ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

22 29 56	CC-H	- - just trying to tell you while ago, we wanted you to gut it when we went LOS from Hawaii, not - not from Orroral.
	CMP	Only another 20 minutes, Tom. That's not bad.
	ACDR	(Laughter) Okay. Well, we had a TAPE MOTION stop, so we thought that was when.
	CC-H	Sorry about that. I did - didn't make myself plain. We're still in the process of - Can you tell us what you - You started the DSE, is that right?
	CMP	Yeah, about 5 minutes ago.
	CC-H	The - You've already started it. You can go ahead and press on, and we'll go ahead and get it. Are we getting VTR also?
	CMP	That's right.
	CC-H	Okay. That's fine. No big problem.
22 32 31	CC-H	Apollo, Houston. Tom, we've actually - If you've been going for as long as you said there on - on exercise, we've got an adequate amount, and we'll just go ahead and take - take the tape recorder and rewind it and set it up for our next pass. And you can do what you like regarding further exercise.
	ACDR	Okay. I'll go here about 4 or 5 more minutes and then - You want us to rewind it, or do you want to command it?
	CC-H	We'll go - we'll - -
22 33 04	CC-H	Rog. You can press on, and we'll go ahead and handle the commanding of the DSE.
	ACDR	Okay. Thank you.

	CMP	And, Crip. Just for general interest, it looks like the Pacific is just full of eddies. Great big eddies. We see them a lot. And we - we think they're eddies because there are giant cloud-ringed areas that sort of make you think the water there is either hotter or colder than the rest.
	CC-H	Rog, Vance. Any - any estimate on size - diameter.
	CMP	Well, we'll - we'll give you some. They're all - many sizes. We'll try to give you some maximums and minimums here shortly.
22 33 48	CC-H	Okay; fine. Also, we would be interested in some further comments regarding the - the attitude that you've got right now for this vis obs pass. I know Tom commented on it this morning, and we were looking at trying to do something different. However, it doesn't - doesn't appear to be too easy right now, and we were wondering maybe it's just a matter of getting used to it a little bit.
22 34 08	DMP	Well, I'll tell you. We just passed Hawaii, and I got zero for two reasons. Number one, it's cloud covered over the island that we're looking for, and secondly, it was too far to the north, and - don't know - This attitude is probably not the greatest. But I - I hesitate to recommend a better one right at this point.
22 34 31	CC-H	Okay. We're still looking at it. A little bit reluctant to come up for - with attitude because of a different attitude that we haven't really wrung out like we have what we got. But if we're not getting the data with what we got, well - we'll - we'll press on and continue to look at it.
22 34 45	DMP	Well, this is a good attitude to acquire things ahead. You know, you see them coming up, which is good. The problem is we're really rotating along here, and once it gets into view where you can shoot it with a camera, you go by it in about 5 seconds.
22 35 00	CC-H	Rog. Understand. We're about 30 seconds from LOS. And our next station contact will be through Newfoundland in 15 minutes. See you there at 130:28.

22 35 10	DMP	Okay.
22 50 49	CC-H	Apollo, Houston. Newfoundland for 7 minutes.
	ACDR	Good evening, Dick.
	CC-H	Hi, Tom. Good evening to you.
	DMP	Houston, Apollo.
	CC-H	Go ahead, Deke.
	DMP	Okay, Dick. We just finished an Earth obs pass here, and talked to Crip about the Hawaii one. We hit the Washington coastline, and we did get a few pictures of that area and partly accomplished our effort then. We've been doing a little experimenting since then. We've - Vance has striked a 10-degree pitch down towards the horizon, and we think we can tolerate about another 20 to get us into better viewing attitude for Earth obs. Problem we've got here is that we're seeing way too much stuff above the horizon and out to the horizon, which is of no value to us at all. And when we get over the target, we don't even get above it, and it's already disappeared through the window. So, we're having a real tough time here with this Earth obs and this attitude.
	CC-H	Okay, Deke. Copy. I did copy your conversation with Crip awhile ago. I've been here for about the last hour.
	DMP	Okay. I guess we propose to try another 20 degrees adjustment in pitch.
	CC-H	Now, do you mean a total of 20 or a total of 30?
	DMP	We took - It didn't seem too much; it was just obviously an improvement.
22 52 54	CC-H	Deke, Houston. The only confusion I have on - on what you said was is that I thought you said that Vance had already tried about another 10 degrees down, and then you mentioned the 20 degrees. And I was wondering if you thought that a total of 20 degrees further pitch down or a total of 30 degrees further pitch down would be about as much as you could stand?

	DMP	I'm talking a total of 30. We tried 10, and we're still looking at a lot of stuff above the horizon. So we think another 20 on top of that might be about right.
	CC-H	Okay. Why don't you let our guys think about that, Deke, and we'll get back to you.
	DMP	Thank you.
	CC-H	Deke, Houston. You got a minute to talk?
	DMP	Yep.
22 54 35	CC-H	Tell you what, we're going to look at the - We have another Earth obs pass coming up down here in just a minute and if we can gin up a - a new number for you before this Ascension pass, maybe we can update this upcoming P20 and you can give that a whirl and - and let us know how it turns out. For your information, it's printed in the Flight Plan, but we - we have no ATS coverage this pass and - due to the attitude constraints.
22 55 01	DMP	Okay. Yes. We would have cranked in the 10-degree adjustment, but we only have 10 minutes of Hawaii to the West Coast and we didn't think that was enough to start experimenting.
	CC-H	Okay.
22 56 57	CC-H	Apollo, Houston. We're about 1 minute from LOS at Newfoundland. I'll give you a call at - at Ascension at 130 plus 46. That's about 11 minutes from now.
23 08 42	CC-H	Apollo, Houston. Ascension for 4 minutes.
	CC-H	Apollo, Houston. Ascension for 4 minutes.
	CC-H	Apollo, Houston. Ascension for about 3-1/2 minutes.
23 09 41	DMP	Roger. We're reading you, Crip - Dick.
	CC-H	Rog. And I've got an update to the upcoming P20 for this Earth obs attitude, Deke, if you'd - if you'd like me to update that Flight Plan.

DMP Okay.

CC-H Okay. It's at 131 hours and 15 minutes.

DMP Roger.

CC-H Are you ready to copy?

DMP Ready to copy.

23 10 10 CC-H Okay. NOUN - there's one change. The NOUN 78, VERB 07 - VERB 25 NOUN 78, I want to change the middle number to read plus 06000. And that'll end up the three numbers will be plus all balls, plus 06 three balls, plus 18 three balls. Over.

DMP Okay. Copy. We got that one. Thank you.

CC-H And if you copied that, due to the data that we see here on the experiment, Vance, from the X-ray, we got a - a change in the pad we want you to do. Right now we would like - -

CMP Okay. Go ahead. - -

23 10 56 CC-H - - Okay. We'd like X-ray H - HIGH VOLTAGE POWER to OFF, now, down on panel 230. And I've got one write-in for you at 29 minutes.

CMP Okay.

CC-H And the write-in is just - write in there, "X-RAY HIGH VOLTAGE POWER to number 1 at 29 minutes." The rest of the pad remains exactly as is.

CMP Okay. Part of your "save the wear and tear" program? Huh?

23 11 27 CC-H No. Tell you what it is, we don't think we're getting good data on the X-ray. There's a very important target down there at 29 minutes. We're going to turn the HIGH VOLTAGE POWER, OFF, now, and turn it back to number 1 at 29 minutes, and the rest of the pad will make it all work. The reason we're not changing any of the interim part of the pad is we're also getting U - EUV data. Over.

	CMP	Okay. Understand.
	CC-H	Okay. Great.
	CC-H	Apollo, Houston. We're about 30 seconds from LOS. Orroral Valley comes up at 131 plus 22. See you then.
	CMP	Okay. See you there.
23 12 47	CC-H	Okay.
	CMP	Hey, we're going over the Simpson Desert right now. And it's just fantastic. It's got dunes in it, it looks like, that are very long and they look like - -
23 43 22	CC-H	Apollo, Houston. Orroral Valley for 3 or 4 minutes.
	CC-H	Apollo, Houston on VHF through Orroral Valley. How do you read?
	CC-H	Apollo, Houston. Orroral Valley.
23 44 33	ACDR	- - better.
	CC-H	Apollo, Houston. Orroral Valley. How do you read?
	ACDR	Clear, how us?
	CC-H	I - I got a loud background noi - noise every now and then, Deke, but I read you loud and clear.
	ACDR	This is Tom, but the - the new attitude is lots better.
23 45 02	CC-H	Hey. Very good. I've got a couple of things for you. First thing - I just - Since I didn't talk to you about it, I'm assuming that Crip had told you, do not activate the primary evaporator where it said in the Flight Plan and one came up there a few minutes ago. I just wanted to verify you didn't do that.
	ACDR	That's affirmative. We've left the evaporator off completely.

CC-H Okay. Fine. And you can delete that. There's a couple of more places between now and the end of the day where it appears, and just - just pass those over. Also, I've got one change to the upcoming - EUV pad that you're going to be doing on rev 80.

CC-H Apollo, Houston. Do you read?

ACDR We're shooting pictures like mad. Stand by.

CC-H Okay. I tell you what. Let me just talk and you guys keep on. The - And I can get the rest of it up to you later. We're about 30 seconds from Orroral Valley. At the start of the X-ray upcoming EUV pad, delete X-ray ops, delete X-ray ops at 55 minutes. I'll tell you the rest later.

ACDR Delete X-ray ops at 55 minutes.

23 46 27 CC-H That's affirmative, Tom. See you later.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

00 24 49	CC-H	Apollo, Houston. Bermuda for 6 minutes.
	CMP	Hello, Richard. How you doing?
	CC-H	Hi, Vance, how are you? I got cut off there and - I'm sorry I was interrupting you guys while you were taking pictures during that Earth resources pass. I think I got up the "Delete X-ray ops" for this pass at 55 minutes. I have one more change.
	CMP	Okay, go ahead.
	CC-H	Okay, down at the tail end of the pad at the time of 34 plus 55, I want you to do - in addition to the EUV powerdown, I want you to do an X-ray contingency powerdown procedure. It's in the Experiments Checklist, page 1-24. It's about a 6- or 7-minute procedure.
	CMP	Okay, I've got it. Seem to recall that from one of our sims.
00 25 45	CC-H	Yeah, we're doing our best to get - to see if we can understand what's the matter with the X-ray. And we're going to sleep with - after you do the X-ray contingency powerdown, we're going to sleep with it in - in that configuration.
	CMP	Roger.
	CC-H	Also, Apollo, I have one change to the Flight Plan at about 32 - excuse me, 132 hours and 30 minutes or so; I want to delete the "WASTE STOWAGE VENT valve to VENT."
	ACDR	Okay, Dick, we have that.
	CC-H	Okay, thank you, Tom.
00 26 34	DMP	And, Dick, as far as the last Earth obs is concerned, I think that attitude is much better than the previous time. We're going to keep running with it.

CC-H Okay, real good, Deke. We'll take that input and crank that into our planning for all the - all the other pads that are coming up.

DMP Okay.

CC-H I mean all the other passes that are coming up.

00 26 58 DMP Things are still moving mighty fast, but it gives you a chance to look at them fast in nadir, which we couldn't do before.

CC-H Okay, well, why don't we try that approach for a while? And if - if you have any other suggestions, just give them to us and we'll try to help you out.

DMP Well, we got to wish we had more film. It's very discouraging to have to stay within a film budget; there's so many interesting things to shoot.

CC-H Roger. Understand. Record them in your mind.

00 27 28 DMP Unfortunately, we have no other choice.

CC-H (Laughter) Roger.

00 29 13 ACDR Houston, Apollo.

CC-H Go ahead, Tom.

ACDR Okay, Dick, down in that - again in that same area - about 32:34 - it says, "Activate primary evaporator." They still want us to leave this one off, don't they?

CC-H That's affirmative. Delete that there where it says "Activate primary evaporator." And that's the last one of the day. We're going to leave it off.

ACDR Okay. We're going to leave it off all night, huh?

CC-H That's affirm. We're about - and, Tom, we're about a minute from LOS. Ascension comes up about 10 minutes from now at 132:19. See you there.

ACDR Real good.

CC-H And, per the pad, we'll probably get locked up on ATS before we get Ascension.

00 29 57	ACDR	Roger.
00 46 35	ACDR	Houston, Apollo. How do you read?
	CC-H	Apollo, Houston. Tom, I read you loud and clear. How me?
	ACDR	Okay. Are we locked up on the ATS?
	CC-H	Yes, we are, Tom. We're talking through the satellite.
00 46 48	ACDR	Okay. I'll go ahead there and go to the stop, REWIND, and COMMAND RESET.
	CC-H	Okay.
	CC-H	And, Apollo, Houston. When somebody gets a chance; on panel 230, request UP TELEMETRY switch to RELAY.
00 47 12	CMP	Rog. Tom's getting it right now.
	CC-H	Okay.
00 47 55	CC-H	Okay. We've got our command in now; on panel 230, request UP TELEMETRY back to UP TELEMETRY position, that's the center one.
	CMP	Roger.
	USA	(Music.)
	CC-H	Holy mackerel! Why did the music stop?
	USA	(Music)
	CC-H	Sounds like you guys are having a party up there. We thought you were working on this EUV pad.
	CMP	Well, we - we're trying to do both. We'll see how it works out.
	CC-H	Roger. Hey, if Deke is listening, I had a comment on his comment about the film.
	CMP	Okay. Stand by.

	CC-H	Okay.
00 50 43	ACDR	Deke - Dick, he's inventorying the film. We'll just wait a couple of minutes on it, and then we can talk to you - you can talk to him.
	CC-H	Well, I tell you what, Tom, it wasn't that big of a deal, and I can just pass it on to you. He was commenting about the frustrations of having to live within the film budget when you saw so many things out the window on good passes that you'd like to record. I'd just wanted to remind you and make sure you hadn't forgotten, that there's four film magazines listed in the Earth Obs book under film budget on page 5-1. There are four - they're listed as Hasselblad PAO magazines. They're your choice as to what to use them on. The numbers are CX06, 7, 8, and 9, located in B-5.
00 51 26	ACDR	We've already used those. (Laughter)
	CC-H	Roger.
	ACDR	One thing that we do have as a reserve, and we are getting quite a bit of things on targets of opportunity, is the little Nikon.
	CC-H	Roger.
	CMP	No, Dick, there's no party. We're just playing a little music to make the computer in the spacecraft feel at ease.
	CC-H	Roger. Understand, Vance.
01 04 07	CMP	Houston, Apollo.
	CC-H	Apollo, Houston. Go ahead, Vance.
	CMP	Dick, right now, Tom's doing the contingency powerdown, and there's a step that says - let's see - it says, "X-RAY COVER, OPEN. Verify." And, of course, it's CLOSED, and he wonders - wants a little advice on that.
	CC-H	Okay. We do want to open that cover, Vance.

CMP Okay.

01 05 58 ACDR Okay, Dick. Everything is done, except closing the X-RAY COVER. And we're in that 5-minute wait after the X-RAY LOW VOLTAGE POWER, ON.

CC-H Okay. Real fine, Tom. And we'll be watching you, too. Thanks a lot, Tom.

ACDR Yes.

01 06 37 CC-H And, Apollo, Houston. We're getting ready to start a dump now that you're through with that pad***

CMP Please repeat, Dick.

01 06 53 CC-H (Laughter) Okay. I was going to tell you that I might drop out for a second because we're getting ready to start a dump, but I dropped out in the middle of what I was saying because we started the dump, and now I'm back up.

CMP Okay.

CC-H And, Apollo, Houston. Vance, when you get a minute to listen, I had a comment to you about what you told us about the eddies that you saw out on the Pacific awhile ago.

CMP Okay. All right. Yeah, go ahead.

CC-H Okay. Farouk is here and we were talking to him. The question that he had that you might notice on future passes over the Pacific, if you see the same thing, was the color and the texture of the ocean down between the clouds, and he's interested there mainly in the sea surface conditions and not just the clouds. Thought you might - I have some news sometime later on this evening that I'll have available if you'd like to hear it. There's one item in here that I thought I'd read to you. It says an earthquake which struck an area of the western Pacific today prompted a tidal wave alert for parts of Hawaii but was later canceled. The University of California Seismographic Laboratory at Berkeley reported an earthquake registering a 7.7 on the Richter scale occurring at 7:50 a.m. Pacific daylight time, and

it was centered in the region of the Solomon Islands. The - for your information, the Solomons are about 2000 miles to the southwest of Hawaii. We did check with our recovery weather people just a minute ago, and it turns out that they have not seen any tidal wave action as a result of the earthquake, either at Hawaii or at Kwajalein.

CMP Yeah, that is interesting. We've been flying repeatedly over that area, of course. I don't know if you can see something like that from up here or not.

01 09 16 CC-H Rog. Yeah, you're not going to be flying over that direct area here in the next pass or so. I just thought you might be interested in that one.

CMP Yeah, that is very interesting. After our last conversation, I took distance mea - or size measurements on a few of the eddies we've seen, and seems like a typical size is 10 to 15 kilometers in diameter.

CC-H Okay. Copy.

CMP But we have seen some giant ones that would be tens of kilometers, so we'll try to look at them more closely in the future though, and see what the sea state looks like.

CC-H Okay, thanks a lot, Vance.

CMP Right.

ACDR Okay, and, Dick, do you want us to maneuver with this VERB 49 to our solar inertial plus-X forward sleep attitude now?

CC-H Stand by on that just a second, Tom, please.

01 10 50 CC-H Tom, in answer to your question, as soon as you get the X-RAY COVER CLOSED after your 5-minute wait, yeah, go ahead and do the maneuver.

ACDR Okay, that's coming up right now.

CC-H Yeah. I marked it, too, and I noticed it was very close to that.

01 11 23	ACDR	And that X-RAY COVER is CLOSED.
	CC-H	Okay, Fine, Tom. Incidentally, while I'm talking to you and we're talking about maneuvering, I wonder if I could have a second. It appears that we're developing an imbalance in the propellants in quads Alfa and Charlie, and we think we can stop this imbalance trend by changing the - one jet configuration on panel 8. And that is in the roll jets, what we'd like to do is turn Bravo - correction, turn Delta 2 to MAIN A and then turn Bravo 2 to OFF. And of course, if you needed to get back to the nominal configuration due to some problem or forgot what it is, those little decals that mark - that is pointed toward B2 would remind you which one it was. And incidentally - -
	CMP	Okay. Understand, Dick. We'll - would you like to have us do that right now?
	CC-H	Yeah, what we'd like to do is go ahead and put D2 to MAIN A and B2 to OFF. And incidentally, for your information, we're not going to have to be switching these back and forth. This configuration is good for the SIM bay experiments.
01 12 35	CMP	Okay, good. We have a Delta 2 ON and Bravo 2 OFF.
	CC-H	Okay. Real fine. Thanks a lot.
	ACDR	Dick, where are we at now? Are we heading across Africa?
	CC-H	No, you're on ascending pass; you're just crossing the coast of southwestern Australia. And - then you'll be, of course, crossing Indonesia. Then you'll get another long pass over the western Pacific.
	ACDR	Okay. Sometimes it's hard to remember where you're at - you're in and out playing with the UV attitude all the time.
01 13 47	CC-H	Rog. Well, you guys move so fast, I'm not surprised.
01 14 06	ACDR	Okay, we'll maneuver to the solar inertial attitude.
	CC-H	Okay. Fine.

01 16 30	CMP	Hey, Dick, are you still there?
	CC-H	Yes, we're here. Go ahead.
01 16 35	CMP	Hey, we're going over the Simpson Desert right now. And it's just fantastic. It's got dunes in it - it looks like that are very long, and they look like road tracks, there are so many of them - like hundreds of parallel road tracks. And we'll comment on it in our usual fashion with the onboard tape recorder, but - -
	CC-H	Yeah, okay. Thanks a lot - -
	CMP	- - it's just plain spectacular!
	CC-H	Roger.
	ACDR	Yeah, and the long red streaks are matching about color 10, I would say, on Farouk's wheel.
	CC-H	Okay. Thanks a lot for the input - wish I could see it myself. Beano and I are whipping out our color chart and seeing what color it is ourselves.
01 17 32	CMP	This is one of those cases where there was light coming in the window, falling on the color chart. And that made it easy to use. Sometimes when it's in the shadow, it's hard.
	CC-H	Roger. Understand. Incidentally if you ever do have a question about the chart or any comment on it, we've got one here at the console that's just about identical to yours, I think.
	CC-H	And, Apollo, Houston - -
	CMP	Very good.
	CC-H	- - we're a couple of minutes from LOS. I'll give you a call at Guam at 133:01.
	CMP	Okay, understand.
01 18 32	ACDR	And some of those long streaks, those long sand streaks, could have either gone to the 9 - between 9 and 10.

	CC-H	Okay, thanks, Tom. Is it - could you differentiate 9 or 10 A or B? They dark or light?
	ACDR	Now that the Sun gets on the wheel where I can see it, it was more like 9.
	CC-H	Okay.
	ACDR	Oh, I'm sorry. Okay. Be about like 9A.
01 19 01	CC-H	Okay, thanks a lot.
01 23 41	CC-H	Apollo, Houston. Guam for 7 minutes.
01 23 44	ACDR	Okay, Dick. And right over this area, you can mark the GET's, a whole series of eddies - maybe 15 to 18 kilometers in diameter - just clumps of them.
	CC-H	Okay, copy.
	ACDR	We're using the Nikon to shoot it.
	CC-H	Okay.
	CC-H	And, Apollo, Houston. We'd like to ACCEPT, please, and we'll get - get up the evening loads here, the new state vectors.
01 24 10	ACDR	You got ACCEPT.
	CC-H	Okay, thanks.
	ACDR	Houston, Apollo.
	CC-H	Go ahead, Tom.
	ACDR	Okay, we'll get these height measurements later on. We're getting such good - Earth observation data here, we'll just delay that. You'll get it on the VTR.
	CC-H	Okay, whenever you get a chance from now until bedtime. As far as flight planning goes, it's mainly your time, so just be sure you get it, please.

01 26 07	CC-H	Apollo, Houston. The computer is yours. You can go back to BLOCK.
01 26 11	ACDR	Roger. Back to BLOCK.
01 29 12	CC-H	Apollo, Houston. We're 1 minute from LOS Guam. Rosman comes up at 133:32. See you there.
	ACDR	All right.
01 29 18	CMP	Okay.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

01 54 06	CC-H	Apollo, Houston. We're AOS, and if you'll give us ACCEPT, we'll continue giving you our uplinks for the evening.
01 54 34	CC-H	Apollo, Houston. MILA for 7 minutes.
	ACDR	Roger. Dick, how do you read?
	CC-H	Loud and clear, Tom. And if you'll give us ACCEPT, we'll continue giving you the evening uplinks.
	ACDR	You got it. Had one problem with the VTR. We got the DM height measurements, but every time we hit the TAPE motor DRIVE, we'd get a green light. When it went to the RECORD, both of - the green - the TAPE motor DRIVE would go out. We did a REWIND, and it - it was reading 555. And did a rewind FORWARD just for a second, and it went to 1800 and something. Vance will talk to you in just a second here.
	CC-H	Okay. We've got the right people listening, so we're standing by.
01 55 25	CMP	Yeah. Well, all told, we didn't use the VTR more than 10 minutes probably. Deke turned it on for us, and when he turned it on it all worked right, both the HEAD WHEEL DRIVE and the RECORD light came on. And then sometime later, when we were changing personnel in the measurement, Tom noticed that both lights were out. At that point, we talked it over and decided we'd rewind it just for a second or two to see what happened. Hit the HEAD WHEEL DRIVE, then REWIND, then OFF again. And so on the meter up to 1850 something, I believe.
	CC-H	Okay. Stand by just a second. Hang on.
01 58 32	CC-H	Apollo, Houston. One question for Deke about the VTR. Is there any chance that he recalls what the TAPE POSITION indicator was reading when he turned the VTR on the first time?
	DMP	Unfortunately, Dick, I didn't look at it.
	CC-H	Okay. No problem.

02 00 20	CC-H	Apollo, Houston. We're about a minute from LOS, and we'll be seeing you when you get locked up on the ATS.
	DMP	Okay.
	CC-H	And, Apollo, Houston. We didn't quite get our loads in. If you'll leave it in ACCEPT, we'll finish when we get locked up on the ATS.
02 00 46	ACDR	Okay. Roger.
02 06 07	CC-H	Apollo, Houston through the satellite.
	CMP	Loud and clear, Dick.
	CC-H	Okay.
	CMP	Just having supper.
	CC-H	Okay. Real fine. Incidentally, we're having some comm problems in our ground gear. We do have air-to-ground voice, and I'm assuming we're going to keep it.
	ACDR	Hey, Dick; Tom.
	CC-H	Go ahead.
	ACDR	What do we hear from Overmyer these days in Moscow?
	CC-H	Well, as a matter of fact, I haven't talked to him this afternoon. Of course, I kept in touch with him, talking to him just about all the time when we were - y'all were docked up and during the rendevel - rendezvous. I'm not sure when he's leaving and is going to be on the way back. I'll check.
	ACDR	Okay. Well, look, tell him "Hello" from all of us, and we sure appreciate his work and all those guys who worked at the Center over there for us. We haven't forgotten about them.
	CC-H	Okay. I - I'm - I was sure you hadn't, and I'll sure pass it to them. They have supported you in mighty long hours over there in the Moscow Control Center the whole time, as you know, and did a real fine job.

02 07 32 CMP You guys down there haven't been doing so bad yourself.

CC-H Thank you.

02 08 03 CC-H Incidentally, guys, either now or after you eat I have some news here if - if you'd like to hear any of it. No hurry. We still - got a good while before bedtime.

ACDR Okay. Yeah, go ahead now.

CC-H Okay. Nearly enchanted by the unique encounter in the sky, Pope Paul VI said today he became one with a multitude of men who watched the feat of Apollo and Soyuz in these days. The Pontiff spoke to a crowd of 5000 from the papal palace in his hilltop resort near Rome. Pope Paul, an - an admirer of space ventures, told of watching televison and scanning the night's sky in the vain hope of having a direct glimpse of you and the Soyuz. He said, "We, too, our eyes dazzled by skylight or wide open toward the depth of nighttime space, will shout out 'Long live the heroic men of such a fantastic feat.' Man has won, and we cannot refrain from foretelling more wonderful advances in the dominance of nature beyond the heavenly sphere. Man will win." Also I have an article - a thing here that points out that except for the Apollo 11 first Moon landing, there are more reporters and press that are here in Houston accredited to cover the Apollo-Soyuz space flight than any other space flight in the history of - since we started. With a - -

ACDR Sounds great.

02 09 35 CC-H Roger. The - I - I'd like to just put in my own two cents. I think the press has given you a tremendous coverage - very fair coverage of both you and the Russian compadres. There are several members of Tass that have been here in Houston, and, of course, we've had a press contingent in Moscow. With a 10-day European trip coming up, the President relaxed over the weekend playing his favorite sports and getting to see the movie "Jaws." It was the last chance for the President to take time off before he departs next Saturday to visit four European capitols and attend the July 30th to August 1st European Security Conference Summit Meeting in Helsinki. The President also faces a busy week ahead in his battles with

Congress over oil price controls and restoring military aid to Turkey. He played 18 holes of golf at Burning Tree Country Club in - in suburban Maryland Saturday, then joined Mrs. Ford for a helicopter trip to Camp David in the evening. War-split Cyprus observed the first anniversary of its Turkish invasion today with rival rallies and speeches holding out little hope for a settlement of the conflict. Addressing thousands of Greek Cypriots in Nicosia, Cyprus President Makarios vowed an unending struggle until the island was united and free again. Mount Everest in one respect is no longer the world's highest mountain, the Smithsonian Institute scientists say. In fact, if you measure from the center of the Earth, it never was, the Smithsonian said in a statement today. The scientists have calculated that Ecuador's Mount Chimba - Chimborazo - I'm sure I'll get corrected on that pronunciation - situated in the Andes about halfway between Quito and Guayaquil, has a geodial height 7000 feet higher than Mount Everest. Apollo planner Werner von Braun said in an interview today that rocket fuel may provide a clean-burning substitute for gasoline in automobiles of the future. An ideal fuel would be pure hydrogen, which gives off pure steam rather than polluting exhaust fumes, von Braun told the West German news magazine today. However, hydrogen which powers our large rockets is very difficult to handle. It turns out that Mercedes-Benz has succeeded in building a transportable tank for hydrogen to power experimental autos. The real problem though is that a car just can't go very far on a tankful, von Braun said. In sports, the Astros dropped another game today to the New York Mets, 10 to 9. The Phillies defeated Cincinnati 11 to 4, while Atlanta beat Montreal in both ends of a doubleheader. The Giants edged the Pirates 2 to 1, and Chicago took Milwaukee 9 to 2. In the American League, Detroit over Kansas City, Oakland beat Baltimore, while Cleveland was defeating California, and the Yankees took Minnesota in the first game of a doubleheader. And the last thing I have in the news here is also in the sports scene. It turns out that Ralph and Ignacio scurried down 6-foot plastic tubes and crawled away with top honors over the weekend in the first Hawaiian cockroach racing festival. Some 2000 persons showed up at the park bandstand near Waikiki Beach to watch the competition sponsored by a local radio station and the City Department of Parks and

Re - and Recreation. Darryl Evora, 15 years old, picked up his champ, Ralph, at the festival's "Rent-a-Roach" booth. "The one I caught at home was too slow," he explained after Ralph streaked down his tube to victory. Remmy Remigio, 16 years old, borrowed a roach from a friend to run in the adult competition and christened his competitor Ignacio. He frantically tapped on the tube and urge Ignacio on and his efforts were rewarded when the roach abandoned his initial hesitation and scurried to victory. Evora said he would keep Ralph as long as possible with an outside chance that there will be a defending champion next year. We'll just have to see how long he lasts. And I like the last line the best. He says "Right now, I just want to take him home and show him to my mother."

02 14 09 CMP Sounds like a new sport is born.

CC-H Roger that. We've still got about 45 minutes left here in this ATS pass.

CC-H And, Apollo, Houston. We're through with the uplinks. You can go back to BLOCK. We're going to be be starting the DSE dump, so I may drop out on the comm here for just a second.

02 14 33 ACDR You've got BLOCK.

02 17 01 CC-H And, Apollo, Houston. I forgot to call you back, but I am GO for voice again. I'm standing by.

ACDR Okay. Thank you, Dick.

02 31 17 CC-H Apollo, Houston.

ACDR Go ahead, Houston.

CC-H Hey, Tom. I guess you guys are still in the end of your meal, but this is the last pass this evening. And what I'd like to - is - what I'd like to do is go through the things that I have and interrupt you here, and then y'all can get back and have it to yourselves. One thing we want to do is go ahead and get the VERB 74 done while Guidance is looking at this data, which he is now. And also, we'd like somebody to go to panel 400, the VTR, and turn the POWER - and verify that the POWER switch, the

TELEMETRY switch, and the INTERLEAVER switch are all ON, and we're going to look at the data; we think its possible that we may have been at the end - end of tape there. There have been some reports of the TAPE POSITION indicator jumping around during testing on the ground.

02 32 13 ACDR Okay, Dick. I'll go down and do that right now. You've got the VERB 74.

CC-H Okay. Another - another something that somebody could be doing would be give me a battery readouts and also, we'd like the quantity readouts on all four quads.

ACDR Give them a battery readout, and, Vance, you give them the quad readout.

02 33 01 ACDR Okay. I'm down here on the VTR, Dick; go ahead.

CC-H Okay. What we wanted - -

ACDR You want all three swit - -

CC-H That's affirm; all three POWER switches to ON.

02 33 12 ACDR Okay. TELEMETRY, INTERLEAVER, VTR's ON.

CC-H Okay.

ACDR And I read 8888.

CC-H Okay. We'll be doing some commanding there, Tom. So I may get back to you a little bit later on to do something else, but for right now, I don't need anything else down at the VTR.

ACDR Okay.

DMP Okay. Dick, you wanted batteries? We got 37 on C, same on BAT A, and PYRO A and B. Do you want the others? A is 35.2, and B is 36.6.

CC-H Okay. I got them, and now we'd like a quad readout if we could get it.

ACDR Okay, I can get it for you here, Dick. Just a minute.

CC-H Okay. Real fine, Tom. And, incidentally, we did verify that we were at the end of tape there on VTR.

CMP Okay. And, Dick, the quads quantities are 79, 87, 76, 83.

02 34 29 CC-H Okay. There's a couple of other things. If somebody would get out the Flight Plan, I've got some - a few minor changes to read up to you that are real early in the morning tomorrow. And also, it turns out with this steam duct problem that we have, that we - it's potem - it's possible that that could affect the relief capability of the CABIN PRESSURE RELIEF valve after looking at some of our drawings, and we can - we can - so - get an alternate relief capability by throwing two valves down in the docking module. So if somebody could go down in the docking module and - and throw a couple of them, I'll be glad to read them to you.

02 35 15 DMP Okay, stand by 1.

CC-H Okay.

02 35 30 CMP Okay. And I'm ready to copy anything else you might have.

CC-H Okay. Vance, do you have the Flight Plan?

CMP That - that's right.

CC-H Okay. Turn over to tomorrow morning at a time of 142 hours and 55 minutes, please.

CMP Okay. I've got it.

CC-H Okay. There in the P20 option 5, I've got the same change I had before, the NOUN 78 second number should be changed. It now reads plus 09 and three balls. I want to change it to read plus 06 three balls.

CMP I understand. Change 09 and three balls to 06 and three balls.

CC-H Okay. Right below, then, in Deke's column at about 143:05, the high-gain angles I want to change to pitch minus 7, yaw 323.

CMP Got it.

02 36 46 CC-H Okay. And while we're right there, on the next page at 144 hours and 40 minutes, there's also some high-gains listed under your column. I want to change them to read pitch minus 10, yaw 229.

CMP Copy.

CC-H Okay. Now if you'll turn back a couple of pages. During the sleep period - this is one I'm sure you probably won't need, but say at around 142 hours.

CMP Okay.

CC-H Okay. It turns out that we've released the ATS satellite during that whole rev, so you're going to have no ATS, and so that contingency comm attitude is not going to do you any good if you did need the ATS. Just for your information, the Soyuz - the orbit is right in there at 141 hours and 46 minutes.

CMP Okay. Yeah, that's good to have. (Cough) 140 hours and how many minutes?

CC-H Well, let's see. The word I had was a 141 plus 46. I also had a time when they would be on the parachutes, but I didn't write it down right here, and I don't have it right now.

CMP Okay.

CC-H Okay. How about - -

02 38 14 CMP 141 and 46.

DMP And that's divided ..., Dick.

CC-H Okay, Deke. Two valves: first, on panel 824, the PRESSURE RELIEF VALVE REFERENCE. I want to put that to VACUUM.

02 38 27 DMP Okay. PRESSURE RELIEF going to VACUUM.

CC-H Okay. And then on panel 828, LOW PRESSURE RELIEF valve to AUTO.

02 38 35 DMP LOW PRESSURE RELIEF to AUTO.

CC-H Okay. That's all there is on that one. Let me check down the list and make sure - see what I've missed.

CC-H Okay. One thing that I was real concerned about last night, and I'm not sure - exactly what configuration y'all were in, but I gave you a couple of calls. I think you were still up, probably had off your headsets. We - we just wanted to make darn sure that when you do do the presleep checklist that you make sure that - that either somebody is on a headset or that one of the speaker boxes, the one probably in the command module, I guess, would be turned on with the volume up and not on full decrease.

02 39 35 CMP Okay. We'll try to make sure. I think we had a good configuration last night. Wasn't aware that you were trying to call us.

02 39 42 CC-H Well I - I - this morning when you - when Crip woke you up he - I was just handing over to him, and I - I agree with you. I was pretty sure we did, and I heard you get up at the right time. But I - right after the scheduled sleep period, I did call you and didn't get a response, and I just worried about it. You - you might write yourself a note. You know, in the presleep checklist on page 1-49, the comm configuration is listed there, but it says, "Required for joint operations only." And it has to do with panel 10. You might just delete that joint ops note there, and just put down there, "Verify speaker box on or somebody wearing a headset."

CMP Yeah, that's - we understand that. And that's how we did last night. Perhaps the volume wasn't up enough to wake us up.

CC-H Okay, incidentally, since Tom called awhile ago, we talked to the specialist team that's in Moscow. It turns out they'll be departing there on Wednesday, and - which - which is going to be coming up shortly, of course, and each heading their own way back to Houston. And they've really appreciated - -

ACDR Okay, good.

CC-H - - and they certainly appreciated your words.

02 40 54 ACDR Roger. Thank you for relaying that, Dick.

CC-H Okay.

CC-H Okay. A couple of more minor business things. One thing that we think, there might be an outside chance that it would help us in getting the steam duct thawed out would be to open up the door that is in front of the LiOH canisters and get a piece of gray tape or something and just leave it open and let some warmer cabin air filter back in there behind - in that area.

CMP Okay, that's open up the door at panel 350.

CC-H Okay, and here's one last note, back again on the vis obs film. I think you already are quite aware of this, but I'm going to tell you anyway. There are thr - there are three black camera magazines that, according to our records, because of past cancellations in Earth - Earth obs, that have extra frames if you haven't already used them. They are CT05, CT06, and CX13.

ACDR We were more concerned, Dick, about the silver camera film. And we've inventoried that since the last time we talked to you, and we got about 5-1/2 mags of that left. So we're - we need four by our records. We're still in good shape, I think.

CC-H Okay; real fine. We won't worry about it.

02 42 30 ACDR Say, Dick, one thing I want to do, too. We don't want to bring back one frame unexposed, so we're going to shoot up all that bank - a lot of it will be on outside and - just check, if there's anything that - that they've got in there that couldn't be used for outside using the light meters onboard the camera. Over.

02 42 54 CC-H Tom, I'm not sure I understand the question, and I'd like to make sure I pass it on properly. I - I realize you are going to try to shoot it all up, but say again the question, please.

02 43 06 ACDR Yeah; okay. We're going to shoot up all that Nikon film, and a lot of it's going to be used for outside viewing. And I just wondered it - you might check - No - nothing time critical - just check tomorrow to see if there's any film that wouldn't be suitable for it. And we're going to be using the light meter onboard and Has - the Nikon.

CC-H Okay - -

ACDR Typical example - example, Dick - -

CC-H Yes, I understand now, and we'll get our camera people to take a look. And if they have any advice in the morning, we'll get it up to you.

ACDR We've got the camera here right now, for example, with a CI18 with ASA 500 film in it, which is for the crystal growth of the ZFF. And we're using that also for Earth obs whenever we see something interesting.

CC-H Roger. Understand.

02 44 10 CC-H Incidentally, I - I think I got this up before, but if I didn't, it turned out the VTR was at the end of tape, and INCO has been commanding it. And we think probably that that was just anomaly because of the end-of-tape condition. We'd like you to leave the VTR POWER switches ON tonight and we're going to clean off the tape recorder during the evening. And it'll be all set to go in the morning.

ACDR All righty. Real good. Well leave them ON, and I guess you could command them OFF at the end, right?

CC-H Well, we - we don't mind - the answer to your question, Tom, is no. We can't command the POWER off, but we will clean off the tape and leave it at the end - at the beginning, and - and we don't mind leaving all three POWER switches ON all night. No problem.

	ACDR	Yeah. All right. Okay.
02 45 17	CC-H	Okay, that's the end of my long list. Thanks for putting up with it. We still have about 13 minutes here, and I'll be standing by until the end of the ATS pass.
	CMP	Very good. Thank you.
	CC-H	Okay.
02 49 18	ACDR	Houston, Apollo.
	CC-H	Go ahead, Tom.
	ACDR	Yeah, what terrain are we crossing over right now? Over.
02 49 30	CC-H	You're on an ascending pass at about 10 degrees south, and you're getting ready to cross the - the islands out in Indonesia.
	ACDR	Oh, okay.
	CC-H	And the pass after - after you cross all those islands chains out there, Tom, you're going to be out over the Pacific all the way out, and then you'll see - start a descending pass and cross over the western United States over Oregon, the State of Washington. And - and as a matter of fact, you're going to come fairly close to Houston on your - on your descending pass coming down this way.
	ACDR	Okay.
02 50 39	CC-H	Incidentally, Tom, one of the nicest things - things that's been happening to our shift on - on this mission is that the EECOM's back room has been fixing a real fine meal for us right now, and you might not believe it, but right now we're having cheesecake in the MOCR.
	ACDR	... (Laughter)
	CMP	Didn't know Cy was a cook.
	CC-H	Well, this is - this is Charlie Dumis' group here.

	CMP	Okay. Well, I didn't know that Charlie was, either.
	CC-H	Well, they have outdone themselves, we ate spaghetti tonight.
	ACDR	Al Bean must be around there someplace.
	CC-H	You guessed it. He's the guy on duty (laughter).
02 56 19	CC-H	Apollo, Houston. We're coming up on about 2 minutes before ATS LOS for the last pass of the day. One thing we were curious about was did you ever talk to Soyuz on FM today - this morning.
	CMP	No, we didn't, Dick. No, never did.
	CC-H	Okay.
	CMP	We - we never - we never got cranked up to hear them mainly because, for the first 3 hours, we were too busy to think about it, and I guess after that, why, just didn't think we were that close to them.
	CC-H	Yeah, okay. Well, I was just wondering. We had talked about it a little bit yesterday and they're - as far as I know, they're doing real fine, and they'll be - by the time you wake up in the morning, they'll be safely back home again. Incidentally, the wake-up call in the morning is Vanguard at 142:45, which is right at the scheduled time for the end-of-sleep period. And we're going to be saying goodnight here, so we'll see you in the morning.
	ACDR	Okay.
	CMP	Very good, see you in the morning.
02 57 31	CC-H	Okay.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

REST PERIOD - NO COMMUNICATIONS

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

11 07 52	CC-H	Apollo, Houston through Vanguard for 5-1/2 minutes. Good morning.
	CC-H	Apollo, Houston through Vanguard for 5 minutes. Good morning.
	ACDR	How do you read, Bo?
	CC-H	Roger. We read you fine. We're just looking at the TV here and see that Soyuz has landed safely, and Alexey and Valeriy were outside of the spacecraft and seem to be in good health.
	ACDR	Oh, very good. Give them our best. Sure glad to hear everything went good.
	CC-H	I've got some Flight Plan changes that I'd like to start on as soon as someone has a - a chance.
	ACDR	Could you give us a couple of minutes? We're just barely starting to move here.
	ACDR	Stand by. I might be able to get a headset. Hang on.
	CC-H	Okay.
	ACDR	Okay, Bo. Go ahead.
11 10 39	CC-H	Okay. The first one is at 143:15, and it concerns the waste water dump. We'd like you to dump the waste water to 40 percent. That's a 9-minute dump. We suggest timing the dump since the transducer has been erratic.
	ACDR	Okay. 9-minute waste water dump at 142 - 143 ... Roger.
	CC-H	Tom, I think I heard you say that correctly, but you came through very weakly. Could you repeat it, please?
	ACDR	Roger, Bo. Waste water dump, 9 minutes; 143:15. We'll time it.

	CC-H	Roger. The second one is at 144:40, and that's change the high-gain angles to minus 4 and yaw 312. And that's a change to the change.
	ACDR	Roger. Minus 4 and 312.
11 12 13	CC-H	At 144:45, perform the X-ray contingency prep in the Experiment Checklist, page 1-25.
	ACDR	Give me the page again, too.
	CC-H	That was page 1-25.
	ACDR	Got it.
	CC-H	Okay. And there's less than a minute until LOS, and we'll see you at ATS at 143:07.
	ACDR	Roger. 143:07. And I guess the - the angles at 143:07 are minus 7 and 323. Okay?
	CC-H	That's affirmative. Minus 7 and 323.
	ACDR	Okay. And we'll check on how our water boiler's doing with you then. Okay.
11 13 14	CC-H	And just as we go over the hill, everything looks fine. We still have live TV from the Soviet Union in Kazakhstan where the spacecraft has landed, and we saw it touch down. Saw the cosmonauts get out and everything looks good.
	ACDR	Okay.
11 29 25	CC-H	Apollo, Houston through Santiago and then ATS. Over.
	CMP	Loud and clear, Bo. Good morning.
	CC-H	Good morning, Vance. I still have some more Flight Plan updates for you. If you could get out the Flight Plan Supplement and - if anybody's there, I can continue with some on the Flight Plan.
	CMP	Okay, stand by 1.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

11 37 33	ACDR	Houston, Apollo.
	CC-H	Apollo, Houston. Go ahead.
	ACDR	Okay. We got the WASTE WATER DUMP going. And we're timing it.
	CC-H	Roger.
	ACDR	And, Bo, does it look like we could use that evaporator to boil water today? Over.
11 38 03	CC-H	Well, we're going to want to keep the evaporator shut down until the evaporator activation at 149, and that was one of the Flight Plan changes that I was going to give you.
	ACDR	Okay.
	CC-H	And how is the vehicle? Is it comfortable?
	ACDR	It's a little warm in the command module.
	CC-H	Understand.
	ACDR	We do have the VTR OFF as per the Flight Plan, now.
	CC-H	Roger.
	CMP	Okay. Ready to copy your changes now, Bo.
	CC-H	Okay. Do you have the Flight Plan Supplement out, Vance?
11 38 39	CMP	That's correct.
	CC-H	Okay. E - rev 88 EUV pad.
	CMP	...
	CC-H	That's on page 6-15.
	CMP	Okay. Got the rev 88 EUV pad.

CC-H Okay. The time on it is 145:25:23.

CMP Roger. 145:25:23.

CC-H And I'd like you to add a - a step at a DET of 46, X-RAY HIGH VOLTAGE POWER, OFF.

CMP Roger. At 46 minutes, which would be at the end of the pad, X-RAY HIGH VOLTAGE POWER, OFF.

CC-H Negative. That would be 46 - that would be between 44 and 58 in a count up sequence.

CC-H Do you have that, Vance? I'm sorry - it ways, set DET, 37, 44, and then I'd like you to stick one 46 in between 44 and 58.

CMP Okay. I just glanced at it and saw there were two places where you could put that and I chose the end of the pad. Sorry. Okay. Stand by.

CMP Okay. Go ahead.

CC-H Okay. And at 58, delete the X-ray - and do the EUV as scheduled.

CMP Roger. Delete X-ray, do EUV.

11 41 37 CC-H Down about three-quarters of the way at 25:43, delete the X-ray powerdown.

CMP Roger.

CC-H On EUV pad 89, the time will be 146:54:13.

CMP Okay. That's EUV pad, rev 89, 146:54:13.

CC-H Roger. And that's all I have in the Flight Plan Supplement. Now go back to the Flight Plan.

CMP Okay.

CMP Bo, I'd like to verify that water dump's 9 minutes.

CC-H Roger. Water dump is 9 minutes.

CMP Okay. Proceeding along.

11 45 09	CMP	Bo, how do you read?
	CC-H	Go ahead. I read you fine.
	CMP	Did you have some more of the Flight Plan that I can copy?
	CC-H	Roger. I do. This would be at rev 88 - rev 87, 88, page 4.3-27.
	CMP	Okay.
	CC-H	I already told Tom, the high gain in the middle of the page is pitch minus 4 and yaw 312. At 144:45, X-ray contingency prep, page 1-25. At 45:10 - -
	CMP	We have that.
	CC-H	- - at 45:10, scratch out "Deactivate primary evaporator," and add "BMAG number 1, WARMUP."
11 46 09	CMP	Okay. At 145:10, scratch "Deactivate primary evap," add "BMAG 1, WARMUP."
	CC-H	Roger. And if you'll turn the page now.
	CMP	Go ahead.
	CC-H	About a third of the way down, right after the EUV scratch out "Activate primary evaporator."
	CMP	Got it.
	CC-H	And add "BMAG number 1, ON," and that should be at 146:02. And this is the start of the ATM. That's prior to the VERB 49 maneuver, BMAG number 1, ON.
	CMP	Okay. At - 146:05, scratch out "Activate primary evap," and at 1 - 146:0 - 05, scratch out "Activate primary evap." And at 146:02, add "BMAG 1, ON."
	CC-H	Roger. And then we'll be working on this ATM, and that VERB 48 should be - change it to "60102, 01111."
	CMP	Okay. This is up at 146 about, and it's VERB 48 maneuver 60 - the DAP is 60102 and zero and four ones.

11 47 51	CMP	Roger. And there's - there's all - there's already one in the Flight Plan at about 146:03.
	CMP	Yeah, we have it.
	CC-H	Okay. And now that VERB 49 maneuver that says "VERB 49 maneuver to target 365A attitude" is going to be moved down to 146 up 37. That's after the ATM burn, and will be the VERB 49 maneuver to target 365A - 178.10, 037.60, and all zeros.
	CMP	Okay. So that VERB 49 maneuver is okay as is, except we change the time of doing it, which goes down to 146:37, was that?
	CC-H	Roger. Right after the burn.
	CMP	Roger. Got it.
	CC-H	Okay. And instead of the maneuver, there will be a maneuver to the ATM burn pad attitude.
	CMP	Okay.
11 49 22	CC-H	At 146:17, there are high-gain angles, and change them to pitch, minus 22; yaw, 305.
	CMP	Minus 22 and 305. And where - and that puts that maneuver to the burn attitude then at - right after you turn on BMAG 1.
	CC-H	Roger. That takes the place of that VERB 49 maneuver to the target 365 attitude.
	CC-H	And at 146:36, perform the burn.
	CMP	146:36; perform burn.
	CC-H	Roger. And I already gave you the 146:37, which is the maneuver to the target 365A attitude.
	CMP	Roger.
	CC-H	At 146:40, VERB 48:611; 1, 01111.
11 50 45	CMP	Okay. After the burn, go back to a slow DAP maneuver rate, which is 61101 and the same 01111.

	CC-H	Okay. And then inhibit all jets except Dog 1, Dog 2, Alfa 3, Charlie 4, Baker 3, and Dog 4.
	CC-H	And you'll notice there that we're using the Dog 2 instead of the Bravo 2, and that's to conserve quad B propellant.
	CMP	Okay, after that - -
	CC-H	Say again.
	CMP	After that, inhibit all jets - to read back, after that, inhibit all jets except D1, D - or Delta 1, Delta 2, Alfa 3, Charlie 4, Bravo 3, Delta 4.
	CC-H	Roger. And then go to the Flight Plan Supplement, rev 89.
	CMP	Okay.
	CC-H	And we thank that the waste water dump is about finished now.
	CMP	Okay.
11 52 23	CC-H	And at 146:26, there had been that VERB 48, and that's to be deleted.
	CMP	Stand by 1.
	CC-H	Go ahead. Standing by.
11 53 58	CMP	Okay, Bo. Why don't we hold off on these Supplement Flight Plan additional changes until Deke gets his morning report worked up. He's got that right now. And did you have something else in the detailed - or in the Flight Plan?
	CC-H	No. I'm sorry, Vance. I understand what you said. When I said go to the Flight Plan Supplement, rev 89, that was supposed to be the last part of the procedure that I was reading and not a direction for you to do now.
	CMP	Okay. Okay, well, let me copy all that down again then. I would - I had to run off and do something else just as you gave that.

11 55 49	CMP	Houston, Apollo.
	CC-H	Go ahead, Vance.
	CMP	Okay. Once again, the very last thing, where you refer me to some place in the Supplementary Flight Plan. Would you give me that word for word at the time it's supposed to be?
	CC-H	That was at 146:40, after you have inhibited all the jets except - then just proceed and go to the Flight Plan Supplement, rev 89.
	CMP	Thank you.
	CC-H	And just to make sure we've got this straight, let me just start on the - start from the top on this ATM maneuver.
11 56 35	CMP	Okay, I - I think we - I've got it. Let me read it all back to you. That'd be better.
	CC-H	Fine.
	CMP	Okay. Starting about 146:02, we're going to turn BMAGs ON, we're going to maneuver - these are just the changes - we're going to turn BMAG 1 ON, maneuver to the burn attitude for ATM. That's a pad. After that, we'll go down to antenna, which is minus 22 and 305. Then at 146:36, we'll have the ATM burn. Immediately after that, we'll do the maneuver that was up at 146:04 about, which VER - VERB 49 maneuver to target 365A. Then after that, VERB 48, put in the slow maneuver rate DAP, 61101. Inhibit all jets except, then go to Supplement Flight Plan, rev 40 - or rev 89.
11 57 54	CC-H	Roger. The only thing that I didn't hear this time was the DAP change, and that's immediately after turning those BMAG ON. 60102, 01111.
	CMP	Rog. We have that, too, and I forgot to give it to you. Okay, we got it.
	CC-H	Okay. At 149:02.
	CMP	...

11 58 44	CMP	Go ahead at 149:02.
	CC-H	Roger. There's maneuver to a vis obs attitude. We would like to change R to - of the NOUN 78 from plus 09000 to plus 06000, and that's so that you can have the better attitude to look out the window.
	CMP	Roger. Copy.
	CC-H	And we'd like you to put a little box around that "Activate primary evaporator," because that's the only one we want you to do this morning.
	CMP	Okay. At 149, we'll emphasize by a box that we do do that activation.
	CC-H	And because you changed your attitude at 149:31, change the high-gain antenna angles to minus 12 and 336.
11 59 46	CMP	Minus 12 and 336. At 149:31.
	CC-H	Roger.
	CC-H	And on that pass at 150 hours and 17 minutes, we'll probably lose ATS.
	CMP	Okay.
	CC-H	And, that's all I have for the Flight Plan. The next one is in the Experiments Checklist.
	CC-H	And, we're going to lose you for a couple of seconds while we make a mode change.
	CMP	Roger.
	CC-H	And, Vance, if you're digging for books, I'm going to be giving you the ATM in the Updates Book.
	DMP	Stand by 1, Bo. We're scrambling around here.
	CC-H	Roger.
12 02 51	DMP	Bo, while we're scrambling for books, I could give you a morning report here if you want it.

CC-H Roger. Ready to copy the morning report.

DMP Houston, how do you read?

CC-H Read you loud and clear, Deke. Go ahead with your morning report.

12 03 15 DMP Okay. Yesterday was day 6. And let's see the AC had everything for breakfast with tea added - sugar and lemon. Okay. For lunch, he didn't use the chicken salad, and he added cheese, tea, strawberry, pecan cookie. Evening: no cherry-nut cake, added a bread and cheese, and a tea. Got all that?

12 04 00 CC-H All breakfast. Lunch: chicken - chicken salad, cheese, tea, strawberries, and pecan cookies. And, dinner: no cherry-nut cake; he added cheese and tea.

DMP Roger. Okay, PRD, if you're ready for that.

12 04 33 DMP Tell me when you're ready, Bo.

CC-H We're listening. But I did not hear the PRD.

DMP Okay. I was waiting for you to switch pages. Okay. It's 11009, 7 hours good, no medications, and a full tank of water.

CC-H Roger. 11009, 7 hours, no medication, and a full tank of water.

DMP Rog. Okay. CP menu.

CC-H Go ahead.

CMP Everything - everything for breakfast. Scratch the ham for lunch; add a tea and cookie; add a cheese for dinner.

CC-H For dinner, that was an add or subtraction of the cheese?

DMP That was an add.

CC-H Okay.

DMP And his medical report. You ready?

CC-H Ready.

DMP 48216, 7 good, and 70 seconds. He must have a lousy PRD or else absorbing the radiation at a much higher rate that the rest of us are.

CC-H Understand 48216, 7 good, and 70 seconds.

DMP Rog. Okay. Then the DP. Everything for breakfast; scratch the salmon for lunch; ate that as a snack. Okay, leave it on. And in the evening, scratch the macaroni and cheese and the chocolate-nut cake.

CC-H Got it.

12 06 23 DMP Okay. And the medical report. Okay. PRD is 61008, 7 hours, excellent sleep, and about 40 swallows of water.

CC-H Roger. Sounds as if everybody slept good last night.

DMP Sure did; super.

CC-H Great.

DMP Yeah, the old DM's cooling down pretty good now, Bo, so we're getting some cool flow up there. I usually sleep there and Vance in the tunnel and Tom down here with the hoses blowing, so it works out pretty well.

CC-H Did - did I actually wake you up this morning?

DMP You actually did.

CC-H Great.

ACDR Yeah, I had a scramble to answer you before you went over the hill.

12 07 22 CC-H Good sign.

12 08 05 DMP Say, Bo. You had some changes to the experiments there.

CC-H Roger. On the Experiments Checklist the - that's page 1-8, and it's modification to the ETE procedures for sample number 1.

DMP ...

CC-H Apollo, Houston. I did not hear you. Did you say you had it ready?

DMP Telling you to stand by. That's in a separate book - we've got to get it.

CC-H Sorry.

ACDR Did you have anything for the main experiments book while we're looking for that? We got the main one out.

CC-H No.

ACDR All right, Bo. Roger; go ahead.

CC-H No, I don't have. I've got something to the Earth Obs Book.

DMP Okay, fine. Go ahead and give Tom the Updates Book then.

12 09 08 ACDR I'm ready to copy on that maneuver, Bo.

CC-H I'm sorry. We don't have the maneuver ready for you yet.

ACDR Oh, okay. ... do you have any stuff for the update book?

CC-H We will have the maneuver for you very shortly, and it - then it will go in the Update Book. But we don't have it right now.

CMP All righty.

ACDR Okay, Bo. I've got the Earth Obs Book here.

CC-H Okay. This is for rev 88, site 8D.

ACDR Okay. Target 8D, rev 88.

CC-H Roger. Dam site 2 nearest the center of the window at 144:44:48. And that's approximately 15 degrees south of nadir.

ACDR Hang on. I need a different pencil to write on this book.

12 10 39 CC-H Yeah, I see. I didn't try to write it on mine, either. I see what you mean.

ACDR That was 144:44:48? Over.

CC-H That's affirmative.

CC-H And on site 8E -

ACDR Got it.

CC-H Okay. Structure number 1 time, 144:49:36, and that also is 20 degrees south of nadir.

ACDR Got it. 144:46:36; 20 degrees south of nadir. Okay.

CC-H And structure number 2 time is 144:49:15, and that also is 20 degrees south of nadir.

ACDR Okay. Got that. 144:49:15 and also 20 degrees south of nadir.

CC-H Roger.

12 12 13 ACDR Hey, Bo. Tell Farouk right now wherever our position is, we're passing over some tremendous sand dunes. They've got long ridge dunes, and on top of them are little bitty - are big stars. I mean, they are big babies. It's like in a - nearly a sedimentary basin. I don't know where we're at but I just wanted to report that at this time. It's 143:50:30.

CC-H Roger. And it looks like you're over - like North China.

ACDR Okay.

CC-H It's just off of the big board.

CC-H And vis obs copied all that.

12 13 15 CC-H And, Apollo, Houston. Just a little weather report. It's a little cloudy at the start, rather clear over South America. It should cloud up across the inner ITC, and then it should clear up again until you get up into Europe just south of the Alps.

DMP Okay. Okay. And I got the ET - ETE Experiments Checklist.

CC-H Okay. Modification to ETE procedures for sample 1. Experiment Checklist page 1-8, and that's step 5.

DMP Okay. Got it.

CC-H Okay. When the AC observes sample 1 at 60 minutes, perform the following: If the front band has advanced to the 110-millimeter mark, then proceed to the ETE freeze procedures immediately. If the front band has not advanced to the 110 mark, then proceed nominally, which is to reset the portable timer to 15 minutes, and then after 15 minutes, do the ETE freeze procedures.

DMP Oops. You better give me all of that again, I don't write that fast.

CC-H Okay. At 60 minutes, perform the following: the front - -

DMP Okay. That's on what sample?

CC-H That's on sample number 1.

DMP Sample number 1. Okay.

12 14 59 CC-H If the front - -

DMP ...

CC-H If the front band has advanced to the 110-millimeter mark -

DMP Okay.

CC-H Then proceed to ETE freeze procedures immediately.

DMP Okay.

CC-H If the front band has not advanced to the 110-millimeter mark, then proceed nominally.

DMP Okay.

CC-H Which means that you reset the timer for 15 minutes and then do a freeze. And what it means is that we're leaving the STDN out of this call. You don't have to call down to us. You just look at it, and if at 60 minutes you're past 110, you go ahead and freeze it; if not, you wait another 15 minutes and then freeze it.

DMP Okay.

CC-H One other item is that we do need to know where the band is.

DMP Okay.

CC-H And I have one circuit breaker call. That's all the - that's all I have for the Experiments Checklist.

ACDR Okay.

12 16 59 CC-H I have a circuit breaker call, and it is to take the 100 WATT - 100 WATT HEATERS OFF and put the 50 WATT HEATERS ON, and that is on panel 226; circuit breaker O_2 TANK 100 WATT HEATERS, 1 MAIN A, OPEN; O_2 TANK 100 WATT HEATERS, 2 MAIN B, OPEN.

12 17 38 DMP Okay. Bo, give me that again. It's O_2 TANK 100 WATT HEATERS, MAIN A and MAIN B, OPEN. Right?

CC-H Roger. 1 MAIN A, OPEN, and 2 MAIN B, OPEN.

DMP Got them.

CC-H And then O_2 TANK 50 WATT HEATERS, 1 MAIN B, CLOSED, and 2 MAIN A, CLOSED.

CMP Okay. I've got those.

CC-H Thank you.

DMP All right.

CC-H And I've got one note, and we'll - it'll probably cause a few changes later, but right now it's just a note. And that's camera number 4002, the color wheel is stuck. Black and white are okay currently in the

DM on panel 871. And number 4009 won't hold the color sync; the black and white is okay. That's currently in the DM, and we think you've put it on number 873.

DMP Did that switch around per your request yesterday?

CC-H Roger. The thing is, it looks like we've got another camera that's not giving us good color.

DMP Okay.

DMP Give me the serial numbers, Bo, again so we can double-check those.

12 19 01 CC-H Number 4002 and number - and number 4009.

DMP Okay. 4002 should be on 871, and 009 on 873. The 873 is the better of the two, I gather.

CC-H And we'll have a mission note for you later on what to do exactly with those cameras.

DMP Okay.

CC-H And that's all we have. I'm sorry for disturbing your breakfast, though. And there are just 2 minutes until LOS but we'll pick you up shortly at Guam.

12 20 01 DMP Okay.

12 22 57 CC-H Apollo, Houston through Guam for a little over 6 minutes. Standing by.

DMP Okay.

12 28 44 CC-H Apollo, Houston. There is less than a minute until Guam LOS. We'll see you at Vanguard at 144:19. That's a little different than what is shown in your Flight Plan because the ship is steaming.

CMP Okay. Hey - and Bo, I was off the line when you were telling Tom about the splashdown of Soyuz today. I'd sure be interested to hear what it was like and how everybody looked when they jumped out. Maybe the - -

	CC-H	They had a helicop - they had a bunch of helicopters following them with TV cameras. And we saw them on their one great big chute, coming down, you know, it looks kind of like a diving bell. And just before they hit the ground, there was a big cloud of dust. Must have been where the rocket fired. And then the dust blew away, and they settled down quite - looks like quite nicely. When the people got to them, they got out and stood up, and both of them waved. And so they looked like they were in good health and good spirits.
	CMP	Sounds great.
12 29 45	CC-H	And we're just about going LOS here.
12 40 57	CC-H	Apollo, Houston through Vanguard for just a little over a minute. Santiago at 144:37.
	ADCR	Roger, Bo.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

12 59 57	CC-H	Apollo, Houston through Santiago and then ATS.
	ACDR	Okay, Bo. Read you 5 by.
	ACDR	Houston, Apollo.
	CC-H	Apollo, Houston. We read you loud and clear. Go ahead.
	ACDR	Okay, Bo. I'm starting this Earth obs pass. Okay, we're off a couple of minutes on the GET from what they're lined up, but I'll - I'll talk to you later. I'm busy now.
	CC-H	Okay.
	CC-H	Apollo, Houston. We'd like ACCEPT if someone has a chance.
13 01 17	ACDR	Got ACCEPT; we're running P20.
	CC-H	Roger. ACCEPT, and it won't hurt.
	CC-H	Apollo, Houston. We're finished with the computer; you can go BLOCK.
13 02 54	ACDR	Okay.
13 12 08	CC-H	Apollo, Houston. We'd like the X-ray contingency prep started so that we can get our X-ray cal in at the proper time.
	ACDR	Okay.
13 15 00	CMP	Houston, Apollo.
	CC-H	Apollo, Houston. Go ahead.
	CMP	The X-ray contingency prep has been completed. Would you just remind me what getting the BACKUP PURGE to OFF does?

CC-H That pressurizes the detector. You see, last night we had the detector venting, and so now we've repressurized it, and then we're going to do a calibration here and turn the - after that, turn the HIGH VOLTAGE POWER, OFF, and evaluate the data and decide what they're going to do with the X-ray.

13 15 40 CMP Okay.

13 27 02 CC-H Good morning, Apollo. The Amber Team's with you, and I need somebody to dig out the Updates Book so I can give you the - the pad for this trim maneuver we got coming. I know everybody's pretty busy. I was wondering if Deke has a - has a moment.

ACDR Okay, just a second. Since you're on the ATS, just stand by for a minute and we'll finish this pass, and then we'll be with you.

CC-H Okay. Our problem is that we're going to - soon as you finish this pass, basically, we're going to initiate a maneuver for this EUV and we're going to lose comm shortly.

DMP Okay. Give it to me, Crip.

CC-H Okay. I under - understand you've got the - got the Updates Book out?

DMP That's affirm.

CC-H Okay. Coming at you with NOUN 33, 146:36 all balls; minus 007.4 all balls, all balls; 182, 329 - -

DMP Okay, hang on a second.

CC-H Okay.

DMP Yeah, ... Stand by 1.

13 28 17 CC-H I'm sorry. What you need is one of the P30 pads - maneuver update.

DMP Yeah, that's what I had, but it started floating off here and I lost you. Okay, start over again, please.

	CC-H	Okay. Starting out again with our NOUN 33's: 146:36 all balls; minus 007.4, all balls, all balls; 182, 329, 355; 007.4; 00:37. Readback, please.
	DMP	Okay, 146:36 all balls; minus 007.4, all balls, all balls; 182, 329, 355; 007.4; 00:37.
	CC-H	That's a good readback, Deke. And down in the remarks, I'd like you to add, "Bypass the P41 attitude maneuver. Do two-jet, minus-X. Set delta-V counter to 100.0" - and the delta-V counter will count up, of course, to 107.4.
	DMP	Okay. Bypass P41 attitude maneuver, two-jet, minus-X, delta-V to 100, should count up to 107.4.
	CC-H	Okay, fine.
	DMP	Incidentally, you're getting cut out again today by some tower down there.
13 30 19	CC-H	Copy. Are you flying with VHF FM on now?
	DMP	Negative.
	DMP	And, Bo, I had the FM off, and I've had the power down in the DM since yesterday or the night before yesterday.
	CC-H	Copy. Incidentally, one other item on this. We're not going to have a - an opportunity to give a - to give you a load for this maneuver or this burn, and it's going to be - have to be loaded manually.
13 30 51	DMP	Okay. No problem
13 31 46	CC-H	Apollo, Houston. Vance, or whoever's performing it, we've had a little problem there with that call, and we need somebody to move a switch for us down there,

please. We need to take the - on panel 230, we need to take the X-RAY PURGE switch to the CAL position, down.

CMP Okay. Did it once; will do it again.

CC-H Rog. We - we copy.

13 32 12 DMP Okay. I just went to CAL on her, Crip.

CC-H Thanks a lot, Deke.

CC-H We're going to lose you here shortly and have you again at Orroral in about 33 minutes.

13 34 20 DMP Okay.

14 05 34 CC-H Apollo, Houston. We're AOS through Orroral. We have you for about 3 minutes.

CC-H Apollo, Houston. How do you read through Orroral?

CC-H Apollo, Houston. How do you read through Orroral?

14 08 15 CMP Houston, Apollo. Reading you weakly.

CC-H Roger. Read me any better now?

CMP Little better. What's up?

CC-H Oh, not much. Need to get a couple of items. We saw an MC&W just before we lost you awhile ago, and we couldn't determine what it was here. Can you enlighten us a little bit?

CMP We haven't seen one. You caught us by surprise.

CC-H Well, it must have been a data glitch down here then or something if you guys didn't get it. Only other item - well, if we could get the POTABLE WATER INLET valve CLOSED, we would appreciate it.

CMP Okay. I'll close it for you. Anything else?

CC-H Well, whenever we can work it in, we would like to get the results of the last P52 you did.

	CC-H	That probably was recorded over on the previous page of your checklist there - on your Flight Plan, rather.
	ACDR	How do you read now, Crip?
	CC-H	Loud and clear, Tom. But we're about to go over the hill here at - at Orroral. I'll just go ahead and get you at - on the next ATS pass. We'll pick - -
	ACDR	Okay - -
	CC-H	- - up the P52 there.
	ACDR	- - Crip. Well, the P52 went real good. No problem.
	CC-H	Okay.
14 09 56	CMP	And POTABLE WATER INLET's CLOSED.
14 09 59	CC-H	Okay. We'll - we'll see you at Quito in about 28 minutes.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

14 38 28	CC-H	Apollo, Houston. We're AOS at Quito; we've got you for about a minute and a half.
	CC-H	Apollo, Houston. AOS Quito for 1 minute.
	ACDR	Roger. Copy. Hear okay. (Music)
	DMP	Hey, Crip. Just a quick data report on the furnace. It was 492 on that last sample.
	CC-H	Deke, you're so weak, I can hardly read you.
	DMP	I said the temperature in the furnace prior to helium inject - -
	CC-H	Yeah. I - comm does - seems to be very poor right now, so why don't we wait until - a little while until we get through and I'll get your furnace report there.
14 39 44	DMP	Okay.
14 45 13	CC-H	Apollo, Houston. We're talking at you now through the ATS. Got you for 52 minutes.
	CC-H	Apollo, Houston. We're with you through the ATS.
	USA	... (Music)
	CC-H	Apollo, Houston. I can hear something very faint in the background but - unreadable.
14 46 17	CMP	Roger. How do you read now?
	CC-H	Oh! Loud and clear, Vance.
	CMP	Okay. We're all set, coming up for our RCS burn. Just crossed over the Andes and the Amazon. Amazingly clear day over the Amazon.
	CC-H	Great. Sounds like a pretty view. Vance, would you - do you got - do you have time to give me that P52 results, just to give us a quick idea what the platform looks like?

	CMP	Yeah. Tom's getting it right now.
	CC-H	Also, where you normally might go ahead and give us - turn the tape recorder on, the high bit rate and so forth for a burn - we do not want to do that one for this one. It would perturbate our scheduling over the DSE for the experimental stuff.
	CMP	Okay. Understand.
	ACDR	Okay, Crip. Ready to copy?
	CC-H	Yes, sir. Shoot it to me.
14 47 15	ACDR	All righty. First star is 06; second, 15. NOUN 05: all balls, plus 14.8, minus 18.7, minus 12.8. And torqued at GET 144:31:00
	CC-H	Roger. Was that Z component minus 10.8?
	ACDR	Minus 12.8.
	CC-H	Okay. Copy. Thank you.
	CC-H	Incidentally, you probably already noticed on the - on the burn there - we're doing it in this attitude of minus-X because it is pretty close to the next attitude that we have to go to for the EUV pad coming up. Didn't think you'd mind a little eyeballs out there.
	ACDR	Oh, no. No problem. Good way to balance up the quads, too - ... there.
	CC-H	Rog.
14 48 43	CC-H	Apollo, Houston for Deke. You were trying to give us some comment about - about the furnace awhile ago, through Quito, and we couldn't read you there. And we're - be glad to get it if you could give it to us now.
	DMP	Okay, Crip. I just wanted to give you a report on the temp on the furnace. And it was 492 prior to helium injection. (Music)
	CC-H	Okay. Thanks a lot. Appreciate it.

	DMP	Sure.
	CC-H	Yeah. That all looks good. That is about what we were predicting it would be.
14 49 18	DMP	Okay.
14 55 54	ACDR	Okay, Crip. We're coming up to 2 minutes on the burn.
	CC-H	Roger that. We're standing by here. We're now looking at playback data from the tape recorder, so we haven't got you real-time data. We will have it just as soon as we get AOS Madrid, which is about a minute from now.
14 58 04	ACDR	And we're burning.
	CC-H	Copy.
14 58 43	ACDR	Okay, there we are, Crip; Zero, minus 1, and plus ...
	CC-H	Roger.
14 59 03	ACDR	And the EMS reads 107.8.
	CC-H	Copy that.
	CC-H	Very good. That should put you right down in the middle come Thursday.
	ACDR	Sounds great.
15 01 42	DMP	Hey, Crip, would you say we were about over the straits of Dover now?
	CC-H	That's affirmative.
	DMP	Okay. Great. We got a picture of it, then.
	CC-H	Okeydoke. We would advise if we can go ahead and get this VERB 49 maneuver in, probably need to get it - get it started to get there in time for the EUV pass.
15 02 04	ACDR	Okay. It's in work, Crip.

CC-H Okay, fine. I also need to update you on this upcoming EUV pass. We want to delete the X-ray ops out of it because of our problem with the instrument. Also, we want to do that same thing on rev 90. I'll - if you want to pull out your supplements and make notes on those, I'll stand by to repeat them.

15 02 30 ACDR And we're maneuvering.

CMP Stand by.

CC-H Copy.

CMP Okay. We got it out.

CC-H Okay, fine. It - on both of these pads, rev 89 and EUV, we just want to delete X-ray ops. Also the same for rev 90.

CMP Okay. Done. Too bad. Does it look like we'll be using that instrument a little later?

CC-H We're - we're still investigating it. We'll get back with you on that. I might - one comment I might make is that it's a really important science day from the standpoint of the other two instruments, both EUV and helium glow, we've got some of their highest priority revs and targets upcoming. In fact, I believe this one that you're doing now has - it's about the second highest priority with one of the highest priority targets involved. We had a problem last rev that we still don't understand. We're trying to take a look at it in that we didn't get - didn't get all of the data recorded on that DSE and that we're not sure whether it was a problem we had here or - or something involved there. Just want to alert you to it, and if y'all can be very careful on the DSE procedures that you've got there to ensure that we're going, we would appreciate it.

15 03 59 CMP Okay. Did it seem to be a question of timing or just that it wasn't - -

CC-H Yes. It - -

CMP - - gathering data or something?

CC-H - - it - if you look back at that last - last rev 88, it would appear that you had a DET time of starting the thing on the DSE at about 33, and we got that last portion of the pass but we didn't get the - the initial one where - which - where - you were supposed to start it at - at zero.

CMP Okay.

ACDR Okay, Crip. We have a checkoff list we're using, and that thing is checked off.

CC-H Rog. We're - we're not sure exactly where the problem was, Tom; I assume you guys are being very careful with it; I was just alerting you that we had had the problem here so we can continue to be so.

15 04 56 ACDR Rog. I understand.

15 09 22 CC-H Apollo, Houston. In looking over your configuration following that burn there, we show that BMAG 1 is still ON, and we need that turned OFF, please.

15 09 30 CMP Okay. Coming OFF.

15 26 18 ACDR Hello, Houston; Apollo.

CC-H Go ahead.

ACDR Well, we're right on schedule, and all the maneuvers are going good. Are you getting good data? Over.

CC-H I believe so. Let me reverify that.

CC-H That's affirm, Tom. We are getting good data. Looks real good.

ACDR All right.

CC-H I was just sitting down here being quiet to stay out of your hair.

ACDR Thank you for the compliment.

CC-H Anytime, anytime. You really are sharp up there today.

	ACDR	Oh, we feel great, Crip. Everything's going good.
	CC-H	Great. That's good to hear.
15 28 56	ACDR	Okay, Crip. Looking forward to 21:12; that's theoretically when we should lose ATS, and that's when we verify that tape motion. Over.
	CC-H	Roger. And, of course, just before we go over the hill there, Ed will put in a command to get the thing initiated for you.
	ACDR	Right. And we'll recheck it.
	CC-H	Rog. Just in case we miss it, that's why the verify's there.
	ACDR	Okay.
	CMP	Go ahead.
	ACDR	How's Ben Franklin doing down there these days?
	CC-H	Oh, he's just having a ball pushing all these buttons - trying to get all this data in.
	ACDR	I can tell. Yeah, I can tell. (Laughter)
	CC-H	It's a pretty - pretty challenging mission for INCO here in this latter part of - the mission.
	ACDR	Yeah, I can imagine all it takes to get this data back there.
15 30 04	CC-H	The EECOM also thinks it's pretty challenging trying to get his water boiler going right.
15 31 22	CC-H	Tom, R1 there should be 169.10; we see it 169.00.
	ACDR	Thank you, Crip.
	CC-H	Just to show we're not totally asleep.
	ACDR	Yeah, I don't know how I missed it. Maybe I didn't hit the 1 button hard enough, and it got out in zeros.

	CC-H	Yeah. And with all those numbers on there, I don't see how you keep them all straight anyhow.
	ACDR	Yeah, this is really a two-man job to coordinate the cross-check here.
	CC-H	Roger that.
15 35 40	CC-H	Apollo, Houston. We're about ready to lose you here on the ATS, and we'll see you in a couple of minutes - oh, actually, about 5, I guess, through Orroral for a short pass.
	ACDR	Okay. Thank you, Crip.
15 39 19	CC-H	Apollo, Houston, talking at you through Orroral. Got you for a little over a minute.
	ACDR	Okay.
	CMP	Roger. Reading you weak, Crip.
	CC-H	Okay; fine. I've got you loud and clear right now.
	CC-H	Apollo, Houston. If you read me well enough - Well, we're just about to go over the hill. We'll see you at Quito in 30 minutes.
	ACDR	Okay. Anything you need real fast?
	CC-H	I was going to give you the DET time to count it to on rev 90, which is over on another - the next page here of 148:23:01, if you want it.
	ACDR	That was 148:23:01, right?
	CC-H	That's affirmative.
	ACDR	Got it.
15 40 51	CC-H	Okay; thank you.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

16 13 22	CC-H	Apollo, Houston. We're AOS through Quito for about a minute and a half.
	ACDR	Roger, Crip. We're ... leg volumes; still have Deke to go - -
	CC-H	Apollo, Houston. You're breaking up. Stand by 1.
16 13 54	CC-H	Apollo, Houston. We'll have you in MILA in a couple of minutes. Why don't we stand by and - maybe get a little better there.
16 15 43	CC-H	Apollo, Houston. We're now talking at you through MILA. How do you read?
	ACDR	Rog. I read you loud and clear, Crip.
	CC-H	Okay. I got you the same now.
	ACDR	And we're already in the attitude to start the next EUV and again to reverify, that's at 148:23:01.
	CC-H	That's a good readback. That is correct. And we're sitting here looking at your attitude, and it looks good.
	ACDR	Okay. Yeah, everything should have been perfect on that last one; hope you got a good data.
	CC-H	Okay. Hope so, too. We're working on a little plan here - it looks like with minor impact - to recover that - that data that we lost earlier. And one item, I guess, if you got a few minutes here, I can talk to you about, Tom. If you flip your Flight Plan over to the next page, at about 149:25 or so, we've got an X-ray cal called out there.
	ACDR	Okay. Stand by.
16 17 02	ACDR	Roger.
	CC-H	Okay. What we'd like you to do is, we're going to delete that cal and, instead, we're going to have you do a - kind of a little special procedure, which is

a very - couple of switch throwings to activate the evaporator, and it's a non - normal activation, and I'll call them out to you when we get AOS through MILA. I would also, contrary to what I believe Bo told you earlier this morning, like to delete that activating the primary evap under 149 hours, under Deke's column.

ACDR Okay. We'll delete that now.

ACDR And we'll pick up on your directions through MILA. We have ATS to follow that, about activating the evap rate on your instructions.

16 17 50 CC-H Okay. Real fine. Thank you very much.

16 27 05 ACDR Crip, how do you read through ATS?

CC-H Loud and clear. How me?

ACDR Loud and clear.

CC-H I expected you guys were all busy getting your leg volumes out of the road, so I was being quiet again.

ACDR Yeah. I'm trying to get a quick shave in here between now and when we start punching that DSKY again.

CC-H Right. Got to look pretty for the - for the TV, I guess.

ACDR I haven't even looked that far ahead.

CC-H Well, I don't even know if we've got any coming up.

ACDR I haven't had time to shave for 2 days, so I'm finally doing a little bit.

CC-H All right. Got to keep that military appearance.

ACDR Right.

ACDR Okay. I'm going off the headset.

CC-H Understand. You're going to take your headset off. Gene said he'd be glad to set some TV up for you if you wanted it.

ACDR I don't - I don't think so right now.

16 28 15 CC-H I didn't think so, either.

16 33 10 CC-H Apollo, Houston. Wonder if the DP's got a moment to let me bend his ear, regarding upcoming vis obs observations for his next pass?

CMP Just a second, Crip. We'll ask him to get on a headset.

CC-H Okay. Vance, were you the gent that requested some information regarding 35-millimeter film and how to use the Nikon for targets of opportunity?

CMP I think Tom asked that last night. He was essentially wondering if we needed a special - oh, sort of additions to the photo ops cue card on light settings, f-stops, et cetera, or if we could just use the light meter in the Nikon, as is?

CC-H Yeah. I think we told him that - -

CMP For outside.

CC-H Yeah. I think we told him that he could use the light meter, but I did have some additional information; I can just give all of that to Deke -

CMP Okay, I'll tell him.

16 34 44 CMP It'll be a couple of minutes before he can get up. He's kind of busy now, Crip.

CC-H Okay. There's no rush at all. I was just - any time that's convenient for you guys to talk about it. One of the things that I was going to talk to him about, Vance, was - I think you had talked to Farouk, premission, regarding some of Cousteau's sea-farming sites. And I was going to tell him where one was in the Adriatic Sea, so that he might be able to get it. We're going to be coming over it next rev, and he's going to be doing some of vis obs, anyhow, so he might be able to get a shot of it.

CMP Oh, hey! That'd be nice. Glad to hear we can do something in that area. Deke'll - when he comes up, then he can copy the location.

CC-H Yeah.

DMP Hello, Crip, how do you read?

CC-H Loud and clear, Deke; how me?

DMP 5 by. Give me about 30 seconds; I'll be ready to copy.

CC-H Okay - -

CMP I'll leave the ETE open.

DMP Okay, Crip. I'm standing by. And the status on the ETE, it's up and running. And the freezer plug came out very fine this morning, back in again, no problem, everything looks A-number-1 on that experiment at this point.

16 36 41 CC-H Great. Really glad to hear that. What - we had a couple items of interest on - that you might be able to do something about, on this upcoming pass that you're going to have. One of them is that - we've had a rather large oil slick, about 40 miles long and 5 miles wide, reported about 50 miles east of Key West. And we think that that probably should be visible from the number 1 window in the command module, when you come across there on the next rev.

16 37 15 DMP Okay. That's 50 west of Key West.

CC-H East. East of Key West.

DMP Okay. 50 east.

CC-H Okay. And we're - it's going to be available to you just about - oh, part of that red tide area, when you come across - about the same area, there. Just a little before it.

DMP Okay.

CC-H Okay. The other one was - -

DMP ...

CC-H Okay. The other one was that - I think Vance had asked Farouk to look into talking with Captain

Cousteau regarding some sea-farming sites. And we got some data back that one of them is going to - that he's considering this on the eastern edge of the Adriatic Sea. And you're going to be coming across it. And it should be visible from number 3 window, on rev 91, at about 149:44 GET. And you can take a look at your book at target 9J and at least get an idea of the area by the Adriatic.

16 38 24 DMP Okay. Rev 91, 149:44, to 9J - and what was the window number?

CC-H Window number 3, the big one there.

CC-H Okay. The other item was that - because Tom had talked to the ground yesterday, regarding use of the Nikon, since you guys were getting a little bit short on film there, for targets of opportunity. Basically, we're telling you you need to use the photo cue card, but I've got some recommendations, if you want to copy them down.

DMP Okay. Go ahead.

CC-H Okay. Recommend using the 300-millimeter lens, although some of the problems we've had from Skylab indicates you might - that might end up blurring a little bit, but we can try it. We recommend a shutter speed of 1/1000. And for your CI film, your interior film - use your exterior photo cue card, table Bravo, but increase each setting by one f-stop. For example, instead of - if it calls for f/8, we want you to use f/11. And for CS film, Charlie Sierra, we want you to use table B directly.

16 39 52 DMP Okay.

CC-H Okay. And if you have a chance to record any of your photos on your voice record, we would appreciate it, also.

ACDR Okay, we've been doing that.

CC-H Yeah. I thought you probably were.

16 40 04 CC-H And that's - that's all I was holding for you right now; let you get back to - to observing the world.

	ACDR	Okay. Fine; appreciate that. Probably good to have it here - it just seems like about the time we get ready for a good old ZFF or crystal growth is when we see the exciting things. And of course, we're obviously out - way out of configuration there, but those ...
16 40 26	CC-H	Okay. Hang in there and keep after them.
17 08 30	ACDR	Houston, Apollo.
	MCC-H	Go ahead.
	ACDR	Okay. I guess we'll be losing you shortly, and that's when it calls out at 27:06 to verify the DSE tape motion?
	CC-H	That's affirm.
	ACDR	And I hope the data's coming in good for them.
	CC-H	It is still looking good.
	ACDR	Okay.
	CC-H	Okay. We're about ready to go LOS through the ATS and next station contact is quite awhile away, be through MILA in about 37 minutes, that's at 149:24. See you there.
17 09 55	ACDR	Okay, Crip. Take her easy.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

17 47 11	CC-H	Apollo, Houston. We're AOS through MILA and with the ATS we should be with you about 58 minutes.
	CC-H	Apollo, Houston. If you're reading through MILA, we're ready to - soon as we get data locked up here pretty good, we're ready to proceed with that primary evaporator activation, as we discussed earlier.
	CMP	Okay, Crip.
	CC-H	Incidentally, Vance, since I heard you there, on your exercise, we would like to wait until we get locked up through the ATS there about - oh, about 10 more minutes before we - I'm sorry, about 5 more minutes before we begin exercise.
	CMP	Okay. And I'd like to be a little late on that. I'll get it in before the end of ATS. But right now I'm helping Deke on this vis obs. Turns out to be kind of a two-man task.
	CC-H	Okay. We copy that. Incidentally, we do not show the WASTE STOWAGE VENT valve opened - which we need it for the purge. It's called out a few minutes - few minutes earlier.
	CMP	Say again.
17 48 32	CC-H	The WASTE STOWAGE VENT valve needs to go to VENT.
	CMP	Okay. We purposely held off on that to clarify or make sure you wanted that done. And - so we'll - we'll get that little section done right now.
	CC-H	Okay. When you can work it in there.
	CMP	Crip, I'm going to have to off headset to get these things. I'll just activate - I'll just take care of that - vent section of the Flight Plan there and activate the primary water evap.
	CC-H	Negative. Negative on the activation - I've got - I want to do it special so I - you can do it if you let me give you the procedures.

CMP Okay.

CC-H Want to make sure that the GLYCOL EVAPORATOR WATER FLOW is in OFF, which is where it should be. Want to take the STEAM PRESSURE to MANUAL, and STEAM PRESS, we want to go to DECREASE for 10 seconds.

CMP Okay.

CC-H And if you do that, we'll sit here and watch you for about 10 minutes before we go to AUTO on those valves.

17 49 58 CMP Okay. WATER, verify OFF. Go to MANUAL, DECREASE for 10 seconds.

CC-H That's affirm.

17 54 13 CMP Okay, Crip. Procedure on the water evaporator and the others on the vent have been taken care of.

CC-H Yeah, we - we're watching our data here. Saw you do it, Vance.

CC-H Did you - you got the WASTE STOWAGE VENT valve open, I understand.

CMP That's right.

CMP Houston, Apollo.

CC-H Go ahead, Vance.

17 57 01 CMP Just one question about the Adriatic - that's going to come up here later this - visual obs. Understand which side of the Adriatic and both north and south and east and west way.

CC-H Okay. The word that we're getting, it's on the eastern edge of the Adriatic and, basically, it's that - the whole eastern edge along - along Italy there.

CC-H I'm - I'm sorry - -

CMP Eastern edge is not mentioned - -

CC-H I'm - I'm - I'm sorry. Yes, on the opposite side along Yugoslavia, across through there.

	CMP	Okay.
	DMP	What specifically are we looking for?
	CC-H	Okay. That's just an - an edge of - of the sea that - that is considered a high potential for sea farming.
	DMP	I see.
17 59 07	ACDR	Houston, Apollo. I got the Doppler - activated and warmed up at 149:26:00.
	CC-H	Copy that. Thank you very much for that report, Tom. That's - as you're aware - is sort of time - critical later on and we need to make sure it gets properly warmed up. Appreciate your telling us.
	ACDR	Right.
	DMP	Okay. And the Earth obs guys may be interested in knowing that we've just seen some icebergs here in the Labrador Current north of Newfoundland.
	CC-H	I copied about seeing some icebergs and I didn't get the rest of it.
17 59 39	DMP	Yeah. They're in the - what we think is the Labrador Current, north of Newfoundland.
	CC-H	Copy that.
	DMP	Whether they're bergs or ice cakes, I guess we'd be hard put to say, but they're very visible at least from this altitude.
	CC-H	Very good.
17 59 56	ACDR	And, Crip, the Marshall people would like to know that when the 60 minutes were up, the first band had progressed from 118 to 123, so we put it right away into the freeze cycle. So it's electrophoresing away.
	CC-H	Okay, real fine. Appreciate that report also.
	DMP	Crip, I forgot to - tell you that we did not see the oil slicks you talked about, east of Key West. I think we're too far north for one thing; and secondly,

there's a cloud cover all over the west coast of Florida and pretty much over the state.

CC-H Okay, I was afraid that was too much of an oblique angle for you to get a shot at it. We thought - take a look at it anyhow. It was pretty - reported to be a pretty good size.

DMP I see.

18 02 00 ACDR Hey, Crip. On that ETE, the first band was stopped at 60 minutes. The first band went from 118 to 122 millimeters; the second band, from 87 to 99 millimeters. The column voltage was fluctuating around 009. Over.

CC-H Okay. Copy.

DMP You might also pass on to Farouk that we have not seen any red tide west of Florida because of the cloud cover, and the same up in the New England area. We - Cape Cod was clear and we got some good pictures there , but everything north of that, from our angle, was cloud covered and - so we've seen nothing in those other sites.

CC-H Copy. Too bad.

18 02 48 DMP We should have some beautiful coverage of Cape Cod, however.

CC-H Rog.

18 03 58 DMP And also for the Earth obs guys, the North Atlantic is also mostly cloud covered. We see a lot of interesting cloud features and practically nine different current and eddy patterns, but we just didn't want to waste film on that. We have not seen any oil slicks. Lots of airplane contrails, however.

CC-H Roger.

18 07 27 CC-H Apollo, Houston. We've been sitting here watching your evaporator. We think it's in pretty good shape right now, and we'd like to go ahead and go - WATER FLOW to AUTO and STEAM PRESSURE to AUTO, if somebody's got a chance to work those switches in.

18 07 41 ACDR Okay, I'll get it.

	CC-H	Okay, Tom. Appreciate letting us know when it happens and we're also assuming that when Vance gets ready to - to get started on his exercise here, he's going to give us a holler so we can go into proper data mode.
	ACDR	Okay, he's working on it - getting it. This Earth obs is nearly a two-man job, I'll clue you. Okay, STEAM PRESSURE coming to AUTO. H_2O FLOW coming to AUTO.
18 08 08	ACDR	Mark it. Okay. You got STEAM PRESSURE, AUTO, and H_2O FLOW, AUTO.
	CC-H	Okay, thank you.
	DMP	Okay, Crip. You still read?
	CC-H	I'm sorry. Missed that last comment.
	DMP	I say, if you're still reading, we just went down the Adriatic coast there, and - getting into problems. One, what we can see is cloud covered and - we can't see very well on account of the oblique angle. It's clear, but it's such an oblique angle, we weren't able to tell anything.
18 09 05	CC-H	Okay. Copy.
18 12 12	CC-H	Apollo, Houston. For the CP. Vance, we got about - oh - about 25 more minutes here available through the ATS for - for your exercise, and anxiously awaiting it.
	DMP	Yeah. He's - he's getting some of it right now, trying to get up to do it.
	CC-H	Okay.
18 12 45	CC-H	Apollo, Houston. It looks like we didn't make it on that primary evap, and we want to go ahead and deactivate it.
	DMP	Stand by. We're in the middle - -
	ACDR	Just a minute. Vance is in the docking module, I'm in the middle of freezing the electrophoresis, and Deke's in Earth obs. Stand by.

	CC-H	Understand.
	CC-H	When you can get to it.
18 13 21	DMP	I'm afraid the old Greek gods are getting to us today on the Earth obs, Crip. I'm supposed to be over the Red Sea, which I'm sure we are, looking for bioluminescence. But, unfortunately, what wasn't factored in here is that we're still in sunlight and I got the sunshine nice and bright right in the window.
	CC-H	Rog. Yeah.
	DMP	I'll hang in here until it sets and see if I can see anything, but I'm not optimistic.
	CC-H	Yeah. It looks to me like - -
	ACDR	Okay, Crip. What - -
	CC-H	Tom.
	ACDR	- - what switch do you want to shut down this thing?
18 13 51	CC-H	Okay. We want - WATER FLOW to OFF, and that's in center position, and go to INCREASE for - MANUAL and INCREASE for 1 minute, please.
	ACDR	Okay. That's just a standard shutdown I'm doing, then.
	CC-H	That's affirm.
18 14 12	DMP	Okay, Crip. Wherever we are, I've got a series of very bright lights down here. A pair to the right, a pair directly under the nose, and a set of three ahead of me. Looks like they're under a bit of a cloud, but they're superbright. Must be gas fires, maybe.
	CC-H	Probably - you're coming just about over the Suez area at this time.
	DMP	I see. Okay. And it's clear off to the left, and we can see forest fires off there. But these probably are gas fires.

18 15 08	ACDR	Okay. STEAM PRESSURE has been INCREASED for 1 minute and that does it. Anything else you want?
	CC-H	No, that should do it for a while. We thought we got it cleared up there, but apparently we did not.
	ACDR	All right.
18 18 35	CMP	Houston, Apollo.
	CC-H	Go ahead, Vance.
	CMP	Okay. I'm on biomed on the center seat CCU. You picking me up?
	CC-H	Let's take a look at it.
	CC-H	Let us get configured here for you, Vance, and we'll tell you when to cut loose.
18 19 19	CC-H	CP, Houston. We're looking at you now; proceed on with the exercise.
	CMP	Okeydoke.
18 20 04	CC-H	CP, Houston. Vance, the data is getting pretty - pretty garbled here, and we would request that, if you could, to recheck your electrodes.
	CMP	Okay. Any one in particular?
	CC-H	No. We recommend you just go ahead and try them all, right now. Just try pressing them down.
18 21 26	CMP	Okay. Is that any better? If not, I'll try again.
	CC-H	Stand by 1, Vance.
	CC-H	Okay. That's looking good to us, Vance. Let's try it once more.
	CMP	You say it is looking good?
	CC-H	That's affirmative.
	CMP	Okay. We'll exercise.

18 24 14	CMP	What's the heart rate, Crip?
	CC-H	Well, let me ask our friends over here.
	CMP	Hope it didn't go down.
	CC-H	(Laughter) If it went down - I don't think it did.
18 24 33	CC-H	About one-half a minute ago, it was 113.
	CC-H	Work hard!
	CMP	That means work harder.
	CC-H	Roger.
18 25 06	CC-H	It just went to 101. You're not complying.
	CMP	I'm trying, Crip; I'm trying.
	CC-H	(Laughter) I suspect that you were.
	CMP	Funny thing - you can work a sweat up, up here, and work your muscles, but it is hard to get your heart rate up with this gadget.
	CC-H	Yes, sir.
	CC-H	And while you're working away there, if the AC has some time, after he finishes up with this ETE ops, I was going to try to - to do a little bit of an update. We were going to do to - or we're going to request to do - to recover this data that I mentioned, that we'd earlier lost due to our tape recorder problem.
	ACDR	Okay. Wait - wait until E - we're in the middle of messing with the ETE.
	CC-H	Okay, that's fine.
	ACDR	I got you.
	CC-H	We'll get it there.
18 29 29	CMP	Houston, Apollo.
	CC-H	Go ahead.

	CMP	This turns out to be a pretty fair leg exerciser. But really, the bicycle ergometer's the first-class way to go, like they had on Skylab.
	CC-H	Rog. For your information, we got your - saw your heart rate up to 125 at one period, there.
18 29 52	CMP	Okay. Also, this just exercises certain muscles. I have the feeling that I could probably jump tall buildings after this, but possibly not walk, be - be able to walk.
	CC-H	(Laughter.) Roger.
	CC-H	You going to put a big "S" on your chest?
	CMP	I'd better not.
	CMP	Okay, Crip. Guess I'll clean up and get ready for lunch. How's that?
18 31 21	CC-H	We'd like to - if you'd keep the OBS on there a little bit and just let us look at a minute or so of your recovery there, we'd appreciate it.
	CMP	Okay.
	CC-H	Is Deke tied up there right now? There was one item I wanted to mention to him sometime.
	DMP	Go ahead. I'm working on restowing the freezer here, but I can listen.
18 31 44	CC-H	Okay. All it was is that we - I was noticing in your book here, you've got - check the biostack in a few minutes. And the PI was getting a little bit concerned about his battery on that particular item and if - when you look at it, if the light is OFF, we would like you to go ahead and turn it OFF at this time. If it's ON, we want to leave it ON.
	DMP	Hey, could you - -
	ACDR	Yeah, while I'm waiting for that sample to unfreeze, I can get up and look at it. Just a minute.
18 32 30	ACDR	Okay. On the biostack, the light is ON.

CC-H Okay. Well, just leave it ON. And believe the next time you check it is when you go ahead and turn it OFF normally, and that will be - abcut 154:10. Fine. Thank you very much.

ACDR Right.

DMP And, Crip. For those of you that have tried to stow this freezer in one g, you should try it in zero g. It's really sporting.

CC-H Well, I tell you, it was - it was fun enough in one g. I don't know what it would be like at zero - trying to get that - get that little foldover thing there to stay in the right position. I thought it'd be a little bit easier in zero g.

DMP Well, I was hoping so, too. But what happens is it keeps floating out of there, of course - -

CC-H Yeah - -

DMP - - hold it in position.

DMP We got her.

CC-H Very good.

CMP Houston, Apollo.

18 35 04 CC-H Go ahead.

18 35 07 CMP Be nice if you'd remind us, sometime in the future, when we're to come over the Adriatic area again in the daytime. We might have a little better viewing condition.

CC-H Okay. We'll look ahead in your Flight Plan there and see if we can pick out a good one for you, Vance.

CMP Okay. Thanks a lot.

CC-H Apollo, Houston. For the CP. Vance, we've - see your heart rate's all down, and you look nice and comfy now, and we've seen enough data. You can go ahead and take the OBS off.

CMP See you later. Thanks.

CC-H Okay. We're about ready to go over the hill on the ATS and next station contact will be at Vanguard in 17 minutes. That's at 150:33. 150:33. See you there.

18 37 47 CC-H And if Vanguard turns out to be a comfortable place to do it, might do a little pad updating there to allow us to recover some data. We'll be talking about reusing that EUV pad for rev 88.

18 54 38 CC-H Apollo, Houston. We're AOS at Vanguard for 7 minutes.

ACDR Okay, Crip. I got one for the electrophoresis.

CC-H Okay.

ACDR Okay. On sample 2 - it says sample 2 through I think about 6, it says verify that the column temperature is 10 to 12 degrees centigrade. This one has come down - you know when we first put it ON, we put it to COOL - and about 27 to - 14 or 15, it's just hanging there. How long do I wait before I press on? Over.

CC-H Let us take a look and we'll get right back with you.

18 55 56 ACDR Crip, I've got to ... this, so I'll wait for your answers on electrophoresis. Maybe I can - maybe you can give me some data on that - you were talking about on the EUV.

CC-H Okay. There's really no big rush on that, we can get it at acquisition here of the - of the next ATS, or we can go ahead and get it now. Whatever you'd like to do.

ACDR Well, get me the answer to electrophoresis and if it's - we got some time to copy it on ATS. I'll try to get some chow and also get the electrophoresis going when you get that answer.

18 56 33 CC-H Okay, Tom. What we'd like you to do is to go ahead and press on with the ETE. No need to hold up for the temperature. And also, on our telemetry down here, we saw an indication of an MC&W. Did you have that onboard, or is this something like what we saw - -

ACDR Yeah. We had a MASTER CAUTION, and Deke and I looked all over and couldn't find a thing.

CC-H Okay. Copy.

18 57 05 DMP Yeah. We got the panel covered with checklists and foodtrays right now. And I caught the red light but I never saw anything on the other ones. So I don't know what triggered it.

CC-H Okay. We'll - we'll take a look at our data down here and see if we can find - find the culprit.

DMP We're - normally assume it's high O_2, but that can get to be a bad habit.

CC-H Yeah. I think we'd be watching for that. Might tell Tom that when I see him at the - the next ATS pass, there or Newfoundland, I can start correcting that - that pad. And what I'm going to do is take the rev 88 pad that we used earlier, the EUV pad, and - and modify it to use in rev 94.

DMP Okay.

18 58 02 CC-H Deke, you got a - got a moment to let me - bend your ear about another item?

DMP Okay. Stand by just a second until I can get my hands empty.

DMP Okay.

18 58 24 CC-H Okay. A little bit later in the - in the Flight Plan, you're going to have a TV installation and - and setup - I believe to - to cover the - the fish. And on that - the - we believe that both of the cameras, both of the TV cameras in the docking module are not working properly. So what we would like to do if they're - if you've currently got one in 873, you can do it like we mentioned the other day, go ahead and mark it bad and temporarily stow it in D-3 if you'd like. And we want to use the camera that we've got in location 606 right now, and - for that setup.

DMP We were wondering what that camera was for. Okay, you want to put that up in the DM on 873?

CC-H That's affirm. Also, when you do that, you're going to have to make sure that it is put in - in MASTER

for using in there. It'll be in AVERAGE, MASTER, and LINEAR like we normally operate them.

18 59 31 DMP Okay. I'll set it up that way right now. And I assume you want the wide-angle lens on it also, it's got the long lens on it.

CC-H That's affirm. We want the wide-angle lens.

DMP Okay.

DMP You say neither one of those cameras are working up there, is that correct?

CC-H That's correct. They're working, but they're not working properly.

DMP Okay.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

18 59 57	DMP	Speaking of fish, a very important item, did anybody ever figure out whether sample 6 is supposed to be 5 or 6?
	CC-H	Well, it so happens that all of them were supposed to have been 6.
	DMP	That's amazing.
	CC-H	Maybe the little buggers are eating one another; I'm not sure.
	DMP	Well, as a matter of fact, I think you may be right. There's one of them there, I thought I could see a fish head in, but I thought, "No, I'm seeing things." I guess that background is pretty difficult to tell.
	CC-H	Yeah. Also, from what your question previously, - Deke, can you tell us if you pulled out the second bag, the one that had the eggs in it?
19 00 34	DMP	Yeah; got it. And it's up there and I've taken one set of pictures of it per Flight Plan.
	CC-H	Okay. You noticed any - any hatchlings yet?
	DMP	Well, I didn't any yesterday, but I haven't looked at it today.
19 00 48	CC-H	Okay. We're about ready to go over the hill here, and we'll see you at Goldstone in 15 - 15 minutes. And we'd certainly be interested in hearing there, when you take a look at it, whether we got any.
19 00 58	DMP	I'll check it for you.
19 16 38	CC-H	Apollo, Houston. We're AOS through Goldstone. We have you for about 2-1/2 minutes.
	ACDR	Okay, Crip. And another master alarm came on, as far as the light - but I didn't get anything on my headset. The whole panel is clear.
	CC-H	Okay. Copy. You got an MC&W. You did not notice any status lights and no tone.

19 17 01	CC-H	Can you give - give us an estimate of what the time was, Tom? That way, we can go back and look at the data.
19 17 05	ACDR	Oh, about 2 minutes ago, I guess. I just caught it coming out of the docking module. ... last 30 seconds. Except the light's pretty hot, it may have been on longer that that ...
	CC-H	Okay. And we were configured properly on the comm panel there, such that we would have picked up the tone. Is that right?
	DMP	Yeah, I'm configured right for it, Crip. But I wasn't on a headset. We're not sure whether Tom was or not.
	CC-H	Okay. I was - understand Tom was on the headset. And I just wondered about him there.
	DMP	Yeah, but I've - I've been on here most of the time. And the last three times it came on, I was on and my audio was on. And I didn't hear it.
	CC-H	You did not hear it. Copy that. Okay.
	CC-H	Okay. And if we have got some time here; well, we've only got about a minute until we're going to drop you out. Newfoundland in about 8 minutes. We'll see you there.
	DMP	Okay.
19 18 32	CC-H	Okay. We show you did not maneuver, or - or you're still in P20, and you didn't pick up that VERB 49 maneuver, which is called out at 150:25. We need you to go ahead and get that in, so we'll be set up for the next helium glow.
	CC-H	And also, so we'll get you on ATS.
19 18 49	ACDR	Roger. Doing it now.
	CC-H	Recommend you increase your DAP to 0.5 degree per second for this maneuver.
19 19 11	DMP	Okay.

19 26 25	CC-H	Apollo, Houston. We are AOS through Newfoundland. Should get you with the ATS about 51 minutes.
	ACDR	...
	CC-H	Okay. I heard you call back down, but it wasn't very clear. If the comm's not going to be too hot here through Newfoundland, we'll - we'll wait until we get ATS lockup.
	CMP	Heard you loud and clear - this time, at least.
	CC-H	Okay. Reading you the same, now, Vance. One item I would like to go ahead and pick up and get out of the road is, for the upcoming helium glow pass, I need to give you the times and a couple of deletions on that.
	CC-H	That's rev 92/93 in your Supplement.
	CMP	Stand by. (...)
19 27 37	CMP	Go ahead, Crip.
	CC-H	Okay. If you're looking at it, for - we want to set the DET counting up to 151:36:36.
	CMP	Okay. Helium glow pad 92/93 - set the DET counting up 151:36:36.
	CC-H	Okay. That's a good readback. We would like to delete X-ray from - from this pad entirely. And we would like to use, on our EUV ops, detector 2, vice detector 1.
	CC-H	I'm sorry. I said that backwards. We want to use detector 1, vice detector 2.
	CMP	Okay. Use - on EUV ops, use detector 1.
	CC-H	Okay. And that's going to be for this pad only. And we're going to drop out here; we'll have to pick up the ATS.
19 28 40	CMP	Roger.

19 28 41	CC-H	Okay. We're back with you again. And the only other item is - if you haven't done it yet - Seeing that you're in attitude now, you can go ahead and go back to 0.2 degree per second on your DAP.
19 28 58	CMP	We're there.
	CC-H	Okay, fine. The other item I wanted to talk to you about was, as I mentioned several times, for rev 94 - instead of running the X-ray pad we've got there, we would like to take our EUV pad that we have for rev 88 and modify it somewhat, which will allow us to pick up some of the data that we lost. So if you could dig that pad back out, I would appreciate it. EUV pad, rev 88.
	CMP	Stand by.
	CMP	Okay. Go ahead.
	CC-H	Okay. The new time for setting the DET counting up to, will be 154:18:10.
	CMP	Copy.
	CC-H	Okay. I want to delete that entire line at 37 on the DET. That is, we do not need to do that X-ray cal it called for there.
	CMP	Copy.
	CC-H	Okay. For - We want to delete the X-ray at 58.
	CMP	Roger.
	CC-H	Okay. We see an MC&W for a high O_2 flow. But at zero time, we want to delete the - configuring the DSE. It will be a real - time pass.
	CMP	Roger. And I guess - of course, delete that 46 write-in of HIGH VOLTAGE POWER, OFF.
	CC-H	I'm sorry. You're - you're correct. Delete that.
	CMP	Okay. Just keep going, Crip.

CC-H Okay. At 12:07, I've got a new attitude for you. It's 018.00, 159.60, no change. Okay.

19 31 21 CMP Okay. At 12:07, 018.00, and 159.60.

CC-H Okay. That's a good readback. Starting with DET time of 15:43, we want to delete all items following that.

CMP Okay. That's the end of the pad, essentially, except for powerdowns too, you mean?

CC-H Okay. Now what we're going - I want to tell you what we're going to do. And I can verbally call these. At 16:48, we're going to go ahead and have you do X-ray ops. And then throughout that pass, what we're - for the remainder of the time, we're going to have you cycling the X-RAY HIGH VOLTAGE POWER, ON, for 2 minutes, and then OFF for 2 minutes, and back ON for 2 minutes, and ON for 2 minutes, and so forth. Okay. At about - at 38:30, we'll go ahead and do a power-down of the EUV and X-ray. And I can call those in real time to you, also.

CMP Okay. Then the attitude that we have at 15:43 will be the attitude that this X-ray ops is done in. Is that affirm?

19 32 43 CC-H That's affirm. That one that I just called out to you to enter at 12:07, will be the - be the one. And it will just stay there pointing at that one particular target.

CMP Right.

CC-H Okay. One other item associated with that is that I need to give you the high-gain antenna angles, since those are going to be modified slightly.

CC-H And you can either put - -

CMP All right.

CC-H You can either put them on the pad, or you can go ahead and put them in your Flight Plan, whichever way you would like to work with it.

	CMP	Okay. Why don't you just put them in - we'll put them in the pad here.
	CC-H	Okay. Put them in the pad. At 44 on the DET, put pitch of minus 45 and yaw of 184. And that will differ from what is currently written in your Flight Plan, but it shouldn't cause any problem.
	CMP	Okay, that's - 44 at the - near the beginning. Is that right?
	CC-H	Yeah, that's affirmative.
	CMP	Okay. Please repeat the angles again.
	CC-H	Okay. Minus 45 and 184.
19 33 53	CMP	Okay. Probably be worth making a note at the end of this pad - We also want you to go back to - to 0.2 degree per second. And we'd have to make a special entry to do that on - at the end of the pad after the powerdowns.
	CMP	Okay. 6 - DAP entry of 61101 just after powerdown.
	CC-H	That's affirm.
	CMP	Houston, Apollo.
	CC-H	Go ahead.
	CMP	A minor thing, but I was noticing you said that everything after 15:43 was affected by this change, by and large, and at 15:43 time we have an insertion to put in DAP 61101.
	CMP	So isn't your last comment redundant?
	CC-H	Okay. I had intended for you to delete all items after that. It really doesn't make any difference. Once you're in attitude, you can go ahead and put it in. Whichever way you would like to do it.
	CMP	Okay. Fine.
19 37 50	ACDR	Houston, Apollo.

CC-H Go ahead.

ACDR Okay, Crip. I noticed for about the last hour or so that one of these suit hoses was spitting water out in that thing. So I went up to the - just now we started talking about it. I went up to the docking module. The other .. of the docking module is spitting water out a little bit. So I'd assume the one that's going down the VTR is spitting some water on the VTR too.

CC-H Okay. Copy that. Let's see.

CC-H Okay. Our INCO friend would like to get that hose out of his VTR then.

19 38 32 ACDR Bet that really cooled off, all that water evaporating in that thing.

CC-H Well, you don't know how long he cried to get it in there.

DMP Can you guys tell whether our squeezer's working or not? It might be coupled with this O_2 flow business.

19 38 49 CC-H I'm sorry, Deke. Would you say that again, please?

DMP Can you guys down there tell whether our water sqeezer's working or not? This may be coupled to our O_2 high flow business too.

ACDR Hey, Crip. You can tell your INCO friend we got - I got a couple of tablespoons of water out of the entrance to his VTR here.

CC-H Okay. Copy.

19 39 27 CC-H As a - as a matter of information, if the AC's still listening. He discovered that he caught us with a small error there on that checklist while ago on the ETE, that we had you waiting on the wrong - on the wrong temperature. We were supposed to have been using the TE temp versus the column temp, and we need to get that noted in the checklist sometime. If it's not convenient now, we can do it later.

ACDR Well, it was - Say again. It was supposed to be the TE temp?

CC-H Yeah. That - the checklist was in error down there on the bottom of that page 1-7. Where it says "column temp," it should be "TE temp."

ACDR Ah, hah. TE temp is 11 degrees (laughter). Okay.

CC-H Okay. If you get a chance, you might - might make a notation here. Say, also, Tom, earlier, when you were talking about sample 1, you mentioned a couple of bands. We were expecting to see three. Did you - It's not necessary to go dig it out, but can you remember seeing three, or was it only two?

19 40 30 DMP Well, it looked to me, Crip, like there was a - the leading band that was a narrow one. What would you say, Tom, about 5 millimeters?

ACDR Yeah.

DMP And then the second one was two or three times that wide. Or maybe the second one was really three I don't know.

ACDR Okay. I recorded that the - the leading band went from 118 to 123 or 24 by 6 wide. The second one was about - Oh, the second was actually wider than the first one. Yeah, the second one was - it you looked - was nearly 12 millimeters wide. The first one was - oh, 5 or 6 millmeters wide; the second one was 12.

19 41 09 CC-H Okay. But there were only two that you could - could note?

ACDR Yeah. And they were faint bands, but you could see them, you know.

CC-H Okay. Real fine. Thank you very much.

DMP Hey, Crip, I wonder if you could have your Earth obs guys do me a favor?

CC-H Try it. Go ahead.

DMP Rog. Next time we got a pass through the middle of Wisconsin, then give me a little bit of warning. We came over there yesterday. I was evaluating the high power scope that messed up the day. I saw it in time, but sitting there with a 300- millimeter lens, so I didn't get much of it.

19 41 54	CC-H	Yeah. It looked like we just had a pass over there this last rev around. We'll try to look at that for tomorrow and warn you.
	DMP	Yeah. We got some pictures with a 300, but that's kind of a lousy lens for the kind of photography we're trying to take.
	CC-H	Okay. I don't know whether Vance is still listening, but the surgeons are very pleased with that OBS exercise that they got awhile ago, and it looks like he's in excellent condition, as we all knew he was.
19 42 28	ACDR	Hey, Crip, I got an idea here, just real fast.
	CC-H	Go ahead.
	ACDR	For Mr. VTR, what about just leaving a return hose in there so at least it can suck some air out in the VTR and keep the inlet hoses away from it while it's spitting water?
	CC-H	Okay. The activity we've got on the VTR now is very minimal, so we really don't need all that cooling, and that's not really necessary. But it sounds like a good pretty idea, if we need it later.
	ACDR	Okay. I'm - All the hoses are out of the VTR.
19 43 04	CC-H	Thanks a lot.
19 47 50	CC-H	For the DP. Deke, awhile ago you asked about your water squeezer. We're confident that it's working satisfactorily, and we have seen water like this produced previously on the lunar orbit, I guess, when we were operating without the primary evap on like we got now. I'm afraid it's probably just something we're going to have to live with.
	DMP	Okay; no big deal. Just occurred to me that we were getting all these high flows, that there might be something going on with the squeezer.
19 48 14	CC-H	Rog.
	CC-H	Apollo, Houston. We'll probably have a little bit early LOS here on our ATS, and next station contact is in 29 minutes through Orroral.

19 52 16	ACDR	Roger.
	ACDR	Hello, Houston; Apollo. You still read?
	CC-H	Rog. We're getting ready to cut you off shortly, though. Go ahead.
	ACDR	Oh, okay. Good. Because - Yeah, even though we're in contact with you on this data, we still go DSE, HIGH BIT RATE, RECORD, FORWARD, and COMMAND RESET. Roger?
	CC-H	That's affirm. We need INCO to get a command in first, though.
	ACDR	Okay.
19 56 33	CC-H	Soon as we - we'll go LOS ...
20 21 19	CC-H	Apollo, Houston. We're AOS through Orroral. We've got you for a minute, and our next station contact will be at the Vanguard at 152:05. And that's about 5 minutes away.
20 21 30	CMP	Roger.
20 26 40	CC-H	Apollo, Houston. We're AOS through the Vanguard for 6-1/2 minutes.
	ACDR	Okay.
	CC-H	I don't know if you guys have taken a chance to look at your orbital map, or maybe somebody told you earlier, but the Vanguard is underway and sailing west at this time. That's why we're picking you up a little bit earlier on it.
	CMP	Okay. Guess we kind of expected that.
	(Music:	"Colorado Rocky Mountain High" by John Denver.)
	CC-H	I'd almost swear Pete Conrad was up there.
	CMP	Got all kinds of western up here.
	CC-H	Rog. Rog.

	CMP	Even "Colorado Mountain High."
	CC-H	Right.
20 28 59	CC-H	Apollo, Houston. If we could, we'd like to get an update on the furnace. According to our Flight Plan, it should have been shut down, and we show it still powered up. Are we running a little bit behind there?
	ACDR	Deke's up there working on it now.
20 29 13	CC-H	Okay; fine.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

20 32 16	CC-H	Apollo, Houston. We are 1 minute from LOS. Next station contact will be through Goldstone. That's about 15 minutes away, and it'll be at 152:25. 152:25.
	ACDR	Okay. Real good. Thank you, Crip.
	CMP	Hey, Crip. Deke says the furnace is off now, and he's doing prep for MA060.
20 32 39	CC-H	Rog. In looking at how we got here, I guess we look like we were just dominoing down from the fact that we had that problem on the ETE with the temperature, and I think everything's just running a few minutes late. We understand it.
20 47 19	CC-H	Apollo, Houston. We're AOS at Goldstone for 6 minutes.
	ACDR	Roger.
	CC-H	Apollo, Houston. For the AC, while you're sitting here waiting for loading your next P20 - got one other item I might discuss with you briefly.
	ACDR	Go ahead, Crip.
20 50 20	CC-H	Okay, Tom. You guys have probably been doing it already - but a request here is that, if you haven't, you might get some DAC footage, using 24 frames per second, of each of you guys doing - any - you know, any kind of task around the spacecraft there, to use for a postflight film. If you haven't, we suggest you might could use the CI01, which should be in F-2.
	ACDR	CI01 in F-2. Okay.
	CC-H	Okay. And a 10-millimeter lens would be good for that. And we do want to get it at 24, cause it works out much better.
	ACDR	Roger.
	CC-H	Apollo, Houston. We're about a minute from LOS, and our next station contact in 7 minutes through Newfoundland at 152:37. 152:37.

20 52 12	ACDR	Roger. Newfoundland, 132:57 [sic].
20 59 08	CC-H	Apollo, Houston. We're AOS through Newfoundland for 7 minutes.
	ACDR	Roger. And I understand we don't have the ATS this time, due to latitude.
	CC-H	That is correct.
	ACDR	Houston, Apollo.
	CC-H	Apollo, go ahead.
	ACDR	What ..., Crip? Are your data looking good on us?
	CC-H	We're looking at you through Newfoundland right now and - which means we're only talking and not looking, VHF only, so we don't have data. Up until this time, it had been looking good.
	ACDR	Okay. Everything's been going right on schedule.
	CC-H	Rog. It looks like you're really having fun sitting there punching the DISKY. About to wear out your finger.
	ACDR	Need new fingertips, when this mission's over.
	CC-H	Roger that. Take care of all fingerprints.
	ACDR	Right.
21 02 06	ACDR	Hello, Crip, Apollo.
	CC-H	Go ahead.
	ACDR	I was just thinking, if I had a penny for every DSKY stroke, we could have a hell of a splashdown party, couldn't we?
	CC-H	Well, that's (laughter) that's certainly a good idea. I think we should have one anyhow.
	ACDR	Oh, we will.
	CC-H	A little - little side information. After I give this mike here to Dick Truly, I'm going to go over -

We're having a little touchdown party for the - for the Soyuz tonight.

ACDR Oh. Real good. Sorry we can't join you.

CC-H Oh, you can have a little orange juice or whatever you got onboard there.

ACDR All righty.

CC-H Tom, you still reading me loud and clear?

ACDR That you, Crip?

CC-H Yeah. I want - I wanted to tell you I got some good news, and I got some bad news. We don't need you to swing through the trees like Tarzan, but would you believe that, due to a little ground error here, we ended up losing all of your OBS exercise data yesterday?

ACDR Okay. Sorry about that. I was working out like mad.

CC-H Well, we were wondering if we could - convince you to do it once more for us.

ACDR Yeah. How about the day before entry?

CC-H Well, that looks kind of busy. We're actually looking at one little spot later on this evening or tomorrow, and we can talk about that a little bit later.

ACDR All right.

21 05 07 ACDR ... that you figured right onboard for that.

CC-H Yeah. It - it was a problem we had here - down here. We know it was right onboard.

21 05 49 CC-H Apollo, Houston. We're 1 minute from LOS. Next station contact in about 4 minutes through Madrid. Call you there.

ACDR Roger.

21 10 37 CC-H Apollo, Houston. We're AOS Madrid for about 2-1/2 minutes; correction on that - for about a minute and a half.

	ACDR	Okay.
21 11 38	CC-H	Apollo, Houston. We are 1 minute from LOS, nice long one here. Next station contact will be Orroral in about 40 minutes. And that's at 153:30. 153:50 - correction, 30.
	ACDR	Roger. 153:30, Crip.
	CC-H	Roger, Tom. Just one thing we're working on down here is a caution and warning tone, when you announced to us you've had some caution and warnings without a tone. Have you had any subsequent ones that you've had the tone with?
	ACDR	No, not a bit. That's the only time.
	CC-H	Okay. That concerns us somewhat that the tone - when it's not working.
	CC-H	We'll go ahead and say good evening to you, and be turning you over to the Silver Team.
	ACDR	Okay. Real good. Thanks a lot for all the help, Crip. Needless to say, we've been busier than the proverbial left-handed paperhanger up here.
	CC-H	Rog. Sounds like you're having fun.
	ACDR	Yep.
	CC-H	If you want to look at Systems Checklist 1-33, you might run through a C&W check.
	ACDR	Say again.
	CC-H	Checklist 1-33.
	ACDR	Roger.
21 13 15	CC-H	That's to allow you to check it out, if you'd like.
21 50 42	CC-H	Apollo, Houston. Hello at Orroral Valley on VHF. How do you read?
	ACDR	Pretty good. Hello, Houston; Apollo.
	CC-H	Apollo, Houston. Tom, I read you. Go ahead.

ACDR Okay. Loud and clear. Deke is doing the fish experiment. I'm still working the helium glow scan, rev 92/93.

CC-H Okay. Fine.

ACDR And Vance is working in between on both things.

CC-H Roger.

ACDR We're all set to go to that con - new contingency pad for the X-ray. Then we'll start that - in fact, we'll get busy on that starting about 154:00. One thing, we did check the caution and warning. Everything checks okay. The only thing is that the warning tone in our headset - we can barely hear it when it's turned up, but it's real low - it's dropped considerably compared to when we first - first couple of days in the spacecraft when that O_2 warning used to keep us wide awake - you know, all the time.

CC-H Sure. Yeah, I remember.

21 51 53 ACDR As your warning goes on, the red light goes on. But you can just barely hear it. That's the only difference. And we haven't had any more funnies where the warning light would go on with no other warning on it. Over.

CC-H Okay; fine, Tom. Let us talk about that just a minute. We'll be back to you. Thanks for letting us know though.

ACDR Okay.

CC-H Apollo, Houston. We're 1 minute from LOS. Hawaii comes up at 153:48.

ACDR Roger.

CC-H And, Tom, one of the things that we also want to check about the loudness of the tone on the caution and warning is how loud it is with the speaker box turned on, cause that's the sleep configuration.

	ACDR	Okay. We can check that. And we'll have an answer for you by the time you get to Hawaii.
21 55 56	CC-H	Okay. Real fine. Thanks.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

22 09 46	CC-H	Apollo, Houston. Hawaii for 7 minutes.
	ACDR	Roger. Read you loud and clear.
	CC-H	Okay.
	ACDR	And we - we've checked the caution and warning, and it'll blast you right out of the spacecraft. There's no problem with the speaker box, as far as the speaker box goes; it's just in the headsets. We could ... the speaker box ...
	CC-H	Okay. One question, Tom. Do you have the same problem with the low tone from all three audio centers, on the headsets?
	ACDR	Roger. All three.
	CC-H	Okay. Understand. Copy. Thank you much.
22 15 06	CC-H	Apollo, Houston. One comment on your jet selects.
	ACDR	Go ahead.
	CC-H	May be going in the keyhole; hang on a second. Okay, you reading me loud and clear, Tom?
	ACDR	...
	CC-H	Okay, you know yesterday we turned off one of the roll jets, Bravo 2, and turned on Delta 2. That balance worked well and the quads are more balanced than they were. The next time you come to a jet select - it's in the Flight Plan about an hour from now, and it's printed there and we want you to go back to the nominal configuration there at 155 plus 07 and then just follow the Flight Plan after that.
	ACDR	Roger. Nominal jet select on auto RCS at 155:07.
	CC-H	That's right, and then after that, just do what the Flight Plan tells you whenever you come up on it. Thanks a lot.

	ACDR	Okay, Dick. From 155 on, we do exactly what's in the - in the Flight Plan.
22 16 09	CC-H	That's affirm. And we're about a minute from LOS Hawaii. Newfoundland comes up at 154 plus 10. I'll see you there.
22 16 16	ACDR	Thank you.
22 31 18	CC-H	Apollo, Houston. Newfoundland for 7 minutes.
	ACDR	Roger. How do you read?
	CC-H	Loud and clear, Tom.
	ACDR	We read you loud and clear now.
	CC-H	Okay.
22 35 18	ACDR	Houston, how do you read through ATS?
	CC-H	Apollo, Houston. I read you loud and clear. Let's - let me make sure that I heard that through the ATS or through Newfoundland. Stand by.
	ACDR	Okay.
	CC-H	That's affirm, Tom. We're locked up on the ATS.
	ACDR	Okay, and we're all set, and we're counting down in the EUV pad, rev 88 ...
	CC-H	Okay, Tom. Since I handed over to Crip, I wonder if I could review with you just so you and I both understand how we're going to run this pass. Over.
	ACDR	Okay, go ahead.
22 35 55	CC-H	Okay. I've got the pad here that is marked up per Crip's markups. As I understand it, at - we're going to go right through the pad down to the time where it says 12 plus 07 and then - -
	ACDR	That's right.
	CC-H	- - then at 16 plus 48, I'm going to give you a call and we're going to do an X-ray ops. And then from there to the end of the pass, we're going to

cycling the HIGH VOLTAGE on and off on 2-minute - on 2-minute intervals. And we - if the PI - -

ACDR Roger.

CC-H Okay, and if the PI desires by looking at the data in real time to change that 2 minutes, I'll give you a call.

22 36 36 ACDR Okay; good. Now we're talking HIGH VOLTAGE only. 2 minutes on, 2 minutes off, 2 minutes on, 2 minutes off.

CC-H That's affirm, Tom. And then at the end of the pass, and I'll give you a reminder on this also, we'll fix up the DAP.

ACDR Okay.

CC-H Okay, real fine. I think we understand it, and I'm standing by.

ACDR All right; good. And - you know, there's also some new angles here that they - they called up to us at 12:07. It's 018.00 and 159.60. Over.

22 37 12 CC-H That's affirm. You cop - you read them down correctly, Tom. And down on panel 230, if one of you'd help us out and go UP TELEMETRY switch to UP TELEMETRY; that's center position.

ACDR Okay.

ACDR Dick, Deke wants to talk to you for just a minute here. He'll be coming on the headset.

CC-H Okay, fine. I'd love to speak to him.

DMP Hello, there, Dick. How you doing?

CC-H Great, Deke. And you?

DMP Well, I'm not sure. I've got a question here. We're doing ETE ops and we're supposed to be on the shutdown on the third sample. Our little old kitchen timer got away from us, so we're kind of doing it by stopwatch or, you know, good old Earth watch.

	CC-H	Roger.
22 39 16	DMP	And by my watch, we've been running here almost 2 hours on this one sample, and it still has not shut down. They're supposed to shut down in 75 minutes, and the voltage get down to somewhere near zero. I'm still reading about 335 volts on her. And I think my timing's pretty good, so I wonder if somebody could tell us if we've got a malfunction or whether we should just go ahead and shut it down based on time.
	CC-H	Okay, Deke. Let us talk about it a second here.
	DMP	Thank you.
	CC-H	And I'll get back to you.
	DMP	Okay.
22 42 11	CC-H	Apollo, Houston. Answer to Deke, we'd like to proceed on and do the ETE freeze that's scheduled there. You've got it in front of you, I'm sure. It's page 1-9.
	DMP	Okay, do the freeze and don't worry about the voltage, right?
	CC-H	That's affirm.
22 42 29	DMP	Okay, thank you.
22 50 11	ACDR	Houston, Apollo.
	CC-H	Go ahead, Tom.
	ACDR	Okay, just wondering how the data's coming down there on the ground since we're taking it back through ATS.
22 50 22	CC-H	Okay, let me check. We've been - I've been watching you here doing the maneuvers. Let's - let me check with Experiments. It's looking real good, Tom. So reports the Experiments Officer.
22 50 33	ACDR	Real good; thank you.
22 56 20	ACDR	Okay, Dick. If you're reading, it doesn't look like we're going to reach that attitude, even with that

DAP rate, by the time we get to 16:48. Over. We may do it.

CC-H Okay. I was watching it, too, here. When we get to 50:18, Tom, you can go ahead and do the X-ray power - X-ray ops, and you might give me a mark when you put the HIGH VOLTAGE POWER to 1, so I can help you keep up the time. Also, after we get to 50:18, at your convenience, you could go ahead and change the DAP that's listed there at 15 plus 43 in the original printed pad.

ACDR Okay. We're coming up to it now. I'll change the DAP and then start it.

CC-H Okay. I see the 50:18.

DMP Okay, Dick.

22 57 26 ACDR Okay. You've got the tight DAP.

CC-H Okay. Real fine. Thank you much.

22 57 34 DMP Okay, Dick. You guys ready for a SAM cal?

CC-H Stand by, Deke. Let me see.

CC-H That's affirm, Deke. We are.

22 57 44 DMP Okay. Coming on in 20 seconds.

ACDR Okay, Crip. I'm down here now.

CC-H Okay.

ACDR You read me okay?

CC-H That's affirm, Tom. Go ahead.

22 59 30 CC-H Okay. We see that you have the HIGH VOLTAGE, ON, and now we'd like cycle it off and on every 2 minutes. Would you like me to give you a call, or you want to keep up with it?

23 04 44 CC-H Apollo, Houston. Deke, we never did see a SAM cal, and I'm assuming you did do that when you said you were, is that right?

	ACDR	Yes, he did.
	CC-H	Okay, fine. Let us check our data. I'll be right back to you.
	ACDR	Okay.
	ACDR	He was waiting for you to call back. He went to work on some other stuff.
	CC-H	Okay. I'll be right back to you.
23 05 15	ACDR	Okay. In 5 seconds, I'm getting the HIGH VOLTAGE POWER, OFF.
	CC-H	Okay.
	ACDR	2, 2 -
23 05 20	ACDR	MARK it. HIGH VOLTAGE POWER, 1, off.
	CC-H	Okay.
	DMP	Yeah, Dick. I gave you the SAM cal when I called it there for 20 seconds, per the checklist, but - -
	CC-H	Roger.
	DMP	- - ... to give you a readback - -
	CC-H	Roger. Deke, stand by a second. We did not see the cal. We may ask you to be doing another one here. And, Tom, when you turn on the HIGH VOLTAGE POWER this next time, after the 2 minutes has elapsed, leave it on until I call you to turn it off. Those first two times you turned it on, our data is looking a lot better.
	ACDR	All right.
23 06 14	CC-H	Deke, Houston. About all we can ask you to do is, is ask you if you see the - verify that the SAM indicator light was on and to recheck the connections - the cable connections, and we'll have to try to get another SAM cal.
23 06 33	ACDR	Okay. I got the HIGH VOLTAGE POWER back on.

	CC-H	Okay. Just leave it on until I call you, Tom.
	ACDR	Real good.
23 07 28	CC-H	Apollo, Houston. Tom, would you turn the HIGH VOLTAGE POWER off now, and I'll call you to turn it back on.
	CC-H	And, Apollo, Houston. Deke, did you copy what I said about the SAM? We'd like to check if the light is on and reverify the cable connections.
	DMP	Yeah, I reverified everything. I don't have a light on, and I'm trying to figure out why. Stand by.
	CC-H	Okay. We understand. And if somebody has a Flight Plan handy, I've got an update to the SAM start times down there at about 155 plus 45.
23 09 07	DMP	Okay. Let's try another cal and see what happens.
	CC-H	Okay. Do you have a green light now, Deke?
23 09 14	DMP	Yeah. Since I never ... is supposed to be.
23 09 24	CC-H	Okay. We're GO to try another cal, Deke. We're watching our data.
	DMP	Okay.
	CMP	And, Houston, we're ready for a Flight Plan change.
	CC-H	Okay. And the SAM cal looked good that time. Thank you very much.
	ACDR	Okay.
23 10 01	CC-H	And, Tom, Houston. We'd like the HIGH VOLTAGE back on, please.
23 11 21	CMP	Houston, Apollo.
23 11 26	CC-H	Apollo, Houston. On panel 230, we'd like to put the X-RAY PURGE switch down to CAL for 10 seconds, and then let it go. The cal target seems to be stuck partially in front of the instrument.

	ACDR	Okay. Down for 10 seconds. I'll give you a mark to it. 2, 1 - -
23 11 46	ACDR	MARK. Holding CAL for 10 seconds.
	CC-H	Okay.
23 11 56	ACDR	MARK. Back to neutral.
	CC-H	Okay. Thank you, Tom.
	CC-H	Also, if somebody's up there by the DSKY, we'd like to get the ATT SET switch out of the IMU position. And on panel 230, Tom, we'd like to get the HIGH VOLTAGE to off now.
	ACDR	HIGH VOLTAGE POWER coming off.
	ACDR	MARK it.
23 12 16	CMP	Hey, Dick.
	CC-H	Go ahead, Vance.
	CMP	You know, the standard - the standard setting is IMU - or is GDC, but really - doesn't really matter in a nondynamic phase of flight like this. Hey, and did you have some updates for me here?
	CC-H	Yeah, I do, Vance. Let me read them to you real quick. The SAM start time at 155 plus 45 is 155:44:34. And I've also got a start time on the next page.
	CC-H	Vance, Houston. Did you get the SAM start time update?
	CMP	Roger. I called it back, and I was waiting for the next. I guess you didn't hear me. Do you hear me now?
	CC-H	Yeah. I hear you loud and clear now, but I never heard you call me. Sorry about that.
	CMP	Okay. Well, maybe it didn't get through. Anyhow, I copied 155:44:34, and I'm waiting to copy the next.

	CC-H	Okay. Sorry about that. At 156 plus 10 or about, over there, that time should be updated to read 156:23:22.
	CMP	Okay. 156:23:22. That's the start time at about 156:10.
	CC-H	Roger. That's right. Thanks a lot.
23 14 20	CMP	Right.
23 14 38	DMP	Hey, Dick. Since nobody told you, you'd be happy to note that we've given birth to five little fishy-niks up here.
	CC-H	You've done the fish experiment, huh? Very good.
	DMP	... Yeah. They're starting to hatch.
	CC-H	Hey, great.
	DMP	However, we also lost one more of our old ones. I don't know what happened to it. Just evaporated away.
	CC-H	Roger.
	DMP	I asked those guys what those poor little fish were going to eat. Maybe they decided to eat each other.
23 15 20	CC-H	(Laughing) I think - That's what I was getting ready to say. That's most likely.
23 15 47	CMP	And, Houston, Apollo. I presume everywhere where we see "Activate primary evap," just keep crossing it out - -
	CC-H	That's affirm - -
	CMP	- - until further notice.
	CC-H	That's affirm, Vance. Just keep deleting those steps wherever you see them.
23 16 03	CMP	Right.
23 17 28	CMP	And, Houston, Apollo.

	CC-H	Go ahead, Vance.
	CMP	Do you still want us to hold this attitude for the sake of the X-ray, or are we clear to go ahead and maneuver it to the SAM attitude?
	CC-H	What we'd like you to do, Vance, is coming up here in just about a minute at a DE time of 38 plus 30, we'd like you to go ahead and de - do an EUV powerdown and an X-ray powerdown. On the X-ray, all you'll have to do is close the cover. And after you've done that, you're clear to go ahead and go to the SAM attitude.
	CMP	Okay. Say the time again.
23 18 07	CC-H	It's 38 plus 30, and that's 30 seconds from now. I'll give you a mark if you've changed the DET.
	CMP	Okay. We got it.
23 18 15	CC-H	Okay.
23 19 55	CC-H	Apollo, Houston. You're - you're clear to go ahead and power down the EUV and close the X-ray door, and proceed with the maneuver.
	ACDR	Houston, Apollo.
	CC-H	Go ahead, Tom.
	ACDR	Roger. On the X-ray powerdown, do you want me to go to PURGE CAL for 30 seconds or -
	CC-H	Negative. All we want you to do on the X-ray is just close the cover and do a complete EUV powerdown.
23 20 59	ACDR	Roger. In work.
	CC-H	Okay.
23 21 35	ACDR	Okay, Dick. Both the X-ray and the EUV are powered down.
	CC-H	Okay. Thank you very much, Tom. Tom, are you looking at the Flight Plan or could you look at one real quick at about 157 hours - or so?

	ACDR	Hang on. I'm in a corner here, and helping Deke, and doing that; and Vance is up there. Hang on.
	ACDR	Okay, go ahead.
	CC-H	Okay. First of all, we're 2 minutes to LOS and - from this ATS pass. The next station contact is Newfoundland at 154 plus 09. What we wanted to suggest to you on this exercise business was to see that ATS pass. It starts at about 157 plus 20 or so. We've got to dump about 3 to 5 minutes of DSE data there. We were hoping that you could don the OBS prior to that, and then as soon as we've dumped that data, we can watch about 10 minutes of exercise and 5 minutes of cooldown in real time and not interfere with the other two guys doing the SAM operations.
	ACDR	Okay. If we keep on schedule, we'll do it.
	CC-H	Okay. Real fine, Tom. Thanks a lot. And we'll see you in Newfoundland.
23 23 00	ACDR	Roger.
23 24 41	CC-H	Apollo, Houston. We've got a VHF pass here that wasn't originally scheduled, or at least it wasn't on your Flight Plan there, through Honeysuckle VHF. How do you read?
23 24 50	ACDR	Loud and clear.
	CC-H	Okay. I got nothing for you here, Tom. I'm just standing by.
23 24 56	ACDR	All right.
23 27 31	CC-H	Apollo, Houston. We're 1 minute from LOS. Newfoundland at 154 plus 09. See you there.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

00 06 28	CC-H	Apollo, Houston. Standing by at Bermuda.
	ACDR	...
	DMP	Okay, Dick. Do you read?
	CC-H	That's affirmative. Go ahead.
	DMP	Yeah, we're just ...
	ACDR	You got about ten echoes.
	CC-H	Roger. I can hear the echoes down here. Let me - let's check something here. Stand by.
00 11 20	CC-H	Apollo, Houston. How do you read now?
	DMP	Still got a lot of echo there.
	CC-H	Okay. Stand by just a second.
	CC-H	Apollo, Houston. How about now?
	DMP	That's better. Much better.
	CC-H	Okay, Deke. I was getting an echo for you, and it just about made what you said unintelligible. Say again, please.
	DMP	Okay. We - The only problem is when I turned down the interva - -
	CC-H	Stand by.
	CC-H	Apollo, Houston. I'm sorry. Just as you said that again, Deke, we had something happen. A real loud noise came on, and I didn't get it. I'm going to have to ask you to say again, please.
	DMP	Okay. How do you read now?
	CC-H	I read you loud and clear.
	DMP	Okay.

00 12 57 DMP Okay, Dick. Anyway, what happened, we got the run off in fine shape except we didn't get any film shot. We could hear the intervalometer clicking away, and we checked the mag at the end of the run for a number and discovered that we hadn't shot anything. And we're troubleshooting the camera now, but it looks like we may have not got the lens cranked on all the way.

CC-H Okay. Copy, Deke.

DMP So I think we better set up to redo that one.

CC-H Okay. We'll crank that one into our planning.

DMP Okay. But everything, procedurewise, looked great. And the calibration was right in the center of the SAM, so it should have been in good shape, as far as what the SAM was seeing.

CC-H Okay. Real fine, Deke. And we'll crank it in. I'm sure it's as much of a disappointment to you as it is to us not to catch it, but we'll see if we can reschedule it some other time.

DMP Okay. Well, I just got another pass here shortly, anyway, so we'll see how that one goes.

00 14 04 CC-H Roger. Incidentally, Deke, the prime SAM data is on telemetry, and we got it there, so we may be in good shape.

DMP Rog. And we didn't get you any pictures, unfortunately.

CC-H Stand by, please.

CC-H Deke, Houston. How do you read now?

DMP Rog. 5 by.

CC-H Okay. I think I may have dropped out a second. It turns out that our prime SAM data is on the telemetry, and it looked good down here, and we've got a couple of sunrises and sunsets scheduled. So we think we'll - we're doing just fine, even if we did miss that film.

DMP Okay, and we'll make sure we get it the next time around.

	CC-H	Okay.
00 15 03	DMP	Couple of comments, Dick, before I forget it, on the electrophoresis. It's been going along fine, but both samples 3 and 4 had one small bubble right in the middle - about a 1-millimeter bubble. I was able to get those bubbles out to the far end in both cases, so hopefully, it will not influence the sample. But I thought I'd better notify you of that, in any case.
	CC-H	Okay, Deke. We copied, and we'll pass it back to the backroom.
	DMP	Okay.
00 16 54	CC-H	Apollo, Houston. We're going to switch modes here and start a dump. I'll be dropping out for about 30 seconds. I'll give you a call here in a second.
	DMP	Okay.
	CC-H	Deke, Houston.
	DMP	Yeah, go ahead Dick.
00 18 16	CC-H	Hey, Deke, on this sample 4 business, when you think that - We don't want to cut that one short for sure, but in case it doesn't shut down automatically, after about 50 minutes, if you're timing it somehow up there, you can go ahead and do the terminate. When you do the terminate, we'd like a COLUMN VOLTAGE reading prior to doing the terminate. Over.
	DMP	Okay. The other one was about 3:35 - 3:34 when we terminated it, incidentally.
	CC-H	Okay. And is Vance listening up there, or is he busy?
	CMP	I'm listening. Go ahead, Dick.
	CC-H	Vance, I wanted to pass up a comment to you from the G&C about the ATT SET switch. It turns out that

there is one little - one thing that - that causes us to want the ATT SET switch to stay in GDC when you're not doing a GDC aline. And that is when it's left in IMU, the fact that the - the presence of the ATT SET equipment or electronics - the presence of the ATT SET equipment in the electronics loop over a period of time creates a - an invalid error in our telemetry readout of the raw resolver errors, an - and that's the reason that G&C wanted you to - to not leave it in the IMU position. Operationally, it - -

CMP Okay.

CC-H - - operationally, of course, it doesn't make any difference.

CMP Yeah. You're exactly right, although it does make a difference in some maneuvers and that sort of thing. But if it affects the TM, that's a good reason.

CC-H Okay. One other - -

CMP Thank you.

00 19 56 CC-H - - one other thing, and there's no hurry on this. But when you get a chance, we were thinking about asking you to isolate the audio centers one by one and try the caution and warning tone, and see if you had any difference with a less of a load on the audio centers. So - so sometime this evening, you might just sequentially turn all the audio centers off but one and then try the caution and warning tone, and see if that makes any difference. We're just trying to isolate the problem.

CMP Okay. So you want POWER to OFF, two at a time. Go - go around the ring and see how it comes out, right?

CC-H Yeah, I think that'd be the easiest thing. Just put up there - go from POWER from AUDIO/TONE to OFF on two of them, and then on the one that's listening, create the tone and see how it turns out. And you could do the - -

CMP Okay.

00 21 33	CC-H	And, Apollo, Houston. When somebody gets a chance, I've got some more updates on the SAM times. The first one at 157 plus 15, but we've got lots of time. Whenever somebody's got a Flight Plan in front of them, I'll give you the numbers.
	CMP	Stand by.
	CC-H	Okay.
	CMP	Okay, ready to copy.
	CC-H	Okay, at 157 plus 15 there, Vance, that little pad that's in there, the time should read 157:13:22.
	CMP	Okay, at about 157:15, it's 157:13:22.
	CC-H	Okay, and if you'll turn the page over there to about 157 plus 45, those times should read 157:52:09.
	CMP	Okay, and at about 157:45, it's 157:52:09.
	CC-H	Okay, thanks a lot, Vance.
	CMP	Right.
	CC-H	Deke, Houston.
	DMP	Go ahead, ...
00 25 27	CC-H	Okay, on this next SAM operations for sunrise, since we missed some of the film for that first one and it's not good - that film is not good for anything else. I've got one minor change to the procedure on page 1-34. And it's real simple. All I want to do is - is to turn the INTERVALOMETER, OFF, at 3 minutes instead of 1 minute, and that'll use up the film in there, because we're going to be changing that mag out after this anyway.
	DMP	Okay, off 3 instead of - okay, my checklist says 2-1/2. Do you want to shoot 3 minutes instead on 1-1/2 worth of film. Is that the idea?
	CC-H	Well, let's see, you looking at page 1-34? I think INTERVALOMETER, OFF, is at 1 minute. I want to change that to 3 minutes, but of course that's for this - this operation only.

DMP Okay, I got you.

CC-H Okay, thanks, Deke.

DMP Roger.

00 29 19 CC-H Apollo, Houston. Incidentally, we've been watching here in the MOCR a film of Alexey and Valeriy landing earlier this morning. They ended up in a stable 1-1/2, lying on their side.

ACDR Beautiful.

CC-H It was - -

ACDR Are they on their way back to Moscow now?

CC-H Oh, I doubt if they're back there that far, but they - We watched them on TV when they got out of - They - they turned them right side up, and they opened the hatch, and they were walking around. Looked real fine. Looked happy to see home.

DMP Was it real level country?

CC-H Oh, yes.

CMP ...

CC-H Very flat and good pictures of it. Of course, the pictures - They showed pictures of the descent taken from helicopters at the scene. But it looked real fine.

CC-H And, incidentally, Deke, I guess - I imagine you've already done this, but prior to that next SAM data take, after you've - after you've gotten the lens on there, you might run off a couple of frames and just make sure it's working okay because we have plenty - -

DMP I've already done that.

CC-H I assumed that you had.

DMP Yeah, we already did that.

	CC-H	Okay, fine. Thanks a lot.
	DMP	... Yeah, we got faked out because we could feel the thing running but it wasn't.
	CC-H	Rog. No problem.
00 30 48	ACDR	Okay, Dick. On sample 4 on the electrophoresis, at 45 minutes the COLUMN VOLTAGE went down to about 4, so it looks like it's all shut off and working good, and I'm in the freeze cycle.
	CC-H	Okay. Thanks, Tom.
	CC-H	And, Apollo, Houston. Tom, hold up on the freeze. We think we're just supposed to do an ETE terminate. We're not supposed to do a freeze on that sample.
	ACDR	Hang on.
00 31 56	CC-H	And, Tom, Houston. We did recheck with the backroom; and we want to do a ETE terminate procedure on that sample and not a freeze.
	ACDR	Roger.
	CC-H	Apollo, Houston. If you called, say again, please.
	ACDR	No, we didn't call you.
	CC-H	Okay.
	ACDR	Houston, Apollo.
	CC-H	Go ahead, Tom.
00 34 54	ACDR	Okay, I'm looking at the checklist here on the ETE operations on page 1-8, 1-7, and 1-9. And just going by the checklist it doesn't tell you not to freeze when you see samples 4 or 8. Maybe flight - maybe the Flight Plan has a thing that - that says "do not freeze" or something.

CC-H Yeah, I think, Tom, the way that is was intended to be done was go to the Flight Plan to tell you which of the procedures to do, and then of course go to the checklist, you know, to accomplish that and the Flight Plan for the previous experiment - I mean the previous sample - did have a freeze in there, and there - I'm sure you've looked at it by now, but at about 156 hours and 20 minutes, it shows ETE terminate and that's after sample 4.

ACDR Roger.

CC-H So it - it - I can see how it could be misleading.

ACDR Houston, Apollo.

CC-H Go ahead, Tom.

00 38 30 ACDR Okay. There's one problem with - here in the checklist it says "Store [sic] the - remove the assembly from the ETE and store the assembly in the bag in the ETE." With the little sample tab on it, it won't fit in one of those slots. And I'm sure they don't want us to pull the sample out. They want us just to maybe break off the top half in the loop where you pull it out of the freezer. Check with them.

CC-H Okay. Stand by, please.

CC-H Tom, Houston. On your problems in stowing sample 4, Backroom thinks that by rotating it 90 degrees, you probably ought to be able to get it into that bag, but if you can't, don't worry about it. Just dispose of it in any tr - any of the trash bags.

ACDR To me that's a throwaway sample, huh, Dick? Can't we keep this one?

CC-H That's right. The sample 4 is the throwaway one. But that, of course, - that does not apply to the others.

ACDR ... we still have ... in the freezer already.

CC-H Yeah, Okay.

ACDR Just never understood ...

	CC-H	Okay.
	ACDR	Just never understood that we were supposed to bring back 4.
	CC-H	Roger.
00 46 13	CC-H	Apollo, Houston. On panel 230, we need UP TELEMETRY to RELAY, if somebody can get it for us.
00 47 11	CC-H	Apollo, Houston. On panel 3, we'd like to stop the DSE. You just go center on that FORWARD REWIND switch.
00 47 20	ACDR	... center.
	CC-H	Okay. Thanks.
00 47 38	CC-H	And, Apollo, Houston. On panel 230, one more. I need the UP TELEMETRY switch to UP TELEMETRY, center position.
	CC-H	Apollo, Houston. We're about to dump the - continue the DSE dump, and so I'll be dropping out in 30 seconds. I'll call you back.
	ACDR	Okay.
	CC-H	Apollo, Houston. Back up on the air to ground.
	DMP	Okay. Do you think that one really went all right, Dick? Should've had good data.
	CC-H	Okay, Deke. We couldn't understand the comm - we had a problem in the comm there, and it looks like a COMMAND RESET was done in a procedure, and we were talking about - we didn't understand that.
	ACDR	Houston, Apollo.
	CC-H	Apollo, Houston. Go ahead.
00 55 24	ACDR	Okay. I guess the secret is we're trying to coordinate everything real tight, and somebody asked - either myself - I don't know - whoever, or Vance, do we have a - do we have a COMMAND RESET? About that time Deke thought we'd called a COMMAND RESET.

CC-H (Chuckling)

ACDR Did that blow - did that blow your data?

CC-H No, we're doing our best to - It - Well, I guess we can't say right now. We're dumping the data now, and we'll get back to you. What we thought perhaps you had done was the sunset procedure instead of the sunrise procedure, because the sunset procedure does have a COMMAND RESET. But, at any rate, we've got the data on the ground and we'll take a good look at it.

ACDR Okay. Real good.

CC-H Okay.

ACDR ... question to ask since it was kind of a busy time.

CC-H Roger. Understand.

00 56 33 CC-H Apollo, Houston. It turns out we only lost - The impact of that was is we probably wrote over about 30 seconds of helium glow data and we got all the SAM data, so it looks like no problem.

ACDR Okay. Real good. Real good.

CC-H Roger.

ACDR Okay, Houston. Before we leave ATS, what time do they want me to hook up with that biomed data?

00 57 54 CC-H Okay, Tom. Here's the deal. On this next ATS pass, right at the AOS, we've got a little bit of DSE to dump, which is not going to take too many minutes. And after that, for the whole rest of that ATS pass we don't have anything that would interfere except for that SAM - there is some SAM operations there at sunrise. So my suggestion would be to - at ATS AOS would be to - for you to be prepared to do the exercise. And I'll let you know when the dump is over, and then you just let us know when you're starting and we can just watch it in real time, and we'll be all done with it.

ACDR Okay.

	CC-H	Okay. Real fine.
	ACDR	Needless to say, if - -
	CC-H	Go ahead, Tom.
00 58 45	ACDR	Needless to say, if this data gets lost, the cabin temperature's going up by about 30 degrees if that request comes up again.
	CC-H	(Laughter) Roger. Copy. That's - that's one of the reasons, incidentally, we're doing it real time, so if we do have any data problems, we'll be sure and know it - know it right there, and we can fix them.
00 59 02	ACDR	Roger.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

01 00 11	CC-H	Apollo, Houston. We're about 1 minute from ATS LOS. I'll give you a call here in about 4 minutes at Guam. See you there.
01 00 15	CMP	Okay, Dick.
01 04 03	CC-H	Apollo, Houston. Guam for 7 minutes.
	CC-H	Apollo, Houston. Guam for 6 minutes.
	DMP	Okay.
	CC-H	Apollo, Houston. We're about a minute from LOS. Rosman comes up at 157 plus 12. The SAM ops will be very close to that time, so I thought I'd get this comment to you now. The experiment people said it would help them some, while they're watching their real-time downlink data, if you give your intervalometer voice marks on the air to ground. See you at Rosman.
	CMP	Okay, we'll do.
01 10 11	CC-H	Okay.
01 34 39	ACDR	Hello, Houston; Apollo.
	CC-H	Apollo, Houston. Loud and clear, Tom. How me?
	ACDR	Okay. Real good. And we're only 40 seconds away from starting the SAM, but again to confirm per checklist, HIGH BIT RATE, RECORD, FORWARD, COMMAND, and RESET to start it. Over.
	CC-H	That is affirm, Tom.
	ACDR	Roger.
01 35 23	CMP	MARK it. Zero counting up.
01 36 23	CMP	MARK. INTERVALOMETER, ON.
	CC-H	Okay. Vance, thank you.
01 37 53	CMP	MARK. INTERVALOMETER, OFF.

	CC-H	Okay.
	ACDR	Okay.
	CC-H	Go ahead, Apollo.
	ACDR	Looks like everything went pretty good that time.
	CC-H	Hey, real fine. Thanks a lot.
	CC-H	And when you get around to it, I'll copy down your frame count.
	ACDR	Roger. 35.
	CC-H	Okay. Thanks a lot.
	ACDR	DET is 1 - is 157:16, Dick.
	CC-H	Okay.
	ACDR	Hello. Houston, Apollo.
	CC-H	Go ahead, Tom.
	ACDR	Okay. I want to stand by. I've about figured out - on out - ... get your - GO as far as go ahead on the exercise. I'm all set for it. The one thing we would like to know onboard is just how the experimenter's doing with his X-ray.
01 41 23	CC-H	Okay. I tell you what, let me get back to you and get the story myself. I - I've - I haven't - I don't have it at my fingertips. We're about a minute from LOS. We'll see you at the ATS, and we will be ready to - as soon as we get data for you, to do the exercise, Tom. Be advised that we had real good data on that last SAM pass, and that was the highest priority SAM pass of all of them. We al - because we also had ground truth data with a balloon, and it went real well.
01 41 49	ACDR	... Real good.
01 45 48	CC-H	Apollo, Houston through the satellite. How do you read?
	ACDR	5 by, Dick.

	CC-H	Okay.
	ACDR	Tom's up there getting ready to do exercises.
	CC-H	Okay. Real fine. Then, let me check the - our data real quick.
	CC-H	Apollo, Houston. We're getting spacecraft data here in the building. I don't know if you're hooked up yet. We are not getting any biomade [sic] - med data. Are you hooked in yet, or not?
	ACDR	I am hooked in solid.
01 47 34	CC-H	Okay. Stand by a second and let's - let me see if we can get biomed data, and - and we'll give you a GO, Tom. Hang on just a second.
01 48 15	ACDR	Dick, everything's hooked up. SUIT POWER's on.
	CC-H	Okay. We have a couple of other controllers that are having a little problem with their data also. We're going to do something with the computers here, and I'll get right back to you. Hang on.
	DMP	Say, Dick. How do you read?
	CC-H	Loud and clear, Deke.
	DMP	Okay. Hey, did you guys - dump on that fish experiment, yet?
	CC-H	Stand by. Let me check with INCO.
	CC-H	Negative, Deke. We have not dumped the VTR that's got that on there.
	DMP	Okay.
	CC-H	What we had planned - -
	DMP	The reason I was curious - because - we just shot a few shots around the inside of the DM to give you an idea of what that ditty looks like right now. We thought - thought you might find it amusing.
	CC-H	I'm sorry, Deke. Say again, I didn't copy you.

	DMP	I said we shot a few random shots around the inside of the DM on that same tape; thought you might find it amusing.
01 50 35	CC-H	Okay. We're looking forward to it. We're going to dump that while you're asleep tonight. Incidentally, we've - we've - taken a look at the data coming out of the spacecraft, and looks like we've got no biomed data on the downlink. And the only thing that I know to check is to make sure the SUIT POWER is on, which you've already reported there. Might check the connection.
	ACDR	Yeah.
	ACDR	Okay. What I can do, I can change leads here. I can go over to Vance's lead, since you got good data on him, this morning.
	CC-H	Okay. We might try that. They might - or a loose electrode or connector - I'm not sure what else to - to try. I think you got a good idea, Tom. Why don't you - why don't you check the connectors real quick, and then go over to Vance's, and let's see if we can get data from there.
	ACDR	I'm going to change comm cables with Vance.
	CC-H	Okay, Tom. We're standing by.
01 53 55	ACDR	Okay. How do you read me on Vance's cable?
	CC-H	Okay. Let us look at the data again, and see if it's any better. Hang on.
	ACDR	And I've double checked all the connectors, too.
	CC-H	Okay, Tom. We're still not getting data. It's not coming out of the spacecraft, and we're sitting here thinking hard as to what else we could check that might be wrong. Stand by, please.
	ACDR	Okay.
	ACDR	Okay. Have you got HIGH BIT RAIE, Dick, and all that?
	CC-H	It's affirm, Tom. We're getting - we're in the only ATS mode that we can get the biomed data on, on the

downlink, and the other indications on the downlink seem to be okay. It's just that one.

ACDR Well, I have double checked, and I've traded off with Vance, and he's checked me. And all the electrodes are on here.

01 55 43 CC-H Okay. We're - Neil and I are sitting here looking at the - the drawing now. Hang on.

CC-H Apollo, Houston. I don't know what you just did, but we are getting data now.

CC-H Apollo, Houston. I don't know if you copied me or not, but we have - we do have data now. It looks good to us. I don't know if you changed anything. We'd like to know if you did, but at any rate, you're clear to go ahead, Tom. We have data.

ACDR How do you read?

CC-H Tom, I read you loud and clear, now.

ACDR Did you read my last transmission?

CC-H No, I didn't. I called you a couple of times and I didn't get anything back. At any rate, we are getting good data now, I don't know what happened - what you did, if anything, but we're getting good data.

ACDR Yeah. Okay. What I said is, I opened up the biobelt at the bottom of it; I just started checking the cables around, they all felt tight, and then suddenly you said that we started getting it.

CC-H Okay. Maybe they - -

01 58 10 ACDR Okay. I'll go ahead.

CC-H Okay. Maybe it's something down there in the biobelt, but at any rate, right now we're getting good data, so press on. We - to tell you again, what we wanted was about 10 minutes of exercise and then about a 5 minute cooldown.

CC-H Apollo, Houston. Apparently we do have a short of some kind in the biobelt because as soon as you started exercising, the data became extremely poor and noisy. You might - you might - -

ACDR Is that right?

CC-H - - Yeah, you might look at the belt again. I'm not sure how we can help you, but at any rate, as soon as you exercised, we got ratty data.

01 59 17 ACDR Let me look at it again down there.

CC-H Okay.

ACDR The only thing I can think of, when I exercised yesterday - actually, I'm up - I'm up in the docking module - brought it up here - I'm using that strap between these two rails to tie me down, and of course, it goes across the belt sometimes. Of course, you move back and forth. Okay. I'm going to start to move these around. Does that get any better?

CC-H Okay. Stand by just a second.

ACDR Get any better, Dick? Over.

CC-H Tom, it - every now and then it'll jump in and have just a little bit of data and - and just a couple of beeps, and then it gets bad again. How much trouble would it be to switch biobelts, to Vance's that you had today?

ACDR It would take me - it would take about 15 minutes to get down there and - his is in the bottom of - of his lockers down there. I'll go get one.

CC-H Okay.

ACDR I'll have to put it all together.

02 01 14 CC-H Okay. I don't know what else to do, Tom. Since we've already - you've already invested this much time, maybe what we ought to do is go ahead and start our - our DSE dump. And you - get his biobelt and then towards the tailend of the ATS pass, we still have 40 minutes left in the ATS pass, maybe we can try again a little bit later. So if you would do that - -

ACDR All right.

CC-H Okay. Why don't you do that? And when you're squared away again, let's try it again.

ACDR Okay. I'll go change out with Vance.

CC-H Okay. Thank you.

DMP Hey, Dick. I recollect that the data I got was no good either. Is that right? In other words, you don't like my belt?

02 02 58 CC-H Deke, let me check with the surgeon. Stand by just a second.

CC-H Deke, about all we can say was we did not get very good data on you in the first exercise period, but we don't - I don't have any reason to believe that it was your biobelt. It - it may have been instrumentation leads, but at any rate, we did get good exercise data on Vance. So, I'd say your belt is an unknown at this point.

ACDR Hey, Dick. We're getting things unraveled here. Look, this morning Vance was in a hurry, and he used my belt. Now, what happens, when we take this exercise, the only way you could hold yourself down using this thing, you put a big strap acrost [sic] your waist; and it's right where that biobelt is, and you're putting a hell of a strain on it. Over.

CC-H Roger. I copied, and I'm not sure what to - to respond. Stand by just a second.

ACDR (Laughter) We expect this - Vance used my belt this morning, it was good, but he used it quite awhile. And I'm sure my data was probably pretty good, but again, that - that big strap goes right across where that belt is. There's no way to avoid it using this exercise to hold yourself down. Over.

CC-H (Laughter) Roger. Stand by.

CMP So it was good this morning.

02 04 22 CC-H Okay. Copy.

02 07 40 ACDR Hello, Dick.

CC-H Yes, sir. Go ahead.

ACDR Okay. I got Deke's biobelt here and his accessory bag, and I'll start changing it out. Vance used mine because his was stowed away someplace and couldn't get ahold of it this morning, and can't remember right now, at this period in time. And he's all set up on the SAM pass, so I'll take Deke's, and that'll give you a data point anyway.

CC-H Okay. That's - I was just getting ready to call you and - to try that. It turned out that there was some problem in getting good data on Vance this morning. We ended up getting a good pass, but it just may be that your belt does have some sort of a short in it, and I guess we can prove it if you'll take the trouble to put on Deke's and let us look at that.

ACDR I'll put it on now, but again let me point out, the exercise we're taking here with this big shoulder strap and leg strap - and you have to tie yourself down or you'll flip all over the place. And that's the big belt you wear, you slide up and down, and that biobelt gets rubbed with it all the time. Over.

CC-H Okay. Why don't you - I copy - And why don't you go ahead and put on Deke's, and let me know when you're ready.

02 08 47 ACDR In works.

USA Apollo, Houston. One comment ...

USA Okay, Houston. If we ... Bravo 2 ...

CC-H Okay.

CMP Say, Dick.

CC-H Go ahead.

CMP Yeah. On this SAM sunrise, you want to go back to normal cutoff time, 1 minute, right? Instead of 3 minutes?

CC-H No. As a matter of fact, I just got an input that on this one, we wanted to let the camera run out of film. We wanted to use it all up.

DMP Okay. Fine.

CC-H Okay.

DMP Okay. We'll just let her run.

ACDR Okay, Deke - Dick. I'm on Deke's biobelt, but don't say anything, because it distracts the SAM. But, you can just look at it for a while.

CC-H Okay.

02 14 10 CMP MARK. Zero.

CC-H Okay.

CMP 1.

02 14 41 CMP MARK. INTERVALOMETER, ON.

CC-H Roger.

02 15 10 CMP MARK. 1 minute.

CC-H Roger.

02 17 11 CMP MARK. 3 minutes.

CMP Okay. I guess that's it.

CC-H Okay, Vance. Thank's a lot.

CMP Roger.

CC-H And, Apollo, Houston. Tom, we have seen no data since - since you called me before that SAM pass started. I think you did tell me that you have on Deke's belt. We - And I assume you have not changed the leads.

CC-H Apollo, Houston. How do you read?

ACDR Loud and clear.

02 18 35 CC-H Tom, I'm not sure if you copied me there. We are not getting data. I'm assuming you do have on Deke's biobelt, and I'm also assuming that you did not change leads. Is that correct?

ACDR That's affirmative. I thought you read me when I talked to you there before, Dick. Sorry, didn't you hear me when I said I changed them out and had everything hooked up?

CC-H Yeah, I heard you, and then I kept quiet through the SAM pass, and I was just verifying what configuration we're in, because we are not getting any data at all now.

ACDR Okay. The only other thing I can think of is going to be the comm carrier, and I'll change out a comm carrier and that way I'll have changed out every couple. Except both leads, which I doubt are bad.

CC-H Yeah. Understand. Okay. We'll stand by while you do that then. I think we're going to - we have 20 more minutes left in the ATS pass. So why don't you do that and call me back. And, if we don't have any luck there, we'll probably just give it up for now.

ACDR Okay.

02 20 31 ACDR Okay, I'm hooked up to Deke's helmet, and his comm lead, and I'll be hooking up the belt.

CC-H Okay. We're looking at the data.

ACDR Okay. I'm hooked up on another belt.

CC-H Okay. Incidentally, I meant to call. If Vance has not already done the VERB 49 maneuver to the sleep attitude, we want him to delay that just to make sure we kept this ATS pass, since we have a good lockup now.

ACDR Okay.

CMP Okay. We'll hold it.

CC-H Okay. Thanks, Vance.

ACDR Okay. I'm on Deke's comm lead, Deke's belt, and my sensors.

CC-H Apollo, Houston. We just picked up biomed data. I don't know if you did anything different in the last 10 seconds or so, but - we have it now.

ACDR Negative. I haven't done a thing since that time I told you I was hooked up on Deke's biomed.

CC-H Okay. I'd recommend that you not start exercising here for a few minutes and let us see what happens to the data. Maybe we can troubleshoot a little better while we have it.

ACDR Okay.

ACDR All right.

02 23 46 CC-H Okay, Tom. We've gotten a little bit of data here while you're being still. We'd recommend you go ahead and start exercising, and if we - if we lose it when you do start exercising, we're going to knock off the drill, at any rate. So why don't you go ahead and do your exercise period now.

ACDR All right. Ckay. How do you read me?

CC-H Loud and clear, Tom.

02 24 13 ACDR Okay. I'll start.

CC-H Okay.

02 27 59 CC-H Apollo, Houston for Tom. If Tom, if you're still listening, as soon as you started exercising, we - or shortly thereafter, we did lose data. We still have about 5 minutes left in this pass, so anytime you're ready to quit, we'd recommend knocking it off when you're ready - before LOS - and we'll watch - if we do get data back, at least we'll be able to watch you recover.

	ACDR	Okay. I just stopped exercising when you called me there.
02 28 28	CC-H	Okay. Real fine, Tom. And we're getting good data again, as soon as you stopped.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

02 30 00	CC-H	Apollo, Houston. Vance, we think you may - we think you may have missed a jet or two in the configuration there. How about rechecking it again? It's in the Flight Plan at 157 plus 57.
	CMP	Okay, it says inhibit all jets except D1, B2, and C - -
	CMP	Okay, that's better - - -
	CC-H	Okay, it looks - -
	CMP	- - I knew it was a standard ones, but I thought you were trying to get me into some other configuration, and I couldn't figure it out. Okay.
	CC-H	Okay, and we're pretty slippery down here. Yeah, we - we agree with it now. Looks good.
	CC-H	Apollo, Houston. Tom, the biomed data is noisy. One thing that the Surgeon would like you to do is just not change the leads, of course, but just press them, and see if that improves the quality of the data.
02 32 12	ACDR	Okay, what did you want me to press?
	CC-H	Just press the leads - that are attached to you, and see if that improves the quality of the data.
	ACDR	All right, here goes the ground lead, press; sternum lead, press; left lead, press; left respiratory lead, press, right lead, press.
	CC-H	Okay, Tom, Flight said to just sit still here for a couple of minutes, and the examination will be all through.
	ACDR	All right.
02 34 17	CC-H	Tom, Houston. Thanks very much for putting up with us. We got enough data there to satisfy the objective, I hope, at any rate, even though we didn't get any while you were exercising. We're about 5 minutes to LOS, so we're going to switch to a DSE dump mode. So thank you much.

ACDR Okay, Dick. Roger. Do you read me okay?

02 34 36 CC-H Yeah, I'm reading you loud and clear. And also for Vance, now that we've got that, I guess that we can go ahead with this VERB 49 maneuver.

ACDR Roger.

CMP Okay, see you later.

CC-H Apollo, Houston for Deke. We see the - SAM shutdown going on, Deke - or already having gone on. The - just a reminder, be sure and get the furnace ops - before you eat if you would, because of, you're sort of on a tight time schedule there.

CMP We'll pass the word on to him.

CC-H Okay, thanks.

CMP Houston, Apollo.

CC-H Go ahead.

CMP Say again what you want Deke to get done, before he eats.

CC-H Oh, we just - wanted we - we saw that the furnace was not operating, but he was doing the SAM shutdown. Just wanted to remind him to be sure and get the furnace before too long, because it is sort of time critical.

02 37 26 CMP Okay, he's going to have a word with you here.

CC-H Okay.

CC-H And, Apollo, Houston. While Deke's coming on the line there, we're 2 minutes to LOS. Goldstone comes up at 158 plus 39.

CMP Okay, Dick. I'm on the air here. What was it that you were talking about?

CC-H Oh, Deke, the Experiment Officer was looking at his data, and saw that you were in the SAM shutdown, which was fine. But he had not seen the furnace ops

or the furnace starting up yet, and just wanted me to remind you to not miss that, because it was a little time critical, before you all start eating.

DMP Okay. Yeah, we've been scratching around here trying to find flash attachment for the PAO pictures of the SAM. And - would they be happy if we shot them with the same kind of stuff that we're shooting the crystal growth and ZFF with, I wonder?

CC-H Rog. We're going to have to - we're about to go LOS here, Deke. And I'll be back with you at Goldstone, 158 plus 38 - 9.

DMP Okay, we'll go to the furnace, and forget the SAM for now.

02 38 40 CC-H Okay.

03 00 59 CC-H Apollo, Houston through Goldstone for 4 minutes.

ACDR Roger. Read you loud and clear.

CC-H Okay.

ACDR Sorry you have to miss that Soyuz splashdown party the group is going to tonight.

CC-H I'm sorry. I'm missing it, too, as a matter of fact.

ACDR Well, I'm sure that Crip, George Evans, and a few others and Bo will represent you real well there.

CC-H Well, as a matter of fact - You still there, Tom?

ACDR Yeah. Go ahead.

CC-H Okay. As a matter of fact, George just walked in. He's sitting right here. So he claims he didn't go to it. He says he played a softball game.

ACDR Oh, I see. Tell him hello.

03 01 52 CC-H Roger. George says hello. He also says Nukowski [?] says hello.

ACDR Thanks. Thanks. (Laughter)

CC-H Roger. (Laughter)

DMP Hello, Dick. Do you read?

CC-H Loud and clear, Deke. And I was just getting ready to tell you, if you never did find the flashgun, we'd be satisfied to take those photos with a crystal growth setup.

DMP Okay. Yeah, I did find in the experiments, also, that there's only room for about one guy working up in that DM. So kind of keep that in mind when you got somebody up there trying to do something that they can't do anything else.

CC-H Okay. I'll - I will, Deke And you were very weak and might put the mike a little closer to your mouth.

DMP Okay. That's all I had anyway.

CC-H I guess you're just winding down at the end of a long day.

DMP I think I already have.

ACDR And, Dick, whenever you get a chance, did you get much information - I guess on status of all experiments? Evidently, the - the helium glow and EUV are coming along real good, but the X-ray's the one that's having the problems. Over.

CC-H That is affirm, Tom. And since you asked the question, the Experiments Officer is putting together a little history of what we've done on X-ray, and where we stand now, and where we think we're going. And this evening before we go to bed, I'll have it for you

ACDR Rog. Real good. Thank you.

CC-H Okay. And we're about 1 minute from LOS. I'll see you at Quito in 158 plus 51.

CMP See you later.

03 03 56 CC-H Okay.

03 13 45 CC-H Apollo, Houston. Quito for 5 minutes.

ACDR Hello there.

CC-H Hello there again.

ACDR Well, we're still eating chow here, Dick.

CC-H Well, good; enjoy it. We - we had Chinese food this evening, courtesy of Al Ong, who is in - in the EECOM back room. So, you enjoy yours, and we're standing by.

ACDR Okay. That sound great.

CC-H It was.

ACDR Oh, Dick; one thing. Over.

CC-H Go ahead.

ACDR Yeah. When you dump that tape tonight, of the fish in the docking module?

CC-H Yeah.

ACDR Yeah. Be sure you show Glynn Lunney and - Vance, anyway, shot a picture of the docking index angle; be sure you show that to Lunney.

03 14 54 CC-H Okay. We'll be sure and do it.

CC-H Apollo, Houston, We're 1 minute from LOS. We'll see you when you get locked up on the ATS. And if you guys are still eating, I've got some news for you, if you'd like to hear it.

ACDR Yeah. We'd love to hear it.

CC-H Okay. When we get locked up on ATS, Tom, I'll be prepared to read it up to you.

03 18 34 ACDR All righty. Thank you.

03 25 10 CC-H Apollo, Houston through the satellite.

CC-H Apollo, Houston. We're AOS through the ATS.

ACDR Got you, Dick.

CC-H And we need ACCEPT so we can get up the evening loads. And we were just too late to catch the P52, so we'll need that data.

ACDR You've got ACCEPT now. We have the data.

CC-H Okay.

ACDR All righty. Star 1 01, star 2 41; NCUN 05, all zeros, plus 11.0, minus 10.7, minus 26. Torqued at 159:01:50. Over.

CC-H Okay, Tom. I've got that, and I've got the news, if you'd like to hear it.

ACDR Okay. Wait until Vance gets down here, so he can hear it.

CC-H Okay. Fine. We're certainly in no hurry to read it up, but I've got it here when you get ready.

ACDR Okay. Sounds great.

ACDR Wow, things are going great up here. It's just been kind of a busy day.

03 26 44 CC-H Sure has. I'll agree with you. We're - we're very satisfied down here, too, and I've got this - some data on the science status as of tonight, and I'll have that to read to you also.

ACDR Okay. Real good.

CC-H Apollo, Houston. During the P52, we drifted out of attitude a little bit. We'd recommend doing a quick VERB 49 maneuver back to the same attitude and tweak it up, and then we'll finish up our uplinks.

CMP Roger.

ACDR Do it right now.

CC-H Okay. Thanks a lot.

03 31 41 ACDR Okay, Dick. Vance is back. He's changing the LiOH canister, but he's on the headset, so you can go ahead and give us the news and science status. Over.

CC-H Okay. First of all, why don't I -

ACDR I'll get the VERB - -

CC-H I'm sorry. Go ahead.

ACDR I got this VERB 49 going.

CC-H Okay. Real fine. Thanks a lot, Tom. Why don't I give you the science status first, and then I'll read you the news. The current status of the X-ray is that one of the two cal sources is stuck within the field of view. We are able to operate for short periods of time, by that I mean about 30 seconds to a few minutes, and we believe the problem with the high counts is in the high-voltage section, some time - type of leakage, either in the high-voltage supply or inside the detector itself. We do plan to do revs 104 and 105 tomorrow with some mods to the pads, and these mods, essentially, will have you to turn on the high voltage, on and off during the pass, similar to what you did tonight in the X-ray tests. And the reason for that was, is the longer it stays on, we cease getting good data. So we need to turn it off and then get it back on. The PI passed - -

ACDR Okay.

CC-H And the PI passed his word - out to the front room that he thanks you for all the malfunction procedures you have performed. You've done everything short of dismantling the hardware.

03 33 09 ACDR Okay. That's what we're here for.

CC-H Roger. Well, we appreciate it. To review quickly the other service module experiments, the EUV, the helium glow, and the SAM data has been excellent quality, and the PIs are very pleased. On the geo experiment, we've got about double the planned data that we had hoped to get. And even with the problems that we have had on X-ray, we have seen at least two sources, so we're hoping to improve on that in the next day or so. The furnace is looking good - -

ACDR All right.

CC-H - - and we're happy with the way the furnace is going. And in general for this, you know, after only being here in the science mode for a couple of days, we think we're getting an excellent science return, and

we've got a couple of more days to - to do even better, and we're looking forward to them.

ACDR Sounds real good.

03 34 08 CC-H Okay. Stand by.

CC-H Okay. Here's some news for you. Postal workers won a 3-year contract that will provide scheduled raises totaling $1500 over 3 years, plus continued cost-of-living increases. By the third year of the contract, which covers about 600 000 workers, the additional cost to the postal service will be about $900 000 000 per year. Here's an interesting one that came from a Beirut newspaper today. Egypt - and that newspaper says that Egypt and Israel have agreed to a 3-year truce, under which U.S. troops will operate electronic listening posts in the Sinai Desert, and Israel will pull back from key mountain passes and the oil fields in the Sinai, and this came from the Beirut newspaper Al Anwar. A closely divided House of Representatives will vote this week on whether to resume military assistance to Turkey. Both supporters and opponents view the measure as the most important foreign policy vote in this Congress. At Capitol Hill, observers report the most intense foreign policy lobbying in recent years. William Peter Blatty, author of the best selling novel, "The Exorcist," and amateur tennis star Linda Tuero were married today in Las Vegas. Blatty, 47, and Miss Tuero, 23, of New Orleans, were married Sunday. Asked by friends why he decided to marry, he replied, "An angel made me do it.'

ACDR In Las Vegas, huh?

CC-H That's right.

MCC-H (Laughter).

03 35 52 CC-H In Montreal, six men tried to rob an estimated $10 to $12 million from a Wells Fargo warehouse Sunday but tripped an alarm and fled empty-handed, police said today. "It was straight out of Mission Impossible," a police spokesman said, referring to pneumatic drills, explosives, gas masks, and walkie-talkies the men left behind. "They were so cool, they stopped and had a Coke from our machine and

even paid for it," the Wells Fargo official said, "I guess they had thought they had all day." One thing that's kind of interesting - that you guys might have an opportunity to look down tomorrow when you're in the right place and see - around Key West, an unbelievable oil slick, a hundred miles long and up to 15 miles wide, was reported today in the Atlantic Ocean off the lower Florida Keys. The origin of the mass was not know. After incoming pilots reported sighting the huge oil patches in the water off the lower Keys, the Coast Guard sent up planes to investigate. They found the slick stretched from Marathon in the middle Keys to the Tortugas Islands about 65 miles west of here, a distance of about 100 miles. A Coast Guard spokesman said the slick was formed of an estimated 40 000 to 60 000 gallons of what appeared to be bunker C or crude oil. On the sports scene, running back Duane Thomas and tight end Marv Fleming are among the missing veterans in the NFL Washington Redskins' camp. Thomas reportedly wants $168 000 for a 1-year contract, while Fleming, signed by Miami before the Dolphins traded him to the Redskins last month, failed to show following a rookie scrimmage with the Baltimore Colts Saturday night. Their opponents were the ones once immortalized by the label "the Amazings," but that label belonged to the Houston Astros, at least for a day. Amazing, it seems, how a team could blow two commanding leads, both coming from - coming after two men were out, to lose to the Mets 10 to 9 yesterday. And that closes out the news, Tom.

ACDR Okay. Sure appreciate the latest data down here on the Earth.

CC-H Okay. It was - -

DMP Hey - -

CC-H Go ahead.

03 38 21 DMP Dick, I was just going to comm - comment on that oil slick. We did have one pass where we might have had an opportunity to see it, but that whole area was cloud covered and at quite an oblique to us. If we get a better position tomorrow, you might give us a little lead time - and maybe some pointing directions.

CC-H I'll do that, Deke. I'll pass the word down the line and tomorrow Crip might - will give you a call if you're passed close by and let you look out the window and see if you can see it.

DMP Okay.

CC-H We've got about a half an hour before bedtime. I don't know what y'all are doing, but whenever you get ready, I've got three or four things that I wanted to read up to you. And also I could get the - pre-sleep battery readings and so forth.

CMP Sounds good. Got a little free time here, Crip. What do you need to copy into - I mean, Dick, Dick.

CC-H That's okay. Okay, I need - in the presleep, I need the battery readings, and I've got some changes early in the morning in the Flight Plan at a time of about 168 hours.

03 39 32 DMP Stand by for the batteries. I got it covered up with my food tray right now. I'll give it to you in a little bit.

CC-H Okay. No problem. I'll remind you.

CMP Just a note of interest. You remember how the toes of slippers used to wear out on crewmen in Skylab?

CC-H Roger. I sure do.

DMP Same thing's happening up here. It's kind of amazing, too, because we don't really have things to - to stick our toes into. But mine completely came out into full bloom and Deke's are starting to, too.

CC-H Roger. Copy. Yes, I do remember that.

03 40 14 CMP Okay. What page, Dick?

CC-H It's about - it's tomorrow moring at a time of about 168 hours. The page number's 4.3-43.

CMP Okay. Go ahead.

CC-H Okay. First of all, is - at right up there at the top in AC's column. That P20 maneuver in preparation

for the Earth resources, again, I want to change NOUN 78, center value, to read plus 06 three balls instead of plus 09 three balls.

CMP Okay.

CC-H And below that, under the DP's column, about 10 minutes down - the high gain - I want to change the angles to read pitch, minus 4; yaw, 311.

CMP Minus 4 and 311.

CC-H Okay. If you'll turn the page, at 170 hours, I want to change those pitch angles - those high-gain angles there in the DP's column - to read the same: pitch, minus 4; yaw, 311.

03 41 30 CMP Got it.

CC-H Okay. If you've got that, Vance, if you'll turn back a couple of pages. This is during the rest period, at about 167 hours, you might - this is the same thing as last night. Incidentally, what we're doing is, we're giving up a couple of ATS passes during the evening that we don't need in order to save some propellant for that satellite. As you know, it's got a 2 CM - CMG that's lost. You will have no ATS capability during that pass at 167 hours, so that contingency comm attitude that's listed there is no good to you. And the same is true on the previous page at 165-1/2 hours.

CMP Okay. Got it. CMG's can be big problems as I recall.

CC-H Me, too. Okay. One thing we wanted to verify, and that was that you haven't changed the configuration in the docking module that I had you go to last night. And that is go to the REFERENCE to VACUUM and the LOW PRESSURE RELIEF to AUTO to back up the cabin pressure relief.

CMP Stand by. I'll ask around.

ACDR No, nope, I haven't - -

DMP No, it's all the same.

CMP No - no one has touched it.

03 42 43	CC-H	Okay. Good. We do want to get a waste water dump tonight. What we'd like to do is two things: we'd like the POTABLE TANK INLET to OPEN; and we'd also like to dump the waste water for 4 minutes.
	CMP	Okay. And we'll leave the POTABLE OPEN after that and let it accumulate in the - or flush through the potable tank.
	CC-H	Okay. And if - and we're watching our data now, so if you'd go ahead and start that waste water dump, we'll be able to watch it with - with you and, again, that's 4 minutes.
	CMP	Okay, 4 minutes.
	CC-H	Yeah. If you'll give us a mark when you start, we'd appreciate it.
	CMP	Okay.
	CC-H	And I've got one more thing in front of me. And that is, I'd like to read you up a block data pad in the Updates Book for rev 123.
	CMP	Just a second, Dick. Be right with you.
	CC-H	Okay.
03 44 07	CMP	Okay, MARK on the beginning of the waste water dump, and we're OPENING the POTABLE INLET.
	CC-H	Okay. Real fine.
	CMP	Okay. And go on.
	CC-H	I - I have a up - a block data pad for you in the Updates Book.
	CMP	Okay.
	CC-H	Incidentally, while you're looking for the Updates Book, have you had a chance yet to sequentially try out each of the audio centers and see if that affects the tone that you - the loudness of the tone you hear?

CMP Yes, we did. Let's see - yeah, Deke has the data for you here.

DMP Yeah. We don't hear it on panel 9 or 6. It appears that panel 10 is the only one it's coming through on.

03 45 08 CC-H Okay. That is a good data point. Understand panel 6 and 9, you don't hear anything. Panel 10 is the only thing, and I - we'll think about that one a lot. It's a good thing we tried it.

DMP Right.

03 46 37 DMP Hey, Crip, you wanted our batteries; they're all 37 volts.

CC-H All 37. Okay, Deke. Thank you much.

DMP Right.

CC-H And after we - after we get the uplinks up there, we'll be getting a VERB 74 from you.

DMP Okay.

CMP Okay, Dick. I have the block data book.

CC-H Okay. When you're ready to copy in a minute, I'll start with NOUN 33.

CMP Okay. And this is which rev?

CC-H This is rev 123.

CMP Okay. Ready to go.

CC H Okay. 200:36:49; minus 194.2, plus four balls, plus 018.0; 359, 330, 003; 177.0; 00:07; 199, 1605.6, 25751, 23:31; 26:50. And if we'll stop right there, we're about to stop the - we'd like to stop the waste water dump right here.

CMP The dump.

03 48 40 CMP Okay. The dump is stopped, and - go on with your readback, if you wish.

CC-H Okay, fine, Vance, the - -

CMP Or your readout.

CC-H Yeah. Right. Okay, the NOUN 66 is NA. I'm starting them again with bank angle: 312/053, 32:32, 35:24; plus 22:00, minus 161.73. Go ahead.

CMP Okay. Rev 123 readback. 200:36:49; minus 194.2, plus all zips, plus 018.0; 359, 330, 003; 177.0; three zips 7; 199, 1605.6, 25751, 25:31; 26:50, NA; 312/053, 32:32, 35:24; plus 22.0, minus 161.73.

03 49 58 CC-H Okay. And I got a couple of notes for you. The - at SCS - at CM/SM sep, we want you to yaw right to 048 degrees. Note number 2, a NOUN 48 pitch trim, minus .20; yaw trim, minus .82. And the two weights: the CSM weight, 25690; the DM weight, 4500. Go ahead.

CMP CS - CM/SM sep, yaw right; 048 degrees on the ball; NOUN 48 pitch, minus .20; yaw, minus .82; weight CSM 25690, and DM, 4500.

CC-H Okay. And guidance is through with the uplink. The computer is yours, you can go back to BLOCK, and we're ready for the VERB 74.

CMP Okay. We'll give it to you in just a second.

CMP Do you need ACCEPT for a VERB 74?

CC-H Negative. We do not.

CMP Okay.

03 51 30 CMP Okay. You have it.

CC-H Okay.

CMP And we have a question about using bags versus direct over-the-side urine dumping here.

CC-H Okay. Go ahead.

CMP Of course, we understand that whenever SIM bay is in operation or about to be operated that - collection is required. And - I note in the Flight PLan - it seems to assume that the only time during this experiment period that you can do anything other than collect is during bag dump times, like early this morning. I

must admit that I'm a little confused on the philosophy because it seems like the only time it should be necessary to collect is when you're - when you have the SIM bay open - or any cover open - or any experiment affected by contamination going. Could you clarify the rule for me?

CC-H Okay. I'll tell you what, Vance, let us research it and get you a straight answer back up.

CMP Okay. Yeah, like - okay, like for example, tonight, it seems like everything's closed up tight. No reason to store tonight at all.

CC-H Okay. Stand by just a second.

03 53 36 CC-H Vance, Houston. The rule, as I'm told, is simple. You cannot dump closer than 15 minutes to any cover on the various experiments coming open. So, for example, right now, there's no problem at all in going ahead and dumping.

CMP Okay. Well, that's kind of what we've assumed.

CC-H Okay.

CMP Yet, I think - the only thing that brought the question up was that we had a dump period early this morning, and it seems like, you know, we could be dumping like now or anytime.

CC H Yeah. You're right. Hey, listen. One question that I had. We haven't seen a change in the - in the partial pressure. Have you done a LiOH canister change?

CMP Yes, I have. I just completed it.

CC-H Okay. Fine. I tell you what, we - -

CMP About 10 minutes.

CC-H Okay. Copy. We've got about 20 minutes left in this ATS pass, and I'm standing by, but I've been through my complete list of data. If I think of anything else, I'll be calling you again, but I'm satisfied with my list.

03 54 50 CMP Okay. Very good. Thanks for the news. And we have a few more things to do around here tonight, and then we'll be winding down again.

CC-H Okay. Great.

03 55 43 CC-H Apollo, Houston.

CMP Go ahead.

CC-H Vance, somebody pointed out to me a good - an easy way to look at the Flight PLan and determine if it's okay to do a urine dump, and that is, anytime you find a period after the entry, "Activate primary evaporator," and before the next entry that says, "Deactivate the primary evaporator," in our present steam duct configuration, you can't activate the primary evaporator, but you could do a urine dump. So if you're ever in doubt, that's one quick way to check because those times have been carefully checked against the experiment pads.

CMP Okay. Very good.

CC-H Roger.

ACDR Dick, speaking of the evaporator, do our ECS friends think we're ever going to get that bear alive again or not? Over.

03 56 39 CC-H Let me get - let me get us an official answer. When I was back in their backroom awhile ago, they were talking about possibly having the problem cured sometime tomorrow, but I'm really not up on it. I'll get back to you.

ACDR Okay.

CMP Just one - just one point. You know, we won't probably be asleep for another hour and a half or so, at least. We could certainly go into an attitude to point that duct at the Sun for a while.

CC-H Vance, we've had a lot of discussion in the last couple of nights about an attitude that would work, but it just turns out that we don't think it would do any good, and we're a little close on RCS propellant on maneuvers anyway. It turns out that where

it's frozen is not accessible to exterior sunlight, and so that just wouldn't cure the problem.

CMP Okay. And how are we standing, incidentally, on RCS these days. I haven't asked for about 2 or 3 days.

03 57 44 CC-H Well, I'm looking at the plot, and it's - and it's - we're just a hair above the experiment redline, and what that means is is that assuming that we hold our own, which we have been doing ever - in - just about ever since we got into the experiment phase, we should be able to complete all our desired experiment objectives on the nominal time line to the end of the mission.

CC-H And, of course, that - -

CMP Okay. Good.

CC-H And, of course, that still maintains the deorbit redlines.

03 58 20 CMP Fine.

ACDR Houston, Apollo.

CC-H Apollo, Houston. Go ahead.

ACDR Roger, Dick. The one thing now - I think needs clarifing as far as the overboard dumps and the SIM bay experiments, you know - what about the - for sleep tonight? In other words, the battery vent is naturally open. Do they want us to put on that elbow for the waste management drain, and let - have that dumped overboard for the night? Over.

ACDR In other words, it's kind of a little cabin purge.

CC-H Tom, negative. We do not - we do not want a purge.

03 59 45 ACDR Okay.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

04 00 01	CC-H	Incidentally, Tom, we were talking off the loop here about the evaporators. We're not sure that we're going to get the - during the mission here, we're not sure if we're ever going to get the use of the primary evaporator back or not. Time will tell. We are - we do think that we'll be able to try the secondary evaporator tomorrow morning. We're waiting on the steam duct temperature to get up to 70 degrees. It's been rising, and presently it's at 63 degrees. We think it'll be high enough in the morning.
	ACDR	That sounds good. Thank you.
04 00 28	CC-H	Okay.
04 01 55	CMP	Houston, Apollo.
	CC-H	Go ahead, Vance.
	CMP	Just a kind of a little item for the visual observations people, in particular oceanographic. We've talked a lot with them about gyres and eddies and that sort of thing. And something that I saw yesterday that I didn't think to report until just now, although I did report on tape, I think, was the fact that just south of Hawaii, there was a line of circles, you might say, running east to west. And it looked like a line of circles - like a chain, you might say. And if you looked at one of those - and you could see them only because of the clouds - and it just made us wonder if maybe that was - perhaps the boundary of a current.
	CC-H	Okay, Vance. I copied that, and we'll pass it to those guys and see what they think.
	CMP	Okay. Must have been 100 miles long, or maybe 200.
	CC-H	Okay. Copy.
04 03 27	CC-H	Apollo, Houston. We'd like the three POW - VTR POWER switches on panel 400 to ON so we can be dumping that tape recorder tonight.

CC-H And we'll sleep with them ON.

CMP Okay, will that be - dumping be going on most of the night, or will it be finished in a couple of hours?

CC-H I'm not real sure what the schedule is. Hang on.

CC-H Vance, Houston. We're not going to be dumping the VTR for about 4 hours, at about 163 hours.

CMP Okay. It's kind of like a little heater in here, and that's - that was the only reason. But it's not that much of a problem.

CC-H Okay. One other thing, we'd like to sleep with the - with the door to the LiOH canisters area open again. That's panel - down around panel 350. And that's again to allow some heat to get in and around the steam duct. And I have one question about the check that you all did to determine that panel 10 audio tone - the tone was working when you listened to panel 10. We just wanted to make sure that that check was done on the headset and not the speaker box.

CMP That's correct, Dick. That's verified. It was on the headset.

CC-H Okay. Was the tone that you heard on - on the headset on panel 10 - was it a normal tone, or was it still also of low volume?

CMP It was - very normal.

CC-H Okay.

04 05 48 CMP Even - even louder than normal. Well - well, certainly not weaker. It was normal, certainly not weaker.

CC-H Okay. We'll be thinking about that one over the night, and - and if we can think of anything that'll help the situation, we'll be getting back to you in the morning.

CMP Okay.

04 08 08	CC-H	Apollo, Houston. One thing, we still haven't seen indications that that LiOH canister has been changed, even though obviously you have changed it. Wonder if you'd check to make sure that that DIVERTER VALVE down there is in BOTH.
	CMP	Yes, it is. We have the door open; we can see it. And Tom's jiggling it.
	CC-H	Okay; thank you.
	DMP	..., Dick, I'm happy to report we've found our flash attachment again.
	CC-H	Hey, good. I imagine up there you got so many little things that, at any given time, about four of them are lost.
	DMP	Yeah, everything disappears, but it all shows up sooner or later.
	CC-H	Roger.
04 11 38	ACDR	Houston, Apollo.
	CC-H	Go ahead, Tom.
	ACDR	Yeah, I just wondered how the weather is down in Houston. Over.
	CC-H	Well, I haven't seen it for about 8 hours, but when I came to - over here to the MOCR this afternoon, it was a beautiful warm sunny day. We had a little rain in downtown Houston, but it was really pretty. And Bo - -
	ACDR	Very good.
	CC-H	And Bo is here, and he's going to be taking over for the midwatch. And he just got here and said it's still pretty outside.
	ACDR	Hey, that sounds great. Thank you.
	CC-H	Okay.
	DMP	Dick, you still there?

	CC-H	Sure am. We've got about another 3 minutes.
	DMP	Okay. One question then. If it doesn't get answered now, you can have the experimenters look at it. Is there any other magazine, DAC 16, we could use for shooting the fish experiment? I shot up all of 128 today - I mean yesterday, and Tom used part of 129. So we've probably got enough to do one more day, but - and we'll need another magazine, I believe.
	CC-H	Okay; we'll have an answer for you in the morning.
	DMP	Okay; no big deal.
04 13 20	CC-H	Okay. And we're a couple of minutes to ATS LOS, and this is the good-night pass. We'll be calling you first thing in the morning. And if you want to do a voice check or call us for anything, we'll be standing by for - that you can just look in the Flight Plan and see where we're going to have AOSs for the next couple of hours or so. Be sure and sleep with the sleep - speaker box on, and we'll see you in the morning.
	DMP	Okay. (Good night.)
	ACDR	Real good. Thank you now.
04 13 58	CC-H	Rog. Good night.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

12 20 36 CC-H Apollo, Houston through Vanguard for 3-1/2 minutes. Good morning. Apollo, Houston through Vanguard for 3 minutes. Good morning.

(Music: "Cigarettes and Whiskey and Wild, Wild Women")

12 21 37 ACDR Sounds like a little different atmosphere than what we're living in.

CC-H Roger. We have a little bit over 2 minutes until LOS here.

ACDR Okay, Bo. I got up a couple of minutes early and turned off the jet monitor and all that and got the VTR POWER OFF, and the TELEMETRY OFF and got the DAP reset. And I'll go ahead - You want us to get locked up on ATS before we go to that Earth obs vis attitude for P20? Over.

CC-H Apollo, you'll have to be in that vis obs attitude to get locked on.

ACDR Okay. We'll set it up.

CC-H Roger. And just one other item; we're going to delete the waste water dump, and I'll call that out when we get up on ATS, just in case you got to it early.

ACDR No, we haven't done that. Thank you, Bo. How's the weather in Houston this morning? Or have you been out to see?

CC-H Someone who walked in said a slightly overcast day, but it looks like it's going to be nice.

ACDR Well, good.

12 22 56 CC-H And we've got a little over a minute until Santiago at 168:17.

12 39 36 CC-H Apollo, Houston through Santiago and then ATS.

ACDR Hello, Bo. Guess we're going to be locked on good on ATS; we got the angle set up.

CC-H All right, sir. When someone has a chance, I have a couple of Flight Plan changes, and the first book we'll need is the Flight Plan.

ACDR We've got that.

CC-H When someone's settled down, give me a call, and I'll be ready.

ACDR Yeah, go ahead. I'm ready.

CC-H Okay. The first one is that waste water dump at 168:29, and we just want to delete that. And we're go - -

ACDR Roger.

CC-H - - we're going to try to get the secondary evaporator activated, but we'll do that just a little bit later when we finish our DSE dump and have comm.

ACDR Okay.

12 40 32 CC-H Next one is on page 4.3-45 at about 171:10 where it says, "VERB 49 maneuver to comm attitude."

ACDR Okay. That's 140 - Say again, Bo. I'm sorry.

CC-H The time was 171:10 and the - it's under your column AC. It says, "VERB 49 maneuver to comm attitude."

ACDR Roger. Go ahead.

CC-H We'd like to change that "260" to "240.5."

ACDR Got it.

CC-H So it now reads, "261, 240.5, and all zeros." And then down below where it says - -

ACDR Okay. Hang on. And this was 240.5, 000, 000?

CC-H ... - -

	ACDR	I got you, Bo. 240.5, 260, and all balls. Over.
	CC-H	Negative. It's 261, 240.5, 000.
	ACDR	Got it.
	CC-H	Down just below DM height measurements, change the ATS high-gain yaw 74 to 70 - to 95.
	ACDR	Roger. Yaw from 74 to 295.
	CC-H	That's not 295. Change it to 095.
	ACDR	Okay.
12 42 30	CC-H	And that's all I have for the Flight Plan for right now. The next item would be the Systems Checklist, and then I'm going to have a couple of updates to go in the Flight Plan Supplement on the X-ray and EUV pads.
12 49 28	CC-H	Apollo, Houston. Over.
	ACDR	Go ahead, Bo.
	CC-H	When someone has a chance, I'd like to give you a procedure for the secondary evap. I thought you might not mind me calling because it might make it a little cooler.
	ACDR	You better believe we'd like to hear about it.
	CC-H	Okay. It's Systems Checklist, page 1-18.
	ACDR	1-18. Stand by. Okay. We're getting the Systems Checklist.
12 50 46	CMP	Okay, Bo. We just got a MASTER ALARM, and there's no indicator light on to tell us what - what it was caused by. And I'm ready to copy on 1-18.
	CC-H	Okay. We think it's probably an O_2 FLOW HIGH. You had an accumulater cycle when you were dumping urine.
	CMP	Right.

CC-H Okay. Did you say you had the checklist, Vance?

CMP That's right. Ready to copy, Bo.

CC-H Okay. S 1 - -

CMP Good morning, by the way.

CC-H Good morning, yeah. (Laughter) That's 1-18.

CMP Okay. Copy.

CC-H Step 14, activate secondary evaporator. We would like you to draw an arrow to show that that last step, which is SECONDARY COOLANT LOOP pump AC1, should be done as the first step in activation of the secondary evaporator.

CMP Yeah. That sure seems reasonable. Okay.

CC-H Okay - -

CMP Okay. And do you want us to try it now?

CC-H - - and the other thing we'd like you to do, first, is on panel 377, GLYCOL to RADIATORS SEC, NORMAL. And then do that little three-step procedure that's on S/1-18, step 14.

CMP Okay. 377 to NORMAL, and then do this - -

CC-H Roger. Then do that three-step modified procedure.

CMP Okay. We'll start doing it.

CC-H Roger.

12 56 25 CMP Okay, EVAP's coming ON now, Bo.

CC-H Okay. We're watching.

12 57 09 CC-H Apollo, Houston. We're watching the secondary evaporator, and it - we'll give you word on it here in just a minute. And I also have an update for the X-ray pad, rev 104.

12 57 25	CMP	Okay. Bo, we're kind of all arm - arms full of food and stuff right here. Could we wait and catch that in a few minutes?
	CMP	Well, if you need it right away - -
12 57 42	CC-H	Negative. We don't need it right away, but we are going to have to have it before the end of this ATS pass because you're going to be starting into that stuff. But we've got like 40 minutes left in the ATS pass.
	CMP	Okay. Just a second.
	CMP	Okay, are we going to need any other books while we're at it - other than the Updates Book - while we're out scrounging books?
	CC-H	Negative. We need the Supplement - the Flight Supplement for this helium glow pad number 104 - for the X-ray pad number 104.
	CMP	Okay. We'll get it out then.
	DMP	Good morning, Bo. Deke here.
12 59 42	CC-H	Good morning, sir.
	DMP	Say, could you tell me what your local time is while things are quiet here. Vance is trying to find his book.
	CC-H	It's just a couple of minutes after 8 o'clock.
	DMP	Okay. Thank you.
	CMP	We're back on rather normal hours, aren't we? Okay, let's go. I've got rev 104, X-ray pad.
	CC-H	Roger. At the DET of 40 minutes, which is the one before zero. Delete "X-ray cal/background (cue card) (through MAD)."
	CMP	Okay. At 40, I deleted "X-ray cal/background (cue card) through MAD)."
	CC-H	At 59:30, delete "X-ray."

	CMP	Delete "X-ray" at 59:30.
	CC-H	At 2 minutes, substitute for "344," "341.7."
	CMP	"341.7" at 2 minutes in the roll.
	CC-H	And the pitch, instead of "291," should be "288.2."
13 01 27	CMP	"288.2."
	CC-H	Roger. At 3:19, add, in the data column, "X-ray ops."
	CMP	Okay. At 3:19, add "X-ray ops" in the data column with VERB 21 and all that.
	CC-H	Roger.
	CC-H	At 5:19, delete the roll of 334 and the pitch of 249 and add, in the data column, "HIGH VOLTAGE POWER, OFF, center."
	CMP	That's done.
	CC-H	Okay. And at 9:36, "X-RAY HIGH VOLTAGE POWER to 2."
	CMP	Go.
	CC-H	At 14:36, delete 310 in the roll and 259 in the pitch, and add "HIGH VOLTAGE POWER, OFF."
	CMP	Go.
	CC-H	At 17:07, delete everything.
	CMP	Okay.
	CC-H	At 18:03, delete everything.
	CMP	Okay. 18:03 - no VERB 21 and all that stuff.
	CC-H	That's correct. At 21:08, change the time to "21:20."
	CC-H	And at what was 21:08, add "HIGH VOLTAGE POWER to 2."
	CMP	Okay. At what now is 21:20, add "HIGH VOLTAGE POWER 2."

CC-H That's right. And there are some changes in the maneuver times. But I - I won't give you those.

CMP Okay. In other words, our counting up to time at the top will get later. Is that right?

CC-H Negative. That remins 170:34:36, just as it was on the original.

CMP Okay.

13 04 53 CC-H And we'll have a change for a later pad, later. But there is one other item that I should get in now, before I let the people go back to eat. And that is that, on the cue card X-ray ops, you should change "HIGH VOLTAGE POWER 1" to read, "HIGH VOLTAGE POWER 2."

CMP Understand. So the nominal, in other words, is just always HIGH VOLTAGE POWER 2.

CC-H Roger. And there's one thing we'd like you to check. On panel 3 - the DC INDICATOR - would you verify that it's on MAIN BUS A.

DMP Verify it's not. I got it on FUEL CELL 3. I just finished purging it.

CC-H Okay. That probably was a bad call on my part. We were having that question from the evening. Do you know if it was on MAIN A all night?

DMP Well, I can't verify where it was all night. I started fuel-cell purge. I took it from wherever it was down to FUEL CELL 1 and went on through. And I just ended up purging 3.

CC-H Okay. Well, we'll just -

DMP ... a second. I suspect it was probably on BAT C, since that's the last thing I checked.

CMP Just out of curiosity, does that affect your TM, or what?

CC-H Roger. Let me find out from EECOM exactly how.

13 06 36	CC-H	Roger. It was a battery voltage that was dropping off, and we thought that perhaps it was on the BATTERY, rather than on MAIN BUS A. But we just wanted to check.
	CMP	Okay.
	CC-H	And I'm sorry for all the callups, but we thought we should get those in, so that you'd be able to start off on those X-ray pads with all the newest information. Enjoy your breakfast.
	DMP	... While we're on that subject, Bo, do you guys only read what I've got selected, up here? I didn't realize that.
	CC-H	Negative. We can read others. But I guess when it's selected on one of the batteries over a long period of time, it causes the battery voltage to decrease.
	DMP	Okay.
13 09 22	CC-H	Apollo, Houston. No need to answer. Just a bit of information. That secondary evaporator at this point looks good.
	CMP	Glad to hear it.
13 09 56	ACDR	Bo, as a note of extreme interest, we have five more new fish this morning.
	CC-H	Roger. Five more new fish.
	ACDR	Yeah. We're going to be overrun with them here by Thursday. I hope they aren't sharks.
	CC-H	We've been trying to find the size hook you'd use for those fish, but so far we haven't been able to.
	DMP	Well, I've been trying to do a little improvisation up here, but I haven't had much success. Those tie-down ropes are just a little bit big for fishing rope.
13 17 30	CC-H	Apollo, Houston. I have a little news here if you people would like to hear it while you're having breakfast.

CMP Sounds great, Bo. Roll her.

CC-H Okay. This is news items, San Francisco. Outgoing HEW Secretary Caspar Weinberger attacked the nation's welfare policy Monday and called for wholesale changes to save the nation from bankruptcy and get recipients back to work. In what he billed as his farewell speech as Secretary, Weinberger said current welfare programs are threatening to destroy the nation economically and they are not doing the job for which they were intended. He called for the immediate abolition of food stamps, aid to families with dependent children, and supplementary income allowances and said they should be replaced by a cash grant based on income and a strong work requirement.

Washington D.C.: Attorney General Ed - Edward Levi, deploring it as a terrifying fact of life, Monday reported serious crime for the first 3 months of 1975 was 18 percent above the same period last year. And for some crimes - including robbery, up 28 percent, and burglary, up 20 percent - the increases were larger. Levi also made public the figures for all of 1974, indicating that crime rose 17 percent for that year as a whole. He said the 18-percent rise in crime for the first quarter of this year compared to the 15-percent rise in the first quarter of last year over the preceding year.

Athens: Christina Onassis, one of the world's richest women, will marry Alexander Andreadis, son of a business tycoon. The sudden wedding will take place today in a small chapel, and Jacqueline Kennedy Onassis will attend. Mrs. [sic] Onassis, 24, inherited her father's shipping and business empire. Aristotle Onassis' fortune had been estimated in the hundreds of millions of dollars. Mrs. [sic] Onassis had been expected to - to marry Peter Goulandris of another Greek shipping family who had been her constant companion for months.

Washington: The Senate Finance Committee voted Monday to provide tax benefits for firms which buy equipment to develop new sources of electric power. A 12-percent tax credit would be permitted on investments in equipment used to convert waste to fuel, to convert organic material into methanol or other synthetic fuels, to tap geothermal heat, to mine coal

too deep for ordinary mining equipment, or to buy oil-shale equipment, coal slurry pipelines or coal liquefication [sic] or gas liquefication gear.

New York: 56 percent of Americans feel President Ford is doing only a fair-to-poor job; a 9-point drop in his job rating since the Mayaguez incident May 12th, the Harris survey announced Monday. The poll showed 56 percent of those questioned gave Ford a negative rating and 41 percent approved of the way he was handling his job; 3 percent were not sure.

United Nations: The 15 members of the U.N. Security Council met behind closed doors Monday night on the continuation of the U.N. peacekeeping forces in the Sinai Desert. When the Council appealed to President Anwar Sadat, he agreed to a continuation of the force in the desert. The mandate expires Thursday. The appeal was adopted 13-0, with China and Iraq not voting.

East End, Massachusetts: Larry Kopunik is having trouble with peanut butter and sharks. He's determined, however, to celebrate the nation's bicentennial in his own way. Kopunik is paddling on a surfboard from Cape Elizabeth, Maine, to Corpus Christi, Texas. He left on July 4th and paddled to East End. A few days ago, he cut his finger trying to hold onto an offshore target ship and eat a peanut butter sandwich at the same time. "I didn't want to give up my sandwich," he said, "so I sat on my finger, but it didn't work, the bleeding didn't stop; I collected quite a few sharks." Kopunik says his supply of peanut butter sandwiches provided nourishment, but he wonders about his luck while eating them. Earlier during the journey, there was a nervous moment when a huge oil tanker passed within yards of him in heavy fog while he held onto a buoy so that he could eat his sandwich.

And Pine Bluff, Arkansas: An inmate at the State's Womens Reformatory, a prison farm, choked to death Monday on her chewing tobacco. The woman had been undergoing treatment for a nervous condition which caused fainting spells. Officials said that it appeared that she fainted in the prison bathroom and choked on the tobacco while unconscious.

And the last article of our (laughter) news this morning - there's a new development in underwear which may help to dispel domestic discord around the house. A firm has come out with deodorized underwear. The underwear is treated with a secret deodorant formula during the manufacturing processes. The company says it contain - continues to fight odor through 50 machine washings. The firm has a whole line of "no-smell" items for men, including socks, shorts, and T-shirts, but at this point, there is no such line for women.

13 23 51 ACDR How about sending us up a batch of those; we could use them.

CMP Yeah, we hadn't had a shower for a week, Bo; you hit us right where it hurts.

CC-H Sorry. We can't get any of that underwear up to you guys right now.

13 24 13 CMP (That's all?)

CC-H Say again, Apollo.

CMP (Is that all?)

CC-H (Everything's okay.)

CMP Is that it?

CC-H That's it.

CMP (That was some good news, please.) or (Thank you, or thank you very much.)

CC-H (You're welcome.) Sorry, we can't find any better to read up to you.

CMP That was good.

DMP Yeah, some of those items make us glad we're up here instead of down there, Bo.

CMP Sure a lot easier to - to travel those miles this way than on that surfboard, I'll tell you.

CC-H At least no sharks up there. The biggest thing you have are the killifish.

DMP Haven't seen any.

ACDR They're getting bigger all the time.

CMP If we see any outside the window, we'll let you know though.

CC-H And, Apollo, Houston. Now that we've given you a report of what's happening down here, if somebody has a chance, we'd like the morning report from you. Sometime before we go out of ATS coverage; that's about 14 minutes from now.

ACDR Okay. We're still eating here, and we'll be able to give it to you pretty fast once we get it here.

CC-H Okay.

CMP It we do see any sharks up here, it'll mean we're in a very low orbit, Bo.

CC-H Roger.

13 26 13 CC-H And, Apollo, Houston. Just a bit of information. The reason there are so many changes on the X-ray pad is because we're finding that they're getting good data when the X-ray is left off for a couple of minutes, and so that explains most of the turn-offs and turnons in the pad and some of the deletions, to give it a chance to be off for a couple of minutes between data takes.

13 26 41 CMP Yeah, we understand.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

13 31 17	ACDR	Okay, Bo, we're ready with the old morning report if you're ready.
	CC-H	We're ready to copy.
	ACDR	Okay. AC: ... meal A, everything plus a tea; meal B, everything plus cookies; and meal C, everything except peas and add a tea.
	CC-H	That was minus peas and plus what?
	ACDR	Minus peas and plus teas.
	ACDR	Got that?
	CC-H	Negative. I still didn't get the addition.
	ACDR	Negative on the peas and positive on the tea.
	CC-H	Tea! Roger. Go ahead. Got that.
	ACDR	Okay. PRD was 11011; 7 good, no medication, and full tank of water.
13 33 05	CC-H	Got it.
	ACDR	Okay. CP: everything on meal A; everything on B plus turkey, cookies, cheese; and everything on C.
	CC-H	Got it.
	ACDR	Okay. And the medical log: PRD, 48258; 7 good sleep; no medication; and about 120 seconds of water.
	CC-H	Roger. Copy.
	ACDR	And DP: meal A, everything plus an orange juice; B, everything plus apricots; C, scratch the peas and add an orange.
	CC-H	Roger.
	ACDR	And a PRD of 61009; 7 good ones; and 50 or 60 drinks of water.

13 34 24	CC-H	Roger. 50 or 60 drinks of water.
	ACDR	Yeah, that's where the ballpark is.
	CC-H	Sounds like it's agreeing with you gentlemen.
	ACDR	Yeah, it really is.
	DMP	Yeah, everything's going great up here, Bo.
	ACDR	...
	CC-H	Go ahead.
	ACDR	Incidentally, Bo, one of the reasons we didn't eat the peas is because we couldn't catch up with them. They were prety wild up here at zero g.
13 35 15	CC-H	Understand.
13 36 17	ACDR	Bo, before I forget it, just a point on the temperature situation. The DM has been, particularly the hatch 3 end, very cold, continually up until this morning. This morning it's almost warm and, of course, we've got a pretty good collection of water down there. But I don't know how long it'll stay there if it keeps warming up.
	CC-H	Roger; copy. The hatch 3 end of DM is cold but starting to warm up and up until now, you've had some water down there.
	ACDR	Rog.
13 38 17	CC-H	Apollo, Houston. 2 minutes until LOS. We'll see you at Orroral at 169:24; that's about 8 minutes.
	DMP	Got you.
13 38 27	ACDR	Okay, Bo.
13 45 56	CC-H	Apollo, Houston. Good morning. We're AOS through Orroral. Talking to you for about 3 minutes.
	CC-H	Good morning, Apollo. We're AOS through Orroral for 3 minutes.

	CMP	Morning, Crip.
	CC-H	Morning, gents. How you guys doing this morning? Sound great. I've been sitting here listening with Bo for a while, listening to him be - be a newscaster. I think he does a much better job of that than me.
	CMP	You're all great. No favorites on the news; we enjoy it from all of you.
13 49 24	CC-H	Apollo, Houston. We are about 45 seconds from LOS. Our next station contact will be Quito in about 28 minutes, 169:55. See you there.
	ACDR	Okay, Crip.
	CC-H	If you guys get a chance, we'd also like you to CLOSE the POTABLE TANK INLET valve, save a little water for us.
	CMP	Can do.
13 49 51	CC-H	Thank you.
14 18 09	CC-H	Apollo, Houston. We're AOS at Quito for 3 minutes.
	ACDR	Earth obs pass right now.
14 18 21	CC-H	Copy.
14 24 35	CC-H	Apollo, Houston. We're AOS through the ATS. We've got you for - oh, about 12 minutes here.
	CMP	Okay, Crip.
	CMP	Just passing over the Orinoco River Delta.
	CC-H	I'm glad you pronounced that. I looked at it awhile ago, and I wouldn't - didn't want to try.
	CMP	Oh, I'm not positive. Farouk's the final judge, I guess.
	CC-H	Rog. When you guys get squared away there, when - don't want to interrupt your pass, but I need to talk to Deke a little bit about this upcoming ETE he's doing on sample 5.

	CMP	Okay. Stand by 1.
	CC-H	Okay. No rush.
14 28 06	ACDR	Crip, I marked the spot at 10 - 170:06:06 is when the - the muddy water from the Ort - Orinoco Delta suddenly stops; you got the blue water of the Atlantic, it goes out this far. Over.
	CC-H	Copy that 170:06:06.
	ACDR	Yeah. You can just give that to Farouk and it's on a trajectory, where the mud comes out this far into the Atlantic.
	CC-H	That stretches out a pretty good distance across there, then?
	ACDR	Roger.
	DMP	Hello, Crip.
	CC-H	Rog. How are you this morning, Deke?
	DMP	Just fine, Crip. How are you doing down there?
	CC-H	Very good. Got a moment for me to bend your ear about the ETE?
	DMP	Yeah. Go ahead.
14 29 29	CC-H	Okay. Tom ran sample 1 for us, and you're getting ready to run sample 5 and when he ended up checking that thing at an hour, he only found two bands in it - which - the only thing we can conclude is that - the first band had already passed on out through it. So what we're going to ask you to do is to - to check it a little bit earlier this time. So if you'd make up - if you got that checklist handy on page 1-8 of - for the ETE, I'd like you to make a note in there to - we want you to check it at 45 minutes after you start it.
	DMP	Okay, I'll do that, but we were looking at that thing off and on during his run there yesterday and I guess I don't think that a band got out past us.

CC-H Okay. Well, that's - that's a good input. We did not have that knowledge before, but if you go ahead and take a look at 45 minutes and go ahead and use that same rule that we had before, if the front band has advanced to the 100-millimeter mark, we want you to go ahead and go to the freeze procedures immediately; and if it's not, well, you can let it go for another 15 minutes.

14 30 39 DMP Okay. We'll do that. And if we got a little quiet time, I'll just try to keep a progressive watch on it today and make sure.

CC-H Okay. One other item - -

DMP Unless that front band ...

CC-H I'm sorry. Say again.

DMP I was just going to say that unless that front is a very faint one - the one that was obvious to us - certainly didn't get past us.

14 31 01 CC-H Okay. It - to the best of my knowledge, it is pretty faint, but we're - we'll get a reading on it for you. Incidentally, there was some discussion about - also, yesterday, you guys had misplaced that little kitchen timer we had and, consequently, you were having little problems trying to get back to it. Would you - if that's so, would you like to go ahead and note the time that you start the thing, and then you could give it to us, and we can give a reminder when we're at the time?

DMP Well, we found it again. Late - late in the afternoon. So, unless I lose it again today - We've got it stashed down there right now, and we'll try to tape it down or something to keep it with us.

14 31 45 CC-H Okay. Copy that. Then - I believe you can go ahead and proceed normally then without getting a reminder from us. Did I copy that correctly?

DMP Yeah. But I don't mind giving you a time hack on it anyway, just as a backup. I'm not sure that timer's the greatest thing in the world either.

CC-H Okay. We'd kind of appreciate it if you could go ahead and note the start time then, and we'll try to - try to help you out on noting when you might - should take a look at it again. Also, we'd like a - -

DMP Okay, sure.

CC-H One - one other item was that apparently you guys gave us a readout on voltage yesterday and - where that was higher than we has anticipated. We would appreciate it if we could make that sort of a nominal step now. The - give us an inch and we're going to take everything we can get. We'd like to go ahead and get a readout on - on voltage nominally in - after step 4 in your checklist, if you could.

DMP Okay.

CC-H The reason for that, I guess, is that if it's running high like that, we're considering reducing the amount of - amount of time that we're using for the samples.

14 32 46 DMP Okay; fine.

ACDR And, Crip, we're deactivating the secondary evap at this time.

CC-H Okay, fine. And, Tom, what we're going to have to - we're going to have to leave that up to your discretion regarding the secondary evap. It looks like it's working good. We would just as soon leave it off as much as we can, but if you guys are getting warm, well, you can activate it where we've called out for activating the primary in the - in the checklist. I noticed you got one period here coming up around lunchtime, where we'd have a good period there; you could turn it on if you wanted it.

ACDR Okay. Why don't we plan that around lunchtime then? Every little bit helps.

14 33 22 CC-H Rog. It looks - just looking at the data down here, it looks like it's bringing it down pretty good right now. And for Deke, one other item I had, whenever he gets a chance, since we have got the secondary evap working and we know that that duct is clear, we can go ahead and go back to the nominal configuration on

the LOW PRESSURE RELIEF valve in the docking module; that is, go ahead and take the thing to CLOSE and the PRESSURE RELIEF VALVE REFERENCE to DOCKING MODULE. Since the duct is clear, the command module relief valve will work satisfactory. No problem.

14 33 56 ACDR Okay, we'll take care of it.

CC-H Apollo, Houston. To get some loads out of the road before you start on your operations for this upcoming X-ray pass, we would like to go ahead and get ACCEPT, and then we'll give you a state vector and, also, we'll update a time for an EMP that we loaded last night.

14 34 59 CMP Okay. You've got it.

CC-H Vance - I mentioned that EMP. I'm not sure we got word to you last night, but we did load that raster scan EMP again because, for one of the passes that we had - we're going to substitute for X-ray - we're going to do a - instead of an EUV raster scan, we're going to do a helium glow. And I was trying to look at - ahead in the futrue, to see when I'm going to have to do some pad updates for you. And over on your next page there at around 127 - correction, 171:40, I believe you've got some time. And what we're going to try to do is - we got two pads rev 105 and the following, 106 - we're going to modify slightly. And I guess we're going to have to call on you guys to help us out, there - about how many changes you can accept. We're trying to recover some data, of course, from the problem we've had with the X-ray. And - we've tried to put it together in sort of a - a manner that didn't perturbate you guys too much. And we'll just try to - try to live with it, whatever you guys can accept.

14 36 17 CMP Okay, well - yeah, I'm - it's a good time for me to copy some pads.

CC-H Did I understand now - or then - was a good time?

CMP Right now would be good, as soon as I stop this maneuver. Okay?

CC-H Okay. Fine.

	CMP	And you've got POO now.
	CC-H	Okay. We see POO. And we're just coming up over Madrid. As soon as we get AOS through there, we're going to go ahead and start doing this uplink we talked about.
	CMP	Roger. Understand. And I'll be starting a maneuver here too.
	CC-H	Well, we'll have to hold up then, because that'll - conflict with yours.
	CMP	Okay. How would it be if I go on the maneuver as long as possible and when you get ready to uplink, why - we'll kill the maneuver.
	CC-H	We're - if you'll hold up on the maneuver there, for us, Vance - we think that we can accept it starting a little bit late. We'll try to get this uplink in as fast as we can.
	CMP	Okeydoke.
14 37 51	CMP	The computer's yours.
	CC-H	Okay, we - see you stopped it. We'll start.
14 38 22	CC-H	Vance, while we're waiting on this load - we might be able to get a little of this pad stuff out of the road. What I would recommend is, if you have - Look over on the 9 Alfa portion of your Flight Plan Supplement. There's a helium glow pad - rev 120.
	CMP	Okay. Stand by.
	CC-H	Okay. I'm not sure we're going to have all this time available to get it, but at least you'll know where it - we want to go next time.
14 39 18	CMP	Crip, do you mean the normal supplement or the contingency?
	CC-H	No, I meant the normal - normal supplement. There's a 9 Alfa page in there - a set of 9 Alfa.
	CC-h	If - if you just look on your tabs, there, Vance - following the astronomy, there should be a tab for 9 Alfa pads.

CMP Okay. Right.

CC-H Tell you what - -

CMP Okay. And - okay. You'll have to repeat the page number.

CC-H Okay. It was - it's actually the first one there, that helium glow pad, rev 10 - correction, rev 120.

14 40 09 CMP Okay. So it's the first page and - -

CC-H Yes, sir.

CMP 5-3, there. Ready to copy.

CC-H Okay. What - I'm going to go ahead and give you one in advance on this; we're going to get both of them on this same page. I'm going to take advantage of the blank portion down here. Okay. Before I press on, we've completed our uplink, and you can go ahead and press on with your maneuver; I'll let you get that started, and then we'll start on this pad. And what's happened is - I'm going to go LOS while you're maneuvering. And we'll get as much as we can.

14 40 40 CMP Okay. And the maneuver is going, and I'm ready to copy.

CC-H Okay. Instead of rev 120, mark that out, and it's going to be rev 106. Okay? The time for counting your DET up to - -

CMP Stand by 1.

CC-H Okay.

CMP Okay. You were blocked out. I - I understand rev 20 is now rev 106.

CC-H That's affirm. And the time - -

CMP Okay. And proceed on from there.

CC-H Okay. The time that we're going to count the DET up to is 173:42:42. Correction; make that 173:42:50.

CMP Okay. Just keep going, and - -

CC-H Okay.

CMP - - I'll tell you if you're going too fast.

14 41 36 CC-H Okay. Change your 52 DET time to 53. At 55, beside EUV, make a note to use detector 1. Prior to the VERB 24 NOUN 79 entry, I want you to make a - an entry for the EMP. And, incidentally, this will kill your high-gain EMP. It's VERB 25 NOUN 26 ENTER, 01 ENTER, 16 22 ENTER, 74007 ENTER.

14 42 29 CMP Okay.

MCC-H You change it to 50.

CC-H Okay. On that - on your NOUN 79, on the last ..., we want to change that to plus 0050 vice 00 - I say again. We want to change it to plus 00050 vice plus 00010.

CC-H If we go over the hill here, your next station contact will be in 37 minutes at Orroral. Your're - also, right after your changing your NOUN 79, we need to go ahead and have the D - make a note for DSE HIGH BIT RATE, RECORD, FORWARD, COMMAND RESET. Okay. Down at the bottom, following your powerdowns, I want to go ahead and change the NOUN 26's back for the high-gain EMP, and I'll give you those now. It's VERB 25 NOUN 26 ENTER, 10001 ENTER, 01412 ENTER, 66105 ENTER. Okay. Now what I need is a note that you can put wherever's convenient. And it's to read: "At DETs of 00:00 and 08:30, turn X-RAY HIGH VOLTAGE POWER to 2 for 2-1/2 to 3 minutes." Accuracy on that's not - not important. And then, "HIGH VOLTAGE POWER, OFF." What we're trying to do, as Bo mentioned to you earlier - if we turn the high voltage power off, and then just leave it on for, like, a couple of minutes - we seem to be getting good data. And that's what we want to do is to pick up that data at 00 and 08:30. You get most of that?

CMP Yeah. Let me try to read it back. Okay. Rev 106. Time 173:42:50. First change. Change 52 minutes to 53 minutes. At 55, over EUV, put detector 1. And just ahead of doing NOUN 79, do VERB 25 NOUN 26 ENTER, 01 ENTER, 16 22 ENTER, 74007 ENTER. Change plus 00010

to plus 00050. And after the VERB 24 NOUN 79, go DSE HIGH BIT RATE, RECORD, FORWARD, COMMAND RESET. Still with me?

CC-H That's affirm. Good readback so far.

CMP Okay. Then down at the bottom - and that's after the powerdown at the 14:38. Do VERB 25 NOUN 26 ENTER, 1000 ENTER - I'm sorry - 10001 ENTER, 01412 ENTER, 66105 ENTER. Then a note: "At the DET 0 and 08:30, turn X-RAY POW - HIGH VOLTAGE POWER to 2 for 2-1/2 to 3 minutes and then OFF."

CC-H Okay. That's a good readback.

CMP Okay.

14 46 40 CC-H Okay. The other item - well, you're getting close on this other pad. What I wanted you to do is - in the blanks that you've got below, on this thing - we're going to - I'm going to read you a new pad for rev 105. And we can just fill that in. How do you feel about continuing that or do you want to pick that up a little bit later? Don't want to rush you.

CMP No, if we've got comm, go ahead. And that's on this same page?

CC-H That's affirm. Why don't you just draw a line and put this one for rev 105.

14 47 17 CC-H Okay. And we'll want to start the DET counting up to 172:03:34.

CC-H Okay. And we'll start a DET of 55:00. Under data column, make - -

CMP Oh - -

CC-H Go ahead.

CMP Okay, Crip, sorry. I'll have to ask you to start from the beginning - 172 and on.

CC-H Okay. No sweat. Count the DET up to 172:03:34. At a DET time of 55:00, under data column make a note for helium glow and EUV ops.

	CC-H	At a DET of 4:00, note under angles for attitude, we want 256.60; pitch is 240.50; yaw is 000. Also, at 4 under data column, we'll want to make X-ray ops.
	CC-H	Okay. At a - -
	CMP	Oh - -
	CC-H	Go ahead.
14 49 03	CMP	Okay, I got - let me read what I've got now; I've got a little question.
	CC-H	Okay.
	CMP	172:03:34. Starting at 55:00, turn - do a helium glow and EUV ops. Then at 40:00, did you say?
	CC-H	That's correct.
	CC-H	Whoa, whoa; I'm sorry. That's at 4 minutes on the DET. You can make it 04:00.
	CMP	Okay. 04:00. And then what was the 256? The roll, pitch, and yaw were 0.60, 240.50, and 000. But what did 256 represent?
	CC-H	Okay. The roll is 256.60.
	CMP	Okay. Got you.
	CMP	Okay, so at 04:00, got roll of 256.60, pitch of 240.50, and yaw of 000, and do X-ray ops.
	CC-H	Okay. That's fine. I've got a couple more line entries on that, but we're about to go LOS on the ATS, so why don't we just hold them up until you finish up with this pass you're on. And we'll see you at Orroral in about 30 minutes.
	CMP	Okay. Very good, Crip.
	CC-H	Okay, Vance; thanks a lot. I appreciate taking - you taking the time to do all that good writing and so do the experiment folks.
14 50 46	CMP	Okeydoke.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

15 18 56	CC-H	Apollo, Houston. We're AOS VHF only through Orroral, currently. I got you for a couple of minutes.
15 20 51	CC-H	Apollo, Houston. About 30 seconds left here at Orroral. Next station contact at Quito at 171:28 - 171:28. That's about 30 minutes from now.
15 50 18	ACDR	Hello, Houston, Apollo. How do you read?
	CC-H	Loud and clear. How me, Tom?
	ACDR	Roger. Through Quito now, I guess.
	CC-H	That's affirm. We're at Quito. We've got you for about 4 minutes. And I - I said loud; actually, I'm reading you clear and kind of faint.
	ACDR	Okay. Would you pass on to Ed Fendell's troops on this last pass, due to the problems we had on the - you know, getting things started up, as far as the DET time, we finally had the X-ray data from a DET time for 5 minutes - was 24:00 to 29:00. Over.
	CC-H	Okay. Let me get that again. It was 24:00 to 29:00?
	ACDR	Yeah. That was when - that was supposed to be from 21:20 to 26:20. We ended up getting from 24:00 to 29:00, and the people made a mistake when they omitted that I - rate in the DAP. We couldn't get to that attitude in the period of time. Right above it was a high DAP rate and these - that was scrubbed out in the - in the revised pass.
	CC-H	Oh. Okay. That's one of the dangers we put ourselves in and when we start redoing the pads. Well, at least we got something.
15 51 28	ACDR	Okay.
	CMP	Crip, did - did - Tom, did you explain the - this part here? Okay.
	ACDR	And, Crip. Do you - I guess - do you have a new pad for X-ray rev 105.

CC-H That's affirm. I had started on it awhile ago with - with Vance, and I need to - to go ahead and continue that. We - we can get it now, or we probably got a little time that - after we lock on the ATS, too. We got a couple more minutes left in this pass.

CMP Okay. I'm ready to copy. As I recall, your last words were 4 minutes, and you gave me a roll, pitch, and yaw and X-ray ops.

15 52 23 CC-H Okay. That's - that is correct, and our next entry under the DET line is at 10:15. For roll, pitch, and yaw, we have 258.60. Pitch is 205.70. Yaw is no change; that is still 0000. For a DET time of 19:10, roll is 255.60. No change on pitch and yaw. At a DET of 25:00, under "Data column," want to put "EUV helium glow and X-ray power down" and then go back to Flight Plan. I need also to note - that when you get to each attitude, turn the X-RAY HIGH VOLTAGE POWER to 2 for 2-1/2 to 3 minutes and then HIGH VOLTAGE POWER, OFF. Did you copy that?

CMP Okay. Readback. After 4 minutes, at 10:15, roll, 258.60; pitch, 205.70. At 19:10, 255.60 for roll. At 25:00 a EUV helium glow and X-ray powerdown. Go to Flight Plan. Note that each - at each attitude have the HIGH VOLTAGE POWER ON for 2 minutes and then OFF.

15 54 33 CC-H See you at MILA in 1 minute.

15 57 45 CC-H Apollo, Houston. We're talking at you through Bermuda now.

ACDR Okay, Crip.

CC-H And that was a good readback, Vance.

CMP Okay.

DMP Hey, Crip. A couple of quickies here. We started the ETE about 10 minutes ago, I guess, I got the timer running. We're late on that for two reasons. Number 1, we lost that darned reflector three times so far today and we're in the process of rebuilding one and finally discovered it again. And, secondly,

we got so much humidity in here that every time we open that thing up, everything gathers frost instantaneously. And sample 5 was frozen in. We finally broke it loose. That's just status. We've got a small problem. I'm supposed to be doing the fish thing; I think I called you yesterday on the 16-millimeter mag to use for that. We've got mag 129 that Tom used the first day, and I was about to use the rest of that. However, we've discovered that we're almost fresh out of DAC magazines, and we're debating whether to hold this for entry or use it up on the fish. I guess we need a recommendation from you guys.

CC-H Okay. Understand. Mag 29 is the one we'd planned on using. Understand. You're almost finished with it?

15 59 12 DMP No. There's 80 percent left, but I used up all of mag 28 on the first two fish tanks for some reason. We ended with a red light at the end of it yesterday.

CC-H Okay.

DMP It - it shouldn't have happened, incidentally; we should have had enough film there to do that, but - and I was timing it, I think, reasonably well.

CC-H Okay. Our recommendation, Deke, is still to go ahead and proceed using mag 29 for it.

DMP Okay. Well, we may not have any film left for entry photography, and that was our concern.

CC-H I believe we think - I think we've still got that covered, and I'll verify that for you, Deke. Incidentally, did you manage to get a voltage reading off of that ETE for us?

DMP BAT C?

CC-H Rog.

DMP We got 37.

CC-H I'm sorry, Deke, I couldn't copy that. Would you say it again?

DMP 37.

CC-H 37 volts. Thank you.

DMP Roger.

16 00 19 CC-H I'm going to keep quiet here while we hand over to the ATS.

16 01 04 CMP Houston, Apollo.

CC-H We're back with you, Vance.

CC-H CP, Houston. Go ahead, Vance.

CMP Roger, Crip. I'm looking at this rev 105 special pad I copied a little while ago. And I guess the initial attitude is the one called out for 4 minutes. Is it okay to go to that at this time or will you lose comm?

CC-H Okay. That attitude you went to, I guess, we show you there right now. The comm attitude that you're currently in is going to be the first data take. We - that's the one - we just sent you too early.

CC-H You understand that then - that we modified that attitude earlier. I guess Bo did it for you, and it just put you in the correct attitude now for that first 4 minutes of data take.

CMP Okay, that's - that's good then. We'll stay here until 4 minutes.

16 02 22 CC-H That's affirm. Wonder if I could get a clarification from Deke on that voltage awhile ago. We copied 37, and it should be something on the order of 200 and something. Was that 237?

DMP Crip, I'm sorry. I thought you said BAT C. You were talking - (Laughter)

CC-H I'm sorry I wanted the - -

DMP You said ETE, huh?

CC-H That's affirm. I thought that sounded awful much like a battery voltage.

DMP That's exactly what it was. I thought you said BAT C. Okay, stand by; I'll get her for you.

DMP Okay, Crip. The voltage is reading 193 right now.

16 03 27 CC-H Copy. 193.

DMP Rog.

DMP Hey, we're talking experiments; we might as well flush another one into the system. We've been looking at the crystal growth every day per schedule. I haven't seen much of anything happening in there. Went down to get a close look this morning. And there's bubbles in three or four compartments, but I certainly don't see any evidence of any crystals. I don't know if there's anything we should be or can do about that subject.

CC-H Okay. Can you give us a little description of the bubbles? Are they - Quantity and size and so forth.

DMP Well, okay. Stand by, and I'll try to give you a - -

CC-H Well, I - -

DMP - - quantitative analysis.

CC-H Okay. It's not necessary for you to go digging it out now, but sometime if you could just give us a little bit detailed description. I'm sure the PIs would like to have it.

DMP Okay. I tell you, why don't you give me a little time because I ought to get the floodlight back on to do that right.

16 04 28 CC-H Sure. No problem at all. Just the next time you have an opportunity to take a look at it. And, incidentally, your Flight Plan shows you that we're going to lose comm on the ATS here (cough). Because we're doing a new attitude, we should have comm with you all through this ATS pass.

DMP Okay.

16 05 13 CC-H And a couple items for both Vance and Deke. I'm standing by with times for crossing the Adriatic, that sea farming area we talked about a little bit yesterday. And, also, for Deke, I got a - I'm going to have a time for the crossing of Wisconsin. It'll probably be easier for me just to call those a little bit ahead of time - give you 10 or 15 minutes warning about it.

CMP Okay, I'm ready to copy.

CC-H Okay. We should be crossing the Adriatic at about 173:26. Not sure of the attitude; it's going to be much - I mean - the viewing is going to be much better than it was yesterday, though. For Deke, the - should be going across Wisconsin at about 174:40, somewhere on that order - 41.

16 06 35 CMP Okay. Got those. Thank you.

CC-H You're welcome. Incidentally, talking about that DAC film for entry, we've currently got CX05, which should be in F-2, scheduled for - scheduled for entry. We're assuming that's still available.

CMP Okay, we'll have to get back with you on that, Crip. Right now, Tom's taking an inventory of the DAC film.

CC-H Okay, fine.

16 07 56 CC-H CP, from Houston. Vance, have you got - got an opportunity now to make a couple of small mods on your Flight Plan regarding ATS and - attitudes - a couple things - or would you like to get them later? No big rush on them either.

CMP Okay, yeah - go right ahead.

CC-H Okay, why don't you flip over to 173:10. We had not anticipated having ATS there, but because of our attitude change, we are going to have it. And I'd just like you to make a note down there to acquire ATS and with a pitch of minus 35 and yaw 114. And - just do it like you normally do.

CMP Got it. Okay.

CC-H Okay. And, also, that - or course, that note down there about losing it, losing the ATS, is not applicable - or not being available, rather. The other item was over 174:13. To get us to this new vis obs attitude that we've been working at, we need to change R2 on your NOUN 78's to plus 06000, instead of 9000.

CMP Yeah. Roger.

16 09 13 CC-H Also, we'll be able to keep ATS down there at 174:45. We don't - don't need to say that's ..., and we need to change those angles at 174:50 to a pitch of minus 10, which it is, and a yaw to minus 25. I'm sorry, I'm sorry. Let's start over again. Change the pitch to minus 25, yaw remains the same.

CMP Okay, so in summary, pitch is minus 25 and yaw is 335 - 355.

CC-H That's good. That's - that's all I've got for now; another little item I'm going to be coming to you a little bit later is that we got word that the red tide has been spotted off the East Coast there, and I'm going to give you a time and camera and so forth a little bit later to be picking that up.

CMP Okay. Good.

CC-H Apollo, Houston. We notice that we're - we're still sitting in ACCEPT, and you can go back to BLOCK whenever you like.

16 10 57 CMP Roger. BLOCK.

16 13 35 CC-H Apollo, Houston. If somebody could get down around 230 for us, from the data we saw last time, it looks like the cal source for the X-ray is hung up in front of the instrument, and we need you to take the X-RAY PURGE switch to the CAL position and hold it for about 10 seconds and then release it.

CMP Okay. Stand by.

16 16 49 CMP Okay. We went to PURGE for 10 seconds and ...

CC-H Okay. Appreciate it.

	CMP	I mean, to CAL.
	CC-H	To CAL, yeah.
	CMP	CAL for 10 seconds, yeah.
	CC-H	And, I was just telling Ron down here that nomenclature does it to me, too.
	CMP	Right. The purge switch that you make a cal with.
	CC-H	Roger that.
	CC-H	Would this be an opportune time, while we're waiting to get these things started, to tell you a little bit about the red tide site that we've got coming up?
16 17 30	CMP	I'd rather - I think Deke's probably got that. I'd rather kind of have him here on the headset.
	CC-H	Okay.
	CMP	He's pretty busy right now.
	CC-H	Okay. We'll hold up on it. Well, you might tell him that I'm standing by to talk to him about it whenever it's convenient for him.
	CMP	Okay.
16 18 45	CMP	Houston, Apollo.
	CC-H	Go ahead.
	CMP	Just studying the pad 105 here and at 4 minutes, of course, we have the maneuver and X-ray comes on right at the same time. You want X-RAY ON during the sweep of that maneuver?
	CC-H	That's affirmative. We've looked at - looked at these and don't see any problem with them.
	CMP	Okay.
	CC-H	Actually the maneuver's a very - very short one, Vance, and by the time you get down there and get the door open and everything, you're going to almost be in the attitude.

16 19 20 CMP Okay.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

16 30 50	CC-H	Apollo, Houston. We're still having problems with that X-RAY CAL source. If somebody could take the opportunity to go down to 230 and hit it to CAL once more and don't - don't hold it for 10 seconds this time, but just hit it and release it like we normally do.
	CMP	Hit and release.
	ACDR	Okay. Coming down to CAL -
16 31 10	ACDR	MARK.
16 31 12	ACDR	Released.
	CC-H	Incidentally, Tom - I tell you that that was a good head on that - picking up that target awhile ago on that previous pad. That worked out real well. We got the whole thing in. And we were getting good X-ray data on that at that time. So, that helped out.
	ACDR	Okay. Real great.
16 32 34	CC-H	Apollo, Houston. Tom, that one didn't work. I guess about the only other thing we can think of is that - Why don't you try several successive positionings of the switch to CAL, and let's see if that'll get it moved out.
	CMP	Okay. Understand.
16 33 17	CMP	Okay, he - Tom hit it about five times to CAL.
	CC-H	Okay. Would appear that it - Oh, stand by 1.
16 34 18	CC-H	Apollo, Houston. That CAL thing is still stuck out in our road. However, that's not preventing us from getting data on the X-ray, and that's - that's still working out. So, appreciate your efforts. Thank you.
	CMP	Okay. And we turned the HIGH VOLTAGE POWER, OFF.

16 34 29 CC-H Rog. We're sitting down here looking at the data at this time. See it off.

CMP Leave it on? Okay.

ACDR Okay. HIGH VOLTAGE POWER 2 coming back on.

16 34 50 ACDR MARK it.

CC-H Vance, if you're working the DSKY there, we're - I see we're getting close to your next maneuver and do not see it loaded.

DMP Crip, Deke here.

CC-H Rog, Deke.

DMP Hey, I just checked electrophoresis - at 45 minutes, and at the 73-millimeter mark, there was a bright stripe I could see. However, I wouldn't term it a stripe. It looks to me like it's a sphere, either coming - or about 40 millimeters. It doesn't seem to be banding today like it was yesterday.

CC-H I'm sorry, Deke. You're way, way down. I can barely copy you. Would you say again where the banding is, please?

DMP Okay, let me try it again. How's that?

CC-H That's much better.

16 35 50 DMP Okay. Yeah, I said it's 45 minutes - the first of the - I wouldn't call it a band. I guess it's - what I'd call the front of the color area - is at about 73 millimeters. And that is a colored area that covers about 40 millimeters. But I don't - I wouldn't call it bands at all. I'd just call it an area of coloration within the tube.

CC-H Okay. Copy that. It's not forming little bands. You had seen the bands before - before flight - how it was supposed to divide up, had you not?

DMP Yeah. Well, we saw them sample 1's - -

CC-H Rog. And I understand this sample 5 is not banded in that manner. Let me see what I can get you for a future plan of action.

16 36 38 DMP Okay.

CC-H Incidentally, Deke, on - on our upcoming pass across the States, we are going to have an opportunity to look at the red tide. And I was going to get you some information about that whenever it's convenient for you to copy it.

16 36 56 DMP Okay. Stand by for it.

16 37 14 CC-H What might be convenient for you, Deke, is if you can just get out your - your Earth OBS book on target 5 Foxtrot, and I can just relate it to you on there.

DMP Okay. Fine. Just a second.

DMP Okay. Go ahead.

CC-H Okay. To describe to you where the ship spotted it if you're looking at 5 Foxtrot, right above where we've got the words "Booth Bay" written in, you can see there's a river that looks like it's flowing - flowing south there that comes out. Well, it was right at the mouth of that river that the red tide was spotted.

16 38 06 DMP Okay. Got you.

CC-H Okay. And our recommendation on - on the camera is - Well, for the window, it should be visible out of CM-3. Want you to use the silver camera, of course. And use 50, with an f-stop of 9-1/2 and a speed of 1/500.

DMP Okay. Got that.

CC-H Frame intervals should be about 6 seconds - every 6. And we should be passing over that, if you want to note it, at about 173:09 to 13. And we'll - can give you a call just before that if you'd like a reminder.

DMP Okay. 173:09. And you want to shoot a mapping strip through there, essentially, huh?

	CC-H	Negative. You can go ahead and just use it and take a shot about every 6 seconds or as you see fit.
	DMP	Okay.
16 39 37	CMP	Okay, Crip. And we have HIGH VOLTAGE ON, and we'll leave it on until you say turn it off.
	CC-H	Okay.
16 40 12	CC-H	Vance, did I copy that you had the HIGH VOLTAGE on now?
	CMP	That's affirm. We turned it off during the maneuvers.
	CC-H	Roger.
	CMP	Trying to comply with your note, somewhat.
	CC-H	Yeah. Okay. The accuracy on that is not - all we need is the approximate time on a couple of minutes - couple to 3 minutes.
	DMP	And for the fish expert, if you want any information, I can give it to you.
	CC-H	Why don't you go ahead and shoot it to us.
	DMP	Okay. Number 1, in package 5, now has ten hatchings in it. And you're missing one out of package 4 this morning. One fatality, like I said due to ...
	CC-H	Let me make sure I got that. In package 4, that - we have lost one or you had one. Is that correct?
	DMP	There had been five live ones. Today there are only four.
	CC-H	Okay.
	DMP	Other than that, everything's normal.
	CMP	Yeah.
	CC-H	Okay, for Vance. We're not seeing anything on that high voltage right now, we're assuming that you're in 2. If that's so, why don't you go to HIGH VOLTAGE 1.

16 42 10	CMP	Okay. Go from HIGH VOLTAGE 2 to 1.
	CMP	Okay. We had a miscoordination here. It was - it had just been turned off and now it's back to 2.
	CC-H	Okay. Fine. Yeah. That's better.
	CC-H	For the DP. Deke, on the ETE, I guess what we want you to do is to go ahead and shut it down at 60 minutes.
	DMP	Okay. You want an early shutdown.
	CC-H	Rog. Go ahead and do your normal freeze there.
	DMP	Okay.
16 43 57	ACDR	Crip, I've got a question.
	CC-H	Yes, sir. Go ahead.
	ACDR	Okay. When you have a few little last, footage - we're trying to scrounge off of each mag on the 16's now. We've got the - the 70 pretty well squared away. But - to shoot out the window at subjects on Earth, view out of the window, you know, on these Earth obs passes, what's the setting going to be? I think we use a 75-millimeter lens, right angle brackets, but get me a ballpark setting for color exterior film. Over.
	CC-H	You want a - give me that once more, Tom. You weren't coming in very clear. For a 75-millimeter lens, on that color exterior, you want the settings?
	ACDR	Yeah. For the DAC.
	CC-H	For the DAC. Roger.
	ACDR	Hello, Houston, Apollo.
	CC-H	Go ahead, Tom.
	ACDR	Okay. I assume for Earth obs, that if you want us to use a 75 millimeter with the right angle, versus the 25 - get me a reading on that, please, too.
	CC-H	Okay.

16 50 17	CC-H	Apollo, Houston. We're about 2 minutes from LOS. Our next station contact is going to be MILA in about 36 minutes. On your powerdown for X-ray, we do not want you to to the CAL position. The thing came loose by itself and we do not want to do that first step on the normal powerdown. For Tom, we would like you to use table 3 on your exterior photo cue card for the settings on the - with the DAC. Those are applicable with the DAC as well, and you can use whichever lens you'd feel most comfortable with. It doesn't make any difference.
16 50 52	ACDR	It doesn't matter to us, whichever gives the most ... to the people there. It's either 75 or 25.
17 26 22	CC-H	Apollo, Houston. We're AOS through MILA. We have you for about 6 minutes.
	ACDR	Roger. Are we near Houston, right now? Over.
	CC-H	Well, you just crossed over into the Gulf of Mexico - coming across the coast of Mexico. Houston and the Texas coast should be coming up - up pretty shortly.
	ACDR	Roger.
	CC-H	Couple of items on - on this pass coming across here. I'd earlier - given Vance an update, telling him we were going to use high-gain-antenna angles and so forth, and we've changed our mind on that. Don't guess - You do not need to acquire the ATS. It's not going to be available; we - we've released it.
	ACDR	Okay.
	DMP	Hey, Crip. Give me a reconfirmation on the window for the New England area. Looks to me like it's going to end up being window 5. We don't see anything out of - anywhere else to speak of.
	CC-H	Okay. The one we'd been given earlier was - was out of 3, and we'll reverify that for you, Deke.
	DMP	Okay. Maybe by the time we get up there, that'll be right. It's not right from here, anyway.
17 27 30	CC-H	Roger.

DMP Okay. We'll stand by and see what happens.

CC-H Okay. Also, if somebody can flip back for us and - on the previous page there, we can pick up that last P52 results. We'd appreciate it.

ACDR Ready to copy?

CC-H That's affirm.

ACDR Star 30, star 17; NOUN 05, all zeros; plus 11.4, minus 85, minus 34; torqued at 178:08:00.

CC-H Okay. Very good. Thank you.

CC-H Apollo, Houston. Like to say a few words about this rev 106 pass, on this helium about coming up to you, if you got a moment to talk about it.

CMP Go ahead.

17 28 44 CC-H Okay, Vance. Maybe you're familiar with it. This was - this is going to be a helium glow raster scan, which was something that we desired to get in, but didn't make the priorities normally. And since the X-ray's not working all that spiffy for us, we're going to go ahead and do it. And basically, it's going to work just like your E - EUV raster scan, except we put a different time constant in it, so it's going to be scanning a larger area.

CMP Okay. Understand. That's what we'll have for pad 106.

CC-H That's affirm. And that's - of course, that replaces the nominal 106 pad.

CMP Right.

CMP Houston, Apollo.

CC-H Go ahead, Vance.

17 29 55 CMP I just take it that - we want to use - make the raster with - P4 - VERB 49 maneuver rather than P20. Is that because we get a longer raster or what?

CC-H Yeah. What happens, Vance, is that you'll have VERB 49 maneuver to get to the initial attitude. Okay? And, then when you go in and follow the pads down - down through what we've given you in there, it'll go ahead and be initiated on the - I think it's initiated on that VERB 31 ENTER.

CMP Oh, Roger. Roger.

CC-H Yeah. You've got to - you've got to do all the other stuff, but when it really starts rastering is when you get to the 31 ENTER.

CMP Okay. Oh, okay. I was thinking of another kind of scan.

CC-H Yeah. And, you'll notice a little bit later down there, at 7:08, you'll do another VERB 49, which will put you at a different attitude, and then you'll reinitiate the - the raster.

CMP Okay.

CC-H Regarding Deke's question on the red tide, we anticipate that's going to come visible first in window 5, come across window 3, and then through 1. And we thought 1 would be - a correction - we thought 3 would be the best total viewing.

DMP Okay. Thank you, Crip.

DMP Okay. We're over Cape Cod right now. I think we got her.

CC-H Very good. Outstanding.

17 34 07 DMP We're having trouble telling sunglint from red tide, however, in this area.

CC-H Yeah. Appreciate the problem.

CC-H I'm going to drop you through a keyhole. I'll give you a call when I'm back with you.

DMP Okay, Crip. We got some pictures up through that area and we see some water that - that's obviously sedimented up pretty good. And we're trying to differentiate if it's really red tide or red sediment. It's difficult for me to evaluate, frankly.

	CC-H	Okay. Very good. If you got the photos, we should be able to make a determination once we get them back. Thank you.
	DMP	Rog. And the other complicating factor is we got sunglint in here, which kind of drowns them out.
	CC-H	Copy that.
17 37 56	CC-H	Apollo, Houston. Talking at you through Newfoundland now. And we do not show a VHF downlink, might check to make sure that we've got that VHF AM on.
	CC-H	Apollo, Houston. How do you read on VHF through Newfoundland?
17 39 21	CC-H	Be advised if you're reading me, I'm not reading you. And we're going to have you at Madrid on that STDN about 4-1/2 minutes. Talk to you there.
17 44 09	CC-H	Apollo, Houston. We're AOS through Madrid now. How - We got you for 4 minutes. How do you read?
	CMP	Loud and clear, Crip.
17 44 17	CC-H	Hey, Vance. We had some funnies on our downlink coming across the States, and it looks like maybe the comm panels might be misconfigured. Can we verify it, please, that everybody on 6, 9, and 10 got S-BAND in T/R and VHF AM in T/R.
17 44 37	CMP	Okay. Verify all three panels S-BAND and VHF and T/R. Stand by.
17 45 13	CMP	Okay, Crip. Panel 10 was fine. Panel 6 and 9 did not have VHF AM on T/R.
	CC-H	Okay, fine. Appreciate you getting it on. I - I'd lost you there through Newfoundland I could - I couldn't hear anybody talking to me. And I get lonesome down here.
	CMP	Yeah.
	CC-H	We're going to get ready to come across the Adriatic like we talked about. You're maneuvering though, so we're not really sure whether it's going - going to be possible for you to see anything or not.

	CMP	Okay. And what's the time of that again?
	CC-H	Oh, about 26 - -
	CMP	I've got it. Yeah. 46. 26.
	DMP	Say, Crip, one reason we've been knocking that VHF off is to get rid of all this power noise.
	CC-H	Yeah. I - I suspected that might have been the case. Well if it - if it gets to be too much of a pain, well, we've got you on S-band every place else except Newfoundland.
	DMP	Okay.
	CMP	And, Crip, I'm on the - in the low maneuver rate. Is that proper for this particular maneuver?
	CC-H	That is affirmative, and looks like we have you change your DAP here at DET of 53.
	CMP	You were cut out by some tower. Say again.
17 46 51	CC-H	Okay, if that - if that thing is really giving you a problem, you can go ahead and secure it; I've got you good on S-band. But your correct low maneuver rate is satisfactory. And when we get to a DET of 53, we'll change it to a 1/2 degree.
	DMP	Right.
17 47 38	CC-H	Apollo, Houston. We are 1 minute from LOS. Like I was - said earlier, we will not have ATS for this pass. It will not be available. We've already secured it. And we'll have you again, at Vanguard, in 45 minutes. Because we've been rather stingy with the SECONDARY EVAP, there - we're making up quite a bit of water. And we would like to go ahead and open the POTABLE INLET valve.
17 48 00	CMP	Okay. Understand. Open the POTABLE INLET.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

18 33 06 CC-H Apollo, Houston. We're AOS through the Vanguard for 6 minutes.

ACDR Okay, Crip. Look, we got one problem on the ETE. It said in there that the sample - the TE temperature for samples 2 - well, anyway sample 6 that we're working on now should be between 10 and 12 degrees. It's minus 44, and it stayed that way. So we've held up until we could talk to you. Over.

CC-H Okay. We copy that. And while I'm trying to get a reading on that, I'd like to tell you that we're going to delete this X-ray cal called out in your Flight Plan to be doing at this time.

CMP Okay.

ACDR Okay.

CC-H Also, I'd like to - because of the problem we had earlier with that cal source, we're going to modify our SM experiment cue card to delete the cal off of that also, on our normal powerdown. If you - if you got that cue card handy, we can go ahead and make those changes.

CMP Okay. It's scratched out of the Flight Plan and coming off the cue card now.

CC-H Okay. And that's just delete that first step: X-RAY PURGE to CAL and hold 30 seconds under the powerdown, and - Stand by 1. Okay. That's - that's all we need to do is to get it deleted off there, so we won't - won't be going to cal anymore. And - -

CMP Okay. And - -

CC-H Go ahead.

CMP - - by the way, Crip, I - I think this raster maneuver we did worked pretty well, but I'd guess that it uses a quite a bit of gas. The maneuver rate seemed fairly high to me at a half a degree a second.

CC-H Yeah, we ran it in the CMC last night, and we were estimating 13 pounds.

	CMP	Yeah. Well, I think both rasters went okay.
	CC-H	Okay. Real good. Appreciate that report. Could we get a verification of the position of the FREEZE switch on - on the ETE?
18 35 05	ACDR	Yeah, okay. We went back, and we're checking some things. Looks like we - we had missed a step in turning a page there. We didn't have it to COOL, it's cooling down right now.
	CC-H	Okay. Real fine. Incidentally, you guys might be interested to know, we got - got three good-looking ladies back here in the - in the VIP room enjoying a little bit of the TV that you guys have made during - during this mission.
	ACDR	Oh, is that right? Well, tell them hello for us.
	CC-H	Well, I think they can probably hear you right now.
	ACDR	Hello there.
	CMP	Hello. Hi.
18 35 46	ACDR	We've been so darn busy, we haven't had a chance to even think hardly about saying hello up here for a few days.
	CC-H	Yeah. We've had you running around pretty - at a pretty good pace.
18 35 56	ACDR	I hope they all look relaxed and refreshed back there.
	CC-H	Oh, absolutely.
	CMP	Ask them how everything's going - ask them how everything's going on the homefront there.
	CC-H	I think everything's been going good. Ah-hah, I've been informed that they aren't hearing me; I'll correct that.
	CMP	Are you still there, Crip?
	CC-H	That's affirm. We've got you about 2-1/2 minutes.
	CMP	Okay.

CMP Which TV are they viewing, Crip?

CC-H Well, we just saw the initial docking, and right now we've got the one where Tom is standing by to open hatch 3 for the first time. I don't believe the girls heard you say hello, so how about giving it to them one more time.

CMP Okay. Hello. Hey, how you doing down there?

DMP Hello to the wives is what he's trying to say.

CMP Too bad they can't answer.

CC-H Yeah, one-way voice isn't too good.

ACDR That isn't too bad at some times, you know.

CC-H Ah, yes.

DMP Glad you said that instead of me, Stafford.

ACDR Just kidding about that (laughter).

CC-H (Laughter) You are in trouble.

ACDR Okay, Crip. We're down there, and we'll press on here.

18 38 11 CC-H Okay; fine. Let's see if I can get you some words. We may want you to modify on that ETE.

CC-H Tom, can you verify for us that - that we did get that sample; it was frozen. If it is, we probably need to go ahead and remove it; take it out of the cradle to let it - let it defrost.

ACDR Sample?

CMP Would you repeat that again?

CC-H Okay. That's - did - in your opinion, did we freeze the sample that we currently got in there? The column, rather?

DMP Oh, no, no. This is what we took out of the sample. It's number - out of the freezer - it's number 6,

and put it in for the 10-minute wait period, and at the end of 10 minutes, the temperature's supposed to be 10 to 12. We were in the process of passing the checklist on - around here. We missed one step, and that was to turn it to COOL prior - -

CC-H Okay. So - -

DMP - - to doing that.

18 39 27 CC-H Okay. So the column - -

DMP We never got to - -

CC-H - - the column is not - -

DMP We never got to - -

CC-H - - frozen. Is that correct?

DMP Positively not. It hasn't even started yet.

CC-H Great.

DMP We sort of - -

18 39 34 CC-H Okay. Going over the hill. See you at Goldstone in 16 minutes.

DMP Okay.

18 56 04 CC-H Apollo, Houston. We're AOS at Goldstone. We have you for about 3 minutes.

ACDR Roger. Through Goldstone. What area we over right now, Crip?

CC-H Coming over Baja.

ACDR Roger. Baja.

CC-H Okay. We're a minute from LOS, and we'll have you again at Newfoundland in about 8 minutes. And might remind Deke again that this is his pass over Wisconsin, coming up at about 41 after the hour.

ACDR Roger. And we're right over the Rio Grande River now. Yeah, I wish the girls could see this site up here that we're seeing, Crip.

	CC-H	Yeah. Right now we got the TV playing for them of Vance doing science demo things over in the Soyuz.
	ACDR	We're right over El Paso. You can look down and see Dick's Air Force Base and the International Airport.
	CC-H	Roger.
18 59 57	ACDR	Okay, Crip. We're - looks like we're approaching Amarillo now.
19 06 10	CC-H	Apollo, Houston. We are AOS through Newfoundland. And with the ATS, we should have you about 50 minutes.
	ACDR	Roger.
	CC-H	Okay. And we got it rigged up where the girls are listening to you again. Incidentally, if - to help this problem we've been having with some of our interference, one of the things that - about the only thing we can come up with doing on VHF is to go ahead and select SIMPLEX Alfa now, instead of staying in Bravo, and that'll change the freq and might - might get rid of some of it.
	DMP	You want to go to SIMPLEX Alfa right now, huh?
	CC-H	That's affirm, Deke, if you would, please. You can go ahead and go Alfa, and Bravo off.
	DMP	Super fast up through the Midwest there.
	CC-H	Came over pretty fast?
	DMP	Kansas City, Madison, Milwaukee, Chicago, Detroit, and the whole business.
	CC-H	Rog. Was it pretty clear?
	DMP	Could see the cows down there on the farm. Yeah.
	CMP	Unfortunately, it was covered with clouds over Sudbury nickle and certain sights that I was to get. But it is very impressive. No doubt about that.

	CC-H	Rog. Incidentally, Vance, while I've got you there, that last pass we had you guys run - end - ended up leaving you in 1/2 degree for your rate on your DAP. And you can go back and change that to 0.2 whenever you'd like.
19 07 44	CMP	Okay. And we'll - we'll do that right away.
	CMP	Incidentally, we did get to see the Adriatic. Got quite a few pictures of the lower half of Italy, from the boot up to - oh, I think it's - oh, I'd say about halfway up. But it - it was a cloud cover over Venice.
	CC-H	Copy that. Thank you very much.
	ACDR	Hey, Crip, tell the girls I wish they could - -
19 10 05	ACDR	Hey, Crip, we just had a big iceberg out here in the North Atlantic, and it has a trailing wake behind it.
	CC-H	Copied. A large iceberg with a - trailing wake, is that correct?
	ACDR	You see, it's like a, you know, like a - a bow wave on it.
	CC-H	Rog. Tom, we ended up dropping out there on VHF when we were trying to switch over and get ATS. And I'm back with you now on VHF. Don't think we got ATS voice locked up good yet. But I think you were just about to make a comment to the girls, and I don't believe they heard it.
19 10 33	ACDR	I said I wish they could enjoy this view we're having up here today, looking down at the Earth.
	CC-H	Rog. I imagine that's quite a sight.
	CMP	Even seen Chicago a couple times up here.
	DMP	Tell them we're trying to get them a new picture, so they can enjoy it.
	CC-H	Very good. Bring them back, and we'll all be able to have a chance to take a - take a look at that beautiful view you guys got.

19 11 43	CC-H	Incidentally, the Flight Plan calls for me to give you an update for the mapping pass you got on - mapping pass number 10 - you've got on the next - next rev. And that time is nominal. We do not need to change that. Any time that it might be convenient for you guys, I have a rev 138 block data pad that we can go ahead and update to you.
	ACDR	Rev 138 block data pad. Okay.
	CC-H	Yeah, we need to - need the Updates Book. But need to make sure I'm locked up good on the ATS before I give that to you. And apparently we're not yet.
	CMP	Okay. Before we go into that, Crip, we haven't seen any icebergs in the Southern Ocean. Been very hard to see the Antarctic area due to cloud cover. Haven't seen any stray icebergs down there. This is the first iceberg we've seen. Might just mention that, up here in the north, it was traveling through a - looked like a fog layer - and leaving a wake. Or else it was stationary, and the wind was blowing the fog a little bit and leaving a wake. No evidence of rotation, which is one of the questions they've asked about icebergs in general.
19 12 52	CC-H	Okay. Sure that we'd - be happy to get that data.
	ACDR	Okay. You got the echo.
	CC-H	Okay. We'll bring the VHF down and get rid of our echo problem here.
	CC-H	Okay, Tom. Did I understand you had the Updates Book there?
	ACDR	It's in work right now.
	CC-H	Okay.
	ACDR	And you can tell the girls that we're going to open some of Rita's little delicacies right now for the noon meal.
	CC-H	Rog. Well, why don't you tell us what good things you're eating today?
	ACDR	Well, every day's a surprise.

DMP We never know until we open it.

CC-H You never know. Sometimes then you don't know, right?

ACDR Right.

DMP Well, we got to say it's really pretty good in general. We can't complain about it. I think we're all getting fatter.

19 13 55 CC-H All getting fat from being fed so well.

CMP It's really funny how taste changes up here, though. I like coffee on the ground and don't particularly like it up here, but like tea instead.

CC-H I think we've heard comments similar to that before.

19 14 17 DMP I think the problem with the food up here is getting it ready to eat. I guess it's the same problem as we got down there. We'll appreciate our wives more when we get home.

CC-H That's affirm. Now they could put you to work in the kitchen, and you'd appreciate a little bit of the problem.

CMP I wish Deke hadn't said that.

CC-H Yeah, y'all are going to be in trouble when you get back.

19 15 01 CMP I'm ready for your block data there, Crip.

CC-H Okay. Coming at you. Note it down for rev 138, and coming at you with NOUN 33. 224:15:20; minus 189.2, all balls, plus 017.6; 357, 336, 007; 171.9; 00:07; 203, 1627.6, 25749, 25:54; 27:17 Downrange error is not applicable. 317/057, 33:04, 35:52; plus 22.00, minus 162.83. Readback, please.

CMP Okay. This is block data for rev 138. Gee, we're getting a lot of revs, aren't we?

CC-H That's affirm.

CMP 224:1 - 224:15:20; minus 189.2, plus all zips, plus 017.6; 357, 336, 007; 171.9; 00:07; 203, 1627.6, 25749, 25:54; 27:17, the NA; 317/057, 33:04, 35:52; plus 22.00, minus 162.83.

CC-H Okay. That's a good readback. For remarks, CM/SM sep is yaw right to 052 degrees. Number 2, NOUN 48 trim angles; pitch trim is a minus .08; yaw trim, minus .78. Number 3, CSM weight 25311. And note 4, this assumes that we complete the DM 1 and 2 burns following the jettison.

19 17 59 CMP Okay. Added notes. Sep yaw right to 052 degrees. Pitch trim, minus .08; yaw trim, minus .78. Weight, 25311. And this weight assumes we perform DM 1 and 2 burns.

CC-H Rog. The whole - the whole pad actually assumes that.

CMP Right.

CC-H Okay; that's a good readback. You guys can sit back and enjoy your lunch.

CMP Okay. Will do.

ACDR Rog. It's a beautiful view the way the whole ground is just kind of grayish down below, just like a haze or fog.

CC-H Rog, Tom. We missed the initial portion of your comment due to a data drop but we're back with you. And we caught the bit around the beautiful view.

ACDR Rog. We're just going into nighttime.

CMP Crip, you still there?

CC-H That's affirm, and we got you for, oh, another 25 minutes or so.

CMP Okay. The gals still there? We could talk about the meal a little more here in detail.

CC-H They are still here and still listening. And be appreciative any words you have to bestow upon us.

CMP Okay. Tom and Deke just sorted out the food here and passed it out. We have our little trays plastered down on the MDCs, the instrument panel with gad - with springs. We're sticking the food on with Velcro. I have meatballs with barbecue sauce and the - something in a can here, haven't examined yet. Whoops, tuna. Can that be? Oh, hey, no. The tuna is mine, and Deke gets the meatballs. Okay; and a grapefruit drink and pecan cookies, and I'm still looking for the rest.

CC-H I hope you've been having little bit better luck finding - finding the food lately.

19 22 49 CMP Yeah, we did. It was a - there was a learning curve there. I think the food was packed very tightly, and when we pulled the first few items out, why, it was hard to keep everything from springing away, and eventually we started collecting things and then found it.

CC-H Probably had the occasion to - -

DMP Yeah. I got my kids' favorite diet here - meatballs and spaghetti. The problem is they're all macaroni and cheese, which replaces the spaghetti, as usual. It doesn't rehydrate. So I'm going to put it in the trashcan and eat a can of salmon that blew off. Vanilla for - pudding for dessert, and - let's see here - grapefruit juice and almonds. That's about it so far.

CC-H Sounds like a delicious meal. Have you tried - have you tried rehydrating that macaroni and cheese and letting it set around awhile?

DMP Yeah, I sure have. The problem is the water never gets up to the top edge when you have to open it. So when you open it, it's like a bunch of worms crawling out of there. You know that dry stuff sort of gets to you.

CC-H Rog.

19 24 04 DMP I close it quick and forget it.

CC-H Yeah, you have to - have to be on your toes up there.

CMP Incidentally, I've lost my spoon three times, and found it shortly thereafter. And anything floats away. You just - just can't afford to just leave anything unattended for more than 5 seconds. And quite often, things unstick themselves and float away.

CC-H Got to be on your toes to try to keep everything tied down.

ACDR Yeah, Crip, at times I'll swear you could lose an elephant up here and not find in this spacecraft - the - you know, the way it's stowed around.

CC-H Rog.

ACDR Okay; let's see. I've got a strawberry drink, peach ambrosia, cheddar cheese spread with rye bread, sliced beef with barbecue sauce, and hot potato soup. That should be it. And that's more than the normal Sego calories I usually have for lunch.

CC-H Yes, quite a bit more.

19 25 59 CC-H You would not believe the shoes our friendly INCO is wearing today. Ben Franklin's really outdone himself.

ACDR What color are they?

CC-H Well, it's kind of hard to describe. There's some blue, and some brown, and a few other colors involved in it. Makes him at least 4 inches taller.

DMP Sure leaving us open for comments, when we were just ....

CC-H Rog.

CMP Well, he wasn't always conservative anyway.

CC-H Well, I always thought Ed was kind of a conservative guy. I'm really surprised to see him - but he's coming out of his shell. That's it.

ACDR He's always been rather bashful, ever since I've known him.

CC-H Yeah, he's always sort of the quiet, unassuming type.

	ACDR	Right.
19 27 15	DMP	We've probably never mentioned to you that we ran out of our most important expendable - Kleenex.
	CC-H	Now what is the - I'm standing by with bated breath to hear what's the most important expendable. I've got a few ideas what I might consider that, myself.
	DMP	The old dry wipes.
	CC-H	The old dry wipes are all gone.
	DMP	Called Kleenex.
	CC-H	I assume that's due to all the liquid we've had up there.
	DMP	Yeah, and, unfortunately, these Beta cloth towels don't absorb very much of anything.
	CC-H	Yeah.
	CMP	Actually, there's a half a box left, and that's really being rationed.
	CC-H	(Laughter) Okay. I was getting worried about you guys up there for a while.
	DMP	Okay. Got to - -
	ACDR	Well, it's - -
	DMP	- - send out for it.
	ACDR	- - going to be ready to come home pretty soon with just a half a box of Kleenex left and one change of underwear left and - plenty of food. But with the underwear and the Kleenex getting short, we'll be home shortly. And we won't - won't bring it home to have them washed either. Just - -
	CC-H	You won't have - -
	ACDR	- - leave them in the docking module.
	CC-H	- - won't bring them home, huh?

CC-H Well, I'm sure the girls will appreciate your leaving them there. Too bad you don't have some of those - of those kind that Bo was describing to you this morning.

ACDR Yeah, that sounded real neat.

19 28 33 DMP I tell you, we could use them right now.

ACDR We ought to meet the wives right now. We both - both need a couple of cans of deodorants, I think.

CC-H (Laughter) I imagine so.

CC-H Well, that'll put you in good shape for one of those shipboard showers.

ACDR I hope it isn't saltwater, like the Navy tradition there, Crip.

19 29 03 CC-H Oh, no. We've - we've come a long way since those days.

END OF TAPE