.

43:03:57 C Okay. Sounds pretty good.

43:04:01 P Slide it down. It doesn't look like it's going to go in the cone here.

43:04:09 C Well, why don't you leave it just above the cone  
...

43:04:11 P Okay. I don't really have to tighten up on these waist tethers very much.

43:04:18 C Okay. Are you going to put that clamp on?

43:04:21 P Right.

43:04:25 P There goes the pin.

43:04:33 C Don't move too fast, you're disturbing the Agena.

43:04:37 P Roger.

43:04:42 P This - what do you call it - this toadstool on the top of the bar - -

43:04:45 C Yes.

43:04:47 P All right. It twists a little bit. I've got it back to straight - aft position.

43:04:57 P Okay. It looks like it's in.

43:04:59 C Okay.

43:05:01 P Well, it wasn't, but it is now.

43:05:04 C Well, double check. What's that line there at the

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top. Will you take that line off that's attached to the clamp?

- 43:05:11 P Yes. I can cut it off and get it on.
- 43:05:16 C Throw it away.
- 43:05:25 P There she goes.
- 43:05:28 P All hooked up and the valve cover's still attached on the strap. I think we can just leave that like that. Right?
- 43:05:37 C Yes.
- 43:05:45 P That okay with you?
- 43:05:47 C Okay.
- 43:05:48 P Let me see how tight it is. We don't want it too tight. Okay. I'll loosen it up just a little bit so that it won't take much to pull it out. That looks good now. Think that'll be clear enough?
- 43:06:04 C Yes. That's good.
- 43:06:05 C Okay. I've got the camera going now. Here, I'm going to turn it off for a second.
- 43:06:13 C Okay. Let's see now.
- 43:06:16 P Let's move over. Evaluate a slightly different position ...
- 43:06:21 C The next thing is to rest for a few minutes.
- 43:06:40 C Well, let's just rest. We're ahead of the game anyway. Let's just rest.
- 43:06:52 C Can you rest facing me, though? I'm just getting a rear-end shot here; it's not too good.
- 43:06:57 P I'm sorry about that. There, how's that?
- 43:07:00 C Okay. Fine.
- 43:07:01 P Better?

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43:07:03 C Yes, that's much better.

43:07:09 P Now I still see that rough stuff around the adapter.

43:07:13 P You know, on the separation plane.

43:07:14 C Yes.

43:07:30 C Listen. While you're resting, why don't I just try and get a picture on the 70mm here?

43:07:35 P All right.

43:07:40 C We are ahead of the game anyway so - I know that you'd like to have your picture taken.

43:07:54 P Well, let me batten down here. Have you got the camera out?

43:07:59 C Yes.

43:08:01 P Okay.

43:08:04 P There. How's that?

43:08:06 P Did you get it?

43:08:07 C Just stand by.

43:08:11 C ...

43:08:28 C One more ...

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43:08:47 C Okay, let's see.

43:08:48 P One more, right?

43:08:52 C Well, ... pictures.

43:08:55 CC Gemini XII, Houston CAP COM. Standing by.

43:08:59 C Okay, Houston. I read you loud and clear. Stand by.

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43:09:04 CC Roger.

43:09:08 P We're getting the tethers all hooked up.

43:09:12 CC Understand.

43:09:16 P Tilt it down a little, if you can get it for me.

43:09:18 C Yes.

43:09:21 P Okay.

43:09:23 P We're just taking a little - couple of pictures of each other.

43:09:30 P All right. I think I'll move this tether over to the other station.

43:09:45 P This one over here ought to be good.

43:09:52 C You're getting out of my field of view a little bit.

43:10:09 P Well, I probably will while I do a little on the S-10.

43:10:25 C Hey! Say, Buzz?

43:10:28 P Yes?

43:10:30 C Where did you get that blue pack on your back?

43:10:33 P What's that?

43:10:37 C Where did you get that blue pack on your back there?

43:10:40 P The blue pack, right?

43:10:57 C Okay. Is it a little difficult?

43:10:59 P It's a little tight.

43:11:04 C ... Okay.

43:11:18 P All right. The fairings are out, the pins are loose, and it's tethered.

43:11:21 C Okay. Good.

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43:11:23 P All right. Let me open it in this position here.

43:11:28 C Open her up.

43:11:33 P What a complicated piece of gear this is.

43:11:39 P It's open and I'm going to leave it, I think, in this deployed position.

43:11:59 C Do you have it open and apart?

43:12:04 P Roger. I think maybe the best thing to do is put the ... out.

43:12:09 C Okay.

43:12:11 P Or just make sure it's not going to come loose.

43:12:13 C Yes.

43:12:14 P ... If they do anything with it, it will slide aft.

43:12:21 C Are you still cool?

43:12:23 P I'm still cool.

43:12:25 C Okay. Sounds good. How's your ...

43:12:32 P All right. I'm going to take the Velcro off the S-10 even though I'm clear of the other place.

43:12:40 P This is just another little bonus. All right. The Velcro is on and is pinned.

43:12:47 C Okay. Velcro off of the S-10 ... Okay. I'll tell you what - look sports fans, you're a little ahead of the game here.

43:12:53 C Why don't you just take your tether and go around to the work station a little bit and we'll get a couple of shots while you rest. Okay?

43:13:08 P All right.

43:13:11 C You're getting in a good position for photography now.

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43:13:26 CC Gemini XII, Houston CAP COM. Could you turn your Heater to AUTO, please?

43:13:33 C Roger. Thank you.

43:13:52 P Well, let's see. I think maybe I'll move this tether out to the other ring. It looks a little better.

43:14:13 P Okay. How's that for position?

43:14:17 C Good.

43:14:18 P Don't let me kick that thing.

43:14:21 C Yes. I'd hate to see that.

43:14:24 P The only think I want to do is get the handle.

43:14:27 C I'm having a harder time getting the camera up to the window than you are.

43:14:32 P Okay.

43:14:47 P Houston, how much longer on this pass do we have with you?

43:14:57 CC About another 10 minutes worth, Buzz.

43:14:58 P Roger.

43:15:03 C Okay. Why don't you rest here for a couple of minutes, Buzz, and ... We've got time to go through the Adapter.

43:15:53 CC Everything's looking real good, Gemini XII.

43:15:55 C First let me get the camera, I might have some film left.

43:16:05 P Houston, this is Gemini XII here. I have a couple of messages for you.

43:16:10 CC Copy.

43:16:11 P Roger. To commemorate our launch day of November 11th, I have an emblem here that I'd like to have

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in orbit. It says November 11th, Vet's Day.

43:16:25 C Stay right there, Buzz. Rest for a second.

43:16:29 C Stay right there, Buzz.

43:16:34 CC Copy, November 11th, Vet's Day.

43:16:36 P Roger. I'd like to extend the meaning of it to include all the people of the world who have been, who are now, and will continue to strive for peace and freedom in the world.

43:16:49 CC Mighty fine.

43:16:50 CC Okay. ... You're doing a good job.

43:16:53 P Now, wait a minute. I've got another one here.

43:16:59 C ... with this 70mm Maurer is a job here.

43:17:08 P Now this message that I have, concerns a contest, coming up in the future. I think the precedent was set for this about a year ago. And I'm not sure that Jim can read this one, so I'll read it out loud to you so you all can hear it.

43:17:36 P Go Army! Beat Navy!

43:17:40 CC Roger. Understand. Beat Army!

43:17:42 P Negative!

43:17:45 P I knew we had the wrong CAP COM on here!

43:17:47 CC No sweat.

43:17:49 C There's always a ... at the ...

43:17:52 P You're not taking pictures here, friend.

43:17:54 C The camera just broke. Okay. I'll take a picture of you in a minute. Stand by.

43:18:09 C ... I hate to do that.

43:18:11 C You've got it now. How about the other one?

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43:18:12 P Yes. I've got it.

43:18:13 C Okay.

43:18:16 P I'll just leave this up here.

43:18:20 C ... it's about time for you to come back.

43:18:25 C Okay. Let me just ... camera here for a second.  
...

43:18:28 CC Everything's looking good, Buzz. Suggest you slow down a little.

43:18:33 P Roger.

43:18:38 P Well done!

43:18:47 P What a beautiful view!

43:18:48 C Yes.

43:18:52 P We're completely upside down now.

43:18:59 CC Roger.

43:19:25 C Hey! ...

43:19:43 CC Gemini XII, Houston. Everything's looking real good. Coming down nicely.

43:19:46 C Okay.

43:20:00 P My feet are still cold.

43:20:06 CC Roger.

43:20:11 C Okay, Buzzeroni. How do you feel?

43:20:14 P Great. Let me get one more portable handheld deployed out here. ...

43:20:20 C No, I don't want to rush it now, going back to the Adapter. Besides, I'm just about out of film.

43:20:43 P This Velcro holds pretty well.

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43:20:54 C Okay. Let's go.

43:20:56 P All right. I've got two of those portable handholds deployed up on the nose. ... standing by.

43:21:03 C Come on back.

43:21:06 CC Gemini XII, Houston. If you have a chance on your way back, you might glance over to the left-hand side and see if you see any ice on the H<sub>2</sub> vent.

43:21:16 CC That's on the Command Pilot's side.

43:21:17 C I sure do.

43:21:20 P So that it's, oh, 6 inches high in the form of a bush sort of - ice building out radially, it's about 8 inches across, and it's pure white.

43:21:37 CC Understand, 6-inch bush.

43:21:44 P Jim, I think this clamp here might possibly have come loose while I was using it as a handhold. I don't think it should be used as a handhold. It's tight now.

43:21:57 C Understand.

43:22:07 P And I'm going to use the Velcro on the top of the ELS to hold this up.

43:22:12 C Okay. This Maurer camera sure beats the Hasselblad for taking pictures in EVA. Here I can get up to the window.

43:22:19 P Well, I'm glad it - -

43:22:21 C There was one advantage to it.

43:22:22 P Yes.

43:22:24 P All right. I'm working my way back along the hand-rail now.

43:22:27 C Okay.

43:22:29 P How does the umbilical look? Nice and clear?

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43:22:32 C Yes. It's 35 now, Buzz, so we've got to go.

43:22:35 P Okay. How about flipping the scanner on just for a minute?

43:22:43 P Is it on?

43:22:44 C I'll turn it on now.

43:22:49 CC Gemini XIII, Houston CAP COM. 1 minute to LOS. About 20 minutes to sunset.

43:22:57 C Roger. Houston. Come on Buzz, let's go.

43:22:58 P Okay.

43:23:00 C Quit horsing around.

43:23:08 P Back in the hatch.

43:23:20 C All right. What's number one on the docket?

43:23:25 C Okay. Hand me the 70mm camera.

43:23:30 C Roger.

43:23:36 CC 3 minutes to Canaries.

43:23:38 C Roger.

43:23:44 P All right. Here's the camera.

43:23:49 P Have you got it?

43:23:50 C Okay. There you are.

43:23:51 P Wait a minute. Okay. I think it's free now.

43:24:07 C Okay. Retrieve the 4 GLV strips.

43:24:17 P Roger.

43:24:37 P 1.

43:24:52 P 2.

43:25:11 P 3 and where am I going to put the 4th one?

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43:25:42 P And 4.

43:25:43 C Okay.

43:25:47 C Pick up and secure Adapter work station camera.

43:25:51 P Okay. I better get my finger under here.

43:26:32 C Do you have it?

43:26:37 P I've got it.

43:26:42 C Okay. Now I'd like to feed out the rest of the umbilical to you before you do that, so it doesn't get tangled before you go back.

43:26:49 P All right. That sounds like a good idea. Let me get the ... fastened on the chest pack back here.

43:26:54 C Okay.

43:26:59 P All right. That seems to be fairly secure.

43:27:10 P Okay. Go ahead and bring it out.

43:27:12 C Okay.

43:27:26 P Okay. That's it.

## CANARY ISLANDS

43:27:29 CC Gemini XII, Canary CAP COM. Standing by.

43:27:33 C I have all of the umbilical out of the hatch now.

43:27:36 C Okay. ... that, Buzz.

43:27:42 P I'm moving from the portable handrail back to the retro handrail.

43:27:49 C Okay.

43:27:50 P Moving along it, one hand over the other. Just getting myself going with a little momentum.

43:27:56 C And ELSS in, right?

43:27:58 P The ELSS is still right.

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43:28:02 P And I can see the EVA light is on.  
43:28:05 C Okay.  
43:28:07 P I'm back at the pigtail now.  
43:28:09 C Okay.  
43:28:11 P Getting set to turn the corner.  
43:28:13 C Okay.  
43:28:19 P Turning the corner.  
43:28:20 C Okay.  
43:28:23 P Coming around the edge.  
43:28:24 C Okay.  
43:28:25 P Routing the umbilical through the pigtail.  
43:28:28 C Okay.  
43:28:29 P ... pigtail ...  
43:28:32 C Okay.  
43:28:38 P ...  
43:28:43 P Is it tight now?  
43:28:44 C Yes. It's really tight from here.  
43:28:47 P Okay. That's good. I'll just leave it there.  
43:28:49 C Okay.  
43:28:52 C All we have ... is 41 minutes now, Buzz.  
43:28:54 P Good show.  
43:28:56 C And --  
43:28:58 P Now wait a minute. Okay.  
43:29:00 C I want you to be positioned ...

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43:29:04 P I'm going - going around now.

43:29:06 C Okay.

43:29:17 P And it looks like both lights are working.

43:29:19 C Okay. Both lights working, right?

43:29:30 C The umbilical goes behind you and ... easy, easy.  
You're shaking up the whole Spacecraft.

43:29:37 P Okay. Left foot is in the foot restrainer.

43:29:43 C Okay.

43:29:44 P And the right foot's in.

43:29:45 C Okay.

43:29:52 C Now, at your convenience ...

43:30:09 P All right. We want to make 1 frame a second.  
1 - 150, is that right?

43:30:15 C Yes, if you want to get some ...

43:30:20 P Well, I don't think we want to experiment around.

43:30:24 C I concur.

43:30:35 P It doesn't want to go in further as easily as I  
would have liked.

43:30:49 P Matter of fact, it isn't going in easily at all.

43:31:05 C Take your time.

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43:31:07 P I don't see what the problem is other than this piece is sticking out quite a ways.

43:31:30 C I can hear you pounding back there.

43:31:34 P Would you believe that the linkage is broken in the - in the bracket?

43:31:44 C Is that right?

43:31:46 P Yes.

43:31:51 P Wait a minute. Maybe I can do a little repair work here.

43:31:55 P How about that? It's in.

43:31:56 C Okay.

43:31:57 P Yes, the linkage is broken, I'm pretty sure.

43:32:07 C How about resting for a little bit?

43:32:08 P All right. I have the plug in.

43:32:10 C Okay. At 44 minutes we'll rest for 2 minutes.

43:32:13 C I have the EVA camera secured ... frame at ...

43:32:25 C What do you see back there? Is everything okay?

43:32:31 P Everything looks good.

43:32:33 C Are your feet in place?

43:32:36 P Right. They don't seem to have a tendency to come out. The left heel seems to be up a little higher, for some reason, than I anticipated.

43:32:47 C Did you start the camera?

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- 43:32:48 P No, I didn't. You didn't turn it on, did you?
- 43:32:51 C I'll turn it on now before you - -
- 43:32:54 P Wait a minute. Have we got enough time?
- 43:32:56 C Well, yes. You're going to leave there at sunrise, so we've got 48 minutes. ... hold off a second.
- 43:33:04 P Yes. There's nothing to take a picture of right now. Besides, the way we've got it oriented, I'm afraid it would be very overexposed.
- 43:33:14 P Okay. I'm going to - the neutral position that I have is just - just about a position where both my hands would be freely in position to grab the handbars - the handbars, you know?
- 43:33:31 C Yes.
- 43:33:32 P And that is primarily a suit position. Now if I move a little forward toward the work station, I have just a very small tendency to come back, but you know you can put a suit in several different positions and it will stay.
- 43:33:41 C Yes.
- 43:33:47 P I'm going to lean back now.
- 43:33:56 P All right. I'm leaning straight back and I'm almost parallel with the - my back is parallel with the longitudinal axis now. And this is a little bit harder than it was under water. It's a little more leg force. I'm looking right down and we're going right over the desert. I guess this is Africa, right?
- 43:34:22 C Yes. I think so.
- 43:34:25 C Hey, Canaries. Are you still with us?

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- 43:34:27 CC Roger. We've got about a minute to LOS.
- 43:34:29 C Okay. Why don't you just inquire from Houston sometime at your convenience about the next exercise, which is the tether experiment with the thrusters, and find out just what they particularly want us to use.
- 43:34:41 CC Roger.
- 43:34:46 C I wanted it checked out before Buzz gets back here.
- 43:34:49 CC Gemini XII, you want to know all about the thrusters for the tether exercise. Is that correct?
- 43:34:55 C We have a tether attached, see, and I just want to know what their thinking is on how we should check out 2 and 4, or just what they want to do with the tether exercise with the two thrusters that are out.
- 43:35:07 CC Roger. We'll pass that on.
- 43:35:18 P I don't see any bananas back here.
- 43:35:20 C No bananas?
- 43:35:21 P No. Now let me see if I still have my Check List. There it is.
- 43:35:31 C I'm changing cameras now. Boy, this slide camera's a bear?
- 43:35:39 P Which one?
- 43:35:40 C The slide camera.

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KANO

- 43:35:44 CC Gemini XII, Houston CAP COM through Kano. Everything's sounding great on the ground.
- 43:35:45 P You mean the one on the 15mm on the bracket?
- 43:35:47 C By my window, yes.
- 43:35:56 P Okay. By far, the hardest job was putting in this camera here.
- 43:36:01 C Okay. Does the --
- 43:36:04 P It may not come out.
- 43:36:06 C Okay. Pull the umbilical cord and ... the handrail.
- 43:36:08 P It's already done.
- 43:36:10 C ... handbars.
- 43:36:13 P Roger.
- 43:36:20 CC Gemini XII, Houston CAP COM through Kano and standing by.
- 43:36:25 C Roger, Houston. We're down to where we're going to start the ... pass and after the pass ... my left-hand camera which is ... It'll be difficult as a matter of fact. Buzz is standing by ...
- 43:36:47 CC Roger. You're looking real good.
- 43:36:52 P I don't know whether you heard it through Canaries, but I had a problem with the camera. It looks like the linkage in the bracket was broken and I was able to stick my finger in underneath it and get it to work properly, so it's now installed. There may be a problem of getting the camera off.
- 43:37:13 CC Roger. We copied. And if you have a problem in taking it out, maybe you can remove the camera

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from the bracket.

- 43:37:19 P Yes. I've got both ... lights out now. Incidentally, one of them looks like it was heated up a good bit.
- 43:37:29 C Okay.
- 43:37:30 P The glass on the front, or whatever it is, is bulged out quite a bit.
- 43:37:33 C Okay, Buzz ...
- 43:37:35 P Okay. You have all those pictures?
- 43:37:37 C All but the ...
- 43:37:40 P All right. One frame per second.
- 43:37:43 C Wait a second.
- 43:37:47 C Okay.
- 43:37:49 P Now wait a minute. When I push it in, it starts to move.
- 43:37:56 P All right. Let me feel and see if it's going.
- 43:38:02 P Roger. It's taking pictures, but the bracket is barely free to swivel. Now wait a minute. I guess it's all right.
- 43:38:11 P It's taking pictures.
- 43:38:13 C Okay. I'll tell you what, Buzz. Why don't you rest a few minutes, because I want to change the tape and this is a good time to change it.
- 43:38:22 P All right.
- 43:38:23 C Look around because it's going to get dark pretty soon. I want to change it before it gets dark.
- 43:38:27 P Yes. I'm getting a slightly warm posterior. The sun is setting.
- 43:38:44 P Great from the visibility standpoint, but it's not

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too good from the heating standpoint.

43:38:50 P I felt pretty cool, but it is getting a little warm.  
43:38:53 CC Roger. That's the sunning effect.  
43:38:56 P Roger. The sunning.  
43:39:23 C Okay. New voice tape installed.  
43:39:28 P When I lift the visor, it sure gets bright back there with all the sunlight hitting the dome.  
43:39:37 CC Gemini XII, this is Houston. Like to remind you to check your manual O<sub>2</sub> heater.  
43:39:41 C Roger. It's at 710. I'll turn it off a little bit.  
43:39:47 CC Roger.  
43:39:51 C Okay, Buzz. You resting?  
43:39:54 P Right --  
43:39:55 C ...  
43:39:56 P -- When I press myself down against the bottom of the suit, I can feel the zipper still a little bit on the warm side.  
43:40:04 C Okay. How do you like your ... Buzz?  
43:40:07 P They are great.  
43:40:08 C Gives you ...  
43:40:09 P Don't have any problem in positioning my body at all.  
43:40:13 C Okay. We're going into darkness.  
43:40:15 P Yes. I can see it.  
43:40:16 C Okay. Buzz, if you want, you can start the --

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43:40:22 P Yes. We're still in daylight back here.  
43:40:23 C Well, it doesn't make any difference.  
43:40:24 P It doesn't?  
43:40:26 C As long as it's daylight back there.  
43:40:30 C 3 minutes to sunset.  
43:40:31 P Okay. Thank you.  
43:40:42 CC Gemini XII, Houston. 1 minute to Kano LOS. See you in Tananarive in 9 minutes.  
43:40:48 C Okay, Buzz.  
43:41:42 P You still have the camera out, don't you, Jim?  
43:41:44 C What's that?  
43:41:46 P I say, you still have the camera out, don't you?  
43:41:47 C Yes. I was dreaming.  
43:41:49 P Okay. I can't feel it taking pictures.  
43:41:52 C You can't? I'll turn the switches off.  
43:41:54 P Take the circuit breaker to SLIP.  
43:41:56 C Switch is off.  
43:41:57 P All right. Now we hit the button again.  
43:41:59 C The circuit breaker's off.  
43:42:48 P I can't - I can't feel it's on.  
43:42:50 C Put your hand on it and I'll turn the camera off and see if it's engaged.  
43:42:59 C Any change?  
43:43:00 P No.  
43:43:04 C Try it again.

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43:43:05 P Okay. I have to push the button this time to turn it on.

43:43:12 P I ought to be able to feel it now that the circuit breakers are set.

43:43:18 P The only thing that I can feel is that it's fairly hot.

43:43:22 C Okay. Start working with the stuff. Open the box and move the lens.

43:43:28 P You've got both switches on?

43:43:29 C Yes.

43:43:30 P I'll move the button once more.

43:43:32 P I'm afraid it might not be working.

43:43:42 C You want to leave there by sunlight if possible.

43:43:43 P Right. The pipe is open.

43:43:46 C Remove the lenses.

43:43:54 P Man, somebody put the wrench in there!

43:43:57 C Calibration on 6 volt ... and turn it up a little.

43:44:18 P I'd like to take a tug on this wrench.

43:44:35 P It looks like maybe the clock is shrunk around the wrench.

43:44:41 C Okay.

43:44:50 C Take it easy.

43:44:53 P I'll do that.

43:45:08 P Okay. I've got it now.

43:45:17 C ...

43:45:25 C Is your ... high?

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- 43:45:27 P It's coming high.
- 43:45:28 C Okay.
- 43:45:30 P All right. I'm going clockwise.
- 43:45:44 P And I've got about 250 each time clockwise and 3 o'clock position.
- 43:45:51 C Okay.
- 43:45:52 P 12 o'clock position.
- 43:45:56 C ...
- 43:46:02 C Got the wrench?
- 43:46:05 P Something in the wrench just snapped.
- 43:46:07 C Are you seated?
- 43:46:08 P Yes.
- 43:46:11 C I can feel it all the way through here, Buzz. I can feel it!
- 43:46:12 P Yes.
- 43:46:14 C Okay. Is the wrench broken?
- 43:46:16 P It just moved to a new neutral position. The 12 o'clock position again is a squeezing of the right hand as you're going counterclockwise. Squeezing of the right hand on the left hand.
- 43:48:04 C Okay.
- 43:48:05 P And it's primarily exhibited in the shoulders more than any other place in the body.
- 43:48:10 P All right. Back to the 3 o'clock position. Again we're with our own, we're pushing up now and this tends to push you down slightly in the foot restraints. This can be done without holding on with the left hand.
- 43:48:26 C They hope you are wrapped up on this torque

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business. Buzz, we have to get going.

- 43:48:29 P Okay.
- 43:48:31 P Now to compare how easy it is to get the wrench under the quarter inch. It goes on fairly easy and - -
- 43:48:42 C Different positions quarter inch.
- 43:48:46 C Okay. Disconnect the - -
- 43:48:48 P The half inch is a little easier, but not much of an advantage.
- 43:48:52 C Okay. Disconnect and connect the center connector.
- 43:48:58 C Secure the wrench in the Velcro.
- 43:49:00 P All right. It's secured on the Velcro.
- 43:49:02 C Center connector.
- 43:49:05 P Is the Velcro undone?
- 43:49:12 P And I inadvertently left my visor down which makes it a little darker. Visor's up now and it's a lot easier to see what's going on.
- 43:49:22 C All right. Center connection.
- 43:49:26 P Moving my right thumb to disengage the bar.

**TANANARIVE**

- 43:49:29 CC Gemini XII, Houston CAP COM through Tananarive and standing by.
- 43:49:33 C Roger, Houston.
- 43:49:35 C Okay. Disconnect the end connector.
- 43:49:37 P I am lining up the colors and green is not a very choice color, but - - for index marks.

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43:49:40 P All right. It's lined up and white is a better index mark. And it is engaged and tight.

43:50:00 C Okay. Now ... picture.

43:50:05 C Will it disconnect?

43:50:10 P It is disengaged and this time I used a jerk, rather than squeezing the finger and thumb against the palm to reengage it, after repositioning it in my hand. It's going to take a push forward and disengaged.

43:50:31 C It is engaged?

43:50:32 P Now I'll do it with thumb and forefinger and it comes out with a squeeze against the palm of the hand. Now it's back in again.

43:50:43 C Okay. Now why don't you rest here for awhile.

43:50:48 CC Gemini XII, Houston CAP COM through Tananarive and standing by.

43:50:53 C Okay, Houston. We're resting.

43:50:56 P I've got my lights on dim now.

43:51:13 P The right glove at the base of the thumb is beginning to give my hand a little bit of a problem.

43:51:20 C Okay.

43:51:23 C ... on the right side of your glove.

43:51:25 P What's that?

43:51:27 C See if your gloves are ...

43:51:30 P No. They're in good shape. This is right in the crease.

43:51:32 C Okay.

43:51:34 P It has nothing to do with the tightening of straps, so loosening them wouldn't help.

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43:51:42 CC Gemini XII, Houston CAP COM. 1 minute to LOS; Carnarvon in 10 minutes.

43:51:43 C Are you resting?

43:51:44 P I'm resting. I'm just moving my slightly moist underwear away from the suit.

43:51:51 C Okay. Are you cooler now than you were?

43:51:54 P Yes. I feel a lot cooler now that the sun's gone down.

43:51:58 C Okay. What's the status of your visor? Is it fogged?

43:52:01 P No. Clear as a bell.

43:52:03 C Clear as bell? Okay.

43:52:06 C Are you perspiring at all?

43:52:08 P Negative.

43:52:09 C No perspiring, right?

43:52:12 P And I'm bending back now, looking up stars.

43:52:15 C Well, It's about time you learned them.

43:52:18 P Yes. Well, first things first, you know.

43:52:22 C Okay, Buzz. Move the cutters to the ... and ...

43:52:33 P I hope the cutters come on a little easier than that.

43:52:47 P Now the cutters are out and look what have we here.

43:52:51 P Looks like my first job is to peel open a banana.

43:52:56 C Don't tell me you got a banana back there.

43:52:58 P I got a banana and it looks like a Mexican banana!

43:53:00 C Mexican banana! Outstanding!

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43:53:03 P Spelled backwards!

43:53:08 C Okay.

43:53:11 P Chiquita! Chiquita banana! How about that?

43:53:15 C Okay ... get your cutters and cut two strands to the right side of strip cable.

43:53:20 P All right.

43:53:21 C ... don't cut yourself.

43:53:47 C ...

43:53:56 C There's 6 minutes now into the second 60-minute period.

43:53:59 P All right.

43:54:30 P All right. I've got the cutters in my hand now. They're in good position. They're cutting the strap seams, all of them, quite nicely. Cutting one strand. They're trying to anyway. All right. One strand is cut and I think that's the medium one. I'll do the small one now, and that one cuts quite easily.

43:54:56 C Okay. Now ...

43:54:59 P No. That one, I don't think, is going to cut at all.

43:55:20 P I don't think it's going to cut with one hand; let me try two.

43:55:30 C Careful.

43:55:34 P All right, I've got the wires cut. Yes, I cut it but it needed a pretty good squeeze with the hand.

43:55:39 C All right. ... disconnected with two hands with a pretty good squeeze, right?

43:55:44 P Right.

43:55:45 C ... the cutters in the box.

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43:55:51 P Cutters going in the box.

43:55:54 C Okay.

43:56:08 C Your ELSS is on HIGH, right?

43:56:11 P Yes, the ELSS is still on.

43:56:13 C Do you have any trouble with the ELSS or not?

43:56:18 P No. How we doing on oxygen?

43:56:20 C Used 6 percent or 700 psi.

43:56:23 P Okay. I feel that MEDIUM while monitoring the work would probably be adequate.

43:56:35 C Well, if our reading has to be okay, we'll ... It may be ... if we tell Houston about it.

43:56:42 P Yes. I agree.

43:56:51 C ... you want to.

43:56:54 P I think we'll leave it here until we get a little further into this.

43:56:58 C Okay ...

43:57:06 P The right fits in its node, removed and stowed and both of them I worked very smoothly back there.

43:57:15 C Okay ...

43:57:37 C ...

43:57:39 P Okay. Just relocating the portable handles on the Velcro.

43:57:44 C Okay.

43:57:46 P You can hear me move it?

43:57:47 C You act like you feel it.

43:57:48 P Well, I mean knock on the door and see if you can

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hear it.

- 43:57:49 C ... may solve the whole thing.
- 43:57:54 P Open the door, Richard!
- 43:57:55 C ... the Velcro and ... bolt.
- 43:58:01 P I'm going to Velcro this center wire out of the way. It's dangling down a little bit and it might get in the way of that operation. Okay. It's out of the way now.
- 43:58:28 P All right. Center bolt coming undone.
- 43:58:32 C Okay. How's the ... holding up?
- 43:58:37 P I haven't got it loosened up enough. I don't think it's going to be a problem at all, loosening it.
- 43:59:06 P Still, I have a tendency to wind up just what you unwind unless you put a slight twist on it.
- 43:59:19 C Okay.
- 43:59:21 P The ratchet - a force to break out the ratchet is too small and it tightened the bolt back up again  
--
- 43:59:27 C ...
- 43:59:28 P -- so what I'm going to do is - well, I don't think there's any problem doing the rest of this.
- 43:59:37 C Okay. Then stow the wrench at the Velcro. You say there's no problem at all with the ... bolt screwing on?
- 43:59:44 P No problem on the foot restraints. So what I'd like to do is to get the waist tethers hooked up and take it out and put it back ...
- 43:59:49 C Okay. Stow the ... on the Velcro.
- 44:00:08 P Right waist tether is hooked up.

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44:00:12 C Okay.

44:00:15 P And left one is hooked up.

44:00:18 C Okay.

44:00:20 C Remove the feet from the foot restraint.

44:00:24 P Okay. The feet are out of the foot restraint and then we just see what tendencies I have for drifting.

44:00:30 P Just as I suspect. The tendency is for the head to drift in.

44:00:35 C The head goes in at an angle ...

44:00:37 P When drifting, then I can push it away, of course, and then the feet begin to come in contact with the foot restraint and the sooner they do that, then I drift up toward the top of the work station. The top of the work station, where all the silly strips are, is the optimum work station with the waist tethers connected where they are and, of course, the Saturn bolt is not at a very advantageous location for the waist tether.

44:01:11 C Okay. Understand --

44:01:13 P And so what I have to do is to drift myself back down here.

44:01:18 C With the bar I had to hold yourself down?

44:01:20 P Well, I'm going to use a portable handhold. It doesn't require very much of one.

44:01:24 C Okay.

44:01:25 P I think the portable handhold on the Velcro will suffice.

44:01:30 C Okay.

44:01:31 P I'm not doing manually now. The bolt, and it doesn't look like the - Yes, afraid of that! - It doesn't look like the rubber's going to come off,

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- so I have a loose bolt and a washer in my hand now.
- 44:01:51 C What happened? The rubber won't come off?
- 44:01:54 P Well, I think what happened is it melted - the rubber melted and stuck to the - -
- 44:02:03 C The rubber melted, right?
- 44:02:04 P Yes.
- 44:02:05 C Okay.
- 44:02:08 P Yes. Let me see what I - if I can do anything about that. Yes, I'll pry it loose with a ... pin.
- 44:02:21 C What are you prying loose with a pin?
- 44:02:23 P I'm prying the rubber loose.
- 44:02:25 C From the bolt?
- 44:02:27 P No, from the - this raised port that the bolt was attached into.
- 44:02:36 C Oh, okay. Oh, I see, I see what you mean. The rubber is keeping the bolt in, right?
- 44:02:44 P Right. Now a loose bolt with washer is being inserted manually on waist tethers.
- 44:02:55 C Okay.
- 44:03:00 P Into the bottom hole. And it's a delicate operation.
- 44:03:05 C Take it easy now.
- 44:03:09 P The bolt is just sitting right straight in the hole now. The zero g just holds it there. It's not engaged.
- 44:03:15 C Okay.
- 44:03:16 P And I'm going to rest for just a bit.

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44:03:20 C Okay. Rest.

## CARNARVON

44:03:32 CC Gemini XII, Carnarvon standing by.

44:03:37 C Roger, Carnarvon. I'm going to go to MANUAL on the O<sub>2</sub> and pump on the oxygen a little bit.

44:03:42 CC Okay. We were just going to suggest that.

44:03:55 P Too bad the camera wasn't working. That would have been a beautiful picture.

44:03:59 C Well, I'll check everything that's in here, Buzz.

44:04:03 P What's that?

44:04:05 C I'll check that everything is in to make sure - that we're okay. This camera is working.

44:04:20 P The picture that I was referring to was when I fumbled the bolt and the washer.

44:04:30 C Yes.

44:04:31 P They both went drifting in underneath my helmet, so I pushed them forward and moved myself away from them and caught both of them and put them together. The Saturn bolt is now going in manually and I'll get a couple of more turns and put it in the rest of the way later.

44:04:49 C Oh, I see. You're playing a little orbital mechanics to get the Saturn bolt in.

44:04:54 P Yes. I had to do a little rendezvous there.

44:04:56 C I see. Okay.

44:05:03 P Yes. This Saturn bolt workspace is way to close to the tether. The right one especially.

44:05:15 C Yes. I figured that the tether is keeping it too close to the workspace ...

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- 44:05:23 C Okay. Look at - when you get a chance, use your wrench and tighten them up.
- 44:05:54 P It has the same problem overcoming the ratchet torque. In other words, you unwind just about most of what you wind. Okay, it's going in now.
- 44:06:10 C Okay.
- 44:06:12 P A couple of more --
- 44:06:13 C Let me know when you have the bolts tightened down.
- 44:07:12 P Okay. It's tight.
- 44:07:13 C Okay. Listen, we're going to have to evaluate hook and D-Ring connections.
- 44:07:22 P All right. Let me start a --
- 44:07:31 P Wrench is stowed.
- 44:07:42 C ... tie away for hook and ring connections.
- 44:07:44 P Right.
- 44:07:49 P I'm going to get out the big ring. The Velcro didn't want to come undone on it.
- 44:08:13 P The big ring is out and the big hook and the two are hooked together.
- 44:08:17 P Okay. The big ring is out and both are hooked ... Okay. Take a look at the small one.
- 44:08:33 P All right. The small ring is out and it takes a little bit more finesse to get it in the proper position in your hand. I'm going to hook it into the big ring and into the big hook.
- 44:09:02 P The big ring is now engaged into the rig. The big hook is engaged to the big ring and the little ring.
- 44:09:11 C Okay. Now take a banana pillow rest for awhile.

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44:09:15 P Don't you want the little ring?

44:09:18 C Right. I thought you were done with the little ring.

44:09:22 P I mean the little hook. I'm sorry.

44:09:24 C That's it.

44:09:42 CC Gemini XII, Carnarvon. We have 1 minute before LOS. Just a reminder on your manual heater.

44:09:47 C Roger, Carnarvon. I'm reading about 690 right now.

44:09:54 CC Okay.

44:09:55 C I'll go to 700 and turn it off.

44:09:59 CC Copy that.

44:10:13 C Okay. Buzz, while you're resting here - are you resting now?

44:10:17 P Not yet.

44:10:19 C Well, start resting.

44:10:21 P I want to give you one quick evaluation of this - little hook and little ring together.

44:10:30 P All right. The little hook is open, the little ring is in my hand and the two are back together. All right. I'm going to stow the little ring back where it belongs. The little hook is stowed, but the little ring doesn't want to stow.

44:10:54 P All right. Everything is back where it was.

44:10:58 C Okay. Take the banana pillow and take a rest for a second.

44:11:08 C I'll go over all you have left to do here.

44:11:12 P Wait a minute. I have it on my schedule. ...

44:11:17 C What are you doing?

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- 44:11:19 P I'm turning my Check List over.
- 44:11:23 P Full nylon Velcro strips, (3), stow; full Velcro strips disconnect and connect to connector; left-hand, right-hand connector.
- 44:11:32 C Yes. I'll give you an idea. We're supposed to do that at 20 minutes and we're now at 24 minutes. So we're running behind here.
- 44:11:39 P Okay. How many minutes?
- 44:11:42 C Let me see ... on my event timer. So we're about 4 minutes behind. Are you resting?
- 44:11:51 P Right.
- 44:11:52 C I don't want you to - rest.
- 44:11:59 C All right. Disk pressure is 700 and we're 58 percent.
- 44:12:16 C Are you cool?
- 44:12:18 P Yes. My feet are actually chilly.
- 44:12:21 C Is your visor clear?
- 44:12:23 P Clear as can be.
- 44:12:25 C Do you have any tendency to ... float up or anything like that?
- 44:12:27 P No. None whatsoever.
- 44:12:29 C Okay.
- 44:12:37 C Okay. Let's pull the nylon umbilical ... and let's go. I think we ought to - this time it's going to be pretty simple. I'll be glad to get up to the EVA.
- 44:12:47 P Okay. The first one says, "Go to jail".
- 44:12:50 C (Laughter)
- 44:12:51 P The second one says, "Do not pass go". And the

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third one says, "Take a chance".

- 44:12:56 C (Laughter)
- 44:12:58 P Ah! Nobody's putting anything underneath the ...
- 44:13:05 C Okay. Why don't you disconnect and set up the center brackets?
- 44:13:13 P All right. Working on the center connector now with weight setters; and since it is a 200 operation, we don't particularly care, except in a gross sense where the body is. I'll line up the two with the index marks.
- 44:13:40 P Those are lined up.
- 44:13:46 C What's that?
- 44:13:48 P It's tight. It's hooked together and tight.
- 44:13:51 C Real good.
- 44:13:52 P The hardest part of the job is getting that one bar - getting the finger in position of that one bar to lock it into position.
- 44:14:02 C Okay. We're coming up on sunrise. Disconnect and connect the left-hand connector.
- 44:14:11 P All right. The left-hand connector is disconnected.
- 44:14:16 C Okay. Connect it.
- 44:14:18 P I'll need a good hand to hold the line up right now.
- 44:14:25 C Let me know when it's connected.
- 44:14:28 P It's connected. It's a bit more difficult because you need a handhold very close to it and there isn't one.
- 44:14:33 C Okay. Put your feet back in the ... frame.
- 44:14:37 P Okay. I want to just take a quick look at the

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right-hand connector, disconnected and connected. It's quite an easy one. Feet coming down into the foot restraint.

- 44:14:56 P Right foot is in. And the left foot is in.
- 44:15:02 C Okay.
- 44:15:08 C How do you feel?
- 44:15:10 P Feel great.
- 44:15:12 C Are you breathing hard?
- 44:15:13 P Not particularly.
- 44:15:15 C I can't tell that you are.
- 44:15:20 C Okay. Let's ... handholds and ... the handholds to be ... back.
- 44:15:26 P In progress.
- 44:15:57 C Sunrise is coming up.
- 44:16:11 C Are you finished?
- 44:16:12 P I'm all set.
- 44:16:13 C Okay. Take your foot out of the foot restraints and evaluate the one foot restraint here for a second.
- 44:16:19 P Okay. Moving back on one foot, and it's much easier to move around on one foot than it is on two. Seems like it's a - it's primarily a suit position problem. It takes a little bit more time to move from one side to the other, but the next thing is to get the camera down, I guess. Right?
- 44:16:41 C ... remove the umbilical clips on the hand bars.
- 44:16:43 P Okay. It's off.
- 44:16:44 C Very good. Okay. Let me check it out. Change pace here. Okay. I'm opening up the EVA Camera

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circuit breaker. Stand by. Okay. The Camera switch is coming closed. Stand by.

- 44:17:11 P What was that?
- 44:17:13 C I closed the EVA Camera switch.
- 44:17:14 P Okay.
- 44:17:16 C Okay. Pick up ...
- 44:17:26 P All right. The plug is out.
- 44:17:58 P And the camera doesn't want to come out. Okay. There it is.
- 44:18:10 C Okay. Looks good.
- 44:18:26 P Camera is off and secured.
- 44:18:31 C Okay. How do you feel?
- 44:18:32 P All set to come around.
- 44:18:36 C Are you perspiring?
- 44:18:38 P Negative.
- 44:18:39 C Is your visor clear?
- 44:18:40 P Clear.
- 44:18:44 P Front of my visor is coming down.
- 44:18:45 C Okay. Okay. Come on.
- 44:18:55 P Right foot is out. And the left foot is out. I'll back the pigtail now. The umbilical is disengaged from the pigtail.
- 44:19:24 C Okay.
- 44:19:25 P Coming around the ...
- 44:19:28 C Okay.
- 44:19:35 P The pigtail is liable to engage in any wire that

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is around, and it almost did on the EVA camera.  
All right. I'm on the handrail --

- 44:19:46 C Okay.
- 44:19:47 P -- with Adapter coming forward. Are you going to bring in some of the umbilicals?
- 44:19:56 C I'll give it a try right now.
- 44:19:57 P Okay.
- 44:20:12 P All right. I think that is probably enough.
- 44:20:13 C Okay.
- 44:20:26 P All right. What's first on the docket?
- 44:20:28 C Okay. ...
- 44:20:33 C Let's see. Okay. ... Did you put any back there or would you rather hand it to me?
- 44:20:45 P Well, I'd rather hand it to you if I can. Now you got a hook on it, but we can ...
- 44:20:52 C Okay. While I take this, I want to give you the other camera.
- 44:21:13 C I'll take that, Buzz.
- 44:21:20 P It's got the hook belt on it.
- 44:21:42 C Let me know when you get it in there.
- 44:21:50 P Getting a good handle on this part of the problem.
- 44:21:57 C Oh, oh! There goes your Chiquita banana. Hey, good shot!
- 44:22:30 C Okay. Stand by for the camera, buddy.
- 44:22:46 P All right. It's in and let me make sure it's 1/250th and 6 frames a second. 1/250th, 6 frames a second.
- 44:22:59 C Okay.

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44:23:00 P And it looks secure.  
44:23:02 C Okay. Now. Let's see. Go to Spacecraft nose  
and camera. Let me know when you're moving.  
44:23:14 P I'm moving.

## CANTON

44:23:18 CC Gemini XIII, Houston CAP COM through Canton.  
Standing by.  
44:23:25 C Roger. Houston ...  
44:23:33 P I think one of my waist tethers that have porta-  
ble handles is loose, isn't it?  
44:23:37 C Yes, it is.  
44:23:40 P Okay.  
44:23:42 C How do you like that nose handrail?  
44:23:45 P Well, they are pretty hard to evaluate back in  
the Adapter. Let me see how they are up here.  
All right. I'm back in toward the Agena now,  
back into the work station.  
44:24:16 C I'll bring in some more of your tether.  
44:24:26 P Well, don't pull me in with it.  
44:24:28 C Hang on. You're still loose.  
44:24:36 P All right. I've got the loop to the right porta-  
ble handhold off.  
44:24:40 C Okay.  
44:24:44 P And it's on the Velcro. The hook - right hook is  
off and it seems to be the pip-pin.  
44:24:56 C Okay.  
44:24:58 P The right pip-pin is off and it is secured with

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- the right waist tether.
- 44:25:09 C Okay. Sounds good.
- 44:25:21 P I need just a little bit of body torque here.
- 44:26:05 P All right. The left waist tether is in place in the portable handhold.
- 44:26:07 C Okay.
- 44:26:08 P The left waist tether is off of the portable handhold.
- 44:26:15 P It's into the pip-pin. The left pip-pin is out.
- 44:26:24 C Okay.
- 44:26:29 P That one missed. I'll move slowly back.
- 44:26:35 C Take it easy.
- 44:26:39 P All right. The pip-pin is in now. It's not quite locked. There it is. It's locked. Okay. That's done now. Let me just move this thing out of the way. It's going to get in the way. Okay. Time for a little breather here.
- 44:26:59 C Okay. Rest for 2 minutes. I'm pumping up the oxygen. Don't move at all. Just take it easy.
- 44:27:33 C Don't move. Just rest.
- 44:27:45 P Got it?
- 44:27:47 C Stand by.
- 44:27:51 C Don't move. Just rest.
- 44:28:11 P I guess we should have checked that retro camera to make sure it's working.
- 44:28:18 C It's blinking the lights on.
- 44:28:21 P ...
- 44:28:24 C Okay. I think both cameras are working.

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44:28:45 C Let's have another look at those.

44:28:54 C Did you say ...

44:28:56 P Better not.

44:29:02 C Where are you now?

44:29:03 P ...

44:29:04 C Wait a second. Keep her there. I've got to do something.

44:29:09 CC 1 minute to LOS, 10 minutes to Guaymas.

44:29:20 P Okay.

44:29:33 C Hold it up a second. Try it.

44:29:50 P Got it.

44:30:06 C Okay. Let's get on with the business part of it.

44:30:15 P All right. I'm moving this one remaining pip-pin to get it out of the way. And as a handhold, the pip-pins that swivel around just don't seem to give you what you need. You need a little bit of delicate hand torque with - of course, the ones that are any size to give you - and you can maneuver around considerably better with the ones that are pip-pin position. Comparing the pip-pin handhold to the portable ones - -

44:30:58 C What happened to the ...

44:31:00 P Okay.

44:31:02 C How do you feel?

44:31:03 P All ready to go.

44:31:05 C You aren't breathing hard.

44:31:06 P No.

44:31:13 C Okay. Disconnect it and - okay, disconnect the left electrical connector, Buzz.

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- 44:31:21 P Electrical connector on the left is coming disconnected.
- 44:31:30 P It's disconnected.
- 44:31:32 C Okay. Disconnect and connect fluid quick disconnect.
- 44:31:36 P Wait. I'm going to get the electrical on.
- 44:31:46 P All right. The electrical is connected. Let me tighten up on these waist tethers just a little bit.
- 44:32:03 P There. I think that is going to be a good position. It feels fine there. Only 2 feet to point of contact.
- 44:32:12 C Yes. That's a good one.
- 44:32:15 P Yes. You can see the kind of leverage you can get here.
- 44:32:18 C Yes.
- 44:32:20 P For torquing, you can spread your feet out a little bit and a tether ...
- 44:32:25 C Your feet.
- 44:32:30 C Okay. I still have to do Apollo torque wrench.
- 44:32:32 P Right. Did I miss the fluid connector?
- 44:32:34 C Yes. You should have gotten that one.
- 44:32:37 P All right. The fluid connector is disconnected.
- 44:32:40 C Okay. Connect it. Right?
- 44:32:43 C Okay. Unstow the torque wrench.
- 44:32:50 P Stand by.
- 44:32:57 P A little difficulty with the fluid connector.
- 44:33:05 P All right. It's in. You have to retract this

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one on the front, which was different than the one on the back.

- 44:33:25 C Okay. Let's see. Let's do Apollo torque wrench. Stow Apollo bolt and try to reset manually.
- 44:33:39 C I've got to change film here, Buzz, too.
- 44:33:46 C How do you feel?
- 44:33:48 P I feel fine.
- 44:33:51 P Well, let's see here. We have to get this button pushed in and the wrench all the way down. There it is. It's seated now.
- 44:33:59 C Okay. Stand by.
- 44:34:01 P All right.
- 44:34:02 C Why don't you rest a few minutes now and I'll change film.
- 44:34:40 P Looks like a panel on the back of the Agena is a little loose.
- 44:34:48 C Oh, yes!
- 44:34:51 P Can you see this one right here?
- 44:34:54 C No.
- 44:34:58 P Now do you see this?
- 44:34:59 C Yes.
- 44:35:00 P It was an electrical umbilical. It didn't slam shut evidently on Lift-off. Okay. It's shut now.
- 44:35:32 P How's the time doing?
- 44:35:38 C ...
- 44:35:39 P The only things that are coming close to being warm are my arms.

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- 44:35:45 C I just worked like mad trying to get the darn camera loaded. I got it finally.
- 44:35:49 P And I think this is primarily due to the close fit of the suit in the arms.
- 44:35:56 C Okay. Do you want to do that torque twist again a little bit?
- 44:35:58 P All right.
- 44:35:59 C I'll start the camera.
- 44:36:01 P All right. This is counterclock - clockwise torquing with a rapid-type Apollo wrench.
- 44:36:06 C Right.
- 44:36:07 P And the brake guard is set for 100 pounds - 106 pounds.
- 44:36:11 C Okay.
- 44:36:13 P I don't seem to be - there doesn't seem to be any problem at all in reaching that torque level.
- 44:36:18 C Okay. Let's do it again.
- 44:36:19 P All right. Let me try it in the counterclockwise position. Now to do this with the waist tether - I want to go back and tighten this left one. All right. It's in a counterclockwise position - -
- 44:36:33 C Okay.
- 44:36:34 P I'm pulling against the waist tether.
- 44:36:36 C Okay.
- 44:36:38 P It's really the right arm, the right waist tether and the right foot. Like this, the left one really doesn't have a tendency to break loose. The chest pack is used for a little bit of leverage as a matter of fact.
- 44:36:54 C Lean out against those waist tethers a second.

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44:36:57 P Lean against them?

44:36:58 C Yes. Let's see how you do it. Get that torque wrench. That's it.

44:37:08 P Well, it depends on where the wrench is when you torque it.

44:37:17 C Okay. How about stowing the torque wrench?

44:37:21 P Okay. Do we have time to go to a higher setting?

44:37:25 C No, because we did that rest period there. We're behind now, so I don't want you to risk that. You had that rest period, but we don't want to go - get too far behind. We only have a limited amount on the ELSS. We're already 50 minutes; comes back from the backpack end at 60. If you want to, you could probably ...

44:38:12 C All right ... Chiquita banana split might have gone by the board.

44:38:17 P You let it go, right?

44:38:18 C Oh, it might be ...

44:38:23 C Okay. Take off a waist tether and we're going to do some stuff with one tether now. We're running a little behind time, but I don't want you to rush.

44:38:31 P All right. I'm going to take out the right waist tether - no, the left waist tether.

44:38:34 C Okay.

44:38:36 P I'm going to do it by the emergency means, by disconnecting this knob first. All right. Both knobs are off. As I pull it through, the snap begins to bind. So I'll just tighten up on it, and push away. And we'll go ahead and jettison now --

44:39:16 C Jettison waist tether.

44:39:17 P Jettisoning waist tether at this time.

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44:39:20 C Okay. Let's see.

44:39:22 P Now, with one waist tether and a torque wrench.

44:39:39 P For this particular operation, one waist tether is just about as good as two. See, I don't need the left one. I've got the right hand. Now let's get rid of the right waist tether. Okay?

44:40:03 C Okay. If you don't want to disconnect the fluid disconnect, I think that's okay.

44:40:20 P Pulling up on it and pushing it away. Oops! I'm free with no waist tethers.

## GUAYMAS

44:40:30 C Okay. You're free with no waist tethers right now.

44:40:32 P Let me start cleaning up the stuff here. Pip-pin, those waist tethers, portable handholds.

44:40:44 C Okay. ...

44:40:46 P I trust you are recording all of this.

44:40:49 C Boy! You are a litter bug, aren't you?

44:40:56 P Yes. I had a back-up Veteran's Day sign here, too.

44:41:02 P Here we go. All right. The work station is clear and no tethers. Let's take a look at respiration rate with no tethers.

44:41:24 CC Gemini XII, Houston CAP COM standing by.

44:41:29 C Roger, Houston.

44:41:31 P ... disconnect with no tethers, unhooked and hooked back up.

44:41:37 P Now the electrical connector - with no waist tethers - unhooked and hooked back up.

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44:41:47 C Okay.

44:41:48 P I think we ought to make one last check of the left hand ...

44:41:55 C Okay.

44:42:21 P See what this part of the Agena looks like.

44:42:26 C Hey, Buzz! Never did wipe off my window, did you?

44:42:31 P Oh, okay. Give me half a minute.

44:42:33 C Hey, would you change the oil too?

44:42:34 P Change the oil? Yes, okay.

44:42:40 P Agena tether looks hooked up and the ... is engaged.

44:42:50 C Impossible to take pictures here.

44:42:53 P Sorry about that.

44:42:55 C Okay. We're out of voice tape, Buzz.

44:42:59 P I need one last run ...

44:43:02 C Okay. I want to take - you can read it in the registers ... voice tape.

44:43:20 CC Gemini XII, Houston CAP COM. You needn't answer while you're changing the voice tape. I would like to comment that if you are willing, we would like to run a quick check on your OAMS thrusters by having Buzz observe a thruster firing while he is standing in the hatch. We have a ... We want all the gear inside and just prior to ingress, when you are removing the EVA camera. You might think about this and give us a call when you have a chance.

44:43:53 C Okay. That sounds pretty good. We'll do that.

44:43:55 CC Okay. We have a procedure here for you when you get squared away. We'll talk you through it.

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44:44:00 P We're going to wipe this window off first.  
44:44:04 P Help it any?  
44:44:06 C No.  
44:44:07 P No? Doesn't look like there's anything on the outside.  
44:44:12 P Oh, wait a minute! I think it is going to help some.  
44:44:16 P See. The film is coming off.  
44:44:18 C Improving any?  
44:44:22 P Can you ... it?  
44:44:27 C Yes. How do you look? It looks good.  
44:44:31 P Okay. Where is the bad spot?  
44:44:32 C Right over here in the lower down corner.  
44:44:35 P Right here?  
44:44:38 C Yes. I know where you can get a job, Buzz.  
44:44:39 P What?  
44:44:41 C I said, I know where you can get a job.  
44:44:42 P You know where I can get a job?  
44:44:46 C I'm still trying to get this other tape back in the - connecting the --  
44:44:51 P I can see from the outside that you've got quite a film on this inside.  
44:44:55 C Yes.

TEXAS

44:44:59 P Okay. Anything's good for that - enough of that.

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This isn't an optimum run - location for doing that.

- 44:45:11 P Can you hold on to this? And I - -
- 44:45:12 C No. I've got - I've got to secure this tape and it's quite a job.
- 44:45:20 C There we go. There we are.
- 44:45:27 C I'm sorry I didn't get a picture of those dim lights.
- 44:45:32 P What! Is the other camera out of film?
- 44:45:35 C Yes.
- 44:45:36 P Yes. How do you know it's on?
- 44:45:41 C Because it has been running more than 10 minutes.
- 44:45:42 P Right.
- 44:45:43 C Okay. Come on back.
- 44:45:45 P All right. Let's bring in the umbilical. I think it's a - yes, I've got the end here.
- 44:45:49 C Okay.
- 44:45:51 P All set. Wait a minute! Wait a minute! Yes, it just about wraps around me and hits the camera.
- 44:46:07 P Okay. Just move it in.
- 44:46:10 C Houston.
- 44:46:12 CC Go ahead, Gemini XII. Copy.
- 44:46:14 C Okay. We're getting prepared for Buzz to come in and bring the umbilical in.
- 44:46:19 CC Let me know when you're ready to try the checking of thrusters.
- 44:46:23 C Okay.

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44:46:24 P Okay. We've got just about all the umbilical in  
that's going to come in before I hand in the ELSS,  
and I'm standing in the hatch.

44:46:30 C Okay. Has the umbilical cleared everything, Buzz?

44:46:32 P Yes. Pull in just a little bit more and move on  
down the line.

44:46:34 C Okay. Watch out for your feet.

44:46:39 C Okay.

44:46:40 P Okay. A little more.

44:46:42 C Okay. What about the retro camera?

44:46:44 P Okay.

44:46:46 C Get the retro camera.

44:46:55 C Watch your feet!

44:47:03 C Watch your feet!

44:47:06 P Okay.

44:47:10 P All right. Any change in mode - -

44:47:11 C Okay. Keep your feet down further. That's it.  
Just keep your feet down there. Did you get  
everything stowed?

44:47:16 P Yes.

44:47:17 C Okay, Houston. Go ahead. What do you want us  
to do?

44:47:20 CC Gemini XII, confirm that the Adapter is clear,  
with - -

44:47:26 C The Adapter is clear.

44:47:28 CC Okay. Jim, you can turn on your two Attitude  
circuit breakers, the ones that you turned off  
previously.

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44:47:33 C Okay. Will do.

44:47:38 C They're on.

44:47:39 CC Okay. OAMS Control Power, ON and DIRECT.

44:47:45 C We're in OAMS and DIRECT.

44:47:48 CC Okay. We'd like Buzz to observe the upper right side of the Spacecraft, on his side at Thruster No. 4 area, while you give a very short-blip yaw right.

44:48:01 C Roger. Short yaw right, Buzz. You all set?

44:48:04 P Okay.

44:48:09 P I can see something coming out there. It looks like thrust coming out. How about hitting another one for comparison, the one that's on the same quadrant there?

44:48:25 C Which?

44:48:26 P No. 3.

44:48:28 C You on No. 3? That's down below.

44:48:33 P Yes. Houston, can you give me one for comparison, the one that's in the same quadrant there, that will be firing up?

44:48:46 CC Pitch up.

44:48:48 C Pitch up.

44:48:51 P All right. Now in comparison, that was a lot cleaner flame.

44:48:57 CC Buzz, was the first a flame or a fluid?

44:48:58 P Well, there wasn't a flame on either of them that I could see. The sun is only about 30 degrees away.

44:49:07 CC Why don't you try one more short yaw before you come in?

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44:49:10 P Okay. Good idea. Try that once more.

44:49:12 C Yaw right coming up.

44:49:14 P All right. There's a definite difference. It looks like there's a lot of uncombusted material coming out.

44:49:21 CC Roger. Copy.

44:49:22 P You want to try the other one, the one that doesn't seem to be working?

44:49:27 C No. That's over there.

44:49:28 P I may be able to see that one.

44:49:31 C Just down below - -

44:49:32 P Also, after the thrust, there are pieces of little flakes, like after a urine dump, occasionally coming out in the direction of that thrust that was inoperative. Whereas for the other pitch-up, there wasn't anything coming out.

44:49:44 CC Roger. Copy. Go ahead and turn your OAMS Control Power to OFF and start your ingress.

44:49:50 C Check.

44:50:01 P All right. I guess - how about the handrail?

44:50:04 C Okay.

44:50:06 P Now, we should get the picture of that one.

44:50:07 C Yes. Okay.

44:50:09 P Got anything going?

44:50:10 C Right.

44:50:12 P You got anything to get a picture of?

44:50:15 C No. I don't have a thing, Buzz.

44:50:17 C Go ahead.

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44:50:21 P All right. It's just --  
44:50:28 C Lower it down into the left.  
44:50:29 P I'll slow it down so you can see it.  
44:50:30 C Okay.  
44:50:31 P Okay?  
44:50:34 P There she goes!  
44:50:37 C Sayonara here.  
44:50:38 P The highest - the world's highest javelin thrower.  
44:50:42 C Now we can go back in AUTO.  
44:50:44 P (Laughter).  
44:50:45 P It's going end-over-end now.  
44:50:48 C Okay. Let's get back in here. Secure the umbilical. I've got the umbilical. Deploy the hatch holding device.  
44:50:59 P Yes. Let me get this camera down on top of the camera butts.  
44:51:04 CC Gemini XIII, Houston CAP COM. Confirm OAMS Control Power, OFF.  
44:51:11 C Roger. OAMS is OFF.  
44:51:13 CC Okay.  
44:51:15 P All right. Looks like the wires are going to be clear.  
44:51:20 C Okay. Let's ...  
44:51:25 P Well, there are flecks of dust on it, but it looks --  
44:51:28 C Okay.

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44:51:29 P - - ... clear. Let me tap a few of these ...  
Okay.

44:51:33 C Okay. Deploy the hatch holding device.

44:51:40 CC Gemini XII, Houston. If you can, turn on your  
manual O<sub>2</sub> heater.

44:51:44 C Very well. Completed.

44:51:46 P All right?

44:51:47 C Okay.

44:51:49 P You're ready for the - -

44:51:50 C Set the hatch locks in the LOCKED position.

44:51:52 P All right. Wait a minute. I've got one more  
little thing to get. There it goes.

44:52:02 C Okay. Can you ...

44:52:03 P What was the last thing you said?

44:52:06 C Hatch locks in LOCKED position.

44:52:08 P Yes. They're in LOCKED, but I can't - -

44:52:10 C Hatch holding device is opened up. Right?

44:52:13 P Right. What is my leg leaning on?

44:52:15 C There you go.

44:52:18 C Okay. Clear your hoses.

44:52:22 C Start the repress of cabin, release these re-  
straints, and hand me the ELSS.

44:52:26 C Right. Let me just check my foot.

44:52:28 C And give me - what?

44:52:30 P All right. It looks clear. That bag that broke  
is moved away from the feeling area.

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44:52:37 C Okay. Come on in.  
44:52:38 P But it looks good. All right. The upper restraint's coming on.  
44:52:42 C Okay. ... Buzz. Keep your seat belt. Keep your feet down. That's it. That's it.

## BERMUDA

44:52:58 C Okay. Hand me that monster.  
44:53:01 P All right. I'll never forgive you if you lose that.  
44:53:05 C ...  
44:53:08 P That big Navy sign.  
44:53:09 C Oh, I know. Loosen that one.  
44:53:15 P All right. The lower restraints are loose.  
44:53:24 C ... OFF.  
44:53:27 P All right. I think you want to take them. If you could turn that toward you. Yes. Turn it toward you this way. Okay. That's right. Just rotate the ELSS and we've got it.  
44:54:02 C All right.  
44:54:05 P Getting in position now. Let me check the hatch closing device.  
44:54:11 C Okay.  
44:54:13 P All set?  
44:54:16 C Okay. Just a minute now. Let me make sure that we have everything off.  
44:54:22 P All right. The foot well looks nice and clean.  
44:54:27 P ... check off to the right here.

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44:54:29 C Come on, Buzz. I can't hold this all day.  
44:54:32 P Okay. Everything's clear?  
44:54:34 C First, help me get this thing. Okay?  
44:54:44 P Ein, zwe, drei.  
44:54:49 C Well, let's give it a try.  
44:54:54 CC Everything looking good, Gemini XII.  
44:54:58 P Okay. We're down to the last latch.  
44:55:02 C We've got our suit fan off.  
44:55:04 C I thought it was getting a little warm in here!  
44:55:09 C Okay. It's off.  
44:55:14 C Lock up, Buzz.  
44:55:16 CC 2 minutes to sunset.  
44:55:20 P Last ball going in.  
44:55:22 C Hatches locked.  
44:55:24 C Okay. We'll pressurize the ELSS shortly.  
44:55:31 C Okay. ... now. That'll be picked up and ...  
44:55:40 P What's that?  
44:55:55 P Hey! Would you believe both the pen lights came  
back with me?  
44:55:58 C Yes?  
44:56:04 P I never thought they'd make it.  
44:56:21 P Now, we need to see that S-10 draft off and the  
tether come loose.  
44:56:30 C You left it on HIGH, didn't you, Buzz?  
44:56:34 P What?

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44:56:35 C You left the ELSS on HIGH, didn't you?

44:56:37 P Yes. I left it in HIGH.

44:56:39 C ELSS Bypass, NORMAL.

44:56:40 P Okay.

44:56:43 C Now, can you get this condenser off?

44:56:47 P Let me see. We're going elbow-to-elbow here.

44:56:57 P I'll push myself down. Okay, now.

44:57:08 P Okay. I think it's getting out of position. At least it turned in my direction.

44:57:18 C Okay.

44:57:19 CC Gemini XII, Houston CAP COM. 1 minute until LOS. New EVA record. Beautiful job!

44:57:25 P Thank you.

44:57:27 C Okay. I'm going to turn off the repress now. Can you put that package in now?

44:57:34 P What? The ELSS?

44:57:36 C Yes. Can you put it in your lap?

44:57:38 P Well, I might as well.

44:57:42 P All right. The condenser's off.

44:57:44 C Okay. Good.

44:57:48 C Okay. Repress coming on now. Stand by. You can take it away.

44:57:49 P Lights burn. The O<sub>2</sub> light's on.

44:58:00 C Okay.

44:58:08 P ... It's 1.5. The cabin, it's about 3/4 now.

44:58:20 C Let me see the pressure.

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44:58:25 P I'm going to get a ... at this now.  
44:58:38 CC 30 seconds.  
44:58:39 P You got BYPASS on?  
44:58:41 C No. BYPASS?  
44:58:44 P Yes. Turn it up a little faster. ...  
44:58:50 P Hit the FLOW.  
44:58:53 C What's the pressure reading now? Okay.  
44:58:57 P CAP COM ... They're coming up to 1.  
44:59:58 C Ho, ho, ho, hum.  
45:00:55 P Now, how about the situation now?  
45:00:57 C Everything's okay.  
45:00:59 P The cabin's building too.  
45:01:06 P So. We're down to 50 percent now.  
45:01:09 C Yes.  
45:01:11 P We've got another 2 1/2 days.  
45:01:37 C ... my left ... ...  
45:01:39 P That's still the O<sub>2</sub>, isn't it? ...  
45:01:41 C Yes.  
45:01:42 P Yes.  
45:02:00 C I've got something stinging in both eyes now.  
45:02:06 CC Okay. Cabin pressure is reading about 2.5 psi.  
45:02:07 P Say again.  
45:02:10 C I've got something stinging in both eyes now.  
45:02:13 P Is it something in the O<sub>2</sub> flow?

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## CANARY ISLANDS

45:02:14 CC Gemini XII, Canary CAP COM. Standing by.

45:02:15 C I don't know what it is.

45:02:25 C 20 degrees?

45:02:27 P I might be able to see something in your right eye. I'm not sure.

45:02:32 C It feels like it might be ...

45:02:37 P Or it could be perspiration.

45:02:38 C Yes.

45:02:39 P You drank too much water.

45:02:44 C Yes. What's the pressure?

45:02:46 P Coming up on 3.

45:02:47 C Okay.

45:03:10 CC Gemini XII, Canary CAP COM. How is the repress coming?

45:03:13 C Okay. Pretty good. We're at - -

45:03:16 P We're at about 3 psi.

45:03:20 CC Roger. Copy.

45:03:24 CC And we're reading the same on the ground at this time.

45:03:40 CC You ready for an exercise?

45:03:41 C Go ahead.

45:03:45 CC The Command Pilot just volunteered.

45:04:04 P What's the pressure now?

45:04:05 CC 3.6.

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45:04:15 C I've got to get a ...  
45:04:16 P Okay.  
45:04:27 C Yes. Both eyes are stinging badly. What's the pressure?  
45:04:34 P Coming up to 4.  
45:05:03 P You want to hand me the Check List?  
45:05:05 C Here it is.  
45:05:20 C Okay.  
45:05:21 P I've got it. Let's see what I have ...  
45:05:51 C Okay. ...  
45:05:52 C Canaries, Gemini XIII.  
45:05:54 CC Go ahead, Gemini XIII.  
45:05:59 CC Gemini XIII, Canaries. Go ahead.  
45:06:13 CC Gemini XIII, Canary CAP COM. Go ahead.  
45:06:14 P I'm not sure that they heard you.  
45:06:37 C I wonder what that was?  
45:06:39 P I don't know. All right. We're down to about 1000 pounds. ...  
45:06:45 C ...  
45:06:46 P All right. Battery switches on.  
45:07:06 C What would you say about this one, Buzz?  
45:07:08 P ... We're pretty close to that now.  
45:07:30 CC Gemini XIII, Canary CAP COM.  
45:07:34 C This is Gemini XII. Go ahead, Canary.  
45:07:37 CC Did you call us down here?

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45:07:39 C Roger. As a matter of interest, Canary, as we started to repressurize the cockpit, using the rate, the O<sub>2</sub> and the ELSS to repressurize, my eyes began to smart. And the ... battery until we got the pressure. I ... to see if that would stop it but it didn't. And there was a faint odor in my suit but I couldn't tell exactly what it was. As soon as we opened up the visor, the stinginess and smartness in my eyes went away.

45:08:16 CC Okay. How does it feel now?

45:08:17 C I'm feeling okay now, but it felt at first like there was salt or perspiration getting in my eyes.

45:08:28 CC Roger. Copy that.

45:08:29 C As I tried to blink some more, it got worse and worse.

45:08:36 CC I understand they have cleared and you're feeling better now. Right?

45:08:40 C Yes.

45:08:41 CC Okay. We've got about a minute to LOS here. We'll be standing by.

45:08:45 C Okay. We're going to do a lot of cleaning up here.

45:09:04 CC Let me get back on some flow here.

45:09:15 P That my ...?

45:09:17 C Yes.

45:09:20 C Did you get the Check List, Buzz?

45:09:22 P Yes. It's in my lap.

45:09:25 C Well, good job. Thank you.

45:09:29 P Well, it makes it a little bit faint.

KANO

45:09:30 CC Gemini XII, Houston CAP COM --

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45:09:31 P On the T.

45:09:34 CC Gemini XII, Houston CAP COM through Kano. Over.

45:09:36 P Go ahead, Houston.

45:09:38 CC Roger. Gemini XII. We suggest you go off VOX and back to PUSH-TO-TALK.

45:09:49 C Say again.

45:09:54 CC Gemini XII, Houston CAP COM. Suggest you go off VOX and back to PUSH-TO-TALK.

45:09:59 C We are on PUSH-TO-TALK.

45:10:09 CC We show your cabin at 5.6. Looks mighty fine from the ground. Real nice job.

45:10:51 C It won't come on! It won't turn on!

45:10:53 C See this?

45:10:58 P Hey, look at that bulb!

45:10:59 C Yes. I know. I can't turn it off.

45:11:05 CC How did that happen? How did that bulb, like that, happen?

45:11:07 C Well, it was back in the Adapter.

45:11:20 P Well, let's see. What's the best thing to get rid of first? Helmet, maybe?

45:11:27 C Wait until I get the Check List --

45:11:46 P The first thing I'd better do now is get rid of all these stowables.

45:13:05 C Do we still have 1000 pounds in there?

45:13:07 P No. I ran it down to 100 and shut it off. We don't need any more than that. That'll go all the way off to what pressure we need.

45:13:22 C Well, it should pick up.

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45:13:28 C ...  
45:13:39 P Say, how did this box get open?  
45:13:45 C It wasn't open when you got off.  
45:13:47 P I know it wasn't.  
45:14:02 P Okay. ...  
45:14:07 P We are frosted up; the window is frosted on the inside.  
45:14:12 C Close that water evaporator.  
45:14:42 CC Gemini XII, Houston CAP COM. 1 minute to Kano LOS.  
45:15:06 C Roger.

## TANANARIVE

45:21:58 CC Gemini XII, Gemini XII. Houston through Tananarive. Over.  
45:22:04 P Good morning, Houston.  
45:22:06 CC Roger. Good morning and good job. We'd like you to check your OAMS Heater circuit breaker and see if it is on, please.  
45:22:18 P Roger. It is on.  
45:22:20 CC Was it off?  
45:22:23 P Negative. We checked that when we first saw the problem.  
45:22:26 CC Okay. And we're standing by at Tananarive. We'll be with you for about 7 minutes.  
45:22:37 C ... understand ...  
45:22:45 CC I'm sorry, Gemini XII. The communication isn't too good. I couldn't read you. Would you say

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again slower, please?

- 45:23:01 C Roger. OAMS Heater circuit breaker was OPEN and I think that was accidentally done during the depress. It's now CLOSED.
- 45:23:02 CC Roger. We copy.
- 45:23:44 CC Gemini XII, Houston. When you have a chance, if you remember, did you get much roll when you were doing your yaw in DIRECT?
- 45:23:57 P That's affirmative. That's yaw we've got - a roll coupling in roll.
- 45:24:03 CC Houston copies. Thank you.
- 45:24:37 CC Gemini XII, Houston. You don't have to acknowledge, but I'd like to talk to you a minute and say that we see no problem with the tether exercise in RATE COMMAND. However, we would like you to turn the Number 2 and the Number 4 circuit breakers off. The reason for this is, if we have a cold problem every time you flow mono propellant, you would continue to keep it cool and possibly by leaving them off for awhile and in the sunshine they warm up and we might get them back later. Over.
- 45:25:20 P This is Gemini XII. ... understand that you're ... GO in RATE COMMAND. And ... circuit breakers 2 and 4 ... Right, Frank?
- 45:25:36 CC That's right, because if you flow propellant out of them and there's no firing, they'll just get colder. This way you won't flow any propellant and if there is a freezing problem in the solenoid area, they may warm up eventually. We'll check them later after the tether.
- 45:25:53 P Roger.
- 45:29:35 CC Gemini XII, Houston. We have about 30 seconds until LOS. Standing by.

CARNARVON

45:38:22 CC Gemini XII, Carnarvon.

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45:38:29 P Carnarvon, Gemini XII.

45:38:32 CC Okay. Would you go to COMMAND on your T/M switch, please?

45:38:36 P Roger. T/M is in COMMAND. We may have uncovered what the problem was with Jim's eyes. The EVA camera that came from the Adapter, if you recall, stopped working after it was originally reported as working. It didn't take any film at all and it seems to have overheated because I guess we turned it on while the sun was still up. What we'd like to know - we're going to store it in a plastic bag and we'd like to know if anybody on the ground has any desire to have the overheated camera back or shall we jettison it tomorrow?

45:39:10 CC Stand by.

45:39:23 CC I'm going to ship you up a  $T_X$ .

45:39:33 CC Okay. We have a purge over the station. We want to purge Section 1 and then Section 2, 30 seconds on the  $O_2$ .

45:39:55 P Okay. How many minutes do we have?

45:39:56 CC Oh, we have a little while. About 6.

45:40:16 P Okay. Understand. Fuel cell purge, 1 Section first, 30 seconds  $O_2$ .

45:40:20 CC Right. Section 1 and then Section 2.

45:43:00 P Fuel cell purge is complete.

45:43:02 CC Roger.

45:43:05 CC Now just a short Flight Plan Update. In about 7 minutes, 45:50:00, we want to gyrocompass to 0 0 0; and for Agena, 0 180 0.

45:43:21 P Roger. Understand 7 minutes from now, gyrocompass the Spacecraft to 0 0 0 and Agena to 0 180 0.

45:43:29 CC That's affirmative. Now replace your Cryo switch to  $H_2$ , please.

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45:43:58 CC Okay. You can go back to O<sub>2</sub>. Thank you.

45:44:42 P Carnarvon, Gemini XII.

45:44:43 CC Go ahead.

45:44:44 P Roger. Our ... clock seems to have stopped at 45 hours 42 minutes left. Could you give us a time hack ...?

45:44:53 CC Okay. I'll give you a Mark at 45:45:30.

45:45:03 P Okay. Stand by. It'll take awhile to get ...

45:45:07 CC Okay. You have about 30 seconds.

45:45:17 P Now we can't seem to get it going forward.

45:45:19 CC Okay.

45:45:32 P It won't crank forward or back. We'll look into it a little more.

45:45:37 CC Okay.

45:45:38 C Switching to STANDBY.

## CANTON

45:57:57 CC Gemini XII, Gemini XII, Houston at Canton. Over.

45:58:02 P Roger, Houston. This is Gemini XII. Say, do you want us to gyrocompass the Agena around to Spacecraft SEF, is this right?

45:58:12 CC That's affirmative. Spacecraft SEF.

45:58:15 P Say, we're having a devil of a time. We just tried to stop the additional roll to get this - the combination stopped. I'll tell you, we're all out of kilter here again, so we're just going to let it go until we get the cockpit straightened up, then we'll work on it.

45:58:35 CC Roger. And would you check your Tone/VOX circuit

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breaker there for your clock problem. Have you gotten that straightened out?

- 45:58:47 P That's the first thing we said was the circuit breaker, and we tried that and that doesn't do it.
- 45:58:53 CC That's - well, there's two circuit breakers, Electric Timer and Tone/VOX.
- 45:59:00 C We checked those out.
- 45:59:02 CC Okay. And your clock is stuck. Is that correct?
- 45:59:08 C ...
- 45:59:10 P ... pull ...
- 45:59:15 P I didn't check the Tone/VOX circuit breaker. We now have a clock light.
- 45:59:22 CC Okay. You now have the clock. Is that correct?
- 45:59:25 P Roger.
- 45:59:34 P Houston, Gemini XII here. The problem seems to be with the combination. I have one yaw and that one pitch thruster out, but we don't seem to be able to exercise proper control in RATE COMMAND or DIRECT, with our own attitude control system. Now it may be that there's some way of cleaning it out, but it's just not too sensible right now. And I think we want to get a particular heading, we'd be much better off sacrificing some of that Agena ...
- 46:00:07 CC Roger.
- 46:00:11 P Want to know how you feel about that.
- 46:00:13 CC Okay. What's your approximate heading right now?
- 46:00:19 P Now we're on our back and we're heading - north roughly.
- 46:00:24 CC You say you're upside down?
- 46:00:30 P Say again.

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- 46:00:31 CC Roger. You say you're upside down. Is that correct?
- 46:00:35 P Roger.
- 46:00:38 CC Okay. My suggestion is, is if you can roll anywhere near right side up, go ahead to FC2 and set up the commands through 0 0 0 and forget it.
- 46:00:52 P Okay. We'll do that. See, I think the problem is the combination of that yaw/pitch. When we put jets in one way, we seem to lose control in one axis, and when we put the roll jets on in the other way, we lose a slightly different pattern of attitude control.
- 46:01:14 CC Yes. I can understand that and also we looked at some vehicle rates for your combined weight and you can - if you have 8/10ths of a degree per second in yaw, why the whole combination in FCL would go 360 degrees before it would stop with the attitude thrusters. So we feel that the problem is just getting - just letting it sit there long enough for it to right itself - total combination with the low gas pressures.
- 46:01:46 P Okay. That's just because of the ..., right?
- 46:01:50 CC That's affirmative. And so, if you get it anywhere near upright so the horizon sensors see some of the earth, and set up FC2 0 0 0 with gyrocompassing, I think you'll find that it'll eventually come around. It may take awhile, but everything looks good here.
- 46:02:08 P Roger.
- 46:02:13 CC We have about 3 minutes and we're standing by. We'll see you over the States.
- 46:03:22 CC Gemini XII, Houston. 1 minute to Hawaii acquisition and we'll leave you to Hawaii.
- 46:03:27 P Roger. We've got all three set-ups now and we're about ... looks like you might start coming around. See you.

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46:03:35 CC Okay. Just bear with it. It's just so darn heavy that it's not going to move very fast for you and will overshoot the dead-band.

46:03:44 P Okay.

46:03:54 P I read about 28 percent attitude gas.

46:03:57 CC Roger. Understand. 28 percent attitude gas.

46:04:02 P That's 20.

46:04:04 CC 20. Roger. 20.

46:04:11 CC You guys did real well getting things squared away. Take your time and rest. We have plenty of time here.

**HAWAII**

46:05:01 CC Gemini XII, Hawaii standing by.

46:06:00 CC Gemini XII, Hawaii. I'm sending you a Tx.

46:06:40 P Looks like we're down to about 15 percent attitude gas, on a closer inspection.

46:06:47 CC Roger.

46:07:15 CC Gemini XII, Hawaii. When you get close to being the right attitude, go to FCl and make sure that you do get 460 in.

46:07:26 P Roger.

46:07:28 CC Yes. I meant the GAIN LOW.

46:07:29 P Roger.

46:08:18 CC Gemini XII, Hawaii. We'd like to have you go to both A-Pumps on.

46:08:24 P Roger. Thank you.

46:09:11 P We're Flight Control to Mode 1 now. We overshot

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to the right a little bit and it looks like it's coming back in.

46:09:22 CC Roger. Very good.  
46:09:37 CC Gemini XII, Hawaii. We'll have LOS in about a minute.  
46:09:41 P Roger.

**CALIFORNIA**

46:13:57 CC Gemini XII, Houston standing by at California. I have about four or five items to talk with you about, when you have a chance.  
46:14:56 CC Gemini XII, Gemini XII, Houston. Over.  
46:15:00 C Go ahead, Houston.  
46:15:01 CC Roger. I've got five or six items here to discuss with you, when you have a chance.  
46:15:09 C Okay. Let me get my book out here.  
46:15:13 CC Okay. The first thing was, did you jettison anything you didn't plan to during your EVA, for weight purposes?  
46:15:28 C I don't believe so. The waist tethers are gone, the handrail is gone. That's the one to the nose.  
46:15:35 CC Okay. And, if Buzz has a chance, could he give us an idea which flow modes he used on the ELSS. He seemed to pick up quite a bit of oxygen and we're interested in that.  
46:15:50 P Roger. I was on MEDIUM for a short while prior to egress, I went to HIGH for egress and I was on HIGH the entire flight.  
46:16:02 CC Roger. Okay. Thank you.  
46:16:05 CC And Jim, I gather you didn't have any more problems with the lap belt. Apparently, it just wasn't

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hooked up right yesterday. Is that correct?

- 46:16:13 C That's right. I was only ...
- 46:16:17 CC Okay. And with regard to the camera, we would like to have it back. If you think it's causing any problems fume-wise, if you could get in the right aft box and leave it there, it'd be fine. If not, and it's causing a problem, go ahead and get rid of it.
- 46:16:34 C Okay. We have it in a zipper bag here. We'll just stick it in the aft box someplace.
- 46:16:40 CC Okay. And I sort of gathered that you got fumes in your eyes there while you were still on the suit loop, which shouldn't really come from the camera in the cabin.
- 46:16:50 C You're right. That's true. It wasn't the oil film or the oil smell.
- 46:16:55 CC Okay. Fine.
- 46:16:57 C Perspiration goes into the eyes, stinging the eyes. And the more you blink, the more they water and the more it gets. Now I don't know whether this is a natural condition, or whether this is something that's around the eyes. It seems that there would be tears that cause irritation.
- 46:17:12 CC Okay. Fine. Do you want me to sync your GET for you?
- 46:17:20 C Love to.
- 46:17:21 CC Okay. Why don't I give you a little while to set up the clock? Why don't you set it up for 46 hours 3 - 46:20:00 and you have about 2 1/2 minutes to go.
- 46:17:33 C Roger. 46:20:00.
- 46:17:38 CC Okay. In the meantime, in order to save electrical power, when you're satisfied in your tether exercise that you no longer need your local vertical needles, why don't you plan to just turn your com-

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puter off?

46:17:55 C Roger.

46:18:00 P We think we ought to discuss this attitude control problem a little bit before we go leaping into this Tether Exercise. I'm not convinced, for one, that we pitch the Agena down and maintain a straight-down attitude.

46:18:15 CC Okay. We're going to talk to you about that in a little bit. We're discussing it right now ourselves.

46:18:19 P Okay.

## GUAYMAS

46:18:30 CC Okay. You've got about 1 and 1/2 minutes to clock sync. And Buzz, do you remember whether the 408 Boom was deployed correctly when you were out?

46:18:43 P No. It's on the bottom if I'm not mistaken. And I didn't get a chance to look down there.

46:18:49 CC Very good, thank you.

46:18:52 CC You might consider, while we're discussing the thruster problem, you can use the Agena to pitch-down with, of course, and if you're not familiar with that, I think you have it in the book there. We can work something out by picking - using the Agena control system to pitch you down and we're discussing exactly your control problem right now. I'll have an answer for you.

46:19:15 P Yes. Okay.

46:19:18 P I was thinking of trying to stationkeep after we undock.

46:19:21 CC Yes. We're working on that.

46:19:34 CC Also Gemini XII. Did you notice any tendency to float up with the ELSS on, when you were standing

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in the cockpit?

- 46:19:44 P Negative.
- 46:19:45 CC Okay. Thank you.
- 46:19:46 P I'll expand on this later.
- 46:19:48 CC Fine.
- 46:19:51 CC Okay. 10 seconds to clock start.
- 46:19:56 CC 5 seconds.
- 46:19:59 CC 2, 1,
- 46:20:01 CC MARK.
- 46:20:05 C Roger. I have it started.
- 46:20:06 CC Okay. I'll give you a hack at 46:20:15 to check it. Stand by.
- 46:20:16 CC MARK. 46:20:15.
- 46:20:19 C Roger. Thank you.
- 46:20:20 CC Okay.
- 46:20:36 CC I have a couple of updates here for you, if you're ready to copy them.
- 46:20:52 P Roger. Go ahead.
- 46:20:53 CC Okay. 46:20:00 to 47:00 is an eat period, if you're stowed. And we have down here the sunrise time for the start of the Tether Exercise as 47:18:00.
- 46:21:14 CC We'd like a fuel cell purge at 49:13:00. It'll be at Hawaii, with cyro readout and it'll be Section 2, then Section 1. And I have a Nodal Update for you.
- 46:21:31 P Stand by.
- 46:21:33 CC Okay.

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46:21:36 P A little slower, please. We can't write so fast.

## TEXAS

46:21:39 P When do you want that fuel cell purge to start?

46:21:41 CC 49:13:00, it'll be at Hawaii and they'll call you.

46:21:50 P Okay. ...

46:21:53 CC Okay. 46:02:06: Node; REV 29; 170.9 west; Right Ascension, 10 hours 54 minutes.

46:22:19 P Roger. Understand.

46:22:50 CC Gemini XII. One other question for your Separation Maneuver, which will be a posigrade burn of approximately 6 feet per second horizontal. What's your druthers? Do you want to use the aft-firing thrusters or the forward-firing thrusters? We'll pass it to you either way.

46:23:13 P We'll use the aft-firing thrusters.

46:23:16 CC Roger. Aft-firing thrusters, posigrade.

## HOUSTON

46:24:14 CC Gemini XII, Houston. With regard to the thrusters, what we'd like you to do is turn the Number 2 and the Number 4 circuit breaker back on. The Roll Logic switch in the NORMAL position - with yaw, and go ahead and undock that way. We think that you should have fairly good attitude control at that time in RATE COMMAND. And, of course, if you're not satisfied with it, you can always get rid of the tether.

46:24:54 C Well, now this is changing our procedures, Houston. We were going to start with the Agena vertical. Do you want us to leave it horizontal then?

46:25:06 CC No. Let's see, you were going to fly it down

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there with the Gemini. You can fly it down there with the Agena and stop it, and then undock in RATE COMMAND.

- 46:25:23 C Okay. We're just curious about our Agena attitude gas.
- 46:25:28 CC Roger.
- 46:25:34 C Houston, Gemini XII here. We didn't really get what you'd call an acceptable RATE COMMAND, before - RATE COMMAND's inability. And I'm wondering if maybe we shouldn't check to see if we've lost another thruster.
- 46:25:56 CC Okay. Well, we'll - let's kick that one around for a minute down here and we'll talk to you again.
- 46:26:02 C Okay. But for sure that when we went to RATE COMMAND, there, it wasn't acceptable and we - we - it wouldn't stop us. What I'm trying to say is we still had a residual rate.
- 46:26:14 CC Roger. Well, of course, you're going to have a few tenths of a degree per second and at that time you had the Number 2 and the Number 4 circuit breaker off. And even mono-propellant or part bi-propellants, you're going to get some help from them and that might change the picture a little bit.
- 46:26:36 CC I agree with you. When you're on that kind of burn, you don't get a lot of good response to begin with.
- 46:26:46 C Roger.
- 46:27:32 CC Gemini XII, Houston. Your wives are out here and they're real happy with your show this morning.
- 46:27:38 P Roger.
- 46:27:39 C Roger.
- 46:28:29 CC Gemini XII, Houston.
- 46:28:31 C Go ahead.

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- 46:28:33 CC Okay. I'm afraid that if you start checking thrusters on the Agena, you'll get that combination moving again. The consensus down here is, let's get set up to do it. Then you can use the pitch mode on the Agena to get pitch down. Go ahead and undock. Now leave the 2 and 4 circuit breakers on and if you aren't too happy with control mode after you undock, you might go ahead and change your Roll Logic switch to the other one because one thruster may be a little bit better than the other, and it would give you a little better control that way; say for a roll. And if you're not satisfied with it, just go ahead and get rid of the docking bar and then you can go on and back away. And you can go ahead if you've got a fairly slack tether out there. You might give it a couple of tries in DIRECT and go right back to RATE COMMAND again.
- 46:29:31 C Roger.
- 46:29:34 C Roger. That's exactly what we're going to do with that thing - have control troubles, we're going to jettison.
- 46:29:41 CC Very good. We concur.
- 46:29:51 CC Okay. Gemini XII, Houston. When you use the Agena to pitch, remember to get 420 in there, PITCH RATE LOW, so you have the 1 and 1/2-degree-per-second pitch rate rather than the 3-degree per second.
- 46:30:08 C Roger.

## ASCENSION

- 46:43:07 CC Gemini XII, Gemini XII, Houston standing by at Ascension.
- 46:44:32 CC Gemini XII, Gemini XII, Houston standing by at Ascension.
- 46:44:37 C Roger, Houston.

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46:44:44 CC Gemini XII, Houston. I've got two Block Updates to pass to you out there to Tananarive, so you can be ready for them.

46:44:53 C Roger.

46:46:54 CC Gemini XII, Houston. 1 minute to LOS Ascension.

46:47:17 C It's no good ...

## TANANARIVE

46:57:36 CC Gemini XII, Gemini XII, Houston through Tananarive. Over.

46:57:46 CC Gemini XII, Houston. I have a Block Update for two areas for you, if you're ready to copy.

46:57:55 C We're trying to get the Spacecraft down now so that we're pointing straight down.

46:58:01 CC Roger. I won't bother you.

46:59:19 C Ready for the update.

46:59:21 CC Roger. This is for Area 32-4 Bravo: GET RC, 50 plus 26 plus 21; RET 400K, 20 plus 45; RET RV, 26 plus 10; roll left 80, roll right 100. Area 33-4 Alpha: GET RD, 52 plus 02 plus 21; RET 400K, 20 plus 15; RET RV, 25 plus 34; roll remains the same. Weather is good in both areas and this is with a Separation Maneuver. Over.

47:00:42 C Roger. Understand. ... RET R ...

47:00:48 CC Roger. RET RV, 25 plus 34.

47:00:57 C Roger. Understand.

47:01:05 CC How are you coming with getting it pitched down, all right?

47:01:09 C Roger. We're pitched down all right.

47:01:13 CC Very good.

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47:01:14 C Houston?

47:01:16 CC Go ahead.

47:01:17 C We went by the proper procedures, got the nose down and we're in Flight Control Mode 2 and slowly drifting.

47:01:25 CC Understand you're in FC2 and you're slowly drifting.

47:01:29 C Right. We're drifting right back up. We went by procedures as prescribed ... down for ... and stop and then we went to Flight Control Mode 2 ... and we're slowly coming back up.

47:01:53 CC Roger. If you pitch down 0 0 0, you should be GEO RATE NORMAL.

47:02:24 CC Roger. That is right. GEO RATE REVERSE.

47:02:28 CC And you say it's drifting back up?

47:04:20 CC Gemini XII, Houston.

## CARNARVON

47:13:32 CC Gemini XII, Carnarvon.

47:13:38 P Go ahead, Carnarvon.

47:13:40 CC Okay. When you get her pitch-down there, you'll have to put on that GEO RATE in order to keep that thing going around. That's Command 351. We show it off on the ground.

47:13:49 P Roger.

47:14:18 CC Sending you a Tx, Gemini XII.

47:14:21 C Roger.

47:17:39 C Carnarvon, Gemini XII.

47:17:40 CC Yes. Go ahead.

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47:17:42 C Roger. We're in a vertical position now, waiting for the tether. We're going to wait until we get a light in our eyes and a light in the background before we undock.

47:17:51 CC Okay.

47:17:57 CC Does it seem to be holding pretty well?

47:20:31 CC Gemini XII, this is Carnarvon. No need to acknowledge, just for your information. You may see some extra propellant usage from the Gemini because of the control situation we're in right now with those circuit breakers open on 2 and 4 - -

47:20:46 CC With them closed.

47:20:50 C Roger. We're going to leave them closed ...

47:20:53 CC That's right.

47:21:00 C Would there be any way until we get a lighted earth?

47:21:03 CC Okay.

## CANTON ISLAND

47:34:37 CC Gemini XII, Gemini XII. Houston at Canton. Standing by.

47:34:42 P Roger, Houston. Gemini XII here.

47:34:48 P ... it wouldn't work.

47:34:51 C If you want to have some fun, try doing this ...

47:34:56 CC Roger.

47:35:03 P ...

47:35:08 CC Say again. You're broken up. Slowly, please.

47:35:12 C ... translation.

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47:35:15 P The scene is beautiful ... nice and vertical. I think it was rolling slow and nice. There was no smudge or anything ...

47:35:24 CC Very good.

47:35:27 C Except we don't have any Spacecraft control.

47:35:31 CC I see.

47:35:33 C Even if I try to stop translation ...

47:35:40 CC I see.

47:36:21 C ... RATE COMMAND doesn't work when you try to stop rolling.

47:36:27 CC Say again. You're saying RATE COMMAND doesn't work?

47:36:30 C RATE COMMAND is firing continuously and will not stop anything.

47:37:26 CC Gemini XII, Houston. You'll be coming into Hawaii in about 30 seconds and you'll have better communication. They'll be talking to you.

47:37:34 C Gemini XII.

## HAWAII

47:38:42 CC Gemini XII, Hawaii standing by.

47:38:47 C Roger, Hawaii. This is Gemini XII. We don't have any choice ... with the Agena.

47:38:58 CC Roger. Understand.

47:39:03 CC At your convenience, we'd like to get a PQI from you.

47:39:08 C Roger. 35 percent.

47:39:10 CC Roger. Thank you.

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- 47:39:24 C Hawaii, here's the situation again in case you didn't get it. At Canton the tether deployment was fine. We let it come out and the Velcro hung it up a little bit; thrusters managed to get it unstuck. It hung up just slightly at the 50-foot marker and we got it undone. We'd be in great shape now if we had a control system. The Agena is fine. The tether is out. We're hardly moving, except that we can't control attitude. Every time I try to control translation, we change our attitude and we have no good control over it.
- 47:40:05 CC Roger.
- 47:40:21 CC Have you tried any other control modes?
- 47:40:26 C Roger. We have tried RATE COMMAND - RATE COMMAND fires continuously when I start the roll.
- 47:40:31 CC Roger.
- 47:40:33 P We switched back and forth the roll ... right now.
- 47:40:59 CC Flight suggests trying PULSE.
- 47:41:03 C Try PULSE? We've tried PULSE.
- 47:41:05 CC Roger.
- 47:41:06 C We've tried PULSE; we've tried DIRECT; we've tried RATE COMMAND.
- 47:41:11 C We just don't have any roll control; that's what's wrong, Hawaii. We tried to get a roll by pitch and yaw, but we just can't do it.
- 47:41:18 CC Roger.
- 47:41:48 C Hawaii, what we're thinking about doing is just letting it go right now and hoping that maybe whatever we've got in will hold it.
- 47:41:57 CC Okay. That's what Flight was just suggesting here.
- 47:42:00 CC And - -
- 47:42:01 C We're in perfect shape. It's just beautiful and

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just perpendicular. If we only had a control system, I'm sure we could do this much better than even in the simulator.

- 47:42:12 CC Yes. We're showing you're hanging in pretty good in pitch and yaw.
- 47:42:18 C Like in RATE COMMAND now ...
- 47:42:45 CC Okay. What we'd like to have you do, if you're willing, is just to let the roll go and see if it will damp out after awhile here.
- 47:43:05 C Roger. We have lost sight of the Agena.
- 47:43:10 CC Roger. Copy.
- 47:43:11 C As long as that tether doesn't wrap around us, we'll do it.
- 47:43:16 CC Okay.
- 47:43:18 CC Flight doesn't really think you'll damp out in roll.
- 47:43:24 P Well, we've stayed well above him now for quite awhile. We're out in front of him just a little bit.
- 47:43:35 P Yes. We're also getting a little low on ACS gas pressure.
- 47:43:43 C Looks like maybe 10 to 15 feet - maybe 10 feet of slack.
- 47:43:50 C Looks like Hawaii is pretty today.
- 47:43:53 CC It sure is. Try to control it in pitch and yaw and just let the roll part of it go, if you can do that okay.
- 47:44:00 C Well, when we put it in pitch and yaw, all we got is roll.
- 47:44:03 CC Okay.
- 47:44:13 C Okay. We show that the Agena would spin-up teth-

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ered that way.

47:44:42 CC We'd like to have you go to Flight Control Mode 1 on the Agena, if you could, and include 451 and 460 in an attempt to save some control gas now. It's getting mighty low.

47:44:54 P Roger. 0451.

47:45:13 P And 460. I've got a MAP on both of them.

47:45:15 CC Roger. Thanks.

47:45:33 C We're still ahead. Don't seem to be getting too much further ahead of him. Maybe we might possibly ... up.

47:45:47 CC Okay. We show a roll rate of 3.89 feet per second here on the ground.

**CALIFORNIA**

47:49:18 CC Gemini XII, Houston at California.

47:49:23 C Roger, Houston.

47:49:28 CC How's it look now?

47:49:29 C What's that?

47:49:31 CC How does it look now?

47:49:33 C We're still just a little bit ahead and looking in the direction of orbit travel. We're a little bit to the right. We stayed ahead for quite some while and - I don't know, I think we might end up getting captured.

47:49:49 CC Roger.

47:49:52 P We've stopped doing anything, we - anything we do usually goes to up anyway, so we'll just stay in here and see what happens. We have a loose tether, though, between the Agena and the Spacecraft.

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47:50:05 CC Okay.

47:50:07 P Occasionally, she goes taut.

47:51:02 CC Gemini XII, Houston. About how many times do you hit the end of the tether?

47:51:09 P ...

47:51:10 CC Say again.

47:51:11 C Three or four times.

47:51:13 CC Okay. So it looks like you're sort of just bouncing off it lightly. Right?

47:51:18 C Roger.

47:51:29 CC It sounds to us down here that you're either rotating very slightly or you are captured - looks like it'd be all right. How do you feel about going into the night that way and not try to stationkeep?

47:51:43 C We have a split decision, I think.

47:51:47 CC Okay.

47:51:51 CC During the pass over Texas and the Cape acquisition, we'll be sending you some DCS loads - and we want to do this just to check your computer. We'll call when we send them.

47:52:16 C Roger.

47:52:22 CC And if it's all right, I'll give you a call just before we're going to do it, and you can go to PRELAUNCH for it so we can look at it.

47:52:29 C Roger.

## CALIFORNIA

47:53:14 C Houston, Gemini XII here.

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47:53:16 CC Go ahead.

47:53:19 C My only concern, Houston, is the fact that we have a very loose tether. It's snaking round and it might get wrapped around some of our antennas outside of the Spacecraft or along the aft.

47:53:36 CC Roger. Copy.

47:53:39 P We're about aligned abreast with him in the direction of motion now. We've been ahead of him all up until now. We're still off to the right.

47:53:47 CC Roger. How many feet off to the right?

47:53:52 P Well, it might be about - I'll measure it in degrees - about 40 or 45 degrees.

47:54:02 CC Roger. Just keep watching. You've got quite a ways to go before night.

47:54:06 P Yes. I think the big thing is that we keep him below the horizon.

47:54:11 CC Roger.

47:54:21 C The tether is going to wrap around him a little bit now.

47:54:28 CC Copy.

## TEXAS

47:54:59 CC Gemini XII, Houston. Would you put your Computer to PRELAUNCH, please?

47:55:04 P Roger. PRELAUNCH.

47:55:58 CC Gemini XII, Houston. Stand by. We're sending you a load.

47:56:17 P We're going right over you now, Houston.

47:56:20 CC Houston. Copy.

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47:56:22 P Almost.

47:56:29 P If this thing is leaning just right, we might even get a picture of the Agena and Houston at the same time.

47:56:35 CC Outstanding.

47:56:38 C All right. Keep your fingers crossed ...

47:56:47 C Would you settle for a plumber's fifty?

47:56:50 CC That's affirmative.

47:58:08 P Smile down there.

47:58:10 CC Roger. We're smiling.

47:58:18 P I think I got several good shots of the Agena with Houston in the background.

47:58:22 CC Very good.

47:58:32 CC Gemini XII, Houston. Will you please switch the computer to CATCHUP now?

47:58:48 CC Gemini XII, Houston. Will you switch to CATCHUP, please? The load was good.

47:58:52 P Roger. We're in CATCHUP.

47:58:54 CC Thank you.

47:58:58 CC Roger. Stand by for T<sub>R</sub>.

47:59:04 CC MARK.

47:59:08 P Got it.

47:59:09 C Houston. It appears like we're slowly dropping down. The Agena is slowly rising up to the horizon, I believe.

47:59:18 CC Roger. How much slack do you have in the tether?

47:59:22 P We have not too much; we get more occasionally, but that's about it.

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HOUSTON

- 47:59:32 CC If it keeps bouncing off the end of it, I think you're safe in going through the night as long as you don't get too much slack. How do you feel about that?
- 47:59:43 C Well, there is slack, Houston, and the slack goes back to the back end of the Spacecraft. If she stayed taut, we'd be fine.
- 47:59:52 CC Roger. About how many times - what's the rate that you're hitting the end of the tether, once every 2 or 3 minutes, or less than that, or more?
- 48:00:02 C Oh - -
- 48:00:03 P It's not going real taut, but it's coming fairly close. I think there is probably some elasticity. We lucked out, I think, somehow.
- 48:00:15 CC Does the - you're saying that when you get a slack in it, though, you're getting some slack that looks like it's getting underneath the Spacecraft and you can't see the tether. Is that what you're saying?
- 48:00:24 C That's right. For instance, right now we can't see the tether or the Agena. It's down below us someplace.
- 48:00:30 P But it's obviously pretty close to taut because - well, for example, right now it's wrapping around at the spacing thing that I put on. It's pretty close to taut right now.
- 48:00:40 CC Okay. That sounds familiar.
- 48:00:45 P And, yes, the Agena is - he's a good ways away from the horizon.
- 48:00:54 CC Roger.
- 48:00:55 C But not more than 3 or 4 pounds on that tether when she hits the end. It's very, very - -
- 48:01:00 P Understand we just passed a taut tether.

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- 48:01:05 CC Roger.
- 48:01:07 CC Sounds like it's cycling and that's good.
- 48:01:21 P We're still on the right side of him. We've gotten a little closer now to his line of motion and to the orbit plane. We're mostly behind him now, and I think to really tell as to how far down the horizon we go when we get to maximum behind him.
- 48:01:41 CC Roger. We concur.
- 48:02:58 CC Gemini XII, Houston. How much of the tether can you see when it's over the nose?
- 48:03:03 P Well, right now I can see the whole thing because I haven't seen the Agena. But at times we can't see anything. Just the red wire that goes right down around the nose when the Agena's below us.
- 48:03:16 CC Okay. Can you give me some idea what your attitude excursions are, with respect to the tether, when in pitch, say like 60 degrees, 45 degrees. How much are you pitching with respect to the tether?
- 48:03:28 P 90.
- 48:03:29 CC 90. You think it's going all the way to the nose?
- 48:03:33 C To about 40 degrees.
- 48:03:36 CC Okay. One says 90 and one says 40. Why don't you guys discuss it and let us know?
- 48:03:51 C Okay. I think we agree. One was with respect to the tether, and the other was with respect to the local vertical.
- 48:03:57 CC Okay.
- 48:04:00 P Right now with respect to the local vertical, we're pitched up 110 degrees.
- 48:04:06 CC Okay. And the Agena's down below you.
- 48:04:09 P That's right, and we're looking at the sky.

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48:04:11 CC Okay. Are you still pitching up or are you pitching down?

48:04:26 C We're passing through the horizontal plane right now.

48:04:29 CC Pitching back down.

48:04:32 P Roger.

48:04:33 CC Okay.

48:04:37 C And we're almost due aft - straight behind the Agena.

48:04:42 CC Okay. So with respect to the Agena, you're almost on the horizon with him, too?

48:04:47 C Not quite. He hasn't reached the limit of the earth yet and may not get there.

48:04:53 CC Okay. How about letting me know when you think you're beginning to back up with respect to that? In other words, travelling forward with respect to the Agena.

48:05:02 C Okay. We're both looking for the same thing.

48:05:05 CC I think, if you do that, don't you think you're beginning to be captured?

48:05:09 C Yes, I think so.

48:05:16 CC You have about 13 more minutes to sunset.

48:05:22 P Roger.

48:05:33 CC Okay. I correct that. You've got about 9 minutes left.

48:05:40 P ... Houston, with the Agena still below us, however. Now we have quite a big loop in the tether. I'd say we're about 60 feet away from it right now.

48:05:53 CC Opening or closing?

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48:07:16 CC Gemini XII, Houston. We've got about 3 minutes and 30 seconds to Antigua LOS and then we'll have you again at Ascension.

48:08:07 CC Gemini XII, Houston. Do you have radar range? Are you locked up on him?

48:08:16 P Radar is on. However, we're not getting anything.

48:08:19 CC Okay. We copied on the ground here some thruster firing. Are you firing your maneuver thruster?

48:08:25 C Just fired it.

48:08:28 CC Say again.

48:08:30 C Just fired it briefly.

48:08:32 CC Okay.

48:08:33 C And attitude, trying to see if we could station-keep at night.

48:08:36 CC Okay.

48:08:53 CC Gemini XII, Houston. What do you think? You think you're all right then to go into the night? Either way?

48:09:18 CC Gemini XII, Houston. Are you satisfied you can stationkeep?

48:09:25 P We'll give it a try.

48:09:27 CC Okay. Very good.

48:09:34 CC We have about 1 minute to LOS Antigua. We'll see you at Ascension at 48:16:18.

## ASCENSION

48:16:29 CC Gemini XII, Gemini XII, Houston at Ascension. Over.

48:16:39 P ...

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48:16:53 CC Gemini XII, this is Houston. We're still a little low and I couldn't read you. Would you say it again slowly?

48:17:05 P Very lightly on the ... tether, the Agena ... and I would say it would touch the horizon about 30 degrees below us.

48:17:20 CC Roger.

48:17:21 P We might just be captured because we haven't ... much at all ...

48:17:36 CC Gemini XII. Roger.

48:17:40 CC Just pass on to you that if you want to maneuver, remember that if you're going to maneuver in pitch, put your Logic switch to yaw and vice versa. Might help a little bit.

48:18:03 CC And if you have a few moments between Ascension and Tananarive, you can look at your water gun. We'd like to get a count off it. If you can't, forget it.

48:18:20 C 1506.

48:18:26 CC Understand 1506.

48:18:30 C 150 ... incidentally I think ...

48:18:38 CC Gemini XII, the communication is very bad. We're not reading you too well. We'll get you at Tananarive in a little while.

48:18:47 P Roger.

48:18:51 CC The roger came through load and clear. Say it again now. You're getting pretty high over the station. Maybe we can read you.

48:18:58 C Okay. The water gun is reading about 1510 ... and I think it might be ...

48:19:09 CC Roger. Copy.

48:19:48 C On that water gun count, we haven't eaten lunch -

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I guess it is - yet. That's partly why it might be a little low.

48:19:57 CC Roger. Copy.  
48:21:19 C This is Gemini XII.  
48:21:21 CC Go ahead, Gemini XII.  
48:21:23 C Roger. The tether looks like it's very nearly taut all the time now, and we're just about to pass straight over. We're thinking that may be a perfect gift of Pat to go over.  
48:21:39 CC Roger. I didn't quite copy all that.  
48:21:47 CC Okay. We got that. The other thing we've been looking at is your OAMS propellant, and you have plenty. That's no problem right now.  
48:21:59 C ... Roger.  
48:23:44 CC Gemini XII, Houston. 1 minute to LOS Ascension.  
48:23:53 C About 15 degrees and straight above, it looks like he holds a darn good attitude.  
48:24:00 CC Roger.

## TANANARIVE

48:32:57 CC Gemini XII, Houston standing by at Tananarive.  
48:33:07 P Roger. ...  
48:34:09 CC Gemini XII, Houston. How's it looking now?  
48:34:14 C Well, it ...  
48:34:17 CC Roger.  
48:34:18 C The tether has been pretty taut all the time, but I think ...  
48:34:25 CC Roger.

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48:35:54 CC Gemini XII, Houston. The ACS is still on in the Agena, isn't it?

48:36:01 P Roger. It is. The Agena's just about horizontal with us right now. What we're going to do is put in a very small upthrust from him; then we'll try and kill our translation as we pass over directly above him, if we do. The tether is frankly taut now, and I think that as long as we keep it taut, we might be able to ... as we pass right over.

48:36:30 CC Roger. Copy.

48:38:38 CC Gemini XII, Houston. 1 minute to LOS at Tananarive. Carnarvon 48:48:02.

48:41:13 C We're on the Tether Experiment. Record her as per usual. We can't get any water in any of the food.

48:41:31 P Are you going to leave it on?

48:41:34 C What's that?

48:41:38 C Yes.

48:41:45 P Momentary reaction, wouldn't it?

48:41:47 C Yes. Go ahead and turn it on.

**CARNARVON**

48:49:15 CC Gemini XII, Carnarvon standing by.

48:49:19 C Roger. We're going into ...

48:49:27 CC Okay. Can we get you to turn your encoder off? We'd like to send a RESET TIMER RESET.

48:49:33 P Encoder off.

48:49:43 CC Okay. You can turn it back on. Thank you.

48:49:51 P What kind of status do you show the Agena in now?

48:50:13 P Carnarvon, Gemini XII. What control mode do you

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show the Agena in now and how much gas is left?

48:50:23 CC Okay. On FCL.

48:50:27 C Okay.

48:50:35 CC Okay. About 5 pounds of gas.

48:50:38 P Has there been much thruster activity in the Agena recently?

48:50:43 CC Just very little.

48:50:53 CC In fact, it's practically nil.

48:51:40 CC Okay. Gemini XII, you can turn your encoder back on.

48:51:45 P It's on.

48:52:02 CC Gemini XII, this is Carnarvon. How close to setting up the Agena do you think you have it?

48:52:11 P Now we're trying to get back into position, and I think we may have a much better crack at it this time than we had before. Rates seem to be nulled down a lot better.

48:52:24 CC Okay.

48:52:27 C We'll do what we can.

49:13:56 C We'll run a tape.

49:13:57 P Well, they ought to have it on T/M. Each time you take a picture, that's on T/M too.

49:14:28 P ... This is pretty good food.

## HAWAII

49:14:37 CC Gemini XII, Hawaii standing by.

49:14:44 C Roger, Hawaii. We're still getting this slow roll rate.

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- 49:14:48 CC Roger. It looks pretty stable from here.
- 49:14:52 C Roger. We haven't touched it in quite awhile. and we look like we're in pretty good shape. We're just maybe 10 feet south and, oh, maybe 20 feet ahead of the direction of orbit travel. Good tight tether now.
- 49:15:09 CC All right. Looks like you still have a very slow roll rate in it. Very gradual.
- 49:15:16 C On the Spacecraft, you mean?
- 49:15:17 CC Yes.
- 49:15:19 C Yes. Well, our attitude does have excursions to it, oh, about 45 degrees pitch down now. That doesn't seem to be too much of a problem, though.
- 49:15:31 CC All right. Very good.
- 49:15:44 C Due to the attitude, it's supposed to be stable ...
- 49:15:46 CC You can ride it to the left a bit now.
- 49:15:49 CC Are you to the right or to the left of the Agena?
- 49:15:50 C We're just about to cross, right now. As far as I know, it's south with respect to the orbit plane. Yes. We're crossing now and we're, oh, maybe 10 feet ahead.
- 49:16:08 CC That's 10 feet ahead.
- 49:16:09 C Right.
- 49:16:33 C Going just a little bit north now. Right on the ... get very large.
- 49:16:40 CC Okay.
- 49:16:43 CC We have an AGENA CLOCK RESET LOAD to send in. Could you give us encoder off, please?
- 49:16:49 P Roger. Encoder off. Incidentally, we will not lock on, and we're not able to get MAP lights

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right now when they are pointed directly at them. I tried to switch to SPIRAL or DIPOLE, and was unable to get any MAP light.

- 49:17:08 CC Okay.
- 49:17:09 C Which antenna do you show we're on?
- 49:17:10 CC Right at the present time, you're on the SPIRAL.
- 49:17:18 CC At the present time, you're on the SPIRAL antenna.
- 49:17:42 C Why don't you jump that other Hasselblad down below there?
- 49:17:46 P (Mumbling)
- 49:18:08 P Oh, well, let me get a little bit more there ...
- 49:18:36 P Just about 11.
- 49:18:43 CC Gemini XII, Hawaii. Do you think you're setting up in the gradient at the present?
- 49:18:49 C Sure looks like it. We're - the docking bar is lined right up with the guide pole now. We're almost straight above them and the tether's crossed.
- 49:18:57 CC Okay. Mighty fine.
- 49:18:59 CC Since we've had acquisition on you, you look like you've rolled about roughly 60 degrees; that's been over about a 5-minute period now.
- 49:19:10 P It's not the attitude we're worried about; it's more the position relative to the Agena.
- 49:19:17 CC Roger.
- 49:19:19 P I think we might want to stay with Agena in Attitude Control a little bit longer and then maybe near the end turn her off.
- 49:19:29 CC Okay.
- 49:19:38 P You know, I think it'd be great to see this way.

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- 49:19:44 C You ought to see the ice he just captured.
- 49:19:47 P The only thing --
- 49:19:48 C I'd think it takes a long time for it to really - well, it didn't take too long for that one to show that we were in capture.
- 49:19:53 P Yes.
- 49:19:54 C We can get very slow, but what we'd have to do is turn off all our ...
- 49:19:59 C I think that the more I see it, the more I think Lang is right.
- 49:20:06 C But you get right down here and take a long time to figure out whether you're in capture or not.
- 49:20:10 P Oh, yes.
- 49:20:16 P You can only tell by measuring total angles of excursion.
- 49:20:26 C Well, let me know. Would you say that you think you could probably do it with a good operating platform on, if you could - I mean control?
- 49:20:35 P Do what?
- 49:20:37 P Capture.
- 49:20:39 P I think so, too. No problem.
- 49:20:47 P What's it look like?
- 49:20:49 C Hey, we keep charging along here!
- 49:20:51 P What's our position relative --
- 49:20:56 P What's our position relative to him?
- 49:20:58 C He's over here about 90.
- 49:21:04 P I mean relative to him straight up.
- 49:21:06 CC Gemini XII, you can turn your encoder back on.

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We'll have LOS in approximately 1 minute. If you'd like to change antennas, we will check and see if you're getting in okay.

- 49:21:18 C What do the Agena people recommend for getting across to them?
- 49:21:28 C Okay. You say I'm on SPIRAL now?
- 49:21:32 CC Yes. That's affirm.
- 49:21:33 C Okay. I'll send 260 and see if it switches.
- 49:21:40 CC That's affirm. We agree. Did it switch?
- 49:21:44 C Okay. I'm not - just not getting a MAP light here.
- 49:21:47 P Here, let me check the - -
- 49:21:49 CC Okay. It's working all right.
- 49:21:54 C Where's the camera?
- 49:21:55 P You might check and see from them, the Agena people in Houston, which antenna would be best.
- 49:22:11 P Who was that we were talking to?
- 49:22:13 C Hawaii.
- 49:22:28 P Still putting it on capture.
- 49:22:29 C What?
- 49:22:31 P Put it on capture.
- 49:22:34 C Well, would give you a position over to our - with respect to - we've got to push back and forth to get capture. And the tether is always taut.
- 49:22:46 C Well, wait a second. Maybe we are. Let's see if we are going forward.
- 49:22:54 P Well, I would estimate, just north of track now.
- 49:22:58 C Yes. I was talking about fore and aft.

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49:23:00 P ... Is that ...?

49:23:10 P ...

## CALIFORNIA

49:23:11 CC Gemini XII, Houston through California.

49:23:19 C Go ahead, Houston.

49:23:22 CC Roger. You're getting extremely low on attitude gas in the Agena. If you think you're stable, while you still have some daylight, any time you're ready, you can go ahead and shut the ACS off.

49:23:38 C Houston, the best indication we have really of capture or not is the Agena. If it's that low, I guess we have no choice.

49:23:51 CC Stand by a minute.

49:23:54 C Yes. We are getting an excursion off to the track.

49:23:56 P Yes.

49:24:09 P Which means that we'll slowly bring the Agena up and we'll slowly go down.

49:24:15 C Maybe.

49:24:20 P I would think so.

49:24:26 C If we're that low, we have no choice.

49:24:32 C But if we're not going to touch anything in the night period, I'll just leave it the way it is.

49:25:14 CC Gemini XII, Houston. Go ahead and look at it as long as you want. Just calling to advise you about the attitude gas and whenever you're satisfied, why it's up to you.

49:25:25 C ...

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- 49:25:26 P ...
- 49:25:27 C Okay, Houston. We understand about the attitude gas. Just what do you plan on doing this time? This capture takes us a long time. We're in that region now where we can say we're captured for a long period, but might slowly go into a spin, like we did on our first attempt. We're in good position now. We can turn off the gas and just let it go. I would suggest that, no matter what it does, we go through the night period in this manner. We won't touch the controls, so that if we're not captured and we go into a spin, we'll come out the next day in that spin.
- 49:26:08 CC Roger. If you're satisfied, go ahead then. I gather, from what you say, that you've got a pretty taut tether all the time now.
- 49:26:19 C That's right, it's a taut tether. There's not much force in there at all, however, and we're just merely going along with it. However, we were in the same position the last time, and we slowly got into a horizontal position. It might do the same this time.
- 49:26:39 CC Okay. Well, whenever you're ready, you can let her go.
- 49:26:44 C Ready now?
- 49:26:45 C Yes. Go ahead.
- 49:26:49 P Now, we're not getting MAP lights. You'll have to confirm whether the engine ACS is off.
- 49:26:55 CC Roger. You'll be at Texas in just a couple of minutes and we can look at it then.
- 49:27:02 CC You can always send your call lights, ACQ lights, or something like that, if you want to assure yourself that you're getting in.
- 49:27:13 C Well, we can't see in the daylight.
- 49:27:15 P Kind of hard to see up here.

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49:27:23 CC I'm talking about when you get in the night side  
there to --

49:27:27 C Nice recovery.

49:27:30 P We're talking about attitude gas.

49:27:35 C ...

49:27:41 C Well, we are not doing it.

49:27:46 C ...

49:27:50 P Well, it depends on how far we go. We're not  
losing the battle fore and aft.

49:27:56 C ...

49:27:59 P Yes.

49:28:03 C Get some pictures over a pretty wide - I don't  
know what we're over.

49:28:17 P How about California?

49:28:20 C Tethered.

49:28:30 C Is it 16 or 11?

49:28:31 P Check it. 11.

49:28:34 C Okay.

GUAYMAS

49:28:36 CC Gemini XII, Houston. We have Agena telemetry

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down in Texas if you want to try to turn it off.

- 49:28:43 C Roger. We did turn it off.
- 49:28:46 P You have ACS off now?
- 49:29:10 CC Gemini XIII, Houston. We show it off on the ground. You are getting in all right.
- 49:29:15 C Roger.
- 49:29:35 P Retrograde.
- 49:29:37 C We're going forward and he's going backward.
- 49:29:39 P Is the tether taut?
- 49:29:41 C Oh, yes.
- 49:29:42 P Right?
- 49:29:43 C Yes
- 49:29:50 C Houston, Gemini XIII.
- 49:29:51 CC Go ahead.
- 49:29:53 C Our tether is essentially taut now. To give you some idea of the forces in the tether, the natural bend of the wire when it made the loop is still bent about 70 degrees; so you can imagine how small the forces are in that tether.
- 49:30:12 CC Roger. Copy.
- 49:30:14 P It was bent ever further, you know, when it wrapped around that one time when it was real tight.

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49:30:29 C What are we doing?

49:30:37 C Well, where's he?

49:30:39 P I don't like the attitude we're in.

49:30:54 P We have to prove a point there some way. ...  
smallest little blip.

49:31:02 C Yes. I do believe we're coming back across.

49:31:06 P What do you mean?

49:31:11 C Is it still going up, or what?

49:31:12 P No. It ...

49:31:47 C I think the ...

49:32:12 C ...

49:32:13 P Yes.

49:33:02 C ...?

49:33:03 P Roger.

49:33:20 C Is it still taut?

49:33:30 C-P (Laughter)

49:33:37 P I've got the ...

49:33:42 C ... too.

49:33:45 P ...

49:34:13 C Good.

49:34:19 P ...

49:34:26 C ...

49:35:36 C Oh, ho! You've got that darn thing in the camera  
box.

49:35:44 P What are you looking for?

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49:35:46 C Another magazine for the Hasselblad.  
49:35:51 P Oh, yes. That's right. Come to think of it.  
49:36:04 C Well, I don't mind taking a ... today ...  
49:36:12 P Well, I'm getting ready to take this ECD off.  
49:36:20 C ECD man, aren't you?  
49:36:26 P Is the thing still down there?  
49:36:32 C I'm not moving it.  
49:36:35 P That's fine.  
49:36:43 C Don't worry. It hasn't been used yet. Don't put your fingers in the lens.  
49:36:50 C Hand me the Hasselblad.  
49:38:27 C Okay. The attitude ready or ...? Do you see the running lights on?  
49:38:34 P There it is, right above us. See there?  
49:38:38 C We reached the point of mid-course.  
49:38:46 P I think it's coming away from the horizon.  
49:38:49 C That's the way it'll be.

## HOUSTON

49:38:54 CC Gemini XII, Houston. How does everything look now?  
49:38:59 C Roger. It appears as though it is pointed right toward us. And if anything, it looks like it's moving away from the horizon. It looks like we're in pretty good shape now.  
49:39:11 CC Very good. Very good.  
49:39:13 C We'll just hold on to this thing throughout the night period.

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49:39:15 CC Okay.

49:39:24 CC Gemini XII, Houston. On the next revolution over Texas, I'll pass an update for your Sep and it will be for the aft-firing thrusters.

49:39:36 C Okay. A matter of interest, the docking light is a good device to illuminate the tether with at night. It works out very nicely.

49:39:43 CC Roger. We use it on ours.

49:39:46 CC ...?

49:39:54 C Let's talk a second about what we should do about this.

49:40:01 CC We've been watching you here on the ground, and it sort of looks like you are oscillating in sort of a cone, I guess.

49:40:12 C It's kind of hard to tell from just looking at attitudes.

49:40:35 C The only thing is, I wonder if we should power-down the Spacecraft.

49:40:48 P I don't think you'd want to do that.

49:40:49 C ... I don't know.

49:40:54 P I guess the way they are looking at it is, why jeopardize a good thing.

49:41:01 C Hey! Now look on back. See how ...

49:41:16 P Does wiping off your window help any?

49:41:23 C What?

49:41:25 P Does wiping off your window help any?

49:41:30 C Yes.

49:41:37 C See him?

49:41:39 P No. He's just about below us.

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49:41:44 C Remember when we were talking about that wedge?

49:41:46 P Yes.

49:41:48 C Take a look at that over there! You can really see that wedge!

49:42:05 P We're at 135. I think we ought to change ... Ready to go ...

49:42:49 C ...

49:42:59 P Right. Sure were.

49:43:04 CC Gemini XII, Houston. We've got about 2 minutes to LOS Antigua; see you over Ascension.

49:43:11 C Roger. Houston.

49:43:49 CC Gemini XII, Houston. Did you get a chance to eat yet?

49:52:11 C ...

## ASCENSION

49:52:21 CC Gemini XII, Gemini XII. Houston at Ascension. Over.

49:52:32 C Houston, Gemini XII here.

49:52:34 CC Roger, Gemini XII. Houston here. When you come out in the daylight, we would like to get a normal fuel cell purge. Purge Section 2 then Section 1; hydrogen normal and oxygen a normal purge - 2 minutes. Over.

49:52:56 C As soon as we hit the daylight, purge two fuel cells per purge, 2 then 1. Is that right?

49:53:02 CC That's correct, and do it as soon as you come out in daylight. And if you are satisfied, you can watch and see what happens to your rate and so forth when you purge.

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49:53:17 C Let's have a urine dump and see what that does.  
49:53:22 CC Roger.  
49:57:50 CC Houston. Gemini XII, Houston. 1 minute to LOS  
Ascension. See you at Tananarive 50:08.  
49:57:57 C Roger.

## TANANARIVE

50:08:06 CC Gemini XII, Gemini XII. Houston through Tananarive.  
50:08:54 CC Gemini XII, Houston through Tananarive. Over.  
50:09:11 CC Gemini XII, Gemini XII. Houston through Tananarive.  
Over.  
50:09:17 C Roger, Houston. This is Gemini XII. Go.  
50:09:21 CC Roger. A couple of times I just turned your  
computer off. Over.  
50:09:28 C Roger. Computer off.  
50:09:30 CC Okay. The other thing is, have you been moving  
around in the cockpit at all? We'd like to know  
if your movements in the cockpit tend to upset  
the combination at all.  
50:09:46 C We can't tell just now. It's still dark. I'll let  
you know at a light time. Well, we did make a purge  
out there to see what that'll do. ... We'll find  
out.  
50:09:57 CC Okay. Very good. And when you do get out in the  
daylight and after the fuel cell purge, if you  
would make some deliberate movements in the cock-  
pit to observe, we'd appreciate that for your  
comments.  
50:10:11 C Okay. We will. We've been moving in the cockpit  
doing things. We turned the Agena control system  
off.

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Then we would get hold of the antenna where the ... ran into a slack a little bit. But seems to be working.

- 50:10:30 CC Roger. Very good. What's - where are you in relation to the horizon now? Are you still pointed down pretty good?
- 50:10:38 C As far as we know. However, it's still dark and we've got the lights on in the cockpit. We'll have to find out where ...
- 50:10:46 CC Okay.
- 50:10:48 P You want us to leave the computer on, don't you, for telemetry on this?
- 50:10:52 CC No. We'd like the computer off now, if you're not using it, so that you'll save electrical power.
- 50:11:23 C Houston, Gemini XII.
- 50:11:25 CC Go ahead.
- 50:11:28 C Roger. We're recording Spacecraft movement through the computer, and we wanted to leave it on to re-record ...
- 50:11:37 CC That's negative. We want the computer off. Turn the computer off.
- 50:11:43 C Roger.
- 50:11:44 CC Thank you.
- 50:11:56 P Houston, would you say again which ... you want to purge first?
- 50:12:01 CC That is purge Section 2 first.
- 50:12:04 C Roger. Normal 2-minute purge, Section 2 first.
- 50:14:08 CC That's affirmative.
- 50:14:40 CC Gemini XII, Houston. 1 minute to LOS Tananarive.
- 50:14:48 C Roger. Houston.

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## COASTAL SENTRY QUEBEC

50:33:38 CC Gemini XII, CSQ.

50:33:42 C ...

50:33:44 CC Roger. How'd the purge go?

50:33:49 C ... normal.

50:33:52 CC How are you doing on the tether exercises?

50:33:55 C Well, I think we're still captured; however, ... fuel cell purge.

50:34:10 CC Roger.

50:34:11 CC We don't have anything else for you. We'll be standing by.

50:34:17 C Roger.

50:34:28 C CSQ, you might relay to Houston that, if it's possible, I could make some Hasselblad pictures during the stand-up EVA run.

50:34:38 CC Okay.

50:35:21 CC Gemini XII, CSQ.

50:35:24 C Gemini XII.

50:35:25 CC We're looking for a burn about 25 minutes after you terminate the tether exercise. That will give you time to Platform Aline.

50:35:32 C Roger. We're going ... CSQ. We're trying to figure out a way of making the burn with the controls ...

50:35:41 CC Roger.

50:35:52 C What is the ... burn? Is it 16 seconds?

50:35:56 CC That's correct.

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50:36:59 CC 1 minute to LOS, Gemini XII.  
50:37:02 C Roger.

## HAWAII

50:50:09 C Hawaii, Gemini XII here. For information, we would like to go clean of the Agena prior to darkness, in the daylight - and also might set up for a burn. We're still discussing how to make this burn. We're really not too sure how much fuel we are going to have to make this burn.  
50:50:34 CC Roger. Copy.  
50:51:11 CC Gemini XII, Hawaii. You mean do the burn in daylight and get off - rather than get off the tether in daylight?  
50:51:22 C No, we don't want to get off the tether in daylight, of course.  
50:51:28 CC Okay. Then Flight say we'll do the burn about 25 minutes later in daylight.  
50:51:33 C Roger. Yes, I think we - it's much better to do the burn also in daylight.  
50:51:36 CC Yes.  
50:51:37 C We're going to have to determine just how much control we have and how long and how much it takes to Aline the Platform.  
50:51:46 CC Okay.  
50:53:14 C Hawaii, Gemini XII.  
50:53:17 CC Gemini XII, Hawaii.  
50:53:18 C Roger. Unless you want us to continue gravity gradient, we can get off the tether any time you want us to.  
50:53:24 CC Okay. They're looking at the real close right now.

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We'll have something for you shortly.

50:53:28 C Okay.

50:54:27 CC Gemini XII, we would like you to continue this gradient exercise through the rest of this day pass, nighttime, and then separate upcoming sunrise.

50:54:43 CC Roger. That's affirm.

50:56:20 CC Gemini XII, Hawaii. We'll have LOS in a minute.

50:56:23 C Roger, Hawaii.

**CALIFORNIA**

50:58:40 CC Gemini XII, Houston at California. Over.

50:58:43 C Roger. Gemini XII.

50:58:45 CC I've got the update for your PLA's here any time you're ready to copy.

50:58:51 C Okay.

50:58:53 CC Okay. Area 34-3A: GET RC, 53:20:29; RET 400K, 2107; RET RB, 2635. The bank angles are roll left 80, roll right 100; the weather is good. The bank angles and the weather are good in all the following areas. There is a Separation Maneuver required for 34-3A; no Separation Maneuvers for the rest of them. Area 35-3 Bravo: GET RC, 54:56:01; RET 400K, 21 plus 05; RET RB, 26 plus 53. Area 36-3A: GET RC, 56:32:01; RET 400K, 20 plus 35. RET RB, 25 plus 58. Area 37 Charlie, Charlie: GET RC, 58:07:05; RET 400K, 19 plus 55; RET RB, 25 plus 04. Area 38 Alpha Charlie: 59:01:42; RET 400K, 20 plus 54; RET RB, 26 plus 40. Area 39 Alpha Charlie: GET RC, 60:38:01; RET 400K, 21 plus 17; RET RB, 27 plus 05. Area 40-2 Alpha: GET RC, 62:11:52; RET 400K, 21 plus 20; RET RB, 26 plus 42. Do you copy?

51:02:20 C Roger. I got all of them except the first area and GET RC and RET blanket.

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51:02:28 CC Roger. Area 34-3 Alpha: 53:20:29; RET 400K, 21 plus 07; RET RB, 26 plus 35.

51:02:59 C Hawaii, this is Gemini XII. You faded out again, but I have it all. Thank you.

51:03:04 CC Okay. I've got a Separation Maneuver for you. Are you ready to copy?

51:03:11 C Roger. Go ahead.

51:03:13 CC Roger. Purpose: Separation; GET B, 52:14:27; Delta-V, 60 - 6.0, excuse me - 6 feet per second; burn time, 8 seconds; yaw 0, pitch 0; Address 25, 00060; Address 26, Address 27, all zeros; thrusters aft; Maneuver Posigrade.

## GUAYMAS

51:04:17 CC Gemini XII, Houston. Did you copy?

51:04:19 C Roger. You faded out right at the end. Separation Maneuver; GET of burn, 52:14:27; Delta-V, 6.0; duration, 8 seconds; yaw 0, pitch 0; Address 259 - say again, Address 25, 00060; Address 26, Address 27, zeros; say again after that.

51:04:50 CC Roger. Thrusters aft and the Maneuver is Posigrade.

51:04:59 C Roger. Understand. Thrusters aft, Maneuver Posigrade.

51:05:09 CC Gemini XII, Houston. We appreciate your control problem, and we are going to see how well you do on your burn and how you do on getting your Platform Alinement and everything. We'll talk to you after that about the rest of it.

51:05:12 C Very good. You're just a little jealous.

51:05:28 CC Okay. I didn't copy your last - we'd like you to turn your X-ray on, Beta WITH MAG and leave it on through the sleep period, please.

51:05:40 C Roger. Z-ray on, Beta WITH MAG through the sleep period.

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51:05:43 CC And what was the last thing you just said?  
51:05:46 C Disregard.  
51:05:48 CC Okay.

## TEXAS

51:05:58 CC Okay. And after your Separation Maneuver, we plan to power you down and get you fed and to bed.  
51:06:10 C Yes.  
51:06:23 C Houston, Gemini XII. Didn't seem to be too much doubt that ... total amplitude seems to be - well, the maximum is a little bit ... the total angle ... vertical ... but they were coming within about 30 degrees to the horizontal.  
51:06:47 CC Roger. In other words, you're going about plus or minus 60 degrees from the vertical.  
51:06:55 C Yes, it looks like it.  
51:06:59 CC Roger. Very good.  
51:07:46 CC Gemini XII, Houston. After you eat, we'll look for your Crew Status Report. You can pass it whenever you're over a station and you're ready to give it. No rush.  
51:07:56 C Roger.  
51:08:06 CC And Gemini XII, Houston. Your sleep period is going to run approximately 53 hours to 61 hours.  
51:08:14 C Roger. We just passed over Acapulco.  
51:08:24 CC And Gemini XII, Houston. After you separate, will you turn your encoder off?  
51:08:31 C Will do. Do you have any things for the radar?  
51:08:36 CC That's negative.

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51:08:50 CC Gemini XII, Houston. I think we're going to change the plan and see if we can't put S-51 in for tomorrow morning. And it also looks like you're separating from the Agena for the last time.

51:09:16 C Say again, please.

51:09:20 CC Roger. We're going to try to put S-51 in tomorrow.

51:09:26 C Okay. What does that change over S-51?

51:09:27 CC We're going to change the time so you do S-51 in the jettison tomorrow.

51:09:44 C Okay.

51:09:47 C You say we're not coming back to the Agena?

51:09:50 CC It looks that way right now.

51:09:56 CC We'd like to see how well you do after you get off it. That's the main thing.

51:10:02 C Okay. I guess you want to check on our ability to null the residuals, too?

51:10:06 CC That's affirmative.

51:10:08 C Okay.

51:10:13 CC Okay. You're going over the hill now. This is your last stateside pass and we'll see you in the morning.

51:10:21 C Roger.

## TANANARIVE

51:43:53 CC Gemini XII, Gemini XII, Houston through Tananarive. Over.

51:44:06 C Houston, this is Gemini XII through Tananarive. How are you?

51:44:08 CC Roger. I've got a few things for you. As soon as you get off the tether, we would like you to call

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a normal fuel cell purge while you're Alining the Platform and prior to the Sep Maneuver. Also, make sure you get the encoder off. As soon as you get off it, we want to set up the Agena. Then you can go ahead and eat and sleep, which will be 53 to 61 hours elapsed. And tomorrow morning we're going to schedule S-51 at 62:45, and your second pass by it will be 64:20. We're going to try and schedule an EVA at 65 hours, so do you think you have enough time there? You know, on the second pass, all you have to do is snap a couple of pictures. Over.

- 51:45:16 C Well, let's stay with that one awhile. Meanwhile, we'll be asking how critical the time is on this Sep burn there, Houston. Houston, we'll take our time, and if it's not critical and merely a ... separation, then you don't mind if we burn a little bit later ...
- 51:45:34 CC Roger. I thought 25 minutes would be enough for you to get off, but we could move it a little bit later, I believe.
- 51:45:45 C No, there is no strain. We don't know what it is going to take, and I just wanted to know whether it would be critical or ...
- 51:45:53 CC No, it's not critical. If you can make it, go ahead and make it.
- 51:46:00 C How about burning BEF with the forward-firing thruster so we can watch the Agena going away?
- 51:46:07 CC That's fine. Go ahead and burn it any way you want and if you don't burn it on time - if you will give us the exact time of the burn, that's fine. Whenever you can burn it, burn it.
- 51:46:23 CC So what we need is the exact time.
- 51:46:27 C Yes.
- 51:46:29 CC Okay. For the rest of tomorrow, we'll work out a schedule of D-10, T-2, S-11 and S-29, depending on how good your control capability is after you give us a little evaluation there after your Sep burn.
- 51:46:50 C Okay. Sounds good.

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- 51:46:57 CC Also, if you are awake during your sleep period in the middle of the night for any reason and you can think of it, a 30-second O<sub>2</sub> purge will help your fuel cells during the nighttime there. If you aren't awake, no problem; if you are, why give it a 30-second O<sub>2</sub> purge.
- 51:47:23 C Roger. Understand. Now it seems to me we just purged them just a little bit ago. Do you want them to be a full 2-minute purge here?
- 51:46:29 CC That is affirmative. We would like to get a full purge on it right after you get off the Agena, while you're Alining the Platform.
- 51:47:39 C Roger. Understand. Also, we've been looking at these Delta-P lights for awhile. If the only thing you are getting on the circuit breaker is the fact that the Delta-P lights are on, we'd like to turn them off.
- 51:47:55 CC Okay. We concur.
- 51:47:59 C Thank you.
- 51:48:29 CC Gemini XII, Houston. We would - the only way we can see and monitor the Delta-P lights on the telemetry is if you leave them on. So if you could cover them with something, we'd appreciate it if you would leave the circuit breaker on.
- 51:48:43 C On it is. Okay. Going back on.
- 51:48:57 CC Okay. The only difference on your burn time Delta-P wise, with the forward firing thruster it'll be a 10-second burn versus an 8-second burn.
- 51:49:07 C Roger.
- 51:49:31 CC That last purge you did helped the fuel cells considerably, so that's why we want to get another long purge on them.
- 51:49:39 C Roger.
- 51:50:02 CC Gemini XII, Houston. Have you separated from the Agena yet?

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51:50:05 C We're going to now.

51:50:07 CC You're going to now, is that correct?

51:50:10 C Roger. Stand by.

51:50:12 CC Okay. We've got about a minute and 45 seconds to LOS.

51:51:09 C ...

51:51:21 CC Okay. Understand you're off the Agena, is that correct?

51:51:24 C Roger. And the force of the reaction ...

51:51:34 CC Roger. Well, when we did it, we were in RATE COMMAND.

51:51:41 C Say again.

51:51:43 CC I say, we didn't notice that. We were in RATE COMMAND when we did it. Of course, ours was working real good.

## COASTAL SENTRY QUEBEC

52:06:30 CC Gemini XII, CSQ.

52:06:33 P Roger, CSQ.

52:06:35 CC Roger. We're ready to go ahead and start gyrocom-passing the Agena.

52:06:39 C Don't thrust the Agena just yet. We don't have him in sight and we want to get away from him. We're just trying to Aline the Platform here. We are having a hard time finding them.

52:06:49 CC Okay. Give me a call when you're ready.

52:06:56 C Roger. I don't know if we'll get above 6 feet per second separation before we get something.

52:07:00 CC Okay.

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52:07:07 C We ... thruster for yaw control.  
52:07:11 CC Roger.  
52:13:17 CC We are coming up on LOS, Gemini XII.  
52:13:20 C We're going to burn your time.

## HAWAII

52:25:13 CC Gemini XII, Hawaii.  
52:25:16 P Go ahead, Hawaii.  
52:25:18 CC Roger. We'd like to know how it went during the burn.  
52:25:21 C Okay. We used maneuver thruster to get aligned. Aligning was okay. Also RATE COMMAND was used during the tether exercise and did hold it. We made a burn; we had to correct the attitude with maneuver thruster during the burn. We burned in Orb Rate Plat mode.  
52:25:46 CC Orb Rate and Plat mode. Okay.  
52:25:50 C We did have to use a little maneuver thruster to go into a yaw.  
52:26:14 CC Okay. We'd also like to know how it went during the purge.  
52:26:21 C Roger. The purge was normal.  
52:26:24 CC Roger. Very good. Okay. We'd like to have you check, and if you have less than five frames left in the film that you used to photograph the eclipse, you can go ahead and stow it and use the other film pack for tomorrow.  
52:26:46 P Roger. We've already done that.  
52:26:49 CC Roger. Very good. Okay. Another little reminder - we'd like for you to use as much water as reasonable, drinking during your meal preparation.

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52:27:04 C Roger. Drink water; I've heard that before.

52:27:07 CC Yes. And you'll probably hear it again.

52:27:21 CC Of course, your main concern on this is to help out those fuel cells as much as possible.

52:27:29 C We'll recant.

52:27:30 CC Oh. Roger.

52:28:37 P Hawaii?

52:28:39 CC Go, Gemini XIII.

52:28:41 C Roger. We're going to power-down unless they want us to have any going.

52:28:46 CC No. We're ready to power-down.

52:28:51 C Roger. We just hold up by the Platform.

52:28:54 CC Okay.

52:29:25 CC Gemini XIII, we'll like a general comment on how you feel about the control system in regard to the remaining experiments which are S-51, T-2, and T-10.

52:29:40 C This is Gemini XIII. RATE COMMAND seems to hold it fairly decently. Big burns any more than about six and seven, we're going to have to use the maneuver controller to stop it. Pitch enough to get certain angles or attitudes so - not too sure, I think we could probably do it in RATE COMMAND and try to get it - be a little expensive on gas.

52:31:07 CC Okay. About all we have left for this day is Crew Status Report, and we'll stand by over RKV and Tananarive for that.

52:31:16 C Okay. ... Re-rendezvous but it might be accomplished.

52:31:24 CC What - -

52:31:25 CC Do you think you have a chance of accomplishing Re-rendezvous?

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52:31:28 C Well, that depends on how much gas we use up on it, and it can be done.

52:31:35 CC Okay. We'll have them thinking about it.

ROSE KNOT VICTOR

52:54:06 CC Gemini XII, RKV. Gemini XII, RKV.

52:54:29 C Go ahead, RKV.

52:54:30 CC Roger. How are you doing?

52:54:32 C ... We just ... and making some supper.

52:54:38 CC Okay. We were just wondering if you're ready for your Status Check - Crew Status Report.

52:54:47 C Roger. Stand by. 1708 is on the counter; however, we - we still can pull it up a few times with ... will drinking for the night.

52:55:03 CC Roger.

52:55:16 C The meals we are on - Day 3, Meal 3.

52:55:22 CC You said Meal, Day-3.

52:55:27 C Roger. Day 3, Meal 3.

52:55:32 CC Day 3, Meal 3. Roger. Copied.

52:57:45 P RKV, Gemini XII.

52:57:47 CC Go ahead, Gemini XII. RKV.

52:57:49 P Roger. The water has been reading 1754.

52:57:52 CC Roger. Understand 1754. Okay. We're just about out LOS, Gemini XII. See you next pass. We have LOS, Gemini XII. ... go.

TANANARIVE

53:18:59 CC Gemini XII, Gemini XII, Houston through Tananarive.

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Over.

53:19:05 C Roger, Houston. Over.

53:19:08 CC Three quick items. We'd like you to leave Cryo Quantity switch in the H<sub>2</sub> position tonight. I'd like PQI reading, please, and we weren't quite clear on whether you are Meal 3-Bravo today in addition to 3-Alpha at Charlie. Over.

53:19:31 C Roger. PQI, 34 percent.

53:19:35 CC Roger. Copy 24 percent.

53:19:39 C Negative. 34 percent, 34 percent.

53:19:43 CC Roger. 34. Thank you.

53:19:46 C And we're consuming 3-Charlie at this time.

53:19:50 CC Did you consume 3-Bravo today?

53:19:54 C Yes. We consumed 3-Bravo, too.

53:19:57 CC That's good, boys. Thank you very much and good night.

ROSE KNOT VICTOR

60:47:10 CC Gemini XII, RKV.

60:47:33 CC Gemini XII, RKV.

60:47:43 C RKV, Gemini XII.

60:47:44 CC Morning.

60:47:47 C Is it morning already?

60:47:49 CC Well, it's just about that time. It's around 1:15 in the morning here.

60:47:56 C Okay. We'll believe you.

60:47:58 CC Okay. I'd like to have you turn X-Ray and Beta off at this time, if you would.

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60:48:06 C Roger.

60:48:08 CC And you can start a fuel cell purge at your convenience, 2 and 1.

60:48:14 C Fuel cell purge, 2 and 1.

60:48:17 CC Give us a Mark when you start, please.

60:48:46 C We are starting the purge now.

60:48:49 CC Roger. Copy.

60:49:04 CC Okay. We'll just talk back and forth here a little bit while you purge. On this pass, when you begin your Flight Plan Update over the Canaries, we suggest you start your eat period as soon as you leave us here. And be advised that during the night your Spacecraft looked real good on the ground.

60:49:27 C Sounds good. We'll start breakfast and ... the Flight Plan Update.

60:49:33 CC Okay. And also ... the updating on the Phase-Adjust at that time.

60:49:39 C Roger.

60:49:50 C ...

60:49:56 CC What did you say, Gemini XII?

60:49:58 C ...

60:50:24 CC Gemini XII. We're going to be updating over Canary for some of the high priority items this morning and get ready for the S-51.

50:50:35 C Roger.

60:54:02 C Fuel cell purge complete.

60:54:05 CC Okay. You're finished with the purge. Would you go to Cryo switch to O<sub>2</sub> please?

60:54:16 CC And would you turn B-Pumps on at this time, for primary and secondary.

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60:54:36 CC Okay. Here, you can switch Cryo switch H<sub>2</sub> and leave it there, please.

60:54:49 CC ... A-Pumps on FLIGHT.

60:54:52 C Roger.

60:55:01 CC Okay, Gemini XII. You're just about our LOS, we - we'll see you next pass around.

60:55:07 C Roger.

## CANARY ISLANDS

61:07:32 CC Gemini XII, Canary CAP COM.

61:07:36 C Good morning there, Canary. Still here.

61:07:39 CC Hey, good morning. How are you this morning?

61:07:42 C It was a short night.

61:07:44 CC Okay. I have a couple of bits of info for you here. First of all, we're setting up the Phase-Adjust Maneuver because we were not able to merge the Agena last night. So we're giving the Phase-Adjust Maneuver to set up a position for tomorrow. It's okay. And I have the Phase-Adjust Maneuver when you're ready to copy.

61:08:06 C Ready to copy.

61:08:08 CC Okay. Purpose is Phase-Adjust: GET B; 61:47:47; Delta-V, 5.5; 90055; Core 26, 27, all zips; thrusters forward; burn time, 09 seconds; yaw 0, pitch 0; 25, Maneuver Retrograde. Over.

61:08:44 C Roger. Understand Phase-Adjust Maneuver: GET B; 61:47:47; Delta-V, 5.5 feet per second; duration, 9 seconds; yaw 0, pitch 0. Was that 25, 90055? Was that 26, 27 zero? Forward thruster and Maneuver Retrograde?

61:09:10 CC That's affirmative. Okay. We have Nodal Update for you now.

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61:09:18 CC Roger. Go ahead.

61:09:20 CC Okay. Time: 61:00:58; Rev 39; 40.9 degrees west; Right Ascension, 10 plus 36.

61:09:39 C Roger. Would you give me the degrees again?

61:09:42 CC 40.9 west.

61:10:02 CC Roger. Okay. I've got a Flight Plan Update for you now.

61:10:07 C Roger. Go ahead.

61:10:08 CC Okay. 61:07: power-up the Platform; 61:00 to 62:15, eat period; 61:30, Aline Platform; and at 61:47:47 is the Phase-Adjust Maneuver that I gave you.

61:10:38 CC At 62:23 at the RKV, take a Crew Status Report; at 62:31 at Antigua, I'll give you Block 7 PLA Update, and also your S-51 Update; at 62:46, S-51, first pass. That's 63:14:43, sunset plus 2, Mode A, Sequence 1; 63:50 to 64:15, start EVA prep; at 64:05, S-51 Update; 64:21, S-51 second pass; 64:30, continue EVA prep; 65:17:56 will be your EVA sunrise time.

61:12:01 C Roger. Say again 65:17:46.

61:12:04 CC That's affirmative. EVA sunrise time. And at 66:26 at Carnarvon, I'll give you another Flight Plan Update and at 67:15, end of ... That's the end of the Flight Plan Update.

61:12:25 C Roger.

61:12:29 CC She's just looking real good down here.

61:12:34 C Roger. Let me go over a couple of ... 63:14:14 was sunset plus 2.

61:12:42 CC Negative. 63:14:43.

61:12:45 C 63:14:43.

61:12:53 CC About a minute to LOS here, Gemini XII.

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61:12:55 C Roger.

KANO

61:13:05 CC Gemini XII, Houston CAP COM to Kano.

61:13:09 C Roger, Bill.

61:13:11 CC Good morning. Say, Jim, for your second Stand-up EVA, we'd like for you to take some pictures after sunrise of the star fields you took in the night-time, if you think you'd have time for it. How do you feel about that?

61:13:33 C You want us to take some pictures after sunrise of the star fields we took during the night; is that what you said?

61:13:41 CC That's correct. We can give you some pointing commands, if you're agreeable and if you're ready to copy.

61:13:52 C Roger. We're ready to copy. We'll see what we can do about it.

61:13:56 CC Well, let me give you these and then give you a chance to think about it. In your ... Check List for your sunrise pointing, your sun will be yaw 47 degrees right, on the horizon. Okay. For your post-sunrise pictures - at sunrise, put 7 minutes - that's at 34 minutes - on the elapsed timer. We'd like you to pick up 125 degrees. 125 degrees up, yaw 20 degrees north. We'd like you to take several 1-second photographs, taking care to keep the sun off the camera and off any part of the Spacecraft the camera might see. Another note we have for you is for your night stars. We'd like for you to stress Orion and possibly work down in the regions toward ...

61:15:17 C Okay.

61:15:23 CC If you'd tell us if you have any water stored in bags in the Spacecraft at this time.

61:15:31 C We've just now started preparing breakfast, so we

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do have water and food and one meal.

- 61:15:38 CC Okay. Mighty fine. We just wanted to make sure you didn't have any bags with water in them when you depressed the cabin.
- 61:15:51 C Houston, Gemini XII. That's pitch up 125 and yaw to the north. That's the yaw first and then pitch.
- 61:16:01 CC Negative. Pitch up and then yaw and we're assuming you have the camera on the f:13 bracket at this time.
- 61:16:09 C Roger. Understand.
- 61:16:10 CC Okay. Think that over, if you think you could swing it. We'd give it some pretty good data here.
- 61:16:15 C Okay. We're going to have some on the Platform up then.
- 61:16:19 CC That's affirmative.
- 61:16:20 C Okay. Why don't we get a ... command 8-Ball here.
- 61:16:24 CC That's what this is. That's on the 8-Ball. 125 degrees up.
- 61:16:29 C Then it must be a yaw first and then pitch.
- 61:16:34 CC Stand by.
- 61:16:52 CC Okay. After you double check that, we can give you some 8-Ball readings over next state - next pass.
- 61:16:57 C Roger.
- 61:17:23 CC 30 seconds to LOS, Gemini XII.

ROSE KNOT VICTOR

- 62:23:44 CC Gemini XII, RKV.
- 62:23:49 C This is Gemini XII ...

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62:23:53 CC Roger. ... Crew Status Report.

62:24:03 C ... 19:12 ...

62:24:13 CC Is that ...

62:24:15 C Roger.

62:24:17 CC Roger.

62:24:21 C Roger. We've spent about 5 hours ...

62:24:26 CC ...

62:24:30 C Negative.

62:24:31 CC Negative.

62:24:33 CC Roger. I have a ... to copy as soon as you're ready.

62:24:39 C Stand by.

62:24:52 C Go ahead.

62:24:54 CC Area 41-Alpha Charlie: 63:48:53, 00 plus 49, 66 plus 26. Area 42-1 Bravo: 65:15:35, 00 plus 49, 26 plus 27. ... roll left 85, roll right 95. Weather in both areas good. No ... will be required. Did you copy?

62:26:09 C Roger. We copied.

62:26:11 CC They will get the rest to you a little bit later.

62:26:15 C We'll have to pass this information ...

62:26:19 CC Go ahead.

62:26:21 C Roger. ... it was very poor. By the time we got the Platform Alined - we did not get the Platform Alined by the time we burned. We attempted at burn out of plane. We don't have enough time to get the Platform Alined by the time we power up. Every time we pitch or yaw, we get left roll because ... RATE COMMAND will not hold it. It will tend to diverge ... maneuver thrusters ... we can then Aline the Platform. This requires

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a bit of time and for ... flight planning ... we have for our ... time allotted to do it. We also used 5 percent of our fuel to Aline the Platform - 4 percent, from 34 to 30 percent.

62:27:36 CC Roger. Copy. 34 to 30 percent.  
62:27:45 CC How long did it take, Gemini XII?  
62:27:48 C Say again.  
62:27:49 CC How long did it take for the alinement?  
62:27:52 C ... I'd say about 25 minutes ... 30 minutes ... position.  
62:28:04 CC Roger. Understand.  
62:28:05 C Our situation was this. That the time to Aline the Platform after ... Unfortunately we were just going into darkness ... attitude problem ...  
62:28:25 CC Roger. ... LOS now.

## TEXAS

62:31:10 CC Gemini XII, Houston CAP COM. Over.  
62:31:24 CC Gemini XII, Houston CAP COM. Over.  
62:31:28 C Roger, Houston. Gemini XII here.  
62:31:29 CC Roger. I have your S-51 Update when you're ready to copy.  
62:31:33 C Roger.  
62:31:37 CC Roger. S-51: 62:46:08; yaw 28 degrees north, pitch 12 degrees down. GMT: 11:32:41. Got it?  
62:32:09 C Roger. I understand that 62:46:08, S-51. I have a yaw and a pitch, but what was that last?  
62:32:16 CC I understand you want a GMT time hack, is that correct?

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- 62:32:21 C We want a Delta-T. I want to take pictures if we don't see it.
- 62:32:30 CC Roger. Start at that time to take pictures. We'd like you to take, besides the sequence camera, 12 exposures with the Maurer. Do you understand, Gemini XIII?
- 62:32:49 C Roger, Houston. 12 Maurer exposures.
- 62:32:54 CC Roger. That's whether you see the cloud or not. Stand by for a GET time hack. That's 62:33:10.
- 62:33:11 CC MARK.
- 62:33:12 CC 62:33:10.
- 62:33:13 C Roger.
- 62:33:21 CC I have your S-6, 51-second pass when you're ready to copy.
- 62:33:26 C Okay.
- 62:33:29 CC 64:20:69: yaw 12 degrees north, pitch 11 degrees down. I'd like you to take six exposures with the Maurer. Over.
- 62:33:55 C Roger. I have that.
- 62:34:04 CC And with respect to your stand-up EVA, post-sunrise stars. Are you ready to copy?
- 62:34:14 C I only got the last part of that.
- 62:34:16 CC Roger. I have a pointing angle for your post-sunrise EVA stars. Over.
- 62:34:25 C Roger.
- 62:34:27 CC Okay. That's yaw 160 degrees north, pitch 40 degrees up. Pointing is not critical.
- 62:34:41 C ... 30 degrees.
- 62:34:44 CC Going to be what?

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- 62:34:51 CC Roger. That's fine. Just spray the general area with exposures, if you think you have time.
- 62:34:56 P All right. Three sunrise stars?
- 62:35:02 CC Three sunrise stars. We'd like for you to concentrate on Orion and in the area from Orion to Gamma Velorum. Would you like pointing for that?
- 62:35:16 P It might be helpful if we're to get down to the sun at sunrise. We'll need a good - a fair amount of time to get down there. Especially hard suit with an attitude system that's not working too well. How about giving us a little rundown on the priorities? Which is more important?
- 62:35:36 CC Orion is first priority. And if you have time, work your way down to Gamma Velorum. Take as many pictures as you think you have time for; we'll give you an Orion-pointing command.
- 62:35:51 C Roger. I understand. I mean the priority between Orion, Gamma Velorum and the sunrise pictures.
- 62:35:59 CC Sunrise is Number 1 priority.
- 62:36:01 C Yes. That means we've got to be there.
- 62:36:04 CC That's affirmative.
- 62:36:38 CC 30 seconds.
- 62:36:49 C Gemini XII, if you read, check your Bio-Med circuit breaker.
- 62:36:59 C ...
- 62:37:02 CC Thank you. And we're at LOS.

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## CANARY ISLANDS

62:41:00 CC Gemini XII, Canary CAP COM. Standing by.

62:41:34 CC Gemini XII, Canaries sending you a TX.

62:42:53 CC Gemini XII, Canary CAP COM.

62:42:55 C Go ahead.

62:42:56 CC Okay. S-51 is on its way.

62:43:02 C Okay.

62:44:36 C Canary, Gemini XII.

62:44:38 CC Go, Canaries. Go, Gemini XII.

62:44:40 C ... taking pictures. We can see the launch ...

62:44:49 CC Thank you and you want a Delta-T for what?

62:44:53 C We want a Delta-T ... to start taking pictures if we don't see it ...

62:44:58 CC Okay. Stand by.

62:45:05 CC Okay. Gemini XII, Canary. We want you to start at the acquisition time that they gave you.

62:45:10 C Okay.

62:48:34 CC Gemini XII, Canary CAP COM. About a minute to LOS. We'll be standing by.

62:48:42 C Roger.

62:48:45 C ...

62:48:47 CC Roger. I understand.

## KANO

62:49:51 CC Gemini XII, Houston CAP COM through Kano and standing by.

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62:49:58 C Roger, Houston. ...  
62:50:03 CC Roger. I understand you took the photographs anyway, but no joy.  
62:50:07 C That's affirmative.  
62:50:09 CC Okay. Nice try.  
62:50:15 CC We're right on the ragged edge of Kano here. We've got about 1 minute to LOS.  
63:11:29 P T-2 coming up.  
63:42:36 P This is an observation and a note to be made after the first T-2 Experiments at 63:14:43 sunset. Near the end of the session, I discovered that using the pump to turn the wheel was considerably easier than using the forefinger due to the suit, especially the arm mobility.  
63:43:06 P T-2 completed at 63:47:42.  
63:44:13 P That ought to do it.  
63:44:17 C ...  
63:44:20 P Oh, we're starting to roll, too.

## TEXAS

64:03:50 CC Gemini XII, Houston CAP COM. Over.  
64:03:53 C Roger. This is Gemini XII.  
64:03:56 C ... Houston.  
64:04:00 CC Roger. This is Houston. The Spacecraft looks good. They have an S-51 info for you. The French are going to launch a second rocket. Your acquisition times are good for the second pass. We'd like to have you start your photos at your acquisition time and take eight exposures with the Maurer. Over.

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64:04:24 C Understand. ... one revolution so it gives us a little more time to get squared away.

64:04:37 CC I understand you are having trouble in EVA prep and you are requesting us to consider putting the EVA back one revolution. Is that correct?

64:04:47 C ... Houston. I'll say again. I'm running into a little time difficulty in the controlling system due to the fact that we've got to carefully control the Spacecraft, plus do everything else. We'll try, but it might take us a little longer to get the EVA ready to go. We'd much rather take our time and do a good job than to rush into it and maybe open up a hatch and ...

64:05:19 CC Gemini XII, Houston. Roger. You can plan your EVA one revolution later. We'll update your time when we have a chance.

64:05:27 C Roger. Gemini XII ... one more discussion. Is there any way we can control yaw? Right yaw is with Number 12 maneuver thruster?

64:05:39 C What is your feeling for my doing this EVA?

64:05:44 CC Roger. We'll think that over. Okay?

64:05:52 CC Gemini XII, Houston. We'd like for you to do a 30-second O2 purge on both sections now. And would you check your Delta-P circuit breaker before you do it?

64:06:09 CC Did you copy?

64:06:26 CC Gemini XII, Houston CAP COM. Do you have your Delta-P lights on?

64:06:34 C That's affirmative. They're on.

64:06:39 CC Roger. Copy. We show them now on the ground. I'd like to give you one more Block PLA Update if I could, if you're ready to copy.

64:06:49 C You're coming in very weak. We can barely read you.

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64:06:53 CC Roger. We'd like to give you one more PLA Update.

64:07:01 C Roger.

64:07:05 CC Roger. 43-1 Alpha: 66:50:05; 20 plus 49, 26 plus 23. Copy?

64:07:26 C What was that area number again?

64:07:28 CC Area 43-1 Alpha.

64:07:33 C Roger. 43-1 Alpha.

64:07:35 CC That'll keep things going for a couple of revolutions and when we get squared away on a new Flight Plan, we'll give you the rest of them.

64:10:07 CC Gemini XII, Houston CAP COM. Over.

64:10:10 P Roger, Houston.

64:10:13 CC Roger. We're thinking, that in order to avoid this yaw problem with the maneuver thrusters during the EVA, of considering the possibility of holding the Maurer in your hand. How do you feel about that?

64:10:26 P Well, we were just discussing that.

64:10:29 CC Okay. We'll start our plan with that in mind, and when you have a chance to think about it a little bit more, let us know.

64:10:36 P Bill, when we Fine Aline the Platform, we know if SEF is at PLATFORM, and if we control the Rates to almost nothing and then go to ..., but if we do it then, then nothing is going to hold the Rate Command or Platform or anything. It's just going to go. The only way we can stop it is with maneuver thrusters.

64:11:01 CC Roger. Understand. Do you think you'd develop too high a rate if on the EVA?

64:11:15 P Well, I don't know. We could probably do it, if we just leave it in Platform mode. Now the T-2 Experiment that we just completed we were able to aline on the stars by use of the maneuver thrusters

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and very gently using the Pulse mode. Of course, we won't be able to do that EVA if we can't find the maneuver thruster.

64:11:40 CC Roger.

**CANARY ISLANDS**

64:17:47 CC Gemini XII, Canaries CAP COM.  
64:17:51 C Hello, Canaries.  
64:17:53 CC Roger. You look good down here on the ground. The S-51 is on its way and is looking up at this time.  
64:18:04 C ...  
64:18:29 CC Sending it to you.  
64:18:31 C Roger.  
64:22:13 CC Gemini XII, Canaries. ... visual acquisition of the cloud from the ground.  
64:22:18 C ...  
64:22:20 P There's where we ought to be.  
64:22:22 C (Laughter)  
64:22:29 C ... pictures taken, no observations.  
64:22:32 CC Roger. Understand. No joy.  
64:23:42 CC Gemini XII, Canaries. About 1 minute to LOS. Did ... S-51?  
64:23:47 C We saw no cloud, Canaries. We elected ... commands this time and ... control for a change. Couldn't see a thing.  
64:24:00 CC Okay.  
64:24:10 C You know what they say, Canaries. That's life.

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64:24:14 CC Roger. ...  
64:24:19 C Oh, boy!  
64:24:25 C ... what that means?

## KANO

64:25:03 CC Gemini XII, Houston CAP COM through Kano.  
64:25:15 CC Gemini XII, Houston. You're on the ragged edge of Kano. We are not reading you.  
64:26:10 CC Gemini XII, Houston CAP COM through Kano and standing by.  
64:26:14 C Roger.  
64:26:17 CC When you fly by, we've got about 45 seconds to LOS.  
64:26:22 C Roger. We're right on the point that time, Bill. We - We sure look ... the whole works ...  
64:26:31 CC Okay. Real nice try and we're kicking around doing the EVA in Plat mode with a hand-held camera.  
64:26:39 C Roger. One other thing about it - we've been wondering - there's a lot of cloud cover up here this time and ...  
64:26:46 CC I understand. Thank you.

## CARNARVON

64:52:22 CC Gemini XII, Carnarvon. Standing by.  
64:52:28 C Roger.  
64:54:23 CC Gemini XII, Carnarvon. All your systems are GO here on the ground. Okay. In regards to your control situation for EVA, we'll talk to you over the States.  
64:54:33 C Roger. I understand.

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64:54:53 CC How's your EVA preparation coming along?

64:54:57 C We're working on it, Carnarvon. We are getting everything arranged here.

64:55:02 CC Roger.

64:55:11 C We have just finished the S-51 Experiment.

64:55:16 CC Okay.

64:57:20 CC Gemini XII, Carnarvon. Do you have time to copy two PLA Updates?

64:57:27 C We can take time.

64:57:29 CC Okay. If I give you these two, it'll keep you updated for awhile, and we won't bug you too much.

64:57:48 C Go ahead.

64:57:49 CC 44-1 Bravo: 68:25:41; 20 plus 37, 26 plus 17.  
Area 45-1 Alpha: 70:01:30; 20 plus 18, 25 plus 53.

64:58:23 C Roger. At what bank angle?

64:58:26 CC Roll left 85. Roll right 95.

64:58:33 C Okay. Fine.

**TEXAS**

65:37:34 CC Gemini XII, Houston CAP COM. Over.

65:37:40 C Roger. Gemini XII here.

65:37:43 CC Okay, Gemini XII. We've been kicking this EVA thing around. We'd like to - our plan is to have you go EVA in Plat mode and for Buzz to hold the Maurer in his hand for the photographs. How does that suit you?

65:38:00 C Okay. You're fading out, but let's go over that again. SEF in Plat mode and for Buzz to hold the camera for photographs. Okay. Here are the

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problems along that line. If Buzz is to take photographs of the sunrise, he needs a visor. Now he can take the photographs up until the sun comes up. Then, of course, he can't look that way any longer.

- 65:38:28 CC Okay. Be advised you have a 40-degree field of view on the Maurer. You're going to be behind the hatch. The sun will be 47 degrees right, down 17 degrees. I'm pretty sure that Buzz is going to be in the shade. The question is, will he be able to get the camera looking at the sun?
- 65:38:48 C ... that's a good question. We don't know just how well he can hand-hold it, but we'll give it a try.
- 65:38:58 C ...
- 65:39:00 CC Roger. We don't think there's a problem with Buzz and the visor as long as he doesn't look directly at the sun. We think that if he just holds the camera in the general area, he'll be okay.
- 65:39:10 C Roger. What we'd like to do - we're almost prepared for EVA - we'd like to get out and open the hatch at daylight, get squared away and jettison the gear, do the exercise, and go into the night pass all squared away for photographs. Do you concur?
- 65:39:32 CC Roger. Will that be this daylight pass?
- 65:39:37 C That's right. We'll stay that way and when we go into the next daylight, we'll take the sun pictures and then we'll ingress.
- 65:39:47 CC Roger. How much longer, do you think, before you'll be ready for depress?
- 65:39:55 C We have to go through a couple of Suit Integrity Checks and that's about it. I'd say 53 minutes.
- 65:40:03 CC Roger. Stand by.
- 65:40:32 CC Gemini XII, Houston. You're GO for depress on your option. We would like to do the exercise

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over a man-site. Either Canary or Carnarvon, at your choice.

- 65:40:44 C Roger. Over a man - you prefer over a man-site.  
Roger.
- 65:40:47 CC That is affirmative.
- 65:40:48 C Well, we're getting all squared away and we'll go ahead with Suit Integrity Checks.
- 65:40:54 CC Roger. I'm ready to give you some new times here, if you're ready to copy.
- 65:41:00 C Stand by. Okay. Go ahead.
- 65:41:05 CC Roger. Your sunrise time for this coming revolution will be 66:47:57. I say again, the sun will be 47 south, down 17.
- 65:41:22 C Say again that time, please.
- 65:41:24 CC Sunrise, 66:47:57.
- 65:41:37 C Roger. 66:47:57.
- 65:41:42 CC Roger. Now we'd still like you to try to get the night star photos if possible. Pointing is real loose. You can hold the camera up and just spray the area.
- 65:41:57 C Roger. But you want me to maintain the Spacecraft in the Plat mode SEF, is that correct?
- 65:42:02 CC That is affirmative. We'd like for you to concentrate on Orion and the area down to Gamma Velorum.
- 65:42:11 C Will do. Understand. ... pictures there ...
- 75:42:15 CC That is affirmative.
- 65:42:17 C Okay.
- 65:42:18 CC If you can, after sunrise, we would like to have you point the camera back 125 degrees, or roughly 30 degrees behind the zenith, and take another

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couple of pictures or several more pictures which will pick up about the same star fields.

- 65:42:40 C I think you understand that we won't have to be outside ... sunset to get these photographs because Orion will be rising ... in order for Buzz to take the pictures.
- 65:42:51 CC Roger. We understand. You can take the pictures of Orion at any time during the night. If you could just turn the camera back and point it back up over Buzz's shoulder - that's over his left shoulder - with the sun off the camera during the day and take several pictures, we'd appreciate it. But it's your option. If you don't think you have time, don't do it.
- 65:43:15 P All right. I'm ready for Hasselblad pictures.
- 65:43:21 CC Roger. I understand Hasselblad. Say again on the Hasselblad?
- 65:43:26 C We've got it all ready to go. We can probably get some of each.
- 65:43:31 CC Roger. And be advised that the weather over the States is exceptionally clear today.
- 65:43:39 C Roger. Will we be over there?
- 65:43:44 CC It looks like if you're getting out this early, you'll probably have to come on in.
- 65:43:54 C We could stay out, if that's okay.
- 65:44:00 CC Stand by.
- 65:44:04 CC We'll mull that over a bit, Gemini XII. Another point - if the Delta-P lights bother you for the night pass, you can turn the circuit breaker off.
- 65:44:14 C Roger. Good idea. I think we will.
- 65:44:37 CC Gemini XII, Houston. I say again. If you try the pictures of the stars in the daylight, try keeping the sun off the camera and possibly have the camera pointed so that it will not see any illuminated part

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of the Spacecraft.

65:44:56 C We understand. Stars in the daylight.

65:44:59 CC Roger.

65:45:02 P Roger. The general area is 30 degrees past the zenith. Is that affirmative?

65:45:08 CC Roger. That's valid for about 5 minutes after sunrise, about 30 degrees after zenith, 15 north to 20 south of track.

65:45:20 C Roger. Maybe somebody could figure out the angles of the sun, if they have it handy - actually the stars - ... against the sun.

65:45:53 CC Okay. If you just bring them straight up from the sun through the zenith about 120 degrees, you'll be in good shape.

65:46:55 C Say, Houston. Gemini XII.

65:46:59 CC Gemini XII calling Houston? Go ahead.

65:47:42 C Roger, Houston. Gemini XII.

65:47:46 CC Canaries in 2 1/2 minutes.

65:47:50 C I understand. 2 1/2 minutes. Say, it looks like after this one ...

65:48:00 CC Be advised you're at LOS and fading out.

## CANARY ISLANDS

65:51:51 CC Gemini XII, Canary CAP COM.

65:51:55 C Canary, go.

65:51:56 CC Okay. In answer to your question on the activities after the sunrise photos, Houston advises that when the sunrise photos are complete, close it up.

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65:52:14 C Roger. How about the pictures of the stars after sunrise?

65:52:18 CC That's affirmative. He means after your pictures are complete.

65:52:50 CC Gemini XII, Canaries. Clarify that a little bit. After you take your photos, close up. They do not want the hatch open all the way to the States.

65:53:01 C Roger. I understand. We'll close the hatch after I've taken the pictures.

65:55:42 C Third EVA, second stand-up, pressure 5 ... Pilot ...

65:59:11 CC Gemini XII, Canary CAP COM. About a minute to LOS. Your Suit Integrity Check is good. You've got a GO for depress.

65:59:23 C Roger. Understand. GO for depress.

## KANO

66:00:03 CC Gemini XII, Houston CAP COM through Kano. We're standing by.

66:00:14 C Roger. We're just about ready to depress.

66:00:18 CC Mighty fine. We'll be doing your exercise over Carnarvon.

66:00:22 C You'll what?

66:00:24 CC We'll be doing the exercises over Carnarvon.

66:00:29 C Okay. I'd forgotten about that.

66:01:42 P Okay. Second stand-up EVA, 30-J at 66:01, Command Pilot Check List complete. Flight test drop.

66:01:53 P Shall I open up the condenser? Turn the ... on?

66:02:11 C No.

66:02:13 P No?

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66:02:15 C Okay. Vent Check valve OPEN.

66:02:26 C Okay. Vent Check valve. Going down to 3 psi, Buzz. I'll turn out this light later on.

66:03:15 C Check your suit.

66:03:30 C Look at the pair of eights.

66:03:35 P 3.8.

66:03:38 C Mine is 3.5.

66:03:43 C All the way.

66:03:50 P I have been checking it again. It's 2.5 instead of 3.8.

66:04:02 C Suit staying okay?

66:04:17 CC Gemini XII, Houston CAP COM. 1 minute to Kano LOS. Have fun.

66:04:30 CC 22 minutes to Carnarvon.

66:04:33 P You want to go back?

66:04:37 C Roger. Houston, we're going down now. We're 1/2 a psi.

66:04:43 CC Understand.

66:05:00 C Exercise.

66:05:02 P Come on.

66:05:11 C We will exercise after we get back in.

66:05:18 C You want me to take the ELSS?

66:05:21 P What?

66:05:23 C Do you want me to take the ELSS?

66:05:25 P Do you think you can while we open the hatch?

66:05:26 CC Gemini XII, Houston at Kano LOS. Reading you on VOX.

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66:05:30 P Okay. I'll hold it.  
66:05:34 C Okay.  
66:05:37 C I've got it.  
66:05:59 C Easy.  
66:06:00 P What?  
66:06:02 C Okay.  
66:06:03 C Easy on the hatch. I don't want the control system built up. Easy.  
66:06:23 C Okay.  
66:06:30 C Go to step out, let me know.  
66:06:43 C Easy.  
66:07:47 P My Gain and Drive Selectors are in LOCK position.  
66:07:49 C Okay.  
66:07:56 P How does the tether look?  
66:07:59 C Stand by.  
66:08:04 C Tether looks good. Once you get in position, Buzz, don't move, because you're disturbing the platform.  
66:09:15 P There goes the ELSS. Lost forever.  
66:10:16 P Hey, you are really firing those thrusters back there!  
66:10:25 P Okay. How do the hoses look?  
66:10:27 C They look good. Your umbilical - the electrical is the tightest.  
66:10:35 P Yes, but --  
66:10:36 C The tether is still loose.  
66:10:37 P The tether is still loose?

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66:10:40 C Yes, yes. Give a forge off again.

66:10:58 P Can you reach ...

66:11:03 C Can I reach what?

66:11:04 P The tether.

66:11:07 C Yes. I just pushed it away.

66:11:11 C How do you want it?

66:11:12 P Tighten it up so that it's just a little tighter than the electrical.

66:11:15 C Okay.

66:11:25 C Which end is which here?

66:11:27 P What?

66:11:38 P That stuff is straight up above us now. We tossed roughly Posigrade, so looks like Kepler was right.

66:11:54 P Looks like the false clouds, right?

66:12:04 C Sure is ...

66:12:27 P Mobility isn't going to be too good here, especially with this type clothing that I'm in.

66:14:05 C I really don't think that we're gaining anything fuel-wise. We've just been doing this as an experiment.

66:14:13 C I think we're making a big mistake.

66:14:15 P Doing what, now?

66:14:17 C Doing this. This is ridiculous. We should be saving the fuel for other experiments. What do you think you're going to get out of hand-holding the camera like that?

66:14:35 C We should be saving this gas for D-10 and T-2.

66:14:47 CC ...

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- 66:14:49 C I can't read it.
- 66:14:54 P Looks like maybe I better hand in the Maurer to you while I do the exercises.
- 66:15:03 C Okay.
- 66:15:08 P Have a blackout here.
- 66:16:05 P There's Orion coming up right now.
- 66:16:07 C You got him?
- 66:16:09 C Yes. I see him.
- 66:16:10 P Okay.
- 66:16:11 C Yes. About 30 degrees over to the left.
- 66:16:22 C Okay. Wait a second. I'll turn out this light right here.
- 66:16:27 C And I'll turn mine on red.
- 66:16:56 P There was a meteor just came in - up above ...
- 66:17:15 C See how deep the airglow is. You see ... just come up.
- 66:17:18 P Yes. It's way down.
- 66:17:26 C Pretty as a picture.
- 66:17:34 P Here we've got something that is fairly large, maybe 6 inches across, that's going right alongside us off to the left. Only about 30 feet away.
- 66:17:54 C Don't lose them.
- 66:18:35 C That's it.
- 66:18:39 C Are you taking pictures?
- 66:18:42 P I thought I'd wait a little bit.
- 66:18:45 C Well, you won't - you can only take them as long as you can track them.

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66:18:51 C You're in a good position right now.

66:18:53 P I don't think the sun is completely down yet.  
There's still a glow on the side.

66:19:39 C I'd take pictures right now. I think you're in  
good shape.

66:20:24 C Are you taking any?

66:20:26 P Yes. I've got to take this one.

66:20:46 P Three.

66:20:48 C I wonder if thruster firings are going to affect  
it.

66:21:06 P Four.

66:21:25 P Five.

66:21:30 C You know that Gamma Velorum is to the south, don't  
you? You get the false cross?

66:21:35 P It's not up yet, is it?

66:21:37 C What?

66:21:38 P Is it up yet?

66:21:40 C I'll see if it's up, after you get the film read-  
ings.

66:21:46 P Now, it may be a little hard for me to get up to  
the hatch to take that.

66:21:50 C Yes. Okay. Concentrate on the Orion.

66:22:26 P It seems silly taking a picture in the middle of  
darkness. Go on, Orion, smile for me.

66:22:52 P That's about eight. I think I'll wait awhile.

66:22:55 C Okay.

66:23:01 P The further back it gets, the closer and closer  
it's going to get to the - by the thruster firing.

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66:23:07 C Yes.

66:23:08 P Hey, you know you could just turn the OAMS control power off when I get ready.

66:23:18 C No. When I turn it back on again, there will be too much firing.

66:23:27 P You think it would be?

66:23:28 C Yes. Well, it's going to get lost and it's going to fire to get back.

66:23:33 P Yes, but it will only take 4 or 5 seconds to take the shot. Want to try one?

66:23:41 C ... just don't like this.

66:24:04 P All right. Let me see now, there's Sirius - -

66:24:07 C Cassiopeia is just about deadahead, over to the right of Cygnus.

66:24:14 P ...

66:24:17 C I can't see it from here, but it's at a slight angle going down to the right.

66:25:06 P Yes. I think I've got it. I'll wait just a little bit for it to come up to the line.

66:25:11 C ...

66:25:40 P We won't be using this film for anything else, I guess.

66:25:45 C No.

66:25:52 C Once you get in a position, Buzz, and lay still for awhile and wait for the thrusters to stop firing, you can take some pictures.

66:26:17 P Do you need that Attitude Indicator Light circuit breaker?

66:26:23 C Let's see if I can turn it on.

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CARNARVON

- 66:26:31 C Can we turn the white lights on a second?
- 66:26:37 P How do my hoses look?
- 66:26:39 C Okay. You're okay. You're pulled a little bit on the electrical lead. That's about all.
- 66:26:44 P Okay.
- 66:26:50 C Now let's see if this other one will take care of it.
- 66:26:54 C Yes. That's okay.
- 66:26:56 P Yes. Well, that one I think may be illuminating the hatch a little.
- 66:27:02 C Oh.
- 66:27:03 P Yes. I guess the thing to do - is just put the camera out here in front.
- 66:27:14 C Okay. Gamma Velorum is up there now, Buzz, I'm sure.
- 66:27:18 C Now, who's the lovely soul that gave us the DCS light?
- 66:27:27 CC Gemini XII, Carnarvon.
- 66:27:29 C Go ahead.
- 66:27:32 CC Okay. We're waiting for a little bit of solid sync on telemetry and then we'll have Buzz's exercise start. Okay?
- 66:27:39 C Okay.
- 66:27:41 P Roger. Thanks for the DCS light.
- 66:27:44 CC Just to let you know we're here.
- 66:27:47 C Take that picture, Buzz, before you have to work.
- 66:27:50 C Carnarvon, Gemini XII.

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66:27:52 CC Go ahead.  
66:27:54 C Are you monitoring thruster firing now?  
66:28:00 CC That's negative.  
66:28:02 C Okay.  
66:28:05 C We do have to continue firing whenever Buzz moves around - on the thrusters.  
66:28:15 CC We're showing intermittent 3 and 4.  
66:28:18 C Right. That's right, 3 and 4 keep putting it back. Watch it when he does the exercises; then they are going to open up.  
66:28:26 CC Is 4 firing?  
66:28:28 C Negative. No. Is 4 firing?  
66:28:32 CC No. The solenoid is opening. I don't think it's been firing.  
66:28:34 C Okay.  
66:28:49 CC Gemini XII, any time you're ready, we're ready for Buzz's exercises.  
66:28:51 C Okay.  
66:28:54 P One more picture of Orion.  
66:29:02 P Okay. Do you want to hold the camera?  
66:29:05 C Okay.  
66:29:09 P Don't knock the flashlight off. Don't hold it too tight because it's --  
66:29:12 C Okay. I've got it.  
66:29:13 P -- set it ...  
66:29:16 P Now, let's see what kind of position we can get in here.

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66:29:32 C Careful of those circuit breakers, Buzz.

66:29:41 P All right. I guess this is as good as any.

66:29:43 C Okay. I'll give you a Mark, and you can start one of your exercises. Are you all set?

66:29:47 P All ready.

66:29:49 C MARK.

66:30:11 C Hey, you're a good substitute for a bum thruster, Buzz.

66:30:18 P What's the count?

66:30:20 C Oh, here we go.

66:30:27 C Exercises.

66:30:49 C Stand by.

66:30:50 C MARK.

66:30:55 C Okay. Rest a little bit.

66:31:11 P I can't really get my arms down too far, but the motion that I am going through is comparable to what I did on the ground.

66:31:19 C Yes.

66:31:20 P But I do have to squeeze my legs a little bit to keep moving around.

66:32:02 P Did you see how many pictures are left in ...?

66:32:06 C Let me check.

66:32:18 P Here you are going to turn on the flashlight?

66:32:33 C I did turn it off, I guess.

66:32:39 C Yes. There's just about - there's about - oh about 30, about 28 or 30.

66:32:52 P Okay. Start it out about 40, 41.

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66:32:55 C Okay. Here's the camera again.

66:33:00 P Nice pass.

66:33:07 C Okay. You've gone your 2 minutes. Let's see. Can you get any more Gamma Velorum?

66:33:21 C I'll turn out the lights.

66:33:26 P Yes. I think it's in a better position now.

66:33:33 C As a matter of fact, I think it's almost straight ahead, isn't it? Better wait a second.

66:33:37 P No. It's high and to the right.

66:33:39 C Yes. I'm looking at Saturn. Right thruster fires.

66:33:50 P You're looking at what? That's Jupiter.

66:33:54 C Yes. Jupiter, that's what I was looking at. Thinking it was Sirius.

66:33:59 P I wonder if it's got any stuff that would come through on this?

66:34:05 P I can take a picture and find out.

66:34:21 CC Gemini XII, Carnarvon. 1 minute to LOS and standing by.

66:34:25 C Okay. Exercise is complete.

66:34:27 CC Right. Thank you.

66:34:30 P Any time.

66:34:33 C What's that?

66:34:47 P Getting pretty good at this one-handed now.

66:35:02 P How many minutes to sunrise?

66:35:06 C Oh, let's see. Sunrise at 47, we're at 35 now. I think. Let me put on this light here - 66:47 and it's 66:35, about 12 minutes. You want to start shooting before sunrise, you know.

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- 66:35:27 P Yes. They want to catch him as it's coming up through the airglow. They want that, I think, for space lines. One every 5 - one every 10 seconds after it comes above the visible horizon. Now, let's see, in 1 minute it's 4 degrees above, and he said he thought it would be above the UV horizon and 2 degrees - -
- 66:36:22 C Yes.
- 66:36:32 P Well, I think I've seen skies just about as bright as this.
- 66:36:39 C On a clear night.
- 66:36:41 P Yes.
- 66:36:48 P The Milky Way, of course, shows up quite nicely. Notice this pattern of dark clouds?
- 66:36:56 C Yes.
- 66:37:05 C Are you taking any more pictures?
- 66:37:11 P I'm kind of watching where Orion is going with respect to the track so I can get those ... or not, but it looks like they are about 80 degrees up now. It's really hard to take a picture up that way - without getting me in it.
- 66:37:34 C I'm going to turn on my flashlight a second.
- 66:37:37 P Yes. Also, what's going to show up, I'm afraid, unless I can hold the thing up high, is reflection of the sun on my visor.
- 66:37:46 C Yes.
- 66:37:53 P You got a voice tape going?
- 66:37:54 C Yes.
- 66:38:15 P ... is just coming up, right?
- 66:38:18 C Yes. Leo.
- 66:38:33 C Hey, you've got a dry skin pile over there - skin

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- cleaning pile you forgot to throw away.
- 66:38:37 P I - I knew it was there.
- 66:38:39 C Oh, you did?
- 66:38:51 P Wonder why they aren't anxious to take infrared shots over the States?
- 66:39:02 C You want to know something?
- 66:39:05 P What?
- 66:39:06 C Okay. My penlight has gone off.
- 66:39:17 P Yes, this one of mine is in a little jeopardy. It's just that pocket clip that holds it on the lanyard.
- 66:39:30 P Why don't I take a couple more?
- 66:39:34 C All right. Sunrise is coming up in 8 minutes.
- 66:40:42 P Yes. I think one-handed is the way to do this - just over the filter. Just put my index finger on the trigger and just squeeze slowly.
- 66:41:27 P Yes. I can see the horizon become defined now.
- 66:41:33 C It looks to be starting to light. It's just another big shaft, if your eyes are adapting readily. You ought to be in real good shape for it.
- 66:41:49 C Can you see a shaft of light coming up?
- 66:41:54 P I can't say as I do. I believe the hatch there is going to get in the way.
- 66:41:59 C About 6 minutes to sunrise.
- 66:42:03 P It's a little early yet.
- 66:42:06 C It's not early for the ... light. It should be there.
- 66:42:15 P I really don't think I can see this too well. Can

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you take over in PULSE and just roll to the right a little bit?

- 66:42:28 C Well, let's see. I can roll over there, but then I can't stop it, Buzz, without going to my maneuver thruster. Do the best you can.
- 66:43:28 P Well, if this hatch closing device was out of the way - -
- 66:43:34 C I'll try it. Watch out for the circuit breakers over there.
- 66:43:54 C (Humming)
- 66:44:05 C Hey, Buzz!
- 66:44:06 P Yes.
- 66:44:07 C ...
- 66:44:10 P It does, does it?
- 66:44:11 C Yes.
- 66:44:20 C (Humming)
- 66:44:30 C I'm falling to sleep pretty well. Hey, the sun is coming up now. Get with it!
- 66:44:34 P Okay.
- 66:44:39 P Well, it's right behind the hatch.
- 66:44:42 C Can you aim for it?
- 66:44:44 P Yes. That's what I'm trying to do. That's probably the best thing to do.
- 66:45:09 P It looks like this makes for good exercise.
- 66:45:12 C What's the story?
- 66:45:18 P Holding the camera in position here is a real bear as far as finger action goes.
- 66:45:46 P How are we doing on time?

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66:45:49 C Oh!

66:45:51 P How are we doing on time?

66:45:54 C It's 2 minutes to sunrise. That's when the light should be.

66:45:58 C You should see the light beautifully now.

66:46:18 C (Humming)

66:46:35 P I think we'd be a lot better off if we'd roll over there.

66:46:39 C I know we'd be a lot better off, Buzz, but we took the initial plot.

66:46:49 P Darn it. I'm working myself to death here putting this camera back and forth.

66:46:58 C I can roll over, but I don't know if I can get out of that rough - and straight away.

66:47:07 C Unless I go to my Number 12 thruster.

66:47:10 P How's the time doing?

66:47:16 C 47:12. We've got 47:57.

66:47:52 P How we doing?

66:48:01 C 47:65, and it's 47:57 now.

66:48:04 P Hey, you're on time.

66:48:27 P That was a dull burn.

66:49:01 P There seems to be a flash in front of this camera when I'm taking pictures.

66:49:07 C Maybe it's the gas escaping.

66:49:09 P ...

66:49:32 P All right. One more.

66:49:40 P Okay. I've only got a few pictures left right now.

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66:49:55 C Easy.

66:50:00 P Perched above the EVA right ... degrees now.

66:50:03 C Hey, feel the hatch. Put your finger down there and see what it feels like down there now. See if it's warm.

66:50:09 C Is it pliable?

66:50:11 P Yes. Some.

66:50:13 C Okay.

66:50:24 P What, burn my right hand. Got worked out that time.

66:50:59 P ...

66:51:06 P I'll take these pictures real quick.

66:51:08 C What?

66:51:10 P Afraid they're going to set if I don't take these pictures real quick.

66:51:14 C Okay. Just probably take them.

66:51:20 C If you can look back there, look back there and see if you can see them at this time.

66:51:25 P Okay. I've got my visor down now.

66:51:49 C I don't know why you are wearing that suit.

66:51:57 P What did you say?

66:51:59 C I said I don't know why you are wearing that heavy suit.

66:52:25 P All right. That shows O and they are on top.

66:53:15 C (Humming)

66:53:25 C Easy.

66:53:31 P I think it might just hit a dead band too soon because I'm not moving around now.

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66:54:57 C Okay. Let's go.  
66:55:03 P ...  
66:55:05 C That's to fire anything.  
66:55:08 P That what?  
66:55:09 C That ...  
66:55:13 P No, I don't think so. It's - it's not from that far back.  
66:55:20 C But it could be because they're 32 percent.  
66:55:23 C Let's go, Buzz.  
66:56:05 P You see any tendency to float in or out?  
66:56:08 C No.  
66:56:22 C Come on, let's go!  
66:56:29 C Okay. ...  
66:56:37 P It's open.  
66:56:38 C Okay. Wait a second ...  
66:56:46 P I figured there was a hooker in there.  
66:56:49 C Okay. I'll give you a Mark.  
66:56:52 P Wait a minute. I've got to get into position where the arms are straight.  
66:57:11 P Okay.  
66:57:12 C MARK.  
66:57:16 C Holy cow! You didn't ... now  
66:57:27 P You speaking into the voice tape?  
66:57:29 C Yes. Because they can probably get a pretty good picture of that themselves.

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66:58:10 C Stand by.

66:58:14 C MARK.

66:58:16 C Circuit breakers, 66:58:12.

66:58:17 P Okay.

66:58:41 P You know you were concerned about how the heat was going to affect this bolt that the - -

66:58:49 C Well -

66:58:50 P - - handrail goes on. It looks like they filed off part of the front of it.

66:58:53 C They did?

66:58:55 P The heat didn't get to it at all.

66:59:01 C I'm not thoroughly familiar about launch - reentry.

66:59:05 P Oh, yes.

66:59:08 C Okay. Why don't you hand me that - can you hand me the Maurer camera now? ...

66:59:15 P You want to pick it up?

66:59:16 C I guess it - you don't have to. I don't want to.

66:59:17 P I guess I might as well leave it on.

66:59:19 C Okay.

66:59:32 P Looks nice and clear. Let me see through it.

66:59:37 C Now that it's clear, take the visor open.

66:59:39 P It's open.

66:59:40 C Okay. Hatch pawls locked.

66:59:43 P They're locked.

66:59:44 C Okay. Check the degree of your field.

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66:59:46 P ...  
66:59:49 C What?  
66:59:51 P I'm checking the hatch seal.  
67:00:02 P I don't think there is any debris.  
67:00:05 C Okay. Let's go.  
67:00:48 P Hey, where ...?  
67:00:50 C It does a lot better on ...  
67:00:52 P What?  
67:00:53 C I like it better, this one.  
67:00:55 P You're recommending it?  
67:01:13 C ...  
67:01:19 C Okay.  
67:01:22 C ...  
67:01:37 P You better mark the time. We're in - they will probably want to know.  
67:01:39 C I think it's at 7:02 we start that.  
67:01:42 C In the Flight Plan. Cabin check valve closed. Check valve closed.  
67:01:55 P Oh heck, I wanted to get rid of this visor.  
67:02:03 C I've got it now.  
67:02:05 P I'm going to open the hatch again.  
67:02:07 C Oh!  
67:02:12 C I see.  
67:02:18 C Just leave it here. You can put it any place.  
67:02:20 P All right.

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67:02:22 C We've got other stuff to do.  
67:02:25 C We've got ...  
67:02:29 P Go ahead.  
67:02:31 C Okay.  
67:02:34 C Repress, OPEN.  
67:02:45 P You can wear the visor, okay?  
67:02:46 P Through Reentry?  
67:02:48 C (Laughter) You can keep it amoung your souvenirs.  
67:03:18 C What happened to the S-13 bracket?  
67:03:22 P What happened to it?  
67:03:24 C Yes.  
67:03:26 P I got rid of that.  
67:05:59 P Oh ...

**GUAYMAS**

67:06:51 CC Gemini XII, Houston CAP COM. Over.  
67:06:58 C Go ahead, Houston.  
67:07:00 CC Roger. Have you got the cabin repress?  
67:07:03 C Right. 3 psi now ...  
67:07:05 CC Roger. I understand 3 psi.  
67:07:59 C I've got a little leg room here for a change.  
67:08:01 P Yes.  
67:08:05 C We're going to be known as a litterbug flight.  
67:08:10 P Oh, boy! Well, let's see what's next on the docket.

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67:08:17 CC Keep space clean.  
67:08:22 C NORAD's going to have a fit trying to track all these little bits and pieces.  
67:08:37 C Okay. We're 4 1/2. That'll do.  
67:08:57 C Okay. Cabin repress to 4 1/2 psi.

## TEXAS

67:09:02 C Cabin repress is closed. Primary Coolant Valve circuit breaker going closed.  
67:09:13 C No. We didn't want that on because we had the A-Pumps.  
67:09:15 P Oh, yes. We had the A-Pumps on. That's right.  
67:09:17 P Okay. A-Pumps are still on.  
67:09:20 C Good.  
67:09:27 P Keep the - Hatch Gain and Drive Select to NEUTRAL.  
67:09:30 C What?  
67:09:32 P Gain and Drive Select to NEUTRAL.  
67:09:33 C They're already neutral.  
67:09:34 C Okay. Want to stow this?  
67:09:41 C Well, let's get all this stuff up first.  
67:10:02 C Houston, Gemini XII.  
67:10:05 P No. We're not on VOX.  
67:10:07 C Houston, Gemini XII.  
67:10:09 CC Go ahead, Gemini XII. Houston here.  
67:10:14 C Let me see, that was a pretty expensive EVA - the last fuel. We're reading about 25, 26 percent.

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67:10:27 CC Copy. When you get relatively squared away, we've got the stuff for you. Give us a call.

67:10:32 C Okay.

67:11:07 C You want to keep that ...

67:11:18 P ...

67:11:21 CC Gemini XII, Houston CAP COM. Suggest you go off VOX.

67:11:24 C Roger.

67:11:44 CC Gemini XII, Houston. T/M shows Thruster 4 on continuously. Will you confirm that Thruster 4 circuit breaker is off?

67:11:51 C Roger. It's off. During EVA, I turned it off ... I wanted to see if there was fuel that was being fired from Thruster 4; to see if I turned it off, if it would stop firing.

67:12:16 C Going back on.

67:12:18 CC Roger.

67:12:19 P I don't think you - do they want them back on? I thought he said it showed continuous firing. I guess it says firing ...

67:12:30 C Yes.

67:12:58 C Houston, Gemini XII. Did you want to send us a Flight Plan Update?

67:13:05 CC Roger, Gemini XII. If you've got time, we'd like you to start a normal purge, Section 1 and then 2.

67:13:16 P Roger. Going in a normal purge, Section 1 and then 2.

67:13:19 CC Roger. And when you get squared away, we'd like you to start a D-10, Mode Alpha, followed by a Mode Echo.

67:13:35 C Roger. After EVA, you still need D-10, Mode Alpha

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and then Echo. Is there a particular time for that?

- 67:13:42 CC No particular time. At your convenience. You can also go ahead and eat. We'll give you a Flight Plan Update next time around on your EPR over the US at 68:39.
- 67:13:57 C Roger. Next Flight Plan Update, 68:39.
- 67:14:01 CC If you want to get your next station time up to date, you can add 5 minutes to what you have on the Flight Plan.
- 67:14:17 C Roger.
- 67:14:22 CC I have a Nodal Update too, if you've got time to copy that.
- 67:14:27 C Okay.
- 67:14:32 CC Time: 68:30:11; Node, Rev 43; 155.9 west; Right Ascension, 10 hours 26 minutes.
- 67:15:02 C Roger. I have received the nodes.
- 67:15:06 CC Okay. Was there anything you would like to add to the Jettison List?
- 67:15:14 C Stand by.
- 67:15:20 P We threw away the S-13 bracket. And we also threw away both the cables for the left-hand EVA camera. We kept the gold visor - the EVA visor ...
- 67:15:40 CC Kept the EVA visor?
- 67:15:42 P Right.
- 67:15:44 CC Everything else went out the door?
- 67:15:48 P Roger.
- 67:15:51 CC Roger. We have the rest of these PLA Updates whenever you're in a mood to copy them, but they're not critical.

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67:16:26 C I'll copy them now. I've got the book out.

67:16:32 CC Roger. Starting with 46-4 Alpha: 72:50:31; 20 plus 47, 26 plus 31; roll left 85, roll right 95. 47 plus 4 Bravo: 76:26:07; 20 plus 41, 26 plus 17. 48-4 Bravo: 76:01:48; 20 plus 18, 25 plus 56. Bank angles are all the same. The weather is all good.

67:18:03 C Roger.

67:18:06 CC I'd like to have Buzz press on the sternal EEKG sensor if he has a chance.

67:18:15 C Roger.

67:18:17 P Which one was that?

67:18:21 CC The one on your breast bone.

67:18:25 P Okay.

67:18:27 CC Middle of your sternal.

67:18:32 P You're so knowledgeable.

67:18:37 P Did that do any good?

67:18:39 CC Wait a second.

67:18:56 CC Thanks a lot, that helps. And be advised you're about 125 - 120 miles from the Agena and holding your own.

67:19:04 C Roger.

67:19:22 CC Gemini XII, Houston. How's your purge going?

67:19:32 C Fine.

67:19:41 C ...

67:19:45 CC Say, Gemini XII, Houston. Over.

67:19:47 C Go ahead.

67:19:49 CC Roger. Just as a matter of info. We'll be

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planning various modes of D-10 later on in the day, which you can just give a try. If you have any trouble with - we'll just have you go - pass on to the next one. We'll also be trying S-11 and S-29 and some T-2. We'll give you a detailed update the next time around.

67:20:17 C Roger, Houston. Just keep in mind, though, these will require ... Gemini time ... Hawaii, and we'll get a chance to do the job or ...

67:20:29 CC We're considering that and we'll give you a long time for each mode and you'll just have to do the best you can.

67:21:21 CC Gemini XII, Houston.

67:21:22 C Go ahead. Go ahead.

67:21:25 CC Roger. Just as a reminder, when you're doing D-10, Mode Echo, we don't want you to fire your up-down or right and left thrusters.

67:21:39 C Roger.

67:21:47 C ...

67:21:57 C ... fire ...

67:22:01 P No. I don't think they care about that one.

67:22:05 C How do you figure?

## BERMUDA

67:22:11 P Purge complete.

67:22:14 CC ...

67:22:23 C How do you figure?

67:22:25 P What?

67:22:26 C This fires forward, right? I push these ... out there ...

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67:22:33 P Yes, but they don't seem to be worried about them.  
67:22:39 C You sure?  
67:22:42 P Yes. That's the way the write-up goes.  
67:22:44 C There's nothing down like that.  
67:22:46 CC We're simply after ...  
67:22:51 C What?  
67:22:52 C ... after all ...  
67:22:55 CC Gemini XII, Houston CAP COM. 1 minute to LOS.  
67:23:02 CC Canaries in 3 minutes

**CANARY ISLANDS**

67:27:34 CC Gemini XII, Canary CAP COM. I'll send you a Tx at this time.  
67:27:45 C Roger.  
67:33:39 CC Gemini XII, Canary CAP COM.  
67:33:42 C Go ahead, Canaries.  
67:33:43 CC Have you deployed the D-10 sensors yet?  
67:33:48 C Well, no. We're still doing the EVA ... stowage ...  
67:33:55 CC Stand by. Stand by on that, Gemini XII.  
67:34:01 CC There's no hurry on it. Do it at your convenience. They just wanted to know back at Houston.  
67:34:06 C Roger.  
67:34:07 CC And we've got a minute to LOS here. We'll stand by.

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KANO

67:34:27 CC Gemini XII, Houston CAP COM through Kano.

67:34:32 C Roger.

67:34:34 CC Roger. On the D-10, deploy and activate Mode Echo at your convenience.

67:35:03 CC Gemini XII, if you're calling Houston, we're not reading.

67:35:08 C Houston, Gemini XII here. We were not calling.

67:35:12 CC Roger. Read you five by.

67:35:15 CC Did you copy that comment on D-10?

67:35:19 C No hurry to deploy it. Is that correct?

67:35:22 CC Deploy D-10 Mode Alpha and Mode Echo at your convenience.

67:35:29 C Roger. Will do.

67:35:49 C Houston, Gemini XII here.

67:35:51 CC Go ahead, Gemini XII.

67:35:53 C ... thrusters will not ... ... D-10 ...

67:36:09 CC That is affirmative. The forward and aft firing thrusters will not affect D-10.

67:36:15 C Roger.

67:36:30 CC Gemini XII, Houston. How did the EVA photography go?

67:36:35 P All right. Little bit difficult to get the shots of the sunrise ... shots around the hatch underneath the hatch closing device. We ended up taking all frames on the EVA film, and I think we ought to get some pretty good pictures out of it.

67:36:58 CC Sounds real good. Nice going.

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67:37:04 P ...

67:37:11 CC Say again, Gemini XII.

67:37:14 P Allowing - if you think they would see Orion in the daytime.

67:37:20 CC I would think we might on UV film, if the camera didn't see any of the Spacecraft.

67:37:25 P Well, ..., but after sunrise the sun was shining in the back of the adapter, and I think I might have been able to get the Gamma Velorum area, but the Orion area, I'm pretty sure, was getting some scatter from the Spacecraft.

67:37:45 CC Roger. Anywhere up there would be great.

67:37:49 P Roger.

67:38:10 CC Gemini XII, Houston CAP COM. Over.

67:38:13 C Go ahead, Houston.

67:38:15 CC Roger. If you don't object, we'd like to have you go to the primary scanners for the rest of the day and back to secondary tomorrow.

67:38:24 C Very well. We're on primary.

67:38:26 CC Mighty fine.

67:38:28 C What we're trying now is the Horizon Scan mode ... Platform, just to see what it does. As far as I can tell ...

67:38:42 CC Roger.

67:38:50 CC Gemini XII, Houston CAP COM. 1 minute to LOS; 5 minutes till Tananarive.

67:40:57 C Roger.

**TANANARIVE**

67:47:03 CC Gemini XII, Houston CAP COM through Tananarive

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and standing by.

67:48:51 CC Gemini XII, Houston standing by at Tananarive.  
67:48:59 C Roger, Houston. We have completed Mode A for the process of Mode E. Gemini XII.  
67:49:07 CC Roger.  
67:52:24 CC Gemini XII, Houston CAP COM. 1 minute to Tananarive LOS; 9 minutes to Carnarvon.  
68:02:11 P This is the Pilot speaking. The surgical scissors are lousy. They won't cut paper and they won't cut rubber.

## CARNARVON

68:02:17 CC Gemini XII, Carnarvon standing by.  
68:02:22 C Roger, Carnarvon.  
68:02:42 CC Go ahead, Gemini XII.  
68:02:45 C A check of our thrusters indicates that Number 8 Thruster is also out. I guess your last Plat Mode operation in EVA was too much for it. We can see the - or hear the thing firing, but trying to operate Number 8 by itself we get no response on the radius at all. Nothing happens.  
68:03:10 CC Okay. That's Thruster Number 8. Is that right?  
68:03:13 C Roger. Only Thruster Number 8.  
68:03:15 CC Okay. Copy that.  
68:09:38 C Carnarvon, Gemini XII.  
68:09:39 CC Go ahead.  
68:09:42 C Roger. It seems like right now we go unstable and flat on Control mode.  
68:09:49 CC Roger.

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## CANTON ISLAND

68:22:29 CC Gemini XII, Houston CAP COM through Canton standing by.

68:22:35 C Roger, Houston. Did you get the word from Carnarvon on the thruster?

68:22:46 CC Roger. We were monitoring your Carnarvon pass. We might want to have you make sure you have roll jets and pitch.

68:22:58 C Roger.

68:23:00 CC And will you confirm that your OAMS Heater circuit breakers are on?

68:23:07 P Roger. OAMS Heater circuit breaker is on.

68:23:11 P We're now beautifully performing Mode F of the test.

68:23:16 CC Roger. We might be doing some of that if this keeps up.

68:23:22 C ...

68:23:29 CC Seems like you've been in this situation before, Jim.

68:23:34 C ...

68:23:43 CC Roger. Just like being back home again.

68:24:14 CC Gemini XII, Houston. We're still thinking of having you try the other mode on D-10 to see how you can - how it'll work out. But if you can't hack it, why you can always give Foxtrot a try.

68:24:27 C We attempted to get SEF when we went into the right ... and couldn't even do it without ... we've got the range now with the platform holding for awhile.

68:24:52 CC Gemini XII, Houston. You're fading in and out. We'll talk to you more over the States. Be advised

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that - if you are still drifting, you might try to get some pictures over Mexico and Florida. Their weather's pretty good.

68:25:09 C Roger.

68:29:04 CC Gemini XII, Houston CAP COM. About 1 minute to Canton LOS. Be at Guaymas in 11 minutes.

68:29:12 C Roger.

## CALIFORNIA

68:39:04 CC Gemini XII, Houston CAP COM. Over.

68:40:20 CC Gemini XII, Houston CAP COM. Over.

68:40:24 C Roger, Houston.

68:40:27 CC Roger, Gemini XII. All the calculations here on the ground indicate you're probably approaching an empty adapter water tank here shortly. You'll be able to tell this because the water pressure will drop from about 20 psi, which you've been having, to almost nothing. And you'll have to use the squeeze bulb to get water out of the Spacecraft tank. You have about 13 pounds in the Spacecraft tank. When you notice this drop in water pressure, we'd like for you to get a gun count. Over.

68:41:04 C Thanks a lot. Okay. We'll give you a gun count.

68:41:08 CC Okay. You faded on us on your description of the control situation over Canton. Could you give us a rundown?

68:41:18 C Roger. Number 8 Thruster appears to be out. We can hear the solenoid firing, but it doesn't do anything. Very similar to a situation we had back on VII. We tried to line the Spacecraft SEF after we were in Horizon Scan mode. And when we got back there, we went back into Plat mode and adjusted with the vibration noted, so we got out of it again. And to save fuel we just let it drift, and we're

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drifting now.

68:41:52 CC Okay. Sounds like Gemini fire control power.

68:41:58 C Yes. It looks like another one.

68:42:15 CC Gemini XII, Houston. Could you give us that water gun count now, please?

68:42:24 C Roger. Our water gun is looking at 2024.

68:42:29 CC Copy. 2024. I have a Flight Plan Update for you when you're ready to copy.

68:42:47 C Ready to copy. Go ahead.

68:42:50 CC Roger. We have several D-10 modes here for you. We'd like you to try them, recognizing your control problem. Just do the best you can. If you can't get it, you might move on to the next mode. If you have - if you can't get them at all, just go ahead and do Foxtrot. Okay. The first one: 69:30, D-10, Mode Bravo, ended at 69:40; at 69:55, D-10, Mode Bravo, ended at 70:05; at 70:05, start a D-10, Mode Charlie, ended at 70:30; 70:45, S-11, Mode Charlie; 71:20 to 72:20, D-10, Mode Charlie; 71:55, purge fuel cells, Section 2 then Section 1; 72:20 to 73:20, D-10, Mode Dog; 73:20, Aline Platform, also, D-10, Mode Echo. Do that until 73:45. 73:45, S-29; 74:20, power-down platform; 75:00, X-Ray on, Beta WITH MAG through sleep period; 75:18, T-2, Mode Alpha, Sequence 1; 75:50, eat period; 76:06, CSQ, PLA Update, Block 8, purge fuel cells, Section 1 then Section 2. Give us a Cryo Read. Leave Cryo Read in H<sub>2</sub> for sleep period. 76:25, Hawaii, Crew Status Report, H<sub>2</sub> Heater on. Raise pressure to 667 pounds, H<sub>2</sub> Heater AUTO. 76:30 to 84:30, sleep period, also D-10, Mode Foxtrot.

68:47:49 CC Did you copy, Gemini XII?

68:47:51 C Roger. I think I got most of that. Would you say again that 75:18, please?

68:47:58 CC 75:18, T-2, Tango-2, Mode Alpha, Sequence 1.

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68:48:08 C Roger. And then the pressure for the H<sub>2</sub> heater before going to cryo.

68:48:15 CC 667 pounds.

68:48:18 C Roger. 667.

68:48:23 CC And we're ready for a 30-second O<sub>2</sub> purge on both sections.

68:48:43 CC Gemini XII, did you copy O<sub>2</sub> purge?

68:48:49 C Negative. Say again. I didn't get any of that.

68:48:51 CC Roger. We'd like to have you do a 30-second O<sub>2</sub> purge for both sections.

68:48:59 C Understand. 30-second O<sub>2</sub> purge. Both sections now.

68:49:04 CC Roger. And we'd like to update your TR and give you a load for 16-1. Would you turn your Computer to PRELAUNCH?

68:49:20 C Roger. Computer is PRELAUNCH and it's on STANDBY for diagnostic.

68:49:25 CC And make that 60-1.

68:49:27 C Okay.

68:49:51 C It looks like when I purge I get an indication on the FDI needles in D-10.

68:50:01 CC Roger. We'll have F COM and G and C think about that.

68:50:15 C I'm sure they yaw to the right.

68:50:19 CC Roger.

68:50:30 CC Gemini XII, Houston. We understand that you were able to get one T-2 pass. Do you have any data for us?

68:50:42 C Roger. Stand by just a minute.

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68:50:43 CC Okay.

68:50:58 C Don't worry about the FDI needle moving too much. They're bouncing back and forth a bit now.

68:51:04 CC Copy. And you're GO for 60-1.

68:51:08 C 60-1. Roger.

68:51:13 CC You have a good load and we're done with the computer.

68:51:28 C We're done with the purge.

68:51:30 CC Roger. Copied. Done with purge.

68:51:46 C ...

68:51:50 CC Roger. Stand by. We're reading you quite garbled.

68:52:13 CC Gemini XII, Houston CAP COM. We're ready to copy your T-2 data.

68:52:18 C Roger. I'll omit the times. I don't - unless you really want those. The 05,00001 and I'll give you just the last two digits. Number 2 is 02. Number 3 was 59. Number 4 was 00000. Number 5 was 01. Copy?

68:52:55 CC Roger. We copy. Thank you.

68:52:58 C Roger. The Betelgeuse/Rigel. I've got several readings here. 18611. I'll give you the last two digits for the remaining ones. Number 2 is 06. Number 3 was 04. Number 4 was 08. Number 5 was 04. Number 6 was 04. Number 7 was 09. Number 8 was 06. Number 9 - I inadvertently turned the knob thrust void. Number 10 was 08. Number 11 was 11. And - for the last three I switched to a slightly different configuration, using the thumb instead of the finger to turn the knob. And I got 05 for all of them. All three of them.

68:54:07 CC Roger. We copy.

68:54:22 CC Gemini XII, Houston.

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68:54:30 CC You have a good load there. You're cleared out of PRELAUNCH at your convenience.

68:54:36 C Roger.

68:54:50 CC Gemini XII, Houston CAP COM. Over.

68:54:54 C Go ahead.

68:54:56 CC Roger. Could you give us your first and last T-2 time, please?

68:55:26 C Roger. The times are reference to 63:14:42.

68:55:31 P No, no, no!

68:55:32 C No. Wait a minute! The times are reference to 63:06:00. First measurement was at 13008.0, and the last measurement was at 3851.0.

68:55:55 CC Roger. Copy.

68:57:41 CC Gemini XII, Houston CAP COM. 1 minute to LOS; 5 minutes to Canaries.

68:57:49 C Roger.

## CANARY ISLANDS

69:02:32 CC Gemini XII, Canary CAP COM. We have nothing for you this time. We'll be standing by. Sending you Tx this time.

69:02:39 C Roger. Canary.

69:03:38 C Looks real nice down there.

69:03:42 CC Say again?

69:03:45 C I say, it looks nice down there.

69:03:46 CC It is. Very, very nice.

69:07:47 CC Gemini XII, Canary CAP COM. About a minute to LOS. We're standing by and we'll see you tomorrow.

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69:07:52 C Roger, Canaries.

## KANO

69:09:20 CC Gemini XII, Houston CAP COM through Kano and standing by.

69:09:28 C Roger, Houston. On Mode C of D-10, I don't believe we have ... on the compass.

69:09:41 CC Roger.

69:10:12 CC Gemini XII, Houston CAP COM. Over.

69:10:15 C Go ahead, Houston.

69:10:17 CC Okay, Jim. If you can't do Mode C, try to stay generally SEF heads up.

69:10:25 C Roger. We just go around to that position now. There's little moisture in the drift to stop it. We can maintain this position somewhat. But if we try to do any particular maneuvers, we ...

69:10:43 CC Roger. We copy.

69:11:51 CC Gemini XII, Houston CAP COM. Over.

69:11:55 C Roger, Houston.

69:11:58 CC On the S-11, if you don't think you'll be able to swing around the horizon, just take, oh, about 12 pictures of whatever horizon you can get.

69:12:09 C Roger. Understand.

69:12:59 CC How's the door coming, Jim?

69:13:03 C Say again, Bill?

69:13:05 CC Be careful with the Prelaunch preparations on the bag.

69:13:11 C Right.

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69:13:14 CC Okay.

69:14:44 C What's wrong with the Maurer camera, Buzz?

69:14:48 P The lens will not go in all the way, and it seems to be the f:9.5 lens that's causing the problem. It did it with one film body and is doing the same thing in this film body. As a result, when you try to snap a picture, it leaves the shutter open until you jockey around the lens.

69:15:23 C I think we have a little control. I think we have a little control. Not much. I think we have a little control.

69:15:47 CC Gemini XII, Houston CAP COM. 1 minute to Kano LOS.

69:15:55 CC 5 minutes to Tananarive.

69:15:56 C Roger, Houston.

69:15:57 P Did you put a filter somewhere?

69:16:04 C Yellow.

69:17:12 C He wanted PRELAUNCH. He wanted it on, I guess.

69:17:14 P Yes. I think we really should have turned a bunch of stuff out and thrown it away.

69:17:17 C Buzz, ... Computer, PRELAUNCH. I think they want that on.

69:17:27 C Don't you agree?

69:17:28 P Yes. How many more voice tapes do you have?

69:18:43 C Two.

69:18:47 C How much do you want to use ...

69:18:53 P One for reentry.

69:19:39 P Ready to do a roll attitude study?

69:19:41 C Yes. ... 3 degrees per second.

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69:19:52 C Okay.

69:19:57 P ... D-10, Mode B roll attitude study, 3 degrees per second. Holding, trying to hold, yaw ...

69:20:17 C Initially the ion sensor yaw needle is about 2 marks off to the left in comparison with the platform needles.

69:20:31 P You're out on the ...

69:20:36 C The pitch is very close in agreement. This is at high scale. At low scale, pitch is also very close in agreement. Yaw now shows about 3 1/2 to 4 degrees off to the left. Both needles, pitch and yaw, momentarily deflect when attitude thrusters are fired.

**TANANARIVE**

69:21:51 CC Gemini XII, Houston CAP COM through Tananarive. Over.

69:22:34 CC Gemini XII, Houston CAP COM through Tananarive. Over.

69:23:07 CC Gemini XII, Houston CAP COM through Tananarive. Over.

69:23:46 CC Gemini XII, Houston CAP COM through Tananarive. Over.

69:23:52 C Roger, Houston. Gemini XII here.

69:23:55 CC Gemini XII, this is Houston CAP COM reading you somewhat garbled. Be advised, we have talked to the D-10 Experimenter. He feels that if you can hold attitude within plus or minus 20 degrees, two zero degrees, that the various mode data would be acceptable. If not, go to Mode F, Mode Foxtrot, and do S-5, S-6 and S-29 at targets of opportunity. Over.

69:24:32 C Understand that we can do D-10, Mode B within ... 20 degrees it will be acceptable. If not, do S-6,

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S-5 and S-29 at targets of opportunity. Is that correct?

- 69:24:49 CC Roger. That's S-5, S-6 and S-29. And D-10 to Mode Foxtrot.
- 69:24:57 C Roger. We are now trying to do D-10, Mode B. I'll let you know how we're coming out.
- 69:25:03 CC Roger. We also added S-11 as target of opportunity.
- 69:25:11 C Roger.
- 69:25:14 CC Whatever you can get, we'll take it.
- 69:26:52 C D-10 we're commencing, 69:26 now. We're doing Mode B. Rolling just about 1 degree per second. Decrease in roll is due to the control problems. It was very difficult to get that roll out once we got it started. Aldrin will now give a commentary on what the FDI's are doing in regard to roll.
- 69:27:28 C The pitch needle is oscillating.
- 69:27:31 CC Say again, Gemini XII.
- 69:27:34 P Disregard.
- 69:27:35 CC Roger.
- 69:27:43 P Pitch needle is oscillating occasionally full-scale up to full-scale down; right now it's sitting in the center. The yaw needle is off to the right and below scale, 3 marks, 3 1/2 back to 3. Roll is now 225 degrees at roll.
- 69:28:20 CC Gemini XII, Houston CAP COM with 1 minute to Tananarive LOS; 9 minutes to Carnarvon.
- 69:28:30 C Say again?
- 69:28:32 CC 1 minute to LOS; 9 minutes to Carnarvon.
- 69:28:36 C Roger.

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- 69:28:48 P We're at 270 degrees at roll. We're showing about 2 degrees off of NDF and the pitch-up position of the left needle. Now the yaw needle is going about 3 1/2 marks to the left of yaw. The pitch needle is dropping down. It's about 1 1/2 to 2 degrees pitch-up. We're now coming through a heads-up position. At the end of the first revolution, we're about 5 degrees yaw right, about 5 degrees pitch-up. The yaw needle shows 1 1/2 marks, 1 1/2 points up to the left; pitch needle is 2 down, and they're holding positions fairly smoothly. The pitch needle's now drifting up; we've about 4 or 5 degrees of roll - roll to the left. Pitch needle is centered now, and the circle in the airplane is about 4 or 5 degrees below the horizon. Yaw needle is off to the left. Got 3, 3 1/2 divisions coming up. 90 degrees of roll left. Pitch needle has now stopped 1 division high, yaw needle ... full-scale to the left. Position of the dot in the 8-Ball is 8 degrees - is 12 degrees down and 4 degrees to the left ... coming up on roll of 180 degrees. We're about 15 degrees left of the orbit plane at 0 up-down at the dot. Pitch needle is showing down 1 division and the yaw needle is 5 divisions to the left.
- 69:32:34 C Before we go ...
- 69:32:36 P We're now at 270 degrees on left roll. The dot is 20 to 22 1/2 degrees high and 10 degrees to the left of the orbit plane; and yaw needle is full-scale left and the pitch needle is full-scale down.
- 69:33:03 P ... the roll as we come up to a heads-up position. The yaw needle is full-scale left and now coming back to center. Pitch needle shows full-scale down. We're about 35 degrees pitch-down on the 8-Ball, and beginning to pitch up a little higher and about 4 degrees to the right of the orbit plane. Yaw needle is just about in the center. We're pitching down from 30 degrees pitched-up, and this is with a roll of about zero. We're pitching down. Yaw needle is showing right in the center of the dot and is traveling down the belly-band of the 8-Ball. We're 20 degrees now. Pitch needle is full-scale down, yaw needle in the center, and the dot in the center of belly-band, coming down.

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That's moving almost a little to the left, and the yaw needle is moving off to the right. Just had a roll right. Just had a slight waver at both needles - they're steady now. In general, the needles are quite steady. We're 10 degrees pitch-up now with very close to 0 roll, and the pitch-up now coming up 3 - 2 divisions - and it's ... 2 divisions at 5 degrees pitch-up. About 2 1/2 degrees pitch-up is at 1 division down, and we're coming right through 0 0 0, and the pitch and yaw needles are exactly centered. This was 0 roll. We're now pitching down, going down the belly-band and the pitch needle is going up. There's a slight oscillation in the needles when the pulse thrusters are fired.

- 69:35:26 P We're continuing to roll now, building up to about 1 degree a second.
- 69:35:50 C We start out at a very slow rate for D-10 because, during the roll to maintain somewhat of a 0 0 0 position, we don't want to saturate the ion sensor needles. We don't want the rate to build up. I'll try to maintain the 0 position, so instead of low, we'll saturate by the time we get around.
- 69:36:36 C Hey, listen. I have an idea.
- 69:36:38 C All is not lost in the control system yet. How much closer do we put it? If it goes slow, this thing will go round. Watch the roll needle.

## CARNARVON

- 69:37:42 CC Gemini XII, Carnarvon standing by.
- 69:37:47 C Roger, Carnarvon. We are still doing D-10, Mode B, with the spring door control system. I think the experiment is coming along quite well. We're getting the proper response on the Pilot's side.
- 69:38:00 P We're now at roll left of 90 degrees. The dot is 5 degrees high and about 2 degrees right of orbit plane. The pitch needle is 1 division down. It's now at 0, and the yaw is 3 divisions right. This

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is high scale.

- 69:38:03 CC Okay.
- 69:39:00 P Now going through a roll left of 180 degrees. The dot on the 8-Ball is 13 degrees up and about 1 degree right; the yaw needle is 1 division left, and pitch is about full-scale pitch-up.
- 69:40:46 P Reaching a 270-degree roll left, the dot on the 8-Ball is 3 degrees right of the orbit plane, 15 degrees high; pitch needle shows about 1 division high, and yaw is full-scale left. The pitch needle just went through a 0 indication and is now down to about half a degree down. At the 0-degree indication, we had a roll of about 3 - about 290 degrees of roll and about 15 degrees pitch-up on the 8-Ball and about 5 degrees right of the plane.
- 69:42:35 C We're completing the roll study here. At 0 degrees roll, we are 10 degrees right of the orbit plane, 5 degrees high, pitch needle is 2 divisions - 1 1/2 divisions down, yaw is 3 divisions left.
- 69:43:10 P This completes D-10, Mode D. This pass will start again at 59.
- 69:44:57 CC Gemini XII. Carnarvon. 1 minute to LOS; 18 minutes to Hawaii.
- 69:45:03 C Roger. Sounds good.
- 69:53:55 P D-10 - D-10 again at 69:54. Will commence rolling to the right - rolling to the right.
- 69:54:09 C That was a commentary by the pilot.
- 69:55:02 P ... 30 degrees.
- 69:56:51 P We're coming up on 90 degrees of roll right. We are - dot is about 3 degrees left of the plane and about 3 degrees high. The pitch needle shows one division up and the needle is 0. To make a correction and all previous comments on the last run, these were all roll angles measured rolling right.

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## CANTON ISLAND

69:57:22	CC	Gemini XII, Gemini XII. Houston through Canton.
69:57:28	C	Roger, Houston.
69:57:30	CC	Gemini XII, Houston. You're going to have a nice pass over the States for photography; it's good weather.
69:57:37	P	Roger. We'll see what we can do. We're now in the 2nd stage of D-10, Mode B.
69:57:44	CC	Copy. Standing by.
69:58:48	P	Rolling right now through 180, the dot is 4 degrees left of the orbit plane and about 2 degrees pitch-down. The pitch needle shows 1 division down and the yaw needle shows 2 1/2 divisions left.
70:00:42	P	We are at roll right angle now, of 27 degrees, about 20 degrees to the left of the orbit plane, 2 degrees high. The pitch needle is full-scale down. The yaw needle is oscillating about a quarter of a division right around the center point.
70:02:21	P	Coming through 0 roll now, the dot on the 8-Ball is 7 degrees up and about 7 degrees to the left of the orbit plane. We show 3 1/2 divisions to the yaw right, the yaw right needle, and 3 to 3 1/2 divisions pitch-down.

## HAWAII

70:03:54	CC	Gemini XII. Hawaii CAP COM standing by.
70:04:00	C	Roger, Hawaii. We've just completed the D-10, Mode B.
70:04:07	CC	Roger.
70:09:57	CC	Gemini XII, Hawaii. We'll have LOS in 1 minute.

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70:10:01 C Roger.

**CALIFORNIA**

70:14:10 CC Gemini XII, Houston standing by California.

70:14:16 C Roger. We completed D-10, Mode B. Before we go on, we're pitching down now slowly, to get a position for some S-5/S-6 photos of the States.

70:14:28 CC Roger. And during your Texas pass we'd like to work some remote through one of the ARI aircraft, and so I'll give you a little chatter and if you talk back over Texas, we'd appreciate it.

70:14:42 C Okay. Fine.

70:14:56 CC Also, on your next pass across the States, we've got a little HF music for you to lighten the load.

70:15:05 C Ah! You're so sweet to us, Babe!

70:15:07 CC I always take care of my pals.

**GUAYMAS**

70:20:05 CC Gemini XII, Houston. We're coming up for the Texas pass. How's the weather look?

70:20:12 C Pretty good.

70:20:15 CC Say again?

70:20:16 C It looks - ... we just passed Yuma, White Sands area, ... seems very clear.

70:20:27 CC Very good, and when you have a chance would you give us a - you've got the time passing the States - a 30-second O<sub>2</sub> purge, please?

70:20:36 C Roger.

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70:20:40 CC And would you put your quantity switch to O<sub>2</sub> for us, please?

**TEXAS AIRCRAFT**

70:21:44 CC Gemini XII, Houston. How do you read me now?

70:21:48 P Loud and clear. We're coming up right over Houston.

70:21:51 CC Roger. You are transmitting to us through the aircraft. Can you give us a little description?

70:22:00 C Roger. For one thing, ..., those kids of yours are on my roof again.

70:22:04 CC Aw, they can't be! They're supposed to be in school.

70:22:13 CC If that's the case, they're playing hooky besides being on the roof!

70:22:20 C Beautiful shot of Houston.

70:22:25 CC Roger. Can you see the Dome?

70:22:29 C Roger.

70:22:32 CC Very good.

70:23:21 CC Gemini XII, Houston. Are you calling?

70:23:24 C Negative.

70:23:39 C Houston, Gemini XII. Did you want us to give a call to an aircraft here?

70:23:43 CC That's negative. You're relaying through the aircraft now to us.

70:23:46 C Oh! Okay.

**CAPE KENNEDY**

70:24:31 CC Gemini XII, Houston. Now we're back to you through

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the Cape.

70:25:32 CC Gemini XII, Houston.

70:25:36 C Go ahead.

70:25:38 CC Roger. The sextant people passed me this information they took from your readings. Your bias error is -7.2 arc seconds and the standard deviation is 9.1 arc seconds.

70:25:52 C Roger.

70:25:54 C Try and do better.

70:27:57 CC Gemini XII, Houston. Could you give us your 30-second purge here? We'd like to watch it.

70:28:02 C Roger. Coming up on 30-second purge.

70:28:05 CC Thank you, and on your next pass across the States don't forget to run out your HF adapter antenna there and we'll play you a little tune.

70:28:15 C Okay.

**ANTIGUA**

70:33:34 CC Gemini XII, Gemini XII, Houston. 1 minute to LOS, Antigua. We'll see you over Ascension.

70:33:41 C Roger.

**ASCENSION**

70:42:36 CC Gemini XII. Houston standing by at Ascension.

70:42:41 C Roger. We're going to try Mode - S-11, Mode C ...

70:42:46 CC Say it a little slower; you're not too high yet.

70:42:50 C We're trying S-11, Mode C, to see if we can do it.

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70:42:53 CC Roger. Copy.  
70:46:36 CC Gemini XII, Gemini XII, Houston. 1 minute to LOS, Ascension.

## TANANARIVE

70:57:02 CC Gemini XII, Gemini XII, Houston standing by at Tananarive.  
70:57:20 C Roger. Chute and Brake Test.  
70:57:29 CC Gemini XII, Houston. Say again?  
70:57:33 C We're taking ... pictures.  
70:57:37 CC Roger. Copy.

## CARNARVON

71:12:40 CC Gemini XII, Carnarvon. Standing by.  
71:13:49 C Carnarvon, Gemini XII. We've just completed S-11, Mode C.  
71:13:57 CC Okay.

## HAWAII

71:38:29 CC Gemini XII, Hawaii CAP COM.  
71:38:32 P Hawaii, Gemini XII. Go ahead.  
71:38:34 CC Roger. I have a short Flight Plan Update for you, whenever you are ready to copy.  
71:38:49 P Roger. Go ahead.  
71:38:51 CC Okay. This will be for Rev 45 over Kano. It's S-5 and S-6, Mode Bravo over Mexico; S-5, Mode Alpha, Sequences 2 and 6; S-5, Mode Bravo, Sequence 7 at

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the red dye marker 20 miles south of the mouth of the Mississippi. Over.

71:39:36 P Roger. That was on the next revolution?

71:39:43 CC Roger. That's on this one that's coming up right now.

71:39:45 P Okay. S-5/S-6, Mode Bravo over Mexico; S-5, Mode Alpha Sequences 2 and 6; S-5, Mode Bravo, Sequence 7, red dye 20 miles south of the Delta.

71:40:04 CC Roger.

71:40:06 C This is your last chance, all Experimenters. Come and get it!

71:40:10 CC (Laughter) Right!

71:40:16 CC Okay. And general information: the data from D-10 Experiment have been very good. So it looks like you're doing real fine on your attitude control.

71:40:29 P Can't understand it!

71:45:45 CC Gemini XII, Hawaii. We'll have LOS in a minute.

71:45:50 P Roger, Hawaii.

**CALIFORNIA**

71:47:49 CC Gemini XII, Houston standing by at California.

71:48:00 C Houston, Gemini XII. Roger.

71:48:04 CC And if you've got your HF on, we'll be bringing you the music in about 3 or 4 minutes.

71:48:12 C Roger.

71:48:19 CC And before you get busy, could I get a PQI and a water gun count from you?

71:48:30 C PQI is 25 percent.

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71:48:34 CC Roger. 25 percent.  
71:48:37 P Water gun is 2033.  
71:48:38 CC Roger. 2033. And after you make your photography over the States, while we're still in Antigua acquisition we'd like a full hydrogen fuel cell purge and a 30-second O<sub>2</sub> purge. You can do that at your convenience, after you get done.  
71:49:01 P Understand a full hydrogen and 30-second O<sub>2</sub>.  
71:49:05 CC That's correct. Thank you.  
71:49:07 P That's Section 2 and then 1?  
71:49:09 CC That's affirmative.

## GUAYMAS

71:52:03 CC Gemini XII, Houston. The music is rolling. I'm not sure you are getting it right now. It's coming out of Cape.  
71:52:11 P Oh? Out of Cape? Okay.  
("The Sound of Music" by Julie Andrews)

## TEXAS

71:55:56 CC Gemini XII, Houston. Can you tell me if you've got your Fuel Cell Delta-P circuit breaker open, or did the lights go out?  
71:56:06 P The circuit breaker is open; it was open for S-11.  
71:56:10 CC Okay.  
71:56:15 P Turn them on now?  
71:56:16 CC That's affirm.  
71:56:30 CC You getting any music yet?

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71:56:33 C No. We have it turned way up.

71:56:37 CC Sounds great here on the ground.

71:56:42 C Just coming in now.

71:56:44 CC Very good.

71:57:41 P ... music too well, Pete. ...

71:57:45 CC Say again, Buzz?

71:57:53 CC Gemini XII, Houston. Say again.

71:57:55 P Can't make out the music.

71:57:59 CC Very good.

71:58:01 P Sounds like ...

71:58:04 CC It's "Sound of Music".

71:58:09 P ...

71:58:34 CC Do you see a red dye in the - the Mississippi?  
(Music)

71:59:07 C We couldn't pick it up. There's a cloud coverage over that area.

71:59:12 CC Roger.  
(Music)

71:59:50 P Music coming through nicely now.

71:59:52 CC Very good.  
(Music)

72:01:55 P Pete, we're over your favorite island.

72:01:58 CC Roger. I notice that. Would you care to name it?

72:02:49 CC Gemini XII, Houston. If you care to name it, you can join a very exclusive club.

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72:02:55 C Roger. I understand there's one member.

72:02:59 CC That's affirm.

(Music)

72:04:12 CC Gemini XII, Houston. Any time you can give us the fuel cell purge in the next 3 or 4 minutes, we'd appreciate it, if you can.

72:04:19 P Okay. Have it going now.

72:06:12 CC Okay, Gemini XII. We saw the purge. Would you give us your Cryo switch to the HYDROGEN position, please?

72:06:20 P H<sub>2</sub>.

72:06:22 CC Very good. Thank you.

72:06:35 CC Still got the music?

72:06:38 C Just about faded out, Pete.

72:07:53 CC Gemini XII, Houston. You can put the Cryo switch off. Thank you.

72:09:13 CC Gemini XII, Houston. 1 minute to LOS Antigua. See you over Ascension.

72:09:18 P Roger.

## ASCENSION

72:16:15 CC Gemini XII, Gemini XII, Houston standing by at Ascension.

72:16:36 CC Gemini XII, Gemini XII, Houston standing by at Ascension.

72:16:42 P Houston, Gemini XII.

72:21:30 CC Gemini XII, Houston through Ascension. We're about 1 minute and 30 seconds to LOS. Standing by.

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72:21:40 P Roger. We're attempting D-10, Mode B.  
72:21:43 CC Roger. D-10, Mode B.

**TANANARIVE**

72:33:37 CC Gemini XII, Gemini XII, Houston through Tananarive. Standing by.  
72:33:44 P Roger. Still in ...  
72:33:47 CC Okay.  
72:38:39 CC Gemini XII, Houston. 1 minute to LOS, Tananarive.  
72:38:46 C Roger.

**CARNARVON**

72:48:49 CC Gemini XII, Carnarvon standing by.  
72:48:51 C Roger.  
72:48:56 C We're finishing up on B of D-10. I think we have time to sneak in a Mode C. Maybe we can do that. We'll do it after this Mode B.  
72:49:05 CC Okay.  
72:54:02 CC Gemini XII, Carnarvon. 1 minute to LOS. We'll see you tomorrow.  
72:54:06 C Roger. Thank you.

**HAWAII**

73:13:49 CC Gemini XII, Hawaii CAP COM.  
73:13:56 P This is Gemini XII, Hawaii. We're finishing up D-10, Mode C.

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73:14:03 CC Roger.

73:14:09 CC I have one item update for you, whenever you're ready to copy.

73:14:14 P Roger. Stand by.

73:14:44 P Go ahead.

73:14:46 CC Roger. This will be on this upcoming night pass. There is an S-29 from SEF; pitch up 90 degrees 4 minutes after sunset to acquire Saturn. Libration region then is approximately on camera axis, if S-11 bracket is used.

73:15:24 P Roger. Understand. Pitch up 90 degrees 4 minutes after sunset. Pick up Saturn and the S-11 bracket will be pointing at the libration region. Thank you.

73:15:35 CC Roger.

73:17:00 C Hawaii, Gemini XII.

73:17:03 CC Gemini XII, Hawaii.

73:17:04 C Do you have a sunset time or a time 4 minutes after sunset?

73:17:09 CC Stand by.

73:18:21 CC Gemini XII, Hawaii. Your sunset time will b  
73:44:51.

73:18:29 C Roger. 73:44:51.

73:18:33 CC Roger.

73:20:41 CC Gemini XII, Hawaii. 1 minute to LOS.

73:20:48 C Roger.

## CALIFORNIA

73:24:46 CC Gemini XII, Houston standing by California.

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73:24:51 C Roger.

73:24:53 CC And do you still have your HF up?

73:24:56 C If we can get it up.

73:24:58 CC Okay. Once you get it up, we've got one more pass there and we've got a little tune or two for you.

73:25:06 C Very well.

73:27:43 CC You picking up any music yet, Gemini XII?

73:27:48 P Not yet.

73:27:49 CC Okay.

73:28:01 P We're doing D-10, Mode E now, Houston.

73:28:05 CC Roger. Very good.

73:29:42 CC Gemini XII, Houston. We're reading your D-10 on the ground and it looks like you've got a real good alinement.

73:29:50 P Houston, it looks like all these ... are coming out even now.

73:29:55 CC Right.

73:29:57 CC Picking up any music yet?

73:30:01 P No. I haven't picked up the music yet. It looks like we're passing over Acapulco again.

73:30:06 CC Roger. Everybody in Acapulco is enjoying the music. Sorry we're not getting to you.

73:31:21 CC Gemini XII, Houston. Any time you can, we would like another 30-second oxygen purge, at your convenience.

73:31:28 C Roger.

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## TEXAS

73:34:09 CC Thank you for the purge. Did you get the music?

73:34:14 C Not yet. What are they playing?

73:34:18 CC "Going Back to Houston." What else?

73:34:21 C Yes.

73:34:23 CC We had a meeting in the office this morning and we just voted you two guys the two astronauts that can get the most attitude control out of the least thrusters. Congratulations.

73:34:34 C ... Say, as a matter of interest, Pete, that smudge on the window looks like it's on the outside of the first window. Buzz wiped my window off and it's pretty clean now.

73:34:48 CC Roger.

73:39:29 CC Gemini XII, Houston. We see you're in the Plat mode. Is it working all right?

73:39:36 C Yes. It fired off right after the purge. ... If you get it right in there, it looks like it holds. But there is very, very little disturbance, so it will just sit there for awhile. Of course, we all know ... dead band.

73:39:48 CC Roger.

73:40:38 C It's holding a little bit, Houston; however, it maintains an offset to the left and down from where a good alinement would be.

73:40:48 CC I'm sorry, I didn't copy the first part of that. Would you say again?

73:40:52 C It's holding, but it's maintaining an offset here according to the needles.

73:40:58 CC You mean you're sitting up against the dead band? It looks to us on the ground, Gemini XII, like you're sitting right up against the dead band.

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73:42:25 CC Gemini XII, Houston. We're about 1 minute, 30 seconds to LOS, and it looked to us on the ground like it was holding within the dead bands.

73:42:33 C Yes. That's right. She's holding.

73:43:16 CC 30 seconds. See you at Ascension.

**ASCENSION**

73:53:04 CC Gemini XII, Gemini XII, Houston through Ascension. Over.

73:53:20 CC Gemini XII, Houston through Ascension.

73:53:27 CC You don't have to acknowledge this. When you finish your S-29, you can go ahead and power-down your platform.

73:56:57 CC Gemini XII, Houston. 1 minute to LOS, Ascension.

73:57:02 C Roger.

73:58:32 C ...

**TANANARIVE**

74:08:28 CC Gemini XII, Houston standing by at Tananarive.

74:09:09 CC Gemini XII, Houston standing by at Tananarive.

74:09:14 P Roger.

74:09:33 CC Now that you've had time to fly it a little bit, does it seem like you've gotten any of your thrusters back or any more little stuff out of them, or are you in about the same shape?

74:09:50 C We're in about the same shape. It's just that very seldom the ... on 7, we should get a little bit of thrust out of them. I don't know exactly what we're doing - incomplete combustion or just dumping fuel out, but with this type of work we

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are moving the Spacecraft around. It's acceptable.

74:10:10 CC Roger. Very good.  
74:10:13 C There's still a lot of thrust upwind. If you yaw left a little, turn or roll left, you pitch up and things like that.  
74:10:23 CC Roger.  
74:12:37 C Houston, Gemini XII.  
74:12:40 CC Go ahead.  
74:12:42 C Flying a power-down right now; just finished S-29.  
74:12:45 CC Say it again?  
74:12:48 C Powering down; we just finished S-29.  
74:12:50 CC Very good. You're really clocking them off. Looks good, and you go ahead and power-down a platform any time.  
74:12:59 C Right.  
74:13:29 CC 3 or 4 more days up there and you'll really get them all done.  
74:13:34 P Thanks a lot!  
74:14:41 CC Gemini XII, Houston. 1 minute to LOS at Tananarive.  
74:14:46 C Roger.

## COASTAL SENTRY QUEBEC

74:32:47 CC Gemini XII, CSQ.  
74:32:50 P Go ahead.  
74:32:51 CC Roger. The only thing we've got for you this pass is an S-6 target of opportunity.  
74:33:01 P Where is it?

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74:33:03 CC It's the Midway area; it's cloud photography. Time,  
74:47:24. That's yaw 0, pitch down 30.

74:33:21 P ... CSQ.

74:33:26 CC ....:24.

74:33:29 P ... CSQ, I'm reading you 3 by.

74:33:32 CC Roger.

74:33:40 P Apparently you would like a count from us.

74:33:42 CC Right.

74:33:47 P I copy you would like a count from us. Is that  
affirmative?

74:34:01 CC Roger. Roger.

74:35:33 CC Gemini XII, CSQ.

74:35:35 P Go ahead.

74:35:36 CC You can go ahead and turn that Delta-P circuit  
breaker on.

74:35:55 C CSQ, Gemini XII.

74:35:57 CC Go ahead.

**HAWAII**

74:49:18 CC Gemini XII, Hawaii standing by.

74:49:29 P Hawaii, Roger.

74:57:00 CC Gemini XII, Hawaii. 1 minute to LOS.

74:57:05 C Roger. Thank you.

**CALIFORNIA**

74:58:50 CC Gemini XII, Houston at California. Over.

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74:58:56 P Roger. Gemini XII. Over.

74:58:58 CC Okay. I've got your sunset time for your T-2, Mode A, Sequence 1, if you're ready to copy.

74:59:09 P Go ahead.

74:59:11 CC Roger. 75:15:01.

74:59:22 P Thank you.

74:59:24 CC And you can turn your X-Ray to ON; Beta WITH MAG and leave it on for the rest of the night, please, sir.

74:59:30 P Roger.

74:59:35 CC And that's it. We're standing by.

74:59:39 P Roger.

## GUAYMAS

75:05:34 CC Gemini XII, Houston.

75:05:36 P Go ahead.

75:05:37 CC Roger. After you get these readings this time, if you could pass those to CSQ, we'd like to look at them tonight to influence what we give you tomorrow with respect to the T-2.

75:05:51 C Okay. We'll give it a try.

75:05:53 CC Okay. And I thought you ought to know that we've got the big TR clock started up and counting on the board. It's 18:53:58 and counting down.

75:06:05 P Sounds good!

## TEXAS

75:07:14 CC Gemini XII, Houston. 1 minute to US LOS.

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75:07:21 P Roger.

75:07:24 CC Have a pleasant evening.

75:07:32 P A night on the town!

75:07:34 CC Not yet. Tonight's the big fight here is Houston between Clay and Williams. We'll keep you advised.

75:07:45 P ... tonight.

**TANANARIVE**

75:46:11 CC Gemini XII. Houston standing by Tananarive.

75:46:27 CC Gemini XII. Houston standing by Tananarive.

75:46:28 CC Houston, Gemini XII.

75:46:32 P Roger. We copy.

75:46:32 CC Okay. Are you busy?

75:46:39 C We're trying to finish ...

75:46:44 CC Okay. I have a couple of things, if you can copy. If not, we'll give them to you at CSQ.

75:46:55 P I'll get them at CSQ ...

75:46:57 CC Okay.

75:47:53 CC Gemini XII, Houston. You need not acknowledge, but write down CSQ air-to-ground. Both transmitters are out and they may not be up on your pass over them.

75:48:06 P Roger. Understand CSQ is out at the present time.

75:48:09 CC Yes.

75:50:39 CC Gemini XII, Houston. 1 minute to LOS, Tananarive.

75:50:46 P Roger.

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## COASTAL SENTRY QUEBEC

76:06:10 CC Gemini XII, CSQ.

76:06:14 P Roger, CSQ. We're glad to see your transmitters up.

76:06:18 CC Roger. We finally got them fixed. You can go ahead and start your fuel cell purge when you are ready. Section 1 and then Section 2. Regular purge.

76:06:27 P 1 then 2.

76:06:30 CC And I've got a PLA Update for you, and also a Flight Plan Update.

76:06:36 P Okay. Can you give me the Flight Plan at daybreak?

76:06:39 CC Okay.

76:06:41 P ...

76:06:46 CC Time: 75:59:20; Node: We have 48:89. 2 degrees east; Right Ascension, 10 hours, 17 minutes. 76:16:41; S-6, yaw left 43 degrees, pitch down 30 degrees, Marcus Island. 76:22:33; S-6 yaw 0 degrees, pitch down 30 degrees, Midway Island. 76:28:56; S-6, yaw right 60 degrees, pitch down 30 degrees, Hawaiian Islands. That's the end of the update.

76:07:59 P Was the middle S-6 yaw left?

76:08:04 CC The second S-6 was yaw 0 degrees, pitch down. The first one I gave you was yaw left 43 degrees.

76:08:13 P Roger. Have it.

76:08:33 P CSQ, Gemini XII. And a 2-minute purge, right?

76:08:38 CC That's affirm.

76:08:40 P ...

76:08:42 CC Okay. Area 49-3 Alpha: 77:21:04; 26 plus 16.

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The bank angles for all areas are 85, roll right 95. The weather is good in all areas. Area 50-3 Alpha: 78:56:38; 20 plus 28. Area 51-3 Bravo: 80:32:16; 20 plus 02, 25 plus 30. Area 52-Charlie, Charlie: 82:06:10; 19 plus 44, 25 plus 09. Area 53-Alpha, Charlie: 83:02:46; 20 plus 14, 26 plus 05. Area 54-Alpha, Charlie: 84:36:59, 20 plus 25, 26 plus 13. Area 55-2 Alpha: 86:12:39 - delete that - that's 86:12:36, 20 plus 36, 26 plus 20. That's the end of the update.

76:10:51	P	Roger. Have them all. Thank you.
76:12:38	P	We switched the Cryo switch to O <sub>2</sub> .
76:12:48	CC	We are to copy the T-2 numbers when you get a chance.
76:13:13	P	Roger. Purge is complete.
76:13:17	CC	Okay. Would you go to H <sub>2</sub> ?
76:13:22	P	... the time ... 04 plus 005 ...
76:24:49	C	... held power on, I'm just taking pictures here.

**HAWAII**

76:25:09	CC	Gemini XII, Hawaii.
76:25:14	P	Go ahead, Hawaii. Gemini XII here.
76:25:16	CC	Roger. Here we have a LOS on the CSQ. Could you give us another readout on your T-2 Experiment, please?
76:25:24	P	Roger. Did you copy any of it?
76:25:26	CC	They might have gotten some of it. We want the whole thing over again.
76:25:57	P	Okay. The reference time is 75:12:00; first phase of it - 05, elapsed time 08:14 1/2. I'll give you the last two numbers: 95; 95; 05; 03. Started star measurement 18.604. The remaining will be

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the last two numbers: 05, 08, 05, 09, 04, 05, 06, 06, 05, 04, 05, 06, 04. Did you copy?

- 76:27:12 CC That's affirmative, Gemini XII. Thank you.
- 76:27:15 P And the last measurement elapsed time for the reference was 29:11.0.
- 76:27:29 CC Roger.
- 76:27:30 P And in the 05, the reason for the jump the first three to the last two is that the ... seems to hang up in the vicinity of 0 and jumps across there unless you are very careful. I'll have to look at that a little bit more.
- 76:27:51 CC Roger. Thank you.
- 76:30:24 CC Gemini XII, Hawaii. Would you verify that your H<sub>2</sub> heater is in AUTO?
- 76:30:31 C Roger. It's in AUTO. You want us to, at that time, run it up to 667. Is that right?
- 76:30:38 CC Roger.
- 76:30:43 CC And we'd like a Crew Status Report.
- 76:31:03 C Well, the drink gun counter is 2074. We haven't had a change of pressure yet. The Pilot has eaten three meals today, the Command Pilot only two, since he was trying to find Hawaii all this time.
- 76:31:22 CC Roger.
- 76:31:23 C And I'll try and get at it as soon as I can, and no sleeping pill for today.
- 76:31:33 CC Okay. Thank you much.
- 76:31:48 CC Gemini XII, Hawaii. We'll have LOS in about a minute here and we'd like to say good night from the Garden Island of Hawaii.
- 76:31:56 C Thank you. ... Garden Island.

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76:32:00 CC So long.

76:32:02 C Roger.

## ROSE KNOT VICTOR

78:25:58 CC Gemini XII, RKV.

78:26:17 CC Gemini XII, RKV.

78:26:29 C Go ahead, RKV.

78:26:30 CC I hate to bother you, Gemini XII, but your O<sub>2</sub> looks like it's building up a little bit. Would you verify the position of the ... in AUTO?

78:26:39 C That's right. It's in AUTO. We ... about 78.

78:26:44 CC Okay. Would you change the ... switch to OFF?

78:26:48 C It is off.

78:26:50 CC Roger. It apparently ...

78:27:00 C ...

78:27:01 CC Roger. Stand by, Gemini XII.

78:27:35 CC Gemini XII, RKV.

78:27:38 C Go ahead.

78:27:39 CC Since I already woke you up, would you do a 30-second fuel cell purge and you can put the O<sub>2</sub> switch in the OFF position now, and ... will be looking at it during the next revolution.

78:27:54 C Okay.

78:29:44 CC Gemini XII, RKV. Would you turn off the valve ...

78:29:56 CC Okay. Stand by.

78:30:45 CC Gemini XII, RKV.

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78:30:48 C Roger.

78:30:49 CC Okay. Prior to throwing the circuit breaker, we'd like you to pump up the O<sub>2</sub> to 700 on-board, and after that you're free to go and pull the O<sub>2</sub> circuit breakers.

78:31:05 C ... off the circuit breakers.

78:31:15 C How long should that circuit breaker be pulled?

78:31:35 CC Roger, Gemini XII. You can pull the circuit breaker now and then ... you don't have to close the circuit breakers until you wake up.

78:31:46 C ... turn it off.

78:32:00 C We will leave it in H<sub>2</sub> for you, RKV.

78:32:03 CC Roger.

78:33:04 CC Okay, Gemini XII. You're just about 1 minute to our LOS. I don't think we'll have to bother you any more.

78:33:12 C ...

## ROSE KNOT VICTOR

84:49:32 CC Gemini XII, RKV.

84:49:46 CC Gemini XII, RKV.

84:49:50 C Go ahead, RKV.

84:49:51 CC Looks like we have to wake you up again here. Would you turn Stack 1-Charlie off?

84:49:58 C Stack 1-Charlie off. Roger.

84:50:03 CC Looks like we've got a little deterioration in this Stack, Gemini XII.

84:50:16 C 1-Charlie is off. We concur. It looks like the voltage is zero.

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84:50:21 CC Roger.

84:50:28 CC Okay, Gemini XII. As soon as you get a little bit awake here, I've got some information for you.

84:50:36 C Okay.

84:50:37 CC Now, would you turn your X-Ray and Beta off?

84:50:42 C X-Ray and Beta going off.

84:50:45 CC Roger. When you get over Canary the next pass at 85:06:00, we'll have a Flight Plan and PLA Update for you.

84:51:01 C Roger. Flight Plan Update and PLA Update next pass. Over.

84:51:06 CC Roger.

84:52:08 CC Gemini XII, RKV.

84:52:11 C Go ahead.

84:52:12 CC Roger. We'd like to get a 30-second O<sub>2</sub> purge, at this time, on both sections.

84:52:19 C Roger. 30-second purge both sections coming up.

84:52:22 CC Roger.

84:52:53 CC Okay. Gemini XII, when you - at your convenience you can start your eating period and I think it's planned between now and 85:45:00.

84:53:06 C Roger.

84:53:15 CC And you're about 1 minute to our LOS. I guess we'll say adios to you until the Apollo Program.

84:53:22 C Roger. Thanks very much for your help all through the flight.

**CANARY ISLANDS**

85:06:26 CC Gemini XII, Canary CAP COM.

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85:06:30 P Go ahead, Canary.  
85:06:31 CC Good morning.  
85:06:33 P How are you?  
85:06:34 CC Fine, thank you. And you?  
85:06:36 P That's another fuel cell that we are without; that's all.  
85:06:39 CC Roger. We've got a special fuel cell purge we want to pull here. Would like to do a 30-second O<sub>2</sub> purge on Section 2.  
85:06:51 P 30-second O<sub>2</sub> on Section 2. Roger.  
85:07:00 C We just did that 30-second O<sub>2</sub> on both sections.  
85:07:05 CC Roger. They want another one.  
85:07:08 C Roger. Another one on Section 2.  
85:07:10 CC And when you finish that one, we'll do 30 seconds more on Section 1, O<sub>2</sub> purge.  
85:07:16 C Okay. 30 seconds coming up on Section 2.  
85:08:05 CC I've got a lot of stuff for you to copy, if you can copy while we're purging here.  
85:08:12 P Go ahead.  
85:08:13 CC Okay. I've got a Nodal Update. Time: 83:28:29; Rev 53, 25.8 degrees west; Right Ascension; 10 hours, 07 minutes.  
85:08:35 CC Okay. We'd like a 12-second H<sub>2</sub> purge on Section 2, then 12 seconds on Section 1.  
85:08:59 C 12 seconds on 2 and 12 on 1. Roger.  
85:09:02 CC Okay. We've got the Flight Plan Update here for you.  
85:09:05 P Okay.

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85:09:07 CC 85:45; T-2, Mode A, Sequence 02. 86:20; load Module 4. 86:29; at Antigua, crew Status Report.

85:09:42 CC Okay. Now on the purge, we would like a 90-second O<sub>2</sub> purge on Section 2, followed by a 90-second O<sub>2</sub> purge on Section 1.

85:10:02 CC Gemini XII, Canary.

85:10:04 C Go ahead.

85:10:05 CC Okay. We'd like to fix Unit 2 of the S-3 Experiment on your Mark.

85:10:12 P All right. Stand by for the Mark.

85:10:14 C Roger. You ready?

85:10:15 P Ready.

85:10:17 C ... Unit 2.

85:10:19 C 3, 2, 1,

85:10:22 C MARK.

85:10:28 C How close can it be?

85:10:31 CC Okay. We've got that.

85:10:37 CC Okay. I'll continue the Flight Plan Update here. At 86:44; S-6, Sequence 01, north of track. 86:54; S-5, Mode A, Sequence 04. 87:15; T-2, Mode A, Sequence 2. 87:57; S-6, Sequence 08, south of track. 88:15; S-6, Sequence 07, strip photos north of track. 88:30; S-5, Mode A, Sequence 04. At 88:40; power-up platform. At 88:45; T-2, Mode B, Sequence 1. At 88:51; at Carnarvon, purge fuel cells, Section 1 then 2. At 89:20; Aline the Platform. At 89:40; D-10, Mode G. We've got about 30 seconds to LOS, so I'll stop here. We'll pick up the rest of it later.

KANO

85:12:55 CC Gemini XII, Houston CAP COM through Kano. Over.

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85:12:59 C Roger. Houston through Kano.

85:13:02 CC Good morning. I'd like to give a PLA Block Update now, Jim.

85:13:42 CC Gemini XII, Houston CAP COM. Over.

85:13:45 P Go ahead.

85:13:46 CC Roger. Are you ready to copy the PLA Block?

85:13:49 P Right. Set them up.

85:13:54 CC Roger. Area 56-Alpha, Charlie: 87:49:32; 20 plus 34, 26 plus 19. 57-1A: 89:13:48; 20 plus 36, 26 plus 24. 58-1B: 30:49:24; 20 plus 36, 26 plus 19. Correction to 58-1B, that's 90:49:24.

85:15:19 P Did you send over ...?

85:15:23 CC That's GET RC for 58-1B. We have 30 seconds to LOS. We'll pick up the rest later, Gemini XII.

85:15:34 P Roger.

85:15:36 CC And were you able to complete your purge?

85:15:41 C Roger. Purge is complete.

85:15:49 CC 30 seconds to LOS.

## HOUSTON

86:29:22 CC Gemini XII, Houston CAP COM. Over.

86:29:27 C Roger, Houston.

86:29:29 CC Roger. If you have Module 4 loaded, you can turn your computer off, please.

86:29:33 C It's not loaded yet.

86:29:38 C Houston, I want to check a procedure with you.

86:29:41 CC Go.

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86:29:43 CC Go ahead.

86:29:53 CC Gemini XII, Houston. Go ahead.

86:29:59 C Roger. We have run out of water and we have put the squeeze bulb ... down below and opened up the valve next to the ... and we first checked that our H<sub>2</sub>O switch should go to the OFF position. Is that correct? We don't have those numbers ...

86:30:19 CC We'll check it out for you. I'd like to give you a Flight Plan change and update if you're ready to copy.

86:30:27 C Go ahead.

86:30:30 CC Roger. On the item we gave you at 88:15 and 88:30, we would like to have you delete them and substitute at 88:10, Thruster Test. Copy?

86:30:59 CC Did you copy, Gemini XII?

86:31:01 C You faded out. I understand at 88:10 have a Thruster Check.

86:31:06 CC That's affirmative. I'll tell you about it later. Delete the items at 88:15 and 30. We're substituting them. At 89:50, do the S-6; at 90:06, do the S-5. Understand?

86:31:27 C Roger. Say in sequence.

86:31:30 CC Okay. It was the same S-6 and S-5 at the times we deleted.

86:31:37 C Roger.

86:31:38 CC Okay. 90:30, stow equipment; 91:30, eat period; 92:05, Carnarvon, Preliminary Reentry Update; 92:30, Retro Prep; 92:50, US pass, Reentry Update; 94:00, Retrofire. Copy?

86:32:31 C Roger. With Retrofire at 94:00.

86:32:34 CC That's rough. Roger. We'd like to give you - have you give us a 30-second O<sub>2</sub> purge on each section.

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- 86:32:43 C Roger. 30-second O<sub>2</sub> purge at each section.
- 86:32:49 CC And could you give us a Crew Status Report?
- 86:33:02 C Pilot slept medium to good, 5 1/2 hours. Command Pilot about 4 hours, fair. Water gun count is 2215. Pilot finishing breakfast and Command Pilot hasn't had anything yet until he gets some water.
- 86:33:21 CC Roger. After you have Module 4 loaded, we'd like to have you turn the computer off, and then turn your A-Pumps on. You copy?
- 86:33:43 CC Gemini XII, you copy? Computer off after Module 4 is loaded and then A-Pumps on.
- 86:33:51 C Roger. Computer off and A-Pumps on.
- 86:33:54 CC Roger. I'd like to talk to you about this Thruster Check now. The configuration we would like to have you in is Rate Gyros ON, FDI's RATE, Scale LOW, Attitude Control DIRECT. And using your OAMS Thruster circuit breakers, we'd like to have you fire each attitude thruster and fore/aft maneuver thruster independently, in order to establish a rate of approximately 1 degree per second on the FDI's. If you can't get these rates, let the thruster fire for 25 seconds. We'd like for you to record the GET of the test for postflight correlation. Understand?
- 86:35:01 CC Gemini XII, do you copy the Thruster Fire Check?
- 86:35:05 C I'm trying to write it down.
- 86:35:07 CC Don't write it down. We'd just like to have you have all the circuit breakers off and bring one of them on at a time and fire that thruster for either 2 degrees - 1 degree per second or 25 seconds, whichever comes first.
- 86:35:27 C Roger. Rate Gyros ON, FDI's RATE, Scale LOW, Attitude Control DIRECT. We use OAMS Thruster circuit breakers and fire each attitude and maneuver thruster separately to get 1 degree per second for 25 seconds.

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86:35:41 CC Roger. We're only interested in the fore and aft maneuver thrusters, not the radial maneuver thrusters.

86:35:47 C Only fore and aft maneuver thrusters.

86:35:50 CC Roger. And if this Thruster Check looks okay, we'd like to do D-10, Mode G, at 89:40 without the computer by having you fire 1 second in each lateral direction and then 1 second aft to take out the forward component. Copy?

86:36:23 CC Gemini XII, if you copy, that's negative on the A-Pumps on.

86:36:33 C Okay. If you guys get together, negative on the A-Pumps on. Right?

86:36:37 CC Roger. They just changed their mind. We'll give you the word on the water over Canaries, and do you copy that about the D-10, Mode George?

**CANARY ISLANDS**

86:41:05 CC Gemini XII, Canary CAP COM.

86:41:07 C Go ahead, Canaries.

86:41:09 CC Okay. They're going to try to get the water answer to you over our site here. Your four stacks are looking real good in the fuel cells. Evidently that purge we did last revolution helped them out a little bit, and do you have the Delta-P circuit breaker open at this time?

86:41:29 C That's affirmative; we have at this time.

86:41:33 CC Okay.

86:41:40 C We'll put it on for a second so you can verify Delta-P lights.

86:41:45 CC Say again, Gemini XII. I didn't copy.

86:41:47 C We will put it on for a minute so you can see that the Delta-P lights are still on.

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86:41:51 CC Roger. We got it.  
86:42:21 CC Gemini XII, Canaries sending you a Tx.  
86:43:34 CC Gemini XII, Canaries.  
86:43:36 C Go ahead.  
86:43:37 CC If it's convenient for you at this time, you can finish off this PLA Update.  
86:43:43 C It's not convenient at this time, Canaries.  
86:43:45 CC Okay. We'll pick it up next revolution.  
86:47:14 CC Gemini XII, Canaries.  
86:47:16 C Go ahead.  
86:47:17 CC Okay. In regard to your query, they want the H<sub>2</sub>O valve to the PRESSURE OFF position and then you pump up the bulb.  
86:47:27 C Roger. ...  
86:47:29 CC Roger.

## CARNARVON

87:18:18 CC Gemini XII, Carnarvon.  
87:18:20 C Go ahead.  
87:18:22 CC Okay. We know you're in the middle of T-2 and all that, but as soon as possible, we'd like to get a 30-second purge on each section and an O<sub>2</sub>, Section 1 and then 2.  
87:18:34 C Is it required during ...?  
87:18:38 CC Right after you're through.  
87:18:40 C Okay.  
87:18:41 CC Okay. We'd like to know how you're doing on the water.

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87:18:44 P Well, you can scrub the rehydratables. We get water out of there, but it comes out very slowly. You can't put any water in the bag, so it's strictly dry food and drinking water.

87:18:54 CC Okay.

87:20:04 CC For your information, your T-2 data look real good.

87:20:10 C Right.

87:21:42 CC Carnarvon has 1 minute to LOS. We'll be standing by.

87:21:46 P Roger.

**GRAND TURK ISLAND**

88:01:56 CC Gemini XII, Houston CAP COM. Over.

88:02:00 C Go ahead, Houston.

88:02:03 CC Roger, Jim. How are you doing with the pumping up the water tank with the blood pressure bulb?

88:02:11 C Well, I can get water out of it. It just dribbles out, very low pressure - very small pressure, with slow rate.

88:02:19 CC Okay. I think there's more to the manual shut-off valve that is shown in the schematic on the GOH. We kind of feel, down here, that this shut-off valve ought to be off when you're pumping, and this acts as a check valve, which does not allow the O<sub>2</sub> to bleed back out as it normally would in the ON position. The ON position is used in measuring blood pressure when you're letting the pressure out of the cup, so try it with the valve off.

88:02:54 C You're talking about the check valve in the blood pressure cup itself. Right?

88:02:57 CC That's right. We think it's a little sliding sleeve. Is that correct?

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88:03:01 C Sliding sleeve? I thought I had her up. I'll check it again.

88:03:04 CC Okay. Look, if that doesn't work, then pump it up and remove the bulb and I think that will let the check valve operate.

## ANTIGUA

88:03:17 CC Did you copy that, about removing the bulb?

88:03:19 C Yes. Okay. We'll pump it up and remove the bulb.

88:03:22 CC You should be able to pump as hard as you can stand on that and develop the pressure. It should check if you have that shut-off valve on - correction, off.

88:03:34 C Right. The O2 water valve, the H<sub>2</sub>O valve is in the OFF position now and we're pumping up the bulb.

88:03:42 CC Okay. I'd like to talk to you about your D-10, Mode George, at 89:40. Did you copy the change we added into your procedure on that?

88:03:56 C Wait awhile. Let me check.

88:03:57 CC Okay. We were talking about it at about LOS on the last stateside pass.

88:04:13 C I have - no, I have D-10, Mode G - that's all I have at 89:40.

88:04:20 CC Okay. In your procedures, it calls for you to bring up the computer and use Address 80. Rather than bring the computer up, we'd like you to leave it off and burn each radial thruster for 1 second, and then burn aft for 1 second to take out the resultant forward Delta-V. You understand?

88:04:49 C Leave the computer off for each radial thruster for 1 second, then burn aft for 1 second to take out the Delta-V.

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88:04:57 CC Roger. The radials will give you a little forward and we want you to take that out with the aft thruster. Okay?

88:05:05 C Roger.

88:05:06 CC Okay. You can bring your A-Pumps on the line now - we're all agreed to it. And were you able to get the 30-second O<sub>2</sub> purge in between Carnarvon and the States?

88:05:23 C Roger.

88:05:24 CC Very good.

88:05:42 CC Gemini XII, confirm that you understand that you're supposed to burn aft with the forward thrusters on this D-10.

88:05:53 C Roger. We're to take out the residuals that the lateral will give us.

88:05:58 CC Very good. And would you give us another 30-second O<sub>2</sub> purge? Section 2, then Section 1.

88:06:07 C I understand you - take an O<sub>2</sub> purge, Section 2 then Section 1. Roger. My right-hand man here is doing the pumping right now; be with you in a second.

88:06:17 CC Okay. I'd like to make a change to your Post-Retrojet Check List, if you can get it out.

88:06:26 C Okay. Stand by.

88:06:28 CC Yes. There is no rush on this, either now or any time we get you next - -

88:06:35 C Section 2 purge?

88:06:37 CC That's affirm.

88:07:13 CC Gemini XII, Houston. When you start to power-up the platform at 88:40, if you can't maintain a 22-volt minimum on the main bus, we want you to go ahead and power-down again.

88:07:30 C Understand 22 volts minimum on the main bus.

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88:07:34 CC Roger. We'll be - later on we'll have you bring the main batteries on the line before you bring your computer up for Reentry.

88:08:14 C Purge complete.

88:08:23 CC Roger. Complete. Are we keeping you busy this morning?

88:08:32 C Yes. You're doing pretty well. Every time I try to eat something I'm either - we're getting ready to purge fuel cells, taking updates or writing down something.

88:08:44 CC What are you doing with your left hand? We want you to eat, so if you're getting into a bind, just drop one of the S-5's or S-6 and go ahead and get a bite.

88:08:57 P Yes. They're on borrowed time. We're just about over 150 and we're bringing these down.

88:09:03 CC Roger. Understand.

88:09:13 CC Gemini XII, we show your B-Pumps are on. You want to go to just A-Pumps?

88:09:20 C Understand. A-Pumps in primary and secondary.

88:09:25 CC Roger. A-Pumps only.

88:09:33 C Houston, Gemini XII.

88:09:35 CC Go ahead, Gemini XII.

88:09:36 C Roger. We're following your updates now almost exclusively. If we miss any of the Flight Plan, it's because we don't have Bozo monitoring at the same time.

88:09:48 CC Roger.

88:09:59 CC Roger. We're giving you everything in the update, Gemini XII. The only thing you might need the other Flight Plan for is your ACQ times.

88:10:08 C Roger.

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88:10:24 CC We've got about a minute and a half to LOS. If you have that Post-Retrojet Check List out, we can get that.

88:10:42 P Okay. Go ahead.

88:10:44 CC Roger. Is this Pre-Retro Check List opposite the page that says, "Nominal 92:45:41"? We have "Agena Power circuit breaker, OPEN." It's in about the middle of the page.

88:11:02 P We're in the Pre-Retrojet now.

88:11:08 CC Roger. This is in the - right after the page that gives you all the MDIU Reentry quantities. You got that?

88:11:26 P Okay. That's Pre-Retrojet.

88:11:28 CC Roger. Opposite where it says "Emergency RCS, ARM".

88:11:33 P Okay. I copy. Go ahead.

88:11:35 CC Agena Power circuit breaker - it says "OPEN", we want it closed for the S-3. We have checked this out and that'll be okay for landing.

88:11:45 P Understand. Leave the Agena Power circuit breaker closed.

88:11:49 CC That's it.

88:11:50 P The four Agena Control circuit breakers you want left closed. That right?

88:12:00 P Disregard.

88:12:02 CC Just the Agena Power - the Agena Power circuit breaker closed.

88:12:07 P Roger. Understand.

88:12:16 CC You're at LOS.

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## CANARY ISLANDS

88:15:18 CC Gemini XII, Canary CAP COM. Have nothing for you at this time. I'll be standing by. Sending you a TX.

88:15:25 C Canary, Gemini XII. Roger. Thank you.

88:15:35 P I'm sure glad. I just had the call of nature.

88:15:40 CC Say again, Gemini XII.

88:15:45 P I said I'm glad you don't have anything for us. I just had a call of nature.

88:15:49 CC Roger.

88:17:25 CC Gemini XII, Canaries.

88:17:28 C Gemini XII.

88:17:29 CC Okay. We need another O<sub>2</sub> purge only, Section 1 then Section 2, 30 seconds each section.

88:17:41 C Roger. In progress.

88:18:47 C Purge complete.

88:18:50 CC Roger. Copy.

88:22:57 CC Gemini XII, about a minute to LOS.

88:23:00 C Roger. ... check.

88:23:01 CC Roger.

## KANO

88:23:42 CC Gemini XII, Houston CAP COM through Kano, Standing by.

88:23:48 C ...

88:23:54 CC Reading you garbled, Gemini XII. Standing by.

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88:23:57 C ...  
88:24:01 CC Understand you're through the Thruster Check.  
88:24:04 C ...  
88:24:08 CC Roger.

**CARNARVON**

88:52:25 CC Gemini XII, this is Carnarvon. Guess what we've got for you to do?  
88:52:31 C Roger. Fuel cell purge.  
88:52:33 CC Make that 2 and then 1. O<sub>2</sub> purge.  
88:52:36 C 30 seconds?  
88:52:37 CC That's affirmative.  
88:52:38 C You want it now?  
88:52:40 CC As soon as possible. Right?  
88:52:41 P I'm right in the middle of a helmeted T-2. You want some of the T-2?  
88:52:47 CC Stand by.  
88:53:04 CC Skip that T-2.  
88:53:06 C Skip the T-2. Right?  
88:53:08 CC That's affirmative.  
88:53:13 C 10 seconds, 2; then 1 coming up.  
88:53:16 CC Roger.  
88:53:21 CC Okay. I'm going to send you a Tx.  
88:53:29 C I think we can get this T-2 anyway. We are purging now and by the time I get in position here - by the way, we checked the thrusters. 4 and 8 are just completely - 2 takes 12 seconds to build up

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to 1 degree and 7 takes 17 seconds, I believe. All the rest of them check out.

- 88:53:51 CC Okay. Thank you.
- 88:54:36 C Purge is complete.
- 88:54:38 CC Roger.
- 88:54:47 CC No change on the voltage.
- 88:55:13 CC Have you made any progress on the water pumping process?
- 88:55:19 C Yes. We can get a little more water out now, I believe. I think it was the slider. She must have slipped on us.
- 88:55:24 CC Okay.
- 88:57:05 CC Gemini XII, Carnarvon.
- 88:57:07 C Go ahead.
- 88:57:08 CC Okay. Number 1, your main bus voltage is reading about 21.8. Keep a close eye on it and if it goes anymore, power-down.
- 88:57:19 C Okay. We have ... now for the platform. Watch it for us. We have all the lights out right now. Let us know when you get LOS.
- 88:57:28 CC Okay.
- 88:57:30 CC And also, if you can get anything else on T-2, you can go ahead on that.
- 88:57:34 C Well, we're doing that right now. That's why the lights are out.
- 88:57:35 CC Okay.
- 88:58:06 CC 1 minute until LOS at Carnarvon.
- 88:58:51 CC Okay. Gemini XII, this is Carnarvon. We're about to lose you. There has been no change on your main bus voltage. 21.8.

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88:58:58 C Okay. We'll hold her right there then until we get next acquisition.

88:59:02 CC Okay.

**TEXAS**

89:33:52 CC Gemini XII, Houston CAP COM. Over.

89:33:56 C This is Gemini XII. Go ahead, Houston.

89:33:59 CC Roger. Jim, we see the main bus voltage is down to 21.6. We'd like to have you take your platform off the line. We'll bring it back on at 91 hours.

89:34:09 C Okay. Platform going off the line.

89:34:14 CC We'd like to have you do the best you can on Mode D - even without a platform.

89:34:22 C Okay. We just had it alined nicely, too.

89:34:26 CC Sorry about that.

89:34:36 CC Gemini XII, Houston. When we bring the platform back up at 91 hours, if you have any trouble alining with OAMS, we'll activate the RCS and aline on one ring.

89:34:47 C No. We're not having any problem. We can do it with ... report I can put in at Carnarvon?

89:34:56 CC Roger.

89:34:58 C Okay. Seems like somebody failed and that they are counter-acting each other - on top of each other, I should say.

89:35:06 CC Understand your ability to aline now is somewhat improved and you think you will be able to do it on the OAMS. Is that correct?

89:35:12 C Yes. So far we're able to aline on the OAMS, using the maneuver and the attitude control thrusters.

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89:35:17 CC Roger. Well, it was our plan to give you a good try on the OAMS and go to the RCS if that didn't work.

89:35:23 C Roger.

89:35:33 CC Gemini XII, Houston. Will you go back to both B-Pumps on and both A-Pumps off?

89:35:39 C Roger.

89:35:53 CC Main bus voltage is up to 25. Looks good.

89:35:57 C Roger. We're back in Active Power.

89:36:00 CC Roger.

89:36:23 CC Gemini XII, Houston CAP COM. Would you believe two 30-second O<sub>2</sub> purges, Section 1 and Section 2, prior to leaving the US pass?

89:36:34 C You want two, 30-second purges. Right?

89:36:37 CC Roger. One purge on each section.

89:36:39 C Okay. Fine. We'll do that. Want us to start now?

89:36:44 CC At your convenience.

89:36:46 C Okay.

89:37:00 C Houston, Gemini XII here.

89:37:02 CC Go, Gemini XII.

89:37:03 C I'm sure glad this isn't GT VII.

89:37:07 CC You had us fooled. Ask Frank Borman if he'd like a good morning story.

89:37:16 C Right.

89:37:59 CC Gemini XII, Houston. Confirm you stopped the O<sub>2</sub> purge.

89:38:08 CC Very good.

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89:38:13 C Stand by.  
89:38:15 CC We're standing by.

## GRAND TURK ISLAND

89:42:51 CC Gemini XII, Houston CAP COM. Over.  
89:42:55 P Houston, Gemini XII here.  
89:42:57 CC Roger. We'd like to get this D-10, Mode Golf, over the ETR. If you could go ahead and do your thruster firing before LOS, we'd appreciate it.  
89:43:14 P Roger.  
89:43:57 P Houston, Gemini XII here. We're not yet in a FDF position. Would you prefer to get the thruster firings at the present attitude before we leave ETR?  
89:44:07 CC That is affirmative. You have about 3 minutes. Go ahead and fire them in your present attitude.  
89:44:15 P Roger.  
89:45:33 CC Looks good, Gemini XII.  
89:45:35 P What's that?  
89:45:36 CC Looks good.  
89:45:38 P Okay.

## ANTIGUA

89:46:08 CC Gemini XII, Houston. 1 minute to LOS. Besides your Preliminary Reentry Update at Carnarvon, we'll be giving you the rest of your P-Block PLA's.

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## CANARY ISLANDS

89:50:40	CC	Gemini XII, Canary CAP COM. Standing by.
89:50:43	P	Roger, Canaries.
89:58:05	CC	Gemini XII, Canaries.
89:58:07	P	Go ahead, Canaries.
89:58:08	CC	Would you place your C-Reentry radar to the CONTINUOUS position, please?
89:58:16	P	Roger.
89:58:28	C	Would you give us the GET time hack, please?
89:58:31	CC	Roger. I'll give you one at 89 hours, 58 minutes and 45 seconds.
89:58:39	C	Roger.
89:58:43	CC	3, 2, 1,
89:58:46	CC	MARK.
89:58:47	CC	89 hours, 58 minutes, 45 seconds.
89:58:52	C	Thank you.
89:58:53	CC	We're just about LOS.

## KANO

89:59:19	CC	Gemini XII, Houston CAP COM through Kano. Over.
89:59:24	C	Go ahead.
89:59:26	CC	Roger, Gemini XII. If you are not getting enough water, or if you are having trouble getting the volume you like, you can take the hex nut on the back of the water gun and turn it one turn counter- clockwise.

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89:59:43 C Roger.

89:59:45 CC That should give you about a five-fold increase in flow.

89:59:49 C Have you ever seen that cartoon of the guy holding his nose in a glass shower?

89:59:53 CC Roger. You'll be another "First Through Space" program.

90:00:02 CC I've got a - the rest of these PLA's we'd like to get up to you here sometime. If you have time to copy them now, we could slip them in.

90:00:12 C Stand by.

90:00:14 CC Okay.

90:00:38 C Go ahead.

90:00:41 CC Okay. This is the rest of Block 9. 59-1 Bravo: 92:24:55; 20 plus 29, 26 plus 01. 60-1 Alpha: 94:00:50; 20 plus 10, 25 plus 36. 61-4 Bravo: 96:49:37; 20 plus 35, 26 plus 18. 62-4 Bravo: 98:52:09; 20 plus 27, 26 plus 01, roll right 85 - correction, roll left 85, roll right 95, and weather good for all areas. Over.

90:02:25 P ... Thank you.

90:02:27 CC Roger. Correction to GET RC of 62-4 Bravo should be 98:25:09.

90:02:41 C Roger. 98:25:09.

90:02:44 CC That is affirmative.

90:03:52 CC Gemini XII, Houston CAP COM. 1 minute to Kano LOS.

90:03:57 C Roger.

90:04:01 CC 23 minutes to Carnarvon.

90:08:31 P Is it running?

90:08:33 C I don't know.

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90:08:34 P Let me see.

90:08:36 P We are now completing Mode G. Experiment D-10. We do not have the platform up. We have fired the thrusters 1 second up, down, left and right; and we're now trying to keep the FDI needles nulled. Until just recently, they seemed to be giving us very good indications of 0 0 0 SEF. And just a few seconds ago the pitch needle started to oscillate up and down. Right now it is steady - steady down. It seems to be giving a good indication again. We're going from daylight into darkness now.

## CARNARVON

90:25:58 CC Gemini XII, Carnarvon.

90:26:00 P Carnarvon, Gemini XII.

90:26:03 CC Roger. We're here with you again, and if Buzz is ready for his finger exercise, we need a normal fuel cell purge, Section 1 and then Section 2.

90:26:11 C Roger. Normal fuel section - normal fuel cell purge, Section 1 and then 2, and that's 2 minutes on the O<sub>2</sub>.

90:26:20 CC That's affirmative.

90:27:26 CC Gemini XII, this is Carnarvon. Will you go MANUAL on your O<sub>2</sub> Heater and bring it up to 700 on-board?

90:27:36 C Roger.

90:32:03 CC Gemini XII, Carnarvon.

90:32:06 C Go ahead, please.

90:32:08 CC Okay. It was mentioned to you about power-up about 91 hours and we'll have you power-up over the States at 91:04, approximately.

90:33:26 CC Gemini XII, Carnarvon. 1 minute to LOS. Your O<sub>2</sub> pressure is coming up nicely. Your fuel cells look okay. We'll see you next revolution.

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90:33:34 C Gemini XII. Roger. Thank you.

## CANTON ISLAND

90:47:28 CC Gemini XII, Houston CAP COM through Canton, and standing by.

90:47:34 C Roger, Canton.

90:52:06 CC Gemini XII, Houston CAP COM. 1 minute to Canton LOS.

90:52:13 C Roger.

90:52:15 CC We'll give you your power-up sequence over the States, Gemini XII.

90:52:24 C I understand, Bob. Sequence over the States.

90:52:26 CC That is affirmative.

## GUAYMAS

91:04:24 CC Gemini XII, Houston CAP COM through Guaymas. Over.

91:04:30 CC Okay, Gemini XII. I have your power-up sequence for you. First of all, I'd like to assure you we're not going to give you a purge on this pass.

91:04:38 P Great! Great!

91:04:40 CC Okay. We'd like to have you do a - to test your main batteries.

91:04:43 C Main batteries testing.

91:05:04 C 22.8 on Number 1.

91:05:06 CC Copy.

91:05:12 C 23.9 on Number 2.

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91:05:14 CC 23.9.

91:05:23 C 23.9 on Number 3.

91:05:32 C 24.0 on 4.

91:05:37 CC Roger. Copy 24.0.

91:05:49 CC We'll continue the rest of your power-up when we start getting T/M through Texas.

91:05:54 C Roger.

91:06:07 CC If it's convenient, we'd like to have you try to get a readout on your reentry water tank bladder position or, if you can't do that, to give us an estimation of how much water you've drunk out of the reentry tank?

91:06:26 CC We need this to calculate a good reentry weight for you.

91:06:33 C I was trying to look at the reentry tank a little while ago, Bill. I can't even seem to find it. Let me talk with Buzz here to see how much water we think we drank.

91:06:44 CC Roger. It figures much.

91:07:10 C Between us, we used about 40 ounces of water.

91:07:12 CC Roger. Understand 40 ounces.

91:07:19 CC That's total. Is that correct?

91:07:22 P Roger.

91:07:27 CC Okay. We're ready to have you put Main Battery Number 1 and Number 4 on the line.

91:07:34 P Roger. Number 1 and Number 4 on the line.

91:07:53 P Houston, the water gun reads 2308 right now, so we can give you a reading later on and you can figure it out.

91:08:02 CC Roger. Gun readings are not valid with low

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pressure, Gemini XII.

91:08:07 P Okay.

91:08:10 CC Okay, Gemini XII. We'd like to have you bring both A-Pumps on the line, B-Pumps off.

91:08:18 P A-Pumps on, B's off.

91:08:32 CC Okay, Gemini XII. You can bring your platform on the line.

91:08:40 C Roger. Platform AFT, CAGE, BEF.

91:08:44 CC Roger. We'll leave your computer off until we've had a chance to take a look at your voltages. In any event, it will be after fast-heat dropout.

91:08:52 C Roger. Understand.

91:08:55 CC If you're ready to copy, I have a water valving procedure that we'd like to have you go through prior to Retrofire and after your last drink.

91:09:16 C Roger. Go ahead.

91:09:20 CC Okay. This is after your last drink. Place your H<sub>2</sub>O valve to NORMAL.

91:09:30 CC Condensate valve to TANK FILL.

91:09:38 CC Urine valve to OFF.

91:09:51 CC Gemini XII, do you want to check your IGS power supply?

91:10:00 CC Very good.

91:10:02 C Roger.

91:10:03 CC Okay. To continue with the water valving, after landing, if you want to get a drink, turn your Condensate valve to NORMAL and your H<sub>2</sub>O valve to PRESSURE OFF. That's it.

91:10:29 P Got it.

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91:10:31 CC Mighty fine!

91:10:46 CC Looks like your voltages are holding pretty good.

91:11:27 CC Gemini XII, Houston. Be advised that our data show that the D-10 sensors are probably still working.

91:11:35 C Roger. They were working fairly well going into the last night pass at the end. And we got buried in a - let it go - looked like we're getting some oscillation in both of them occasionally.

91:11:48 CC Roger.

91:15:02 C ...

91:17:16 CC Gemini XII, Houston CAP COM. Over.

91:17:19 C Go ahead.

91:17:21 CC Roger. We'd like to have you turn your rate gyros to PRIMARY.

91:17:25 C Roger. The rate gyros to PRI. And say, do you happen to know what our orbit is, just out of curiosity?

91:17:32 P Let's hope so!

91:17:55 CC Well, it looks like you're in a 157 by 143.

91:18:01 C Thank you. I just wanted to see if that will do.

91:18:04 CC Give or take a little.

91:18:17 CC Voltages are looking pretty good.

## BERMUDA

91:21:27 CC Gemini XII, Houston CAP COM. 1 minute till LOS, 3 minutes to Canaries.

91:21:32 P Gemini XII. Roger.

91:21:36 CC Sounding pretty chipper today.

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91:21:42 C He wants to do one more EVA.  
91:21:46 CC I'd like to get a few more D-10's there, too.  
91:21:50 P Say again?  
91:21:52 CC Disregard.  
91:22:06 P Hey! What happened to the Agena?  
91:22:11 CC It's still out there.  
91:22:13 P I thought after that Phase-Adjust Maneuver, we might go chase it.  
91:22:20 CC No. We just stopped you and let you hold your own there.

**CANARY ISLANDS**

91:26:24 CC Gemini XII, Canaries standing by.  
91:26:29 C Roger. Canaries.  
91:26:32 C C-band does not keep ... out of fast heat.  
91:26:39 CC Say again, Gemini XII?  
91:26:41 C ... dropout on the platform.  
91:26:43 CC Roger.  
91:32:42 CC Gemini XII, Canaries. About 1 minute to LOS.  
91:32:47 C Roger.

**KANO**

91:33:23 CC Gemini XII, Houston CAP COM through Kano. Standing by.  
91:32:29 C Roger.

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91:36:07 CC Gemini XII, Houston. We'll be bringing your computer on the line after we've had a chance to take a look at you over Carnarvon.

91:36:15 C Roger.

91:36:37 C Roger.

91:39:49 CC Gemini XII, Houston CAP COM. 1 minute to Kano LOS.

91:39:55 C Roger, Houston.

91:39:57 CC 5 minutes till Tananarive.

91:40:00 C And as I understand it, Carnarvon will give us our Reentry Update. Correct?

91:40:05 CC Roger. We'll give you the Preliminary Update at Carnarvon.

91:40:08 CC We'll give you the MDIU quantities over the States.

91:40:12 C Okay.

## TANANARIVE

91:46:15 CC Gemini XII, Houston CAP COM through Tananarive and standing by.

91:50:05 CC Gemini XII, Houston CAP COM through Tananarive and standing by.

91:50:13 C Roger, Houston.

91:52:26 CC Gemini XII, Houston CAP COM. 1 minute to Tananarive LOS.

91:52:34 C Roger.

91:52:35 CC 8 minutes to Carnarvon.

## CARNARVON

92:01:14 CC Gemini XII, Carnarvon.

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92:01:18 C Go ahead.

92:01:20 CC Okay. We're getting a check on your voltage here and we'll be letting you know about the computer in just a minute.

92:01:25 C Okay.

92:01:50 CC Okay, Gemini XII. This is Carnarvon. You can turn your computer on PRELAUNCH, maybe I can do an Accelerometer Bias Check.

92:02:01 C Computer's on PRELAUNCH.

92:02:04 CC Roger.

92:02:41 CC Okay. I have a short Pre-Retro Update for you whenever you're ready to copy.

92:02:48 C Roger. Stand by a second.

92:02:59 P Go ahead.

92:03:01 CC Okay. This is the Area 60-1A. Your nominal IVI's: aft 3, 02 down 113. Your initial deflections will be updated over the States. Pitch Gimbal at 400K, 92. You'll have a lighted horizon at Retrofire and also at 400K. RET begin blackout: 22 plus 29; RET end blackout: 27 plus 30. RET drogue at 29 plus 16. RET main: 30 plus 50. MDIU quantities also over the States and now for the weather. Cloud cover, 2000 scattered, high broken; visibility, 10 nautical miles; wave height, 3 deep with 4 to 5 foot swells wind, 260 at 15; altimeter setting, 29.94. Recovery call signs, Airboss 1, 2 and 3. The carrier is the Wasp. And under remarks you might add a Bluebird day.

92:04:48 C Roger, Carnarvon. Could you tell me just where the carrier will be with respect to the target point so I can, you know, get a little ...?

92:04:55 CC You don't want to hit it, do you? Okay. Stand by.

92:05:58 CC They're checking on that, Gemini XII. You'll probably see the carrier before we have an answer

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for you.

92:06:04 C ...  
92:06:23 CC 4000 yards downstream of the target point, Gemini XII.  
92:06:27 C Sounds good!  
92:06:32 C Did you have a preliminary GET RC on-board?  
92:06:54 CC Preliminary GET RC for 60-1A: 92:59:58.  
92:07:06 P Roger. 92:59:58.  
92:07:10 CC Roger that.  
92:08:34 C Gemini XII, Carnarvon. We have about 1 minute to LOS. We'll be standing by.  
92:08:38 C Roger.  
92:08:42 CC A 30-second O<sub>2</sub> purge, on each section. Let me check which one first.  
92:08:58 CC Your choice.  
92:09:00 C Good!  
92:09:10 C Do you have any readouts down there of how well we're aligned?  
92:09:15 CC Your telemetry is coming in pretty bad.  
92:09:19 CC How about that! You look pretty good now. Good solid telemetry.  
92:09:44 CC Okay. You look good and solid. BEF.

## CANTON ISLAND

92:21:03 CC Gemini XII, Houston CAP COM through Canton. Over.  
92:21:09 C Roger, Houston.

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92:21:11 CC Roger, Gemini XII. We'd like to confirm that most of your exposed film is in the centerline camera box. Over.

92:21:20 C That's right. Most of it is in the centerline camera box ...

92:21:30 CC Roger, Gemini XII. Be advised that you are fading in and out. We'll be counting you down over this site next pass. About 3 minutes into the pass.

92:21:43 C Roger.

92:21:45 CC How are we reading you? How are you reading us?

92:21:54 C We're reading you 4 by 4.

92:21:57 CC Roger. ...

92:22:00 CC And by the way, Gemini XII, Mohammed Ali sends his regards.

92:22:07 C Thank you very much.

92:22:11 CC He's the greatest!

92:22:13 C He still is the greatest! Right?

92:22:15 CC Yes.

92:24:03 CC Gemini XII, Houston CAP COM through Canton. How do you read?

92:24:07 C Loud and clear.

92:24:09 CC Mighty fine.

CALIFORNIA

92:38:10 CC Gemini XII, Houston CAP COM. Over.

92:38:33 CC Gemini XII, Houston CAP COM. Over.

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## GUAYMAS

92:39:17 CC Gemini XII, Houston CAP COM. Over.

92:39:22 C Houston, Gemini XII.

92:39:23 CC Roger. I have your Retro Update, if you're ready to copy.

92:39:33 C Okay. Go ahead.

92:39:35 CC Roger. Your GET RC remains the same, 93:59:58; RET 400K, 20 plus 14. RET RB, 26 plus 02; bank left 50, bank right 60. Down-range needle deflection: 0 degrees, plus 230; 55 degrees, plus 64; 90 degrees, minus 80. Read back.

92:40:32 P Roger. Understand in Area 60-1: GET RC, 93:59:58; RET 400K, 20 plus 14. RET RB, 26 plus 02; bank left 50 degrees, bank right 60 degrees. Nominal IVI's: 4 left, 302 aft, 113 down. Down-range needle deflection: 0 degrees, 230; 55 degrees, plus 64; 90 degrees, minus 80.

92:41:19 CC Roger. That's correct, Gemini XII.

92:41:26 P Houston, Gemini XII. Did you copy?

92:41:29 CC Roger. We copied. That is correct.

92:41:33 P And the pitch ... is 92 degrees. Right?

92:41:37 CC That is affirmative.

## TEXAS

92:41:49 CC Gemini XII, Houston. Will you put on Main Batteries 2 and 3 on the line?

92:41:57 C 2 and 3 on the line.

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92:41:59 P Roger. All four batteries are on the line.

92:42:03 CC That is affirmative.

92:42:41 CC Gemini XII, Houston CAP COM. Would you put Section 2 to WARM-UP? We're going to start turning it off just so you don't have to worry about it.

92:42:49 P Roger. Section 2 to WARM-UP.

92:43:00 CC Gemini XII, Houston CAP COM. Would you put your computer in PRELAUNCH for your Retro load?

92:43:06 P Roger. Computer is in PRELAUNCH.

92:43:09 CC Roger.

92:43:21 CC Roger. Here comes your Retro load.

92:43:28 CC MARK.

92:43:36 P Roger. We got it.

92:43:38 CC Roger. And looks good on the ground.

92:43:45 CC And Gemini XII, are you ready for your MDIU quantities?

92:43:52 P Roger. Ready to copy.

92:43:55 CC Roger. Address 63:22 - correction, Address 63:23324. Address 04, 68694.

92:44:30 P Go.

92:44:32 CC Address 65 - correction, Address 05, 06812.

92:44:45 P Go.

92:44:47 CC Address 66, 69224.

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92:44:55	P	Go.
92:44:56	CC	Address 67, 27427.
92:45:03	P	Go.
92:45:05	CC	Address 08, 40088.
92:45:12	P	Go.
92:45:13	CC	Address 09, 07366.
92:45:21	P	Go.
92:45:22	CC	Address 10, 02444.
92:45:29	P	Go.
92:45:30	CC	Address 11, 29000.
92:45:38	P	Roger. All MDIU quantities verified.
92:45:42	CC	Looks good on the ground, Gemini XII.
92:45:45	P	Roger.
92:45:53	CC	Gemini XII, could you put your Quantity Read switch to H <sub>2</sub> ?
92:46:59	CC	Gemini XII, stand by for transmitting T <sub>R</sub> .
92:47:03	P	Go ahead.
92:47:09	CC	1,
92:47:10	CC	MARK.
92:47:15	P	Roger. Received it.
92:47:19	CC	Roger. We got a MAP.
92:47:37	CC	Gemini XII, your T <sub>R</sub> checks good on the ground.
92:47:40	P	Roger.
92:47:52	CC	Gemini XII, will you put your Section 2 Power switch to OFF?

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92:47:57 C Section 2 Power switch going off.

92:48:04 P The Delta-P light went out.

92:48:06 CC Roger. We'd like to give you a check on your  $T_R$ , Gemini XII.

92:48:13 C Go ahead.

92:48:19 CC Give you a Mark at 71:30. 6 seconds.

92:48:24 C You cut out there, Houston.

92:48:26 CC Roger. We'd like to check your  $T_R$ . We'll give you a Mark at 71:20.

92:48:31 C Understand. 71:20.

92:48:33 CC Roger. In 5 seconds.

92:48:36 CC 2, 1,

92:48:38 CC MARK.

92:48:39 CC 71:20.

92:48:43 C Roger. 71:19.

92:48:46 CC That's good.

92:49:14 CC Gemini XII, Houston CAP COM. RCS Ring-A reg pressure shows slightly high. Will you pulse it a few times?

92:49:22 C Would you say again, please?

92:49:24 CC RCS Ring-A reg pressure shows slightly high. Will you fire RCS Ring-A a couple of times?

92:49:31 C Roger. Ring-A.

92:50:28 CC Gemini XII, Houston CAP COM. Like for you to hold off firing Ring-A for a little while. We'd like to watch it.

92:50:38 C Roger. A is off.

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92:51:12 C Houston, I'll fire B.  
92:51:21 CC Roger. B looks good.  
92:51:43 CC Gemini XII, Houston CAP COM. Don't be too surprised if the com through Canton is not too hot the next pass.  
92:51:51 C Understand.  
92:51:56 C We'd like to have Carnarvon give us a 22 - a 22 time hack.  
92:52:01 CC Wilco.

## BERMUDA

92:56:51 CC Gemini XII, Houston CAP COM. 1 minute to LOS. We'd like you to not use Ring-A until we advise you over Canaries in 5 minutes.  
92:57:04 C Roger.

## CANARY ISLANDS

93:02:52 CC Gemini XII, Canary CAP COM.  
93:02:55 C Go ahead, Canary.  
93:02:56 CC Okay. Your Ring-A reg pressure is up a little bit. You want to use it a little bit and see if we can bring this reg pressure down.  
93:03:02 P Okay. We're reading low on Ring-B, on-board.  
93:03:06 CC Say again?  
93:03:08 P Okay. I understand. Fully on Ring-A.  
93:03:50 C How's it look, Canaries.  
93:03:53 CC Say again, Gemini XII?

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93:03:54 C How's it look?  
93:03:58 CC It's reading 413 right now.  
93:04:02 CC Go ahead and use it some more.  
93:04:09 C I'm using Ring-A only.  
93:04:35 CC Okay, Gemini XII. It's down to 379. Use a little  
bit more.  
93:05:49 CC Gemini XII, Canary.  
93:05:51 C Go ahead.  
93:05:52 CC Okay. We'd like you to stay on Ring-A for the rest  
of your activity so we can keep this pressure down.  
It's reading 310 down here now.  
93:06:01 C Okay.  
93:06:13 CC Got a minute to LOS and have a good trip home.  
93:06:17 C Thank you.

## KANO

93:08:59 CC Gemini XII, Houston CAP COM through Kano. Over.  
93:09:03 C Yes, Houston.  
93:09:05 CC Roger. With respect to RCS Ring-A, we'd like for  
you to do the rest of your normal maneuvers on  
Ring-A rather than B or OAMS.  
93:09:15 C Roger. We now have Ring-A on, only. We're Alining  
the Platform with Ring-A.  
93:09:22 CC That's affirmative. And we'd like to have you use  
both rings for Retrofire. Use Ring-A first for  
Entry.  
93:09:36 CC And what do you have for an RCS on-board readout?  
93:09:44 P Ring-A reads 2250 psi and 58 ... degrees. Ring-B

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reads 2450 psi and 67 degrees.

93:10:04 CC Roger. Copy.  
93:12:59 CC Gemini XII, Houston CAP COM. 1 minute to Kano LOS. Could you give us an RCS A source pressure?  
93:13:08 C Roger. RCS A source pressure reads 22 ...  
93:13:15 CC Copy. 2250.

## TANANARIVE

93:20:26 CC Gemini XII, Houston at Tananarive. Could we have an RCS Ring-A source, please?  
93:20:35 C Gemini XII, we read 2150 on the RCS Ring-A.  
93:20:39 CC Roger. 2150. Thank you. Standing by.  
93:25:38 CC Gemini XII, Houston. The data are good. Load is valid. We will not change it, and we'd like to get one more Ring-A source pressure from you, please. We're about 1 1/2 to LOS.  
93:25:51 P Roger. Ring-A now reads 2125.  
93:25:56 CC Roger. 2125. We'll see you during the count over Canton.

## CARNARVON

93:36:33 CC Gemini XII, Carnarvon.  
93:36:35 P This is Gemini XII. Go.  
93:36:37 CC Okay. We have about a minute and 20 seconds for your T<sub>R</sub> 22-minute time hack.  
93:36:41 P Roger. Standing by.  
93:36:43 C Carnarvon, Gemini XII. Pre-Retro Check List is complete.

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93:36:46 CC Roger.

93:37:48 CC 10 seconds. 5, 4, 3, 2, 1,

93:37:58 CC MARK.

93:37:59 CC 22 minutes.

93:38:05 C Roger. I read 21:59.

93:38:12 CC Say again?

93:38:14 C Roger. I read 21:59 in the computer.

93:38:18 CC Roger. Okay. You're a little high on your reg pressure. How about using the Ring-A a little bit?

93:38:27 C I will fire them.

93:39:43 CC Gemini XII, Carnarvon.

93:39:44 P Go ahead.

93:39:45 CC Okay. We're still a little high on that hydrogen pressure. You guys can do a better job than that.

93:39:52 C ...

93:40:00 CC Okay. We're showing about 392 here on the ground and we want to get it down to about 350.

93:40:38 C How's that?

93:40:41 CC Let me take a quick look-see.

93:40:56 CC Hey, bully for you guys! You got it down to 1 psi. Use a little more.

93:42:05 C How are we doing?

93:42:08 CC Let me check. Okay. You can stop now. Relax.

93:42:23 CC Okay. Gemini XII, this is Carnarvon. We're down about 325 and that's good for Retrofire.

93:43:07 CC Gemini XII, Carnarvon.

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93:43:18 CC Gemini XII, Carnarvon. Your Rate pressure looks real good at 325 and steady.

93:43:25 C Roger.

93:44:11 CC Gemini XII, Carnarvon. 1 minute to LOS. It's been a pleasure working with you guys! We'll see you back in Houston.

93:44:16 P Roger. Thank you.

93:44:18 C Thank you very much, Carnarvon. See you.

93:44:20 CC Bye.

93:55:50 C (Humming)

93:55:52 C A sterling reentry of Gemini XII.

93:55:55 P ... Antenna Selector, REENTRY; Attitude Control, PULSE; Platform, ORBIT RATE!

93:55:59 C ORBIT RATE.

93:56:00 P FDR, PLAT; FDM, RATE; FDI Scale Range, HIGH.

93:56:01 C FDR, PLAT; FDM, RATE; FDI Scale Range, HIGH.

93:56:02 P Attitude, RATE COMMAND.

93:56:04 C Attitude, RATE COMMAND.

93:56:06 P Rate Gyros, three, PRIMARY; OAMS Control Power, OFF. OAMS Prop Motor Valve, CLOSED. RCS A Power, reacting.

93:56:14 C Reacting.

93:56:15 P Control Spacecraft retro attitude; Retro Power, ARM.

93:56:20 P Retro Power, ARM.

93:56:23 C Retro Power, ARM.

93:56:25 P SD indicate retro attitude, FDR PLAT. And Attitude Scale Range, HIGH - HI. Verify HF T/R - OFF; HF T/R OFF. 16mm Camera ON.

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## CANTON ISLAND

93:56:41 CC Gemini XII, Houston through Canton. Over.

93:56:45 C Go ahead.

93:56:47 CC And I'll give you a Mark at 3 minutes.

93:56:53 CC 5 seconds.

93:56:58 CC MARK.

93:56:59 CC 3 minutes and counting.

93:57:01 C ... Check List is complete.

93:57:04 CC Houston. Roger.

93:57:08 C What is that?

93:57:09 P What?

93:57:19 P Okay. What do we do in 1 minute?

93:57:22 C ...

93:57:23 P Okay.

93:57:58 CC MARK.

93:57:59 CC 2 minutes.

93:58:00 P Come on, you are not in PULSE now.

93:58:02 C Yes.

93:58:05 C Man, that's pretty.

93:58:08 P ... small ...

93:58:17 C ...

93:58:58 CC 60 seconds.

93:59:06 C Stand by for separation ...

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93:59:09 CC Roger.

93:59:12 P Retro rocket squibs armed at 30 seconds.

93:59:28 CC 30 seconds.

93:59:30 C Retro rocket squibs armed. Okay?

93:59:35 P Stand by on the clock.

93:59:39 C Standing by on the clock.

93:59:43 P If you don't have anything new, we can start the countdown.

93:59:49 CC 10, 9, 8, 7, 6, 5, 4, 3, 2, 1,

93:59:59 C RETROFIRE.

94:00:04 C 1, 2,

94:00:10 C 3.

94:00:14 P Hold it steady.

94:00:16 C 4.

94:00:17 P We had a little dispersion there.

94:00:23 C Four retros fired. 301 down. 301 aft. 115 down.

94:00:32 P 3 left.

94:00:33 CC Houston copy.

94:00:44 P 3 left, okay.

94:00:46 C Retro Jett.

94:00:47 P Retro Jett, ARM.

94:00:49 C Retro Jett.

94:00:52 C Here goes the scanner.

94:00:57 P Retro Jett.

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94:00:58 CC Roger. Retro Jett. We didn't copy the left-right  
IVI. Did you have any?

94:01:03 C Left 4. Left 4.

94:01:06 CC Roger. Left 4.

94:01:14 P Are you on up to 10?

94:01:19 CC This is Houston. Say again?

94:01:24 P Roger. 301.4 aft.

94:01:26 CC Roger. 301.4.

94:01:35 P 3.7 left.

94:01:43 P 114.9 down.

94:01:51 CC Roger. Copy.

94:01:59 P All right. Post-Retro Check List. ... circuit  
breakers, OPEN.

94:02:05 C ... OPEN.

94:02:07 P Retro Sequence Control 1 and 2 circuit breakers,  
OPEN.

94:02:09 C Retro Sequence Control 1 and 2, OPEN.

94:02:11 P Retro Power, SAFE.

94:02:13 C Retro Power, SAFE.

94:02:14 P Retro Jett, SAFE.

94:02:15 C Retro Jett, SAFE.

94:02:16 P Retro Rocket Squibs, four, SAFE.

94:02:17 C Four, SAFE.

94:02:18 P ATTITUDE.

94:02:20 C And ATTITUDE.

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94:02:21 P Scale Range, LOW.  
94:02:22 C Scale Range, LOW.  
94:02:25 P Scanner, out. Scanner. RCS Control Power B, OFF. Okay. Attitude Control, PULSE. D-ring, unstowed.  
94:02:35 P Okay. What gives with this thing now?  
94:02:39 C We're still up pretty high.

## HAWAII

94:03:10 CC Gemini XII, Hawaii.  
94:03:12 C Go ahead, Hawaii.  
94:03:13 CC Roger. Would you confirm that you are in REAL-TIME and ACQ-AID with T/M?  
94:03:21 C Negative. We've been in COMMAND.  
94:03:23 CC Roger. Go to REAL-TIME and ACQ-AID, please.  
94:03:25 C Roger. REAL-TIME and ACQ-AID.  
94:03:27 CC Roger. We got it. Thank you.  
94:03:29 P Tighten and lock restraint harness.  
94:03:31 C Okay.  
94:03:33 P Check hatch pawls, neutral.  
94:03:36 C Okay.  
94:03:38 P OAMS Propellant ... over.  
94:03:44 C Check.  
94:03:45 P Cabin Air Recirc, 45 degrees. Cryo O<sub>2</sub>H<sub>2</sub> Heater, OFF. Section Power 1 and 2, OFF. Stacks, OFF. Comp Air attitude is low. Cryo O<sub>2</sub>H<sub>2</sub> Heater circuit-breaker, OPEN.

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94:04:10 P Tape Recorder Control circuit breaker, OPEN.

94:04:13 P Fuel Cell Control 1 and 2 circuit breakers, OPEN.

94:04:21 P Do you read ... tighten and lock restraint harness  
...

94:04:26 C Gemini XII. Retro Check is complete.

94:04:29 CC Roger. We'll give you a Mark at plus 5 minutes in  
about 30 seconds, if you want it.

94:04:35 C Roger. That'll be fine.

94:04:48 CC 10 seconds.

94:04:55 CC 3, 2, 1,

94:04:58 CC MARK.

94:05:02 C Roger.

94:05:06 CC All right. Stand by for Retro Update time. Control  
Spacecraft attitude.

94:05:10 C No Delta-P lights. Yes.

94:05:13 CC Control Spacecraft attitude to 180 yaw, 170 roll,  
horizon at top of window. Snap to it now!

94:05:18 CC Okay. And your Source Pressure Ring-A is looking  
good. Reg pressure good.

94:05:22 C Thank you.

94:05:25 P Standing by for Computer Reentry finalize.

94:05:29 C Right.

94:05:33 P 301. Hardly worth computing. That's -1 and 115  
at plus 2.

94:05:55 P Minus 1 plus 2.

94:06:08 C You can't tell the difference. Forget it.

94:06:13 P 64 miles.

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94:06:15 C 64 miles.

94:06:16 P Speed 'em up, right?

94:06:18 C Could be. Could be. Could be.

94:06:28 C Is this right?

94:06:32 P Yes.

94:06:35 C Have you got any water in your helmet? I've got water in my neck ... for some reason.

94:06:39 P Somewhere?

94:06:42 C Retrofire just splash forward. I think it is coming out of the east.

94:06:45 P All right.

94:06:49 C Did you get the Retro burn?

94:06:51 P Sir? Yes.

94:06:56 C How do you like that for a push?

94:06:58 P Felt pretty good. He's with him. They're going to push me right away.

94:07:09 C Now we can turn the Time light on.

94:07:10 P Yes.

94:07:13 C 3.

94:07:31 P I think the thing to do right now is to change this.

94:07:39 C Okay. ...

94:07:42 C Boy, those retros are alining nicely.

94:07:44 P Yes. .

94:08:05 P Pitch angle 92 at 400K.

94:08:09 C Post-Reentry Check List is complete, right?

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94:08:15 P Right.

94:08:51 P What I have is all exposed now.

94:08:59 P I hope I got that retrograde.

94:09:00 CC Gemini XII, Hawaii. 1 minute to LOS.

94:09:03 C Roger, Hawaii.

94:09:07 P I thought I had a ... didn't I?

94:09:14 CC Okay. Initial deflection, based on the IVI's, should be 61 nautical miles up.

94:09:29 C Roger. 61 up.

94:09:30 C I will check it.

94:09:31 CC That's roger.

94:10:10 P Keep these ... right together so it doesn't go off the ...

94:10:18 C Are you taking a picture?

94:10:22 P Yes.

94:10:43 C ... light still on?

94:10:48 P Okay. Let's go to 1250 ... for a chance to be recollected.

94:11:00 C You know, we might have a problem with the ...

94:11:03 P I never though of that.

94:11:23 C You know that.

94:11:24 P What kind of a problem?

94:11:28 C We're going to come in during those reentries.

94:11:31 P No. Don't sweat it.

94:11:36 C And what happened? Have I got another one in there?

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94:11:51 P Sure don't.  
94:12:27 C We better pick it up a little.  
94:12:31 P Looks pretty good. There's lots of stuff coming out there; good fireworks!

## CALIFORNIA

94:12:37 CC Gemini XII, Gemini XII. Houston through California. Over.  
94:12:42 C Go ahead, Houston. Gemini XII here.  
94:12:45 CC Roger. We're standing by. I'll pass you data as soon as I get them.  
94:12:48 C Roger.  
94:13:03 P Okay. ... all right?  
94:13:04 C All right.  
94:13:13 P If I am not mistaken, altimeter is 29.94. Have you got that?  
94:13:15 C I will send it in right now.  
94:13:20 P Wind is 360 at 15.  
94:13:44 C Oh. Let's take a break.  
94:13:52 P There's not too many are valid anymore.  
94:13:54 C ... retro ...  
94:14:08 P Well, let's go along the top ... on.  
94:14:20 C Hold it. Don't put anything on the ...  
94:14:25 P ... system?  
94:14:27 C You never can tell. We might need them.  
94:14:29 P ...

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94:14:32 P Try your maneuver control now.

94:14:36 C Is that all it is?

94:14:43 P I'll leave you the oxygen ... OAMS Control ... tied into there.

94:14:54 C ...

94:14:57 P What?

94:14:59 C Never mind.

94:15:03 P You letting your ... loose? Oh, going to get out of the game?

94:15:05 C No.

94:15:07 C I'm just ...

94:15:11 P Okay. We're - this is a recording ... We are now on Coolant Pump A - -

94:15:18 C ... stick to the Check List.

94:15:28 P ... circuit breakers on because we might have to our own.

94:15:55 P Well, let's see what our latitude is now. 27:78.

94:16:47 C You know that ... is pretty good. Look at that ... we got ...

94:16:50 P Yes.

94:16:59 P 20 plus 14?

94:17:01 C Yes.

94:17:12 C Is your harness locked?

94:17:16 P Is that on the Check List? I guess it is.

94:17:26 P You understand we ... of film. ... that retro power with the eclipse.

94:17:32 C Is that the eclipse film?

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94:17:35 P No. It's regular film. It's just film that I was taking of the eclipse.  
94:17:39 C We might have a new ...  
94:17:47 P I think things are beginning to drift back.  
94:18:22 C ... pressures.  
94:18:25 P ...  
94:18:35 P Pull it back. Pull it back.  
94:18:38 P From here on in, it's under the water.  
94:18:46 C Have you computer ... yet?  
94:18:50 P Yes. It's under the water.  
94:19:11 C Would you like to go to the United States?  
94:19:15 P Well.  
94:19:18 C Pretty funny!

## TEXAS

94:19:48 CC Gemini XII, Houston. Your 400K time, 20 plus 08.  
94:19:55 C 20 plus 08. Thank you.  
94:20:00 P Okay. That gives us a couple of seconds.  
94:20:02 C Yes.  
94:20:10 P Okay. Let's do 0 plus 3 plus 08.  
94:20:13 C Okay.  
94:20:15 CC Gemini XII, Houston. Your back-up quantities: roll left 46, roll right 56, RET RB 26.03.  
94:20:30 C Roger. RET RB 26 plus 03. Bank left 46. Bank right 56.

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94:20:37 P In that order.

94:20:44 C ...

94:20:47 CC Okay. Gemini XII, Houston. We passed you 20 plus 08 for your 400K time; then I thought you said 28 back, 20 plus 08.

94:20:58 C We've already got the information. Thank you.

94:21:00 CC Roger.

94:21:19 CC Gemini XII, Houston. Your drogue time, 29:02; your main, 30 plus 26.

94:21:31 C Come on, Buzz.

94:21:33 P I understand. 29 plus 02; main, 30 plus 26.

94:21:46 CC Gemini XII, Houston. Your begin blackout and end blackout times are good.

94:21:58 C 1200.

94:21:59 C Gemini XII. Roger.

94:22:06 CC Have a good ride.

94:22:07 P ... 2229.

94:22:26 C ...

94:22:35 C Have you seen any?

94:22:36 C Come on, Buzz. Look at the thing!

94:22:38 P I'm looking at them.

94:22:49 P Keep the bank angle in.

94:22:51 C Okay. Here we go.

94:22:56 P Okay. You got reentry indicate?

94:22:59 C Yes. Looks good.

94:23:06 P Oh, the sun just wiped me out.

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94:23:26 C ... reentry.  
94:23:32 C A good reentry.  
94:23:37 C Looks perfect.  
94:23:43 P The window's all frosted over.  
94:24:08 C Watch the pressure.  
94:24:13 P 1800. There goes the Agena.  
94:24:30 C You know that we have not felt the ... yet.  
94:24:44 C How's the pressure?  
94:24:47 P 1800.  
94:25:01 P ...  
94:25:06 C How's the pressure?  
94:25:08 P 1800, 1750,  
94:25:10 C Okay. ... roll right now.  
94:25:28 P Beautiful! I wish the film ...  
94:25:55 P ...  
94:25:56 C Yes. Watch the pressure.  
94:26:01 P 1500.  
94:26:02 C Okay.  
94:26:06 P You ...  
94:26:07 C ...  
94:26:15 C ...  
94:26:18 P 1500.  
94:26:22 P It's really blowing up a hot spot on the nose there.  
94:26:32 P 1500.

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94:26:33 C Okay.

94:26:51 C 14.

94:26:55 P ... make it.

94:27:03 C Not very good.

94:27:30 CC Gemini XII, Gemini XII, Houston standing by.

94:27:49 CC Gemini XII, Gemini XII, Houston standing by.

94:27:56 P Holding pretty well?

94:27:58 C Yes.

94:28:09 P Too bad we didn't take them through your window.

94:28:13 CC Gemini XII, Gemini XII, Houston standing by.

94:28:16 C Roger. Automatic reentry.

94:28:19 CC Roger.

94:28:23 C 100,000

94:28:27 P Okay.

94:28:30 CC I am going to get a Rate Command.

94:28:39 C ...

94:28:42 P Stand by for landing ...

94:28:44 C ...

94:28:47 CC Gemini XII, Houston. Our data shows you right on the money.

94:28:52 C Roger. Address 86 reads 2441.

94:28:55 CC Roger.

94:29:02 P 50K.

94:29:03 C 29005.

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94:29:05 P Coming out at 50K.  
94:29:06 P Roger.  
94:29:07 C Set up ... control ...  
94:29:10 C Go ...  
94:29:15 C Got a GO.  
94:29:17 CC Copy.  
94:29:18 P Yes ...  
94:29:22 C Drogue chute!  
94:29:25 CC Roger.  
94:29:26 C 35K ...  
94:29:28 P ...  
94:29:30 C Okay. 2710 ... area.  
94:29:32 P ... 27K.  
94:29:42 C Okay. Are we there yet?  
94:29:49 C Okay.  
94:29:50 P ... Recirc, 45 degrees.  
94:29:51 C Okay.  
94:29:53 P Stand by for 10.6.  
94:29:55 C Roger.  
94:29:59 CC Address 87 reads 29006.  
94:30:11 CC Address 86 reads 2436.  
94:30:19 P Standing by for 10.6.  
94:30:22 CC 10.6; 14,000.  
94:30:30 CC 12,000.

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94:30:34 CC 11,000.

94:30:36 C 10.6.

94:30:39 C Should be on. There he goes. There he goes. Okay.  
Watch it!

94:30:51 P Chute is out.

94:30:52 CC Does it look good, Buzz?

94:30:54 P ...

94:30:55 C Okay. Pulling off. Brace yourself, Buzz.

94:31:00 C Are you braced?

94:31:01 P Yes. Let me get a shot, but go ahead.

94:31:03 C Okay. Here we go.

94:31:09 CC Gemini XII, Houston. We get you on the boob tube,  
You're looking good!

94:31:13 P ... help me get a chance for a ...

94:31:20 CC 5, 4, 3, 2, 1,

94:31:23 C Okay. Attitude Indicator Control circuit breaker,  
OPEN.

94:31:27 P Roger. Stand by for recovery.

94:31:28 CC This is radio contact. Visual contact.

94:31:35 CC Gemini XII, Houston. We have you on the tube.

94:31:37 C 5,000.

94:31:39 P Rescue beacon without lights.

94:31:43 C ...

94:31:45 P Okay.

94:31:46 C 5,000.

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94:31:48 P RCS Heater, OFF.  
94:31:52 C Okay. Watch the pressure.  
94:31:56 P Scanner Heater circuit breaker, OPEN. ... switch PRELAUNCH. Right now.  
94:32:02 C ...  
94:32:03 CC Gemini XII, Houston. Smile! You're on the tube!  
94:32:06 C Let me call Recovery.  
94:32:08 C ...  
94:32:10 C ... 1, 2, 3,  
94:32:12 CC ... Gemini XII. On two-point suspension.  
94:32:19 CC Gemini XII, Houston. Copy. Smile! You're on the tube!  
94:32:23 C Stand by. Roger.  
94:32:29 CC Gemini XII, this is Photo One and Search. Have you in sight and your R & R package.  
94:32:34 C Roger.  
94:32:39 C Say that over again. 3,000, Buzz.  
94:32:42 P Okay. Stand by for Delta-D rate.  
94:32:44 C I've got it, Buzz. You'd better hurry up because your altimeter might be off.  
94:32:55 C ...  
94:33:02 C 2,500 feet.  
94:33:12 P Okay. ... set.  
94:33:15 C 2,000.  
94:33:18 P I think we have everything.  
94:33:24 P Great show! Looked good, didn't it?

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94:33:27 P How did you like that Reentry?

94:33:29 C Man, that was something!

94:33:30 P Wasn't that a flame to see!

94:33:32 P 1,500 feet. Stand by. Brace yourself!

94:33:37 C I think that should be off.

94:33:50 C 1,000 feet. Hang on now, Buzz!

94:33:57 P We're under 10 feet. I think we've got it all.

94:33:59 C There's the helicopter.

94:34:07 C 8,700. We're coming over the clouds now. I can see the water. Okay. 95.

94:34:19 P Stand by. Both landings Para Jett. Push!

94:34:21 P Yes. Cabin Vent, Down; Water Seal, Down. Here you are.

94:34:32 P Son-of-a-gun!

94:34:33 C Boy!

94:34:37 C Boy! Boy! That was a mean one, wasn't it?

94:34:39 P We've got some water in here.

94:34:40 C Okay. Inlet snorkel.

94:34:46 P Let down.

94:34:49 CC Inlet snorkel, down.

94:34:51 C Pop up the Repress valve.

94:34:54 C ...

94:34:58 P Okay.

94:35:01 P How's it look?

94:35:05 C Take off your harness.

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94:35:09 P Landing switch, ON.  
94:35:10 C Landing switch is SAFE.  
94:35:12 P HF antenna.  
94:35:16 P And landing safe.  
94:35:18 C Okay.  
94:35:32 C Okay. REENTRY.  
94:35:39 P Helmet, off.  
94:35:42 C That's it.  
94:35:44 P Pretty big waves.  
94:35:46 C Pilot ... waves.  
94:35:49 C ...  
94:35:50 C ...  
94:35:52 C ...  
94:35:58 P All right, let me see. Lap belt, release.  
94:36:06 CC ... splashout.  
94:36:14 P Okay.  
94:36:22 C ... the stabilator.  
94:36:28 P Well, how do you want to go aboard?  
94:36:31 C Let's go by helicopter, I guess. You don't want to stay here all the time, do you?  
94:36:37 P I don't know. That depends on how long it takes to bring us up. Might be a good thing ...  
94:36:42 C ...  
94:36:45 P ...  
94:36:49 C Okay. Let me call.

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94:36:51 P Recovery, Gemini XII.

94:37:16 P Hello there, Recovery or Houston. Gemini XII here.

94:37:28 P Say again, please?

94:37:34 P Okay. Fine.

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