ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

15 18 58	ACDR	(Soyuz, Apollo. How do you hear us?)
	DMP	(Fine.)
	ACDR	(We see you through ...)
	USSR	I was just experimenting - Deke, listen to me.
15 45 35	CC-H	Apollo, Houston through Santiago. How're you doing?
	ACDR	0.9 mile and have him wired.
	CC-H	Super, Tom.
	ACDR	Midcourses were 0.2, 0.4, and the second one was a big one - like 0.6 and 0.8.
	CC-H	Roger.
	DMP	Okay, I've got it pretty well centered in my monitor, Dick.
	CC-H	Okay, good. It's - this one is going on the VTR, we'll be picking it up real time shortly, here - over the ATS.
	DMP	Okay.
15 46 19	ACDR	Starting braking, Dick.
	CC-H	Roger.
	ACDR	Less than 20 feet per second.
	CC-H	Apollo, Houston. I got two messages for you: Moscow is GO for docking; Houston is GO for docking; it's up to you guys. Have fun.
	ACDR	All right, it sounds good. (Half a mile, Alexey.)
	SCDR	Roger. 800 meters. What is this? 21. What is the range rate?
	ACDR	(Very good, 80 seconds.)
	ACDR	You can see his antennas from out here, Dick.

	CMP	Yeah.
	CC-H	Roger.
	CMP	(I see a green ship.)
	USSR	Thank you, Vance. Thank you, Vance.
15 47 34	ACDR	Going to the second braking gate now.
	CC-H	Roger. And Houston is about 45 seconds from LOS at Santiago. We'll see you when you get locked up on the ATS.
	ACDR	(.,.)
16 00 08	ACDR	Houston, how do you read?
	CC-H	Loud and clear, Tom. How me?
	CC-H	Apollo, Houston. How do you read?
	ACDR	Loud and clear. How you read?
	CC-H	Roger. Loud and clear, Tom. How're you doing?
	ACDR	Good. You should have a good TV picture.
	CC-H	Okay. We're going to be starting the TV downlink ... here shortly.
16 01 16	CC-H	Apollo, Houston. Panel 230, need UP TELEMETRY switch to RELAY, if you haven't already done it.
	DMP	Stand by.
	CC-H	Okay.
16 02 00	CC-H	Apollo, Houston. We've locked up on that data, now, we've looked at it, you're looking real good. We're going to switch over to the TV mode.
	DMP	...
16 03 01	CC-H	Apollo, Houston. We're - we do have the TV now out the right-hand window, we can see the docking module and the Earth horizon.

	ACDR	Can you see the Soyuz?
	CC-H	(No.)
	DMP	Okay, he's in behind the docking module and - -
	CC-H	Ah-hah! Here he comes - just above the docking module. Looks real pretty.
16 03 31	DMP	And, Dick, we have two lights, SM RCS B and D. I think it's temperatures, no sweat.
	CC-H	That's affirm, Vance.
16 04 40	ACDR	(Soyuz, please tell us when you begin your maneuver.)
	ACDR	(Soyuz, this is Apollo. How do you read?)
	SFE	I read you 5 by 5.
	ACDR	(Yes, please tell us when you begin your maneuvering.)
06 05 09	SFE	We're initiating rotation maneuver. You see?
	ACDR	(Yes, very slowly.)
16 05 20	SFE	Inertial orientation initiated.
	ACDR	(Roger.)
16 05 26	SCDR	Soyuz docking system is ready.
	ACDR	(We are also ready, Apollo is ready.)
16 06 43	SFE	Tom, I see your spacecraft.
	ACDR	(Yes.)
	USA	(We see it. It's very beautiful. We see your periscope.)
	SFE	It's a good picture.
16 07 12	CC-H	Apollo, Houston. As far as our TV picture goes, it's been real good. It is - as you maneuver around and the sunlight varies on the two spacecraft, it does very bright. If you're in AVERAGE, SLAVE, and LINEAR - -
16 07 25	SFE	Tom, roll maneuver is completed.

	CC-H	- - you want to stay there.
	ACDR	(Roger.)
	SCDR	Inertial orientation established.
	ACDR	... SLAVE ...
	CC-H	Good show. Just stay there. Looking fine.
	ACDR	(I'm approaching Soyuz.)
	SFE	Come in, Tom?
	SFE	Tom, please don't forget about your engine.
	ACDR	(Laughter.)
16 08 15	SCDR	Inform us about range rate.
	ACDR	(Very good. One-half meter.)
16 08 40	ACDR	(Less than 5 meters distance.)
	CC-H	Deke, Houston. Deke, Houston. Can you close down the f-stop some?
	ACDR	(3 meters.)
	ACDR	(1 meter.)
16 09 09	ACDR	(Contact.)
16 09 10	SCDR	We have capture.
16 09 11	ACDR	(We also have capture. We have succeeded. Everything is excellent.)
16 09 27	SCDR	Okay, Soyuz and Apollo are shaking hands now.
	ACDR	(We agree.)
	CC-H	Apollo, Houston. Deke, when you have a chance, we'd like to close down the f-stop. We do have a good picture, but it's too bright.
	CC-H	Right there, Deke.

	DMP	Is that okay, Dick?
	CC-H	Deke, it got a little bit better. It's still a little bit too bright. While you were fooling around with it, though, we did get a good picture when you were closed down a little more than you are now. And we've got all the events. We're following you on the ground. You're looking real good. We copied Alexey saying you're holding hands, and we see it, too.
16 10 53	SFE	... Moscow, this is Soyuz. How do you read me? Over.
	CMP	(Soyuz, this is Apollo. Initiating the retraction.)
	SCDR	Okay. Roger.
	ACDR	Houston, Apollo.
	CC-H	Go ahead, Tom.
	ACDR	(Tell Professor Bushuyev it was a soft docking.) It was a soft docking.
	CC-H	Roger, Tom. We'll pass it on.
	USSR	... ready to mate.
	USSR	...
16 12 16	ACDR	Heard your hatch close.
16 12 18	CMP	(Active latches are closed.)
	SCDR	Perfect. Seal compressed.
16 12 24	CMP	(The docking is finished.)
16 13 26	ACDR	Docking is completed, Dick. Docking is completed, Houston.
	SCDR	Roger. (Moscow, Moscow. How do you read? Over.)
	SCDR	Well done, Tom. It was a good show. We're looking forward now to shaking hands with you on - in board Soyuz.
	ACDR	(Thank you, Alexey. Thank you very much to you and Valeriy.)

	SCDR	...
16 14 09	CC-H	Apollo, Houston. For Deke. Deke, on that TV camera, we'd like you to go to PEAK, please.
	DMP	Okay. We'll try her.
	CC-H	Okay.
	SCDR	(Moscow, Moscow, Soyuz. How do you read me? Over.)
	CC-M	(I read you well. Was docking achieved?)
	ACDR	(Soyuz, Apollo. We are beginning ...)
	SCDR	(Okay. Let's go.)
16 16 11	CC-H	Apollo, Houston. I'd like to check two switches on panel 181. We'd like the TV SELECT and the CM1 - the CM2 switch - both of them to UP TELEMETRY. That's the center position.
	ACDR	Say again, Dick.
	CC-H	Okay. Panel 181, TV SELECT and CM1, CM2 to the center position: UP TELEMETRY.
	ACDR	Roger. Understand. CM1 ...
	USSR	...
16 16 55	ACDR	Okay, Dick. We're turning off the VHF on panel 10.
	CC-H	Okay.
	ACDR	Okay. Now we can - Okay.
	CMP	...
	CC-H	Okay. Now, Tom, if you can hear me. I think you copied that. Panel 181, TV SELECT and CM1/CM2 to UP TELEMETRY. That's the center position.
	ACDR	Roger.
	CC-H	Okay.
	CMP	(Soyuz, this is Apollo. Turn off power of the docking system. Soyuz, this is Apollo. Soyuz, this is Apollo.)

	ACDR	(Soyuz, this is Apollo. How do you read?)
16 18 26	CMP	(Very good. Docking system power off.)
	ACDR	(Soyuz, this is Apollo. Docking system power off. Soyuz, this is Apollo. Now the docking system power is off. Over.)
	CMP	... ground ...
	ACDR	... configured your VHF to ...
	CMP	Houston, Apollo.
	CC-H	Apollo, Houston. Go ahead, Vance.
	CMP	Dick, we have P25 up, and we can reset the VHF ranging anytime you want.
	CC-H	Okay. Thanks for letting us know.
	ACDR	Oh, you want her - oh, okay. You better hurry up and do that. I just turned off the range ... way ahead of you here. Better get back into configuration.
	CMP	Yeah, the ground has to watch that.
	ACDR	Okay. Let's see, where the heck were we?
	CMP	Probably about all it takes is -
	ACDR	This alinement is beautiful. ... came in. This line across here is just splitting the screw in the center of his target.
	CMP	Great. Mind if I take a look?
	ACDR	Have at it. It's awful ... look at it, you can see it.
	CMP	... Boy, it's alined perfectly, huh?
	ACDR	Oh, shoot, you couldn't do it any better.
16 20 50	CC-H	Apollo, Houston. You'll be able to terminate the P25 at 52 plus 05. I will call you back and remind you of that and, also, if you get a chance, the polarizing filter on the camera in slot number 11 is - needs some rotation; that light is blanking it out. Thanks, Vance.

	ACDR	Dick, as far as interesting PRO alinements, the center of my COAS is splitting the exact center of a bolt that's holding on his target - on the center of his target.
	CC-H	Great. Sounds good.
16 22 56	CC-H	Apollo, Houston. Be advised you're pretty close to coming across - over the Soviet launch site. We're past the places that we got the previous comm interference; you might want to try reconfiguring the comm and that would get us back to the RELAY.
	ACDR	You got it.
	CC-H	Okay. And if it's a problem to you, Tom, go back as you need to.
	ACDR	Okay.
16 25 05	CC-H	Apollo, Houston. It's 52 plus 05, and, Vance, you can terminate the VHF bias check. Thanks much.
	CMP	Okay. You bet.
16 27 07	CC-H	Apollo, Houston. We had a real good TV picture, Vance, when we went into the Earth's shadow there. It looks like it got darker, so you might open up that camera a little bit. And you did a real fine job on that polarizing filter. That worked real well.
	CMP	Okay.
	ACDR	And, Dick, I'd estimate my final closing velocity between 0.3 and 0.4 of a foot per second - on contact.
	CC-H	Okay, Tom. I copy. It sure looked good down here, dead center.
	ACDR	Why don't you - -
	DMP	...
	ACDR	Houston, Apollo.
	CC-H	Apollo, Houston. Go ahead, Tom.
16 30 50	ACDR	Okay. Deke smells something pretty bad up in the docking module. ...

DMP ... up there and close it.

ACDR We're going on - on the oxygen masks right now. And we're going to close that hatch. We don't know what it is yet.

CC-H Roger. And could you describe what the problem is?

ACDR ... but we can smell it. It - it smells like - it's kind of weird. It smells something like cordite. I can't tell. But it might be like the flight glue or something like that.

CC-H Okay. About all I copied, because of the voice and the mask, Tom, is that it - it is a very bad odor.

ACDR Yeah.

ACDR We got good partial pressure in the module. O_2 is 200 millimeters.

16 31 53 CC-H Okay. And the one thing that was garbled, Tom, was your description of the smell, and that would help us a lot. Was it a burning smell or can you relate it to anything?

ACDR Yes. It was a burning smell. It smells something like burnt glue.

CC-H Burnt glue or something like that. Okay.

ACDR Yeah. Yeah, or it could smell something like acetate.

CC-H Okay. Copy.

ACDR It smells like acetate.

CC-H Roger. Understand, Tom.

CMP But - I think we noticed - I've smelled that in new vehicles before.

CC-H I'm sorry, Vance, we dropped out.

ACDR But it's really strong.

16 32 31 CC-H Okay. I dropped out when Vance said it - you say that you think you have smelled the odor before or not?

CMP Yeah. We - the thing to sort out right now is if we smell the same thing that we all smelled just slightly in the vehicle a couple of days ago. You may remember sometime being around spacecraft in a plant smelling the glue. Perhaps the same sort of thing that they used to put on Velcro.

CC-H Roger. Understand. And are all three of you guys back in the command module now with the hatch - hatch shut or not?

DMP Not yet.

ACDR No, the hatch isn't shut yet. We're just going to stay here for a minute. We've got the masks standing by so we can put them on. No sweat.

16 33 21 CC-H Okay. Fine, Tom. We still have 15 minutes of voice here through the ATS, so please keep us posted.

ACDR Sure will.

ACDR And - and it does have a tendency to burn your eyes.

CC-H Roger. Copy.

ACDR Okay. We're going to go ahead and close hatch 2, and we can vent the module down and ... work with it.

16 34 15 CC-H Tom, Houston. One thing we think - one thing that we think, just for precaution that would be a good idea, is that at least one of you guys go ahead and put a mask on.

ACDR Okay. Well, I've got it. Vance and I have got it right by our face here, so there's no sweat. We've got - you can see it.

CC-H And, Apollo, Houston. The TV cameras are getting kind of warm. We've stopped the downlink of the TV on panel 181. We'd like to get CM 1 and CM 2 POWERS to OFF.

ACDR Roger. Got it coming in work now.

CC-H Okay, Tom. Thank you.

SCDR Tom, ... pressure integrity check is okay.

ACDR (Roger. I understood you.)

USA ...

USA I don't know.

16 35 24 ACDR Okay, Dick. It looks like it may be - may be dissipating a little bit. We first noticed it when Deke opened the hatch and went up in there.

CC-H Okay. Fine. We're talking about it, but the best information is coming from you so just keep us posted.

ACDR Okay. It seems to have dissipated quite a bit after the initial jolt of the stuff, and we're going to start that CM/DM atmosphere mixing and see what happens here.

16 36 04 CC-H Okay, Tom. Stand by on that just a second, please.

CC-H Apollo, Houston. Tom, one comment we'd like to make to you that it may very well not be a good indication to - that the fact that the smell seems to be going away because you just might be getting used to it as you stay longer. We'd like you to hold up on the CM/DM atmospheric mixing from now, and let us think about it a little more and just continue on through the other parts of the checklist and please keep us advised.

DMP Okay. Understand, Dick.

CC-H Okay.

16 37 58 DMP I'm back up here again, and the partial O_2 is a little over 200. Our total pressure is up about 260; and CO_2 is about 4.7. So everything's looking pretty good right now.

CC-H Roger, Deke. I copied that on the ground.

DMP I'm just kind of standing by here to see if I feel any different and I'm feeling pretty good.

CC-H Understand.

MCC-H What did he say?

CC-H He read us a PPO_2 is better than 200. Total pressure ...60. CO_2... 7, so he thinks his systems are in good shape.

DMP I'm not used to sniffing glue. Maybe that's what it is.

CC-H Roger, Deke.

MCC-H ... why they .... They detected a slight odor, which was the first I heard ...

MCC-H Okay, ...

MCC-H I'm pressing on here and getting the mixing going so that ... CO_2 ...

MCC-H Okay, CAP COMM .... Let's get Vance on the mask since it's ... ... EECOM was saying the situation was caused by.

MCC-H ...

MCC-H Go ahead, ...

MCC-H Yeah, my understanding is when we put - pulled those furnace ... earlier today and put them ... and put ...

16 41 33 SCDR Hello, Valeriy and me just now in orbital module.

CC-H Apollo, Houston.

ACDR Go ahead, Dick.

CC-H Okay. Here's what we'd suggest doing. We still got - got about 6 minutes left in this pass. First of all, we don't see anything wrong. Matter of fact, we see a benefit to continuing on and - and doing the CM/DM mixing. We would suggest that Vance, since we think, looking at the checklist, it'd probably be the least inconvenience to him, would go ahead and put on the mask until we sort the whole thing out. Also, one thought is that the furnace sample that we took out his morning was rather warm when it was placed into D-1. There is some Velcro in there that with glue, as you know, it might be that - that might be a location of the smell. In any case, we think you ought to go ahead and start the CM/DM mixing and press on.

ACDR Houston, that sample wasn't removed this morning.

ACDR Remember we held off on removing it.

16 42 58 CC-H Okay. Roger. We can get straightened out on that here in a few minutes, and at least we'd suggest Vance get on the mask and do the CM/DM mixing.

ACDR Okay, I'm still in the CM, Dick, and I'm feeling okay now, no problem. And I don't know where our checklist let us down here, but the sample is still in the furnace. The furnace feels cold, however.

CC-H Okay. If you'll give me a few minutes here at one of these upcoming passes, we'll straighten that out. We're not worried about it at the moment. One other thing, Tom, is you might let Alexey know what's going on in Apollo. I'm sure he'd be interested. We have informed Moscow Control Center.

ACDR All right.

16 44 14 ACDR (Soyuz, this is Apollo. Now we have some - a little problem. I think we have somewhat of a bad atmosphere here. I think soon that we will no longer have any problems.)

SCDR Okay.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

16 45 31 CC-H Apollo, Houston. A couple of things. One is, we're picking up a big squeal. We think it's probably the speaker box in the DM. If we could turn that off, it would probably help the comm a lot. Also, on panel 230, we'd like the UP TELEMETRY switch to UP TELEMETRY, that's center.

ACDR Okay. That's in work.

16 45 54 ACDR The speaker box is off.

CC-H Okay. And Tom - -

ACDR And Vance is on the O_2 mask.

CC-H Okay. Real fine. Thanks a lot, Tom. We heard you inform Alexey and we appreciate it. We think, probably, the most likely explanation is - is that we've had the docking module closed up for 4-1/2 hours and the smell has just built up a little bit. We don't anticipate a big problem at all. We are about 2 minutes from ATS LOS, and I'll give you a call at Orroral Valley after just a couple of minute dropout.

ACDR Okay.

DMP Okay. Dick, let me give you some quick readings here while I got you.

CC-H Okay. I'm ready to copy, Deke.

DMP Pressure latch system A, number 1 is 5.1. Number 3 is 5.1. Number 5 is 5.1. Number 7 is 5.1. System B, number 2 is 5.1. Number 4 is the same. Number 6 is the same. And so is 8.

CC-H Okay. Let me check them again, Deke. All of the system B meters were 5.1. Is that right?

DMP Everything is 5.1, Dick. Basically ...

CC-H Okay. Good show. Thanks, Deke.

DMP Roger.

16 47 25	DMP	Have you got the predock readings down there so you can do your own subtraction? We'll do ours up here later.
	CC-H	Yep. Sure do.
	USSR	... Soyuz ...
	USA	(Soyuz, this is Apollo.)
	USA	(Soyuz, this is Apollo.)
	USSR	Go ahead.
	SCDR	(Alexey, turn on your dual VHF simplex, please.)
	SFE	... simplex ... simplex on.
16 48 12	SCDR	(Thank you, Valeriy.)
16 50 12	CC-H	Apollo, Houston. We're AOS Orroral Valley for 6 minutes and if you'll give us ACCEPT, we'll start uplinking the high-gain EMP.
	USSR	(Moscow, Soyuz. I read you excellently.)
	CC-H	Apollo, Houston. On panel 230 we need the UP TELEMETRY switch to DIRECT.
	USSR	(The result of the TV tube check is excellent. Right now, we ... in 7 minutes will check exactly instructions. Right now the pressure is ... millimeters.
	CC-H	Apollo, Houston. How do you read?
	DMP	Well, you got us here. We've got the TVs activated in the DM, and I guess you're supposed to tell us if you don't like where they're pointing.
	CC-H	Understand, Deke. You got the TV activated in the DM. I didn't copy the last.
16 52 17	DMP	Both of them are up and running, but I'm supposed to position them per your directions.
	CC-H	Roger. And we'll get back to you. We are not downlinking TV here, Deke.

	CC-H	And, Apollo, Houston. How are you reading me?
	CC-H	Apollo, Houston. Per the Flight Plan, we would like to go ahead and commence the battery Alfa charge.
	USA	Roger.
16 53 40	CC-H	And, Apollo - Apollo, Houston. One thing I did want to pass up to you at this pass, I'd like to correct my last - that was - early comment to you. After talking to the Surgeons, we feel that the - -
	SCDR	(Moscow, Soyuz. We hear you excellently.)
	CC-H	- - that the smell, as you - as the smell changes to your senses, we think that is a very good indicator of how you're doing, and before - we've got about 2-1/2 minutes before LOS. We would - we'd like - we'd just like to know how you're coming along with the odor problem prior to LOS here at Orroral Valley.
	DMP	Okay. I've been in the DM all the time here, Dick, and I got both TVs; you can look and see if anybody's interested but I'm feeling fine right now and the smell is strongest towards hatch number 3 and - but it's not bad anymore. It's not bothering me any at the present time.
	CC-H	Okay, Deke. It sounds real good. We're - we're not - incidentally, the business on the TV - the way the Flight Plan was written, we would have had TV toward the end of the ATS pass, but we got a little slowed down on the odor problem. So we'll catch up the pointing a little bit later.
16 54 58	DMP	Okay. I'll just set them up - best I can and you get them later.
	CC-H	Okay. Real fine.
	DMP	Okay.
16 55 06	CC-H	And, Apollo, Houston. We're 1 minute from LOS Orroral Valley. We'll see you at Quito at 53:01, and we'll be starting to uplink the high-gain EMP there at Quito.

17 22 08 CC-H Apollo, Houston, through Quito for 5 minutes.

CC-H Apollo, Houston, through Quito for 4 minutes.

DMP We read you 5 by.

DMP Just getting started on page 2-5 in the DM checklist.

CC-H Roger, Deke. We read that you're on page 2-5 of the DM checklist.

DMP Yeah. I'm getting started on the top of that page.

17 23 45 CC-H Understand.

DMP We've gotten ourselves all confused here on what's going on with the furnace at this stage. We ... the sample we put it originally *** it appears that somewhere along the line we should have had an update, or maybe got one and missed it, to take the sample out. But the fact is, the first sample we got in there is still there. I did the helium injection per procedure, and I'm assuming that that sample will come out, when we put the ***

17 24 44 CC-H Apollo, Houston. How do you read us now?

DMP Read you 5 by, Bo.

CC-H Roger, Deke. We understood that you are in the DM starting on page 2-5 at the top, and you had done the procedure and the helium injection - -

SCDR (Tom, what about your problem?)

ACDR (...)

CC-H But - we - you were cut off because of bad communication, with the rest of your question about the sample.

DMP Okay. The sample that's in the furnace at the present is the sample that was put in originally. It's the only one that's ever been in it. It appears, somewhere along the line, we may have should have taken that out of there, but he never did. And that was in our Flight Plan. We had a lot to do related to the furnace, and we must have missed that. So what I'm assuming we should do is take that sample out and then ... put the Soyuz sample in. Is that correct?

	CC-H	We'll check on that for you, Deke.
17 25 39	DMP	Normally that would have been sample SC001 coming out ... We never put that sample in.
	CC-H	Understand.
	CC-H	Apollo, Houston. Over.
	DMP	Go ahead, Bo.
	CC-H	Apollo, Houston. We would like you to take out that sample, and when the Flight Plan calls for the placement of the Soviet sample into the furance, we'd like you to do that then.
	DMP	Okay. We're cut out but understand we should take out the 041 at the time we put the Soviet sample in.
17 26 55	CC-H	Apollo, Houston. We're about 30 seconds from LOS and we'll see you at MILA at - 50 - -
	DMP	Okay. You cut out on us, Houston.
17 27 12	CC-H	We'll see you at - at Bermuda at 53:11.
17 27 16	DMP	Understand. Bermuda at 53:11.
17 30 29	CC-H	Apollo, Houston through Bermuda for a few seconds, and then we'll be going ATS. Over.
	DMP	Okay, Bo. Read you 5 by.
	CC-H	Roger. And - in the command module, we would like on panel 181, the COMMAND MODULE cameras 1 and 2 TV POWER to ON.
17 30 52	ACDR	Stand by.
	CC-H	Command module pilot, Houston. Do you read?
	CMP	Roger. Not in a position to do that, because of - we're kind of crowded in here. It'll be just a moment, though, and we'll do that for you. Understand - POWER for cameras 1 and 2, ON.
	CC-H	Roger. And on panel 230, we'd like to - you to verify that the UP TELEMETRY switch is in the center, UP TELEMETRY, position.

	CMP	Stand by.
	USSR	(Apollo, Soyuz. I hear you excellently. Over.)
17 32 02	CC-H	And, Vance, if you have a chance, we'd like the computer in ACCEPT.
	USSR	(Repeat. Over.)
	CMP	Okay, Bo. Stand by 1.
17 32 12	CMP	Okay, we put the switch UP TELEMETRY in the center position for you. It was not there before.
	USSR	(Moscow, Soyuz. I didn't get you; repeat. Over.)
	CMP	And, believe it or not, I can't quite reach the UP TELEMETRY switch, now. Stand by 1.
	CC-H	Say that again, Vance, please.
	CMP	We're ... just a second.
17 32 54	CMP	Okay. Panel 2 UP TELEMETRY switch coming on.
17 33 14	USSR	(Second parameter on form 3, right?)
	CMP	Okay. UP TELEMETRY switch to UP TELEMETRY now.
	CC-H	Roger. Thank you.
	USSR	(The results of the precise check are very good.)
	USSR	(The tunnel 2 pressure dropped 1 millimeter in 10 minutes. This is very excellent. Over.)
	SFE	(Moscow, this Soyuz 2.)
	USSR	(... 275.)
	CC-H	Apollo, Houston. We're standing by for ATS acquisition.
	ACDR	Okay, Bo.
	CC-H	Apollo, Houston through ATS. How do you read? Apollo, Houston through ATS. How do you read?

	DMP	Houston, Apollo. How do you read?
	CC-H	Deke, we read you well.
	CC-H	How do you read us?
	CC-H	Apollo, Houston through ATS. How do you read?
	CC-H	Apollo, Houston. We cannot understand you ...
	CC-H	Apollo, Houston through Madrid. How do you read?
	CC-H	Apollo, Houston through Madrid. How do you read?
	CC-H	Apollo, Houston.
	DMP	Houston, Apollo.
	CC-H	Apollo, Houston.
	CC-H	Apollo, Houston. We heard you once about 30 seconds ago; how do you read us?
	USSR	(...)
	CC-H	Apollo, Houston through Madrid. How do you read us?
	CMP	Houston, Apollo. How do you read now?
	CC-H	Roger. We read you now, well.
	CMP	Houston, Apollo. How do you read?
	CC-H	Apollo, Houston. We read you. Could you tell us what your comm problems are?
17 46 50	CC-H	Apollo, Houston. We seem to be getting data. Perhaps we can also speak. How do you read?
	CMP	Houston, Apollo. How do you read?
	CC-H	Apollo, Houston. We seemed to read you okay that time. How do you read us?
	CMP	Loud and clear. We've had a whale of a time locking on, Bo, and we've had a lot of background noise from ground frequencies; so, we're locked on and we turned off VHF FM again.

	CC-H	Roger. Thank you.
17 47 52	DMP	Okay, Bo, if you're reading, we've about completed step 7 here - -
	CC-H	Understand. You've completed step 7 in the Docking Module Checklist.
	DMP	Yeah. We got one problem here. We don't know where the ZFF sample is that's supposed to be in the DSP to go to the Soyuz.
	CC-H	Deke, would you say that again, please. You were cut out.
17 48 24	DMP	Yeah, we're supposed to transfer a ZFF to the Soyuz; number 1A or AS-1. We don't know where that thing is.
	CC-H	Roger. I'll check with FAO.
	DMP	Thank you.
	CC-H	Apollo-Soyuz [sic]. The REFSMMAT is not onboard yet, and so we request you to not do the P52 yet.
	CMP	Understand.
17 49 11	CC-H	Command module, Houston. Over.
	CMP	Houston, command module. Roger. I understood and I'm holding on.
	CC-H	Roger. And we know you were busy before, and we'd like to check if you had a capability to turn that CM 1 and 2 TV POWERS, ON?
	CMP	Okay. I think somebody did it for me, but let me go down and recheck.
	CMP	Okay, Bo. They should be on now.
	CC-H	Roger. And on *** POWER AMP HIGH/LOW switch to OFF; that's center.
	CMP	Please repeat. You were cut out by the ground station.

17 50 26	CC-H	Roger. That is the - on panel 3, S-BAND NORMAL POWER AMP HIGH/LOW switch to OFF, center.
17 50 35	CMP	Roger.
17 52 54	CC-H	Docking module pilot, Houston.
	DMP	Go ahead, Bo.
	CC-H	We have a good picture of you, Deke, and an answer to your question is that the D - ZFF photos should either be on the bulkhead right of the optics, where they're positioned for the photos, or you'll find them in R-5.
	DMP	Okay. We've got two up there on the bulkhead that we're - we've been running with. Are we supposed to transfer one of those to Soyuz?
	CC-H	Roger. One of those is supposed to go to Soyuz.
	DMP	Okay. Well, there wasn't any label on them, so we weren't sure - just - either one of them, huh?
	CC-H	Roger. Either one.
	DMP	Okay, fine.
17 56 49	CC-H	Command module, Houston. We would like you to go to ACCEPT so we can load the REFSMMAT.
17 57 03	CMP	You've got it.
	CC-H	Thank you.
	CC-H	Apollo, Houston. We have the REFSMMAT in. You can go back to BLOCK and do the P52.
	CMP	Roger, Bo.
	CC-H	Roger, Vance.
17 59 53	CC-H	Apollo, Houston. On that MASTER ALARM, we're looking at an O_2 tank pressure that is low.
	CMP	Roger. O_2 tank pressure.

18 00 30	CMP	Yeah, Bo. We have a - an indication of a full scale low on number 2.
	CC-H	Roger. We agree.
	CMP	And, Houston. We have VHF FM back on again, not that we've passed the noisy area.
	CC-H	Roger. I understand. You put the VHF AM back on.
	CC-H	Apollo, Houston. The O_2 tank pressure now agrees with tank number 1, and so the transducer is working again.
	CMP	Now, that's interesting, isn't it.
	CC-H	Roger.
18 02 54	CC-H	Command module, Houston. We're going to dump data so we'll have voice loss here for a few seconds.
	USA	Understand.
	CC-H	Command module, Houston. Over.
	CMP	Rog, Bo. We're delaying the P52 a little bit here, until we get squared away a little better ...
	CC-H	Roger. Understand. You're delaying the P52 a bit, and we would like you to check the SM RCS engine package heaters and verify that they're all on up into the number 1.
	CMP	About the time of docking, I turned them all off, because we were getting lights on all quads and reported the lights; turned them off, so we'll get them back on for you.
18 05 11	CC-H	Roger. Understand you turned them off about the time of docking.
	CMP	Roger. Temp was going up above 200 on all of them at that time.
	USA	... you're secure at the computer, and we can go to BLOCK.

18 05 44	CC-H	Roger. You're clear to go to BLOCK.
	CC-H	And command module, Houston. For your information. We have not had a chance to get the high-gain EMP into the computer yet.
	CMP	Rog. Understand.
	USSR	(Are you supposed to have pressure integrity control on?)
	USSR	(What for?)
	USSR	(Is your pressure control valve open? Check with documentation.) (Is your ... on?)
18 08 31	ACDR	Bo, we just had a MASTER ALARM for the CRYO PRESSURE.
	CC-H	Roger. Tom, understand. CRYO PRESSURE, MASTER ALARM.
18 08 54	ACDR	Have you got telemetry, Bo?
	CC-H	Negative. We have playback data right now.
	ACDR	Okay, it went on about 53:48:30.
	CC-H	Understand 53:48:30 for that time of alarm.
	ACDR	Yeah, about 45 seconds ago.
	CC-H	Roger.
18 09 43	CMP	Houston, Apollo. If you're watching our computer, we're just finishing a P52 option 3.
	CC-H	Vance, we're having playback data right now, so we're not seeing your P52.
	CMP	Rog.
18 10 52	ACDR	Bo, do you want me to read the data to you on the P52?
	CC-H	Roger. Please do. We only are receiving playback data.

ACDR Okay. Star 35, number 1; 37, number 2; NOUN 05, four balls 1; 93, plus 50, minus 20, minus 7; torqued, 53 plus 50 plus 35. Over.

CC-H Understand. Stars 35 and 37, four balls 1; plus 50, minus 20, minus 7; 53:50:35. Thank you.

ACDR Roger.

CMP And we're ready to proceed with the option 1 and we'll report that.

18 11 46 CC-H Roger.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

18 15 25 ACDR ... Bo, do you want to copy on the - on the option 3? I'm sorry, option 1.

CC-H Roger. Go ahead with ... 3.

18 15 34 ACDR Okay, I'm sorry. I gave you option 3 first. This is the option 1 to realine the orbital orientation. Same stars, 35, 37; NOUN 05, all balls; NOUN 93, plus 191, plus 165, plus - plus 37. That was torqued at 53 plus 54 plus 15. Over.

CC-H Understand. The option 1: stars 35, 37, all balls; plus 191, plus 165, plus 37; 53:54:15.

ACDR Roger.

CC-H Apollo, Houston. I have a message for you all. Are you ready to copy?

ACDR Go ahead.

CC-H During the first transfer, just after the acquisition of Soviet TV and just after Tom enters the orbital module - Deke will still be in the DM - the Soviet leaders would like to pass a message to the crews of the Apollo/Soyuz mission.

ACDR Very fine, thank you.

CC-H I've got more. Immediately after - -

ACDR Go ahead.

CC-H Immediately after they have finished their message, bring the camera into the OM and set it up as planned. The AC and the DP will take positions around the OM table, and the President of the U.S. would like to relay a message to the commanders of both vehicles. The sequence will be that all will get into position and allow the commander of the Soyuz to welcome you to the OM, and the President will then speak. The docking module pilot is requested to give his headset to the Soyuz commander so the President may speak to the Soyuz commander.

	ACDR	Okay. Well, I think we got that.
18 17 50	CC-H	Roger.
18 21 08	CC-H	Apollo, Houston. Over.
	ACDR	Go ahead. Go ahead, Bo.
	CC-H	Roger. We'd just like a progress report on how the preparations for the transfer are coming before we go over the hill here.
	ACDR	Well, we're in good shape. We're ahead of schedule, just waiting around to sync the clock at - Deke'll sync the clock at 54:11.
	CC-H	Real fine.
18 21 36	DMP	Hey, Bo, I'm just making one minor mod to your procedures down there. I've got enough hoses here in the DM to do the time sync right down here in the LEB from here without messing around coupling and uncoupling.
	CC-H	Say again, Deke. We did not understand what you said.
	DMP	Okay. I'm going to stay connected to the DM and do the time sync from the LEB mission timer connected to the DM comm.
	CC-H	Understand. You're going to stay connected into the DM and do the time sync from the LEB.
	DMP	Roger.
	CMP	Bo, CP. Last time we had a hard time locking up with the ATS. Do you have any idea what was wrong, and should we expect any more problems?
18 22 30	CC-H	Let me check on that with INCO.
18 23 10	CC-H	Vance, Houston. We don't have any good reason for the ATS not locking up, and all we can suggest is to try the normal procedure again.
	CMP	Okay.

	CC-H	Hello, Vance; Houston. Over.
	ACDR	Houston, Apollo.
18 24 17	CC-H	Go ahead, Tom.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

18 58 41	CC-H	Apollo, Houston through MILA. Over.
	CMP	Loud and clear, Bo. How do you read?
	CC-H	We would like the UP TELEMETRY switch to DIRECT on panel 230.
18 58 51	CMP	UP TELEMETRY, DIRECT. Roger.
	CC-H	And while you're down there, Vance, the other thing is, on panel 400, we would like the VTR POWER switches, the TELEMETRY, INTERLEAVER, and VTR, all to the ON position.
	CMP	Okay. You were cut out. Please say again VTR position and VTR POWER.
	CC-H	Roger. The three VTR POWER switches on the right - on the left-hand side - all to the ON position.
18 59 17	CMP	That's verified.
	CC-H	Thank you.
	CC-H	And, Apollo, could you give us a progress report on the transfer?
	DMP	Yes, Bo, if you're reading - we've - we're on step 19, but actually we've also completed 20 and 24.
	CC-H	Understand; you're on 19, but you've done 20 and 24 as well.
	DMP	That's affirm - except for the last part of 24; we'll do ... comm reconfiguration.
	MCC-M	Go ahead.
	CC-H	And, command module, Houston. On panel 230, we would like the UP TELEMETRY switch to UP TELEMETRY.
19 00 04	CMP	UP TELEMETRY switch to UP TELEMETRY. Roger.
	CC-H	And, Apollo, we show the spacecraft in FREE at the present time.

19 00 35	CMP	Roger. Back to CMC AUTO.
	CC-H	Thank you.
	CMP	And would you like a maneuver back, Bo, to the - just the right attitude?
	CC-H	Roger.
	CMP	Say the angles you'd like, Bo. Roll, pitch, yaw.
	ACDR	(...)
	ACDR	(Four.)
	USA	Go ahead.
	SCDR	(You, too.)
19 02 47	CC-H	Docking module, Houston. Could you tell us if the portable light is on? We're getting a picture that's a bit bright.
	ACDR	Negative, it's not, Bo. We've got it set up to turn it on, but we haven't got it on.
	CC-H	Roger. Understand. It is not on at this time.
	ACDR	(Soyuz, this is Apollo. What is your step 19? Is step 19 in normal? How many minutes, please?)
19 06 37	SCDR	Apollo, Soyuz.
	ACDR	(Standing by, Soyuz.)
19 06 42	SCDR	Tunnel 2 pres - tunnel 2 pressure integrity is okay. Step number 19 is completed.
	ACDR	(...)
	SCDR	Roger.
19 07 31	ACDR	(Soyuz, this is Apollo. Now our step 20 is completed.)
	SCDR	Roger. Step number 20 is completed.
	CMP	Do you have a good lockup on the ATS?

	CMP	Houston, Apollo.
	CC-H	Apollo, Houston. Go ahead.
	CMP	Bo, do you have a good lockup on ATS now?
19 08 36	CC-H	Roger. We're reading you but you have a bit of an echo.
	SCDR	Tom, ... tunnel 2 - Soyuz.
19 08 48	ACDR	(Say again, please.)
19 09 05	ACDR	(Soyuz, this is Apollo. We're doing 21. Over.)
19 09 47	ACDR	Houston, Apollo. We've completed step 20, and they're working on step 21.
	CC-H	Roger. Understand you've completed step 20.
	ACDR	Roger.
	CC-H	And, Tom, we've got a picture of you right there, to the right of the hatch. Looks fine.
	ACDR	Okay.
	ACDR	He's got ...
	DMP	Yeah.
	CC-H	Deke, we had a picture of you there in front of the TV, and may we suggest you move to the right or the left of it.
	ACDR	You talking to me?
	CC-H	No, that was to - to the docking module pilot. Tom, yours looks just fine.
	ACDR	You want to get your - -
	DMP	I didn't hear your message there, Bo.
	DMP	Okay. You're talking about that camera. Oh.
	ACDR	Yeah.
	DMP	Okay. You didn't like the picture we had on the other one, huh? (Laughter) We can't fix that.

19 11 22	ACDR	Okay. And 37. He's at 40 right now.
	DMP	Damn. Got to perform a ... some time here.
19 11 40	ACDR	(Soyuz, this is Apollo. Now hatch 4 is open. Over. Roger. Roger.)
	CC-H	Go ahead, INCO.
	CC-H	Negative.
	ACDR	Oh, okay.
	DMP	Hey, I can hear it.
19 11 55	SFE	(Hatch 4 is open. We are now equalizing the pressure between the docking module and the Soyuz.)
	ACDR	Okay. ...
	MCC-H	CAP COMM, let's tell him we're not hearing any Soyuz crew remarks right now. We were a little while ago.
	ACDR	I didn't hear you transmit.
	DMP	Yeah. Opening.
	ACDR	(Is it open?)
	CC-H	Apollo, Houston. We're not hearing the Soyuz relay at this time.
	DMP	Okay. We think they said hatch 4 is open, but we're standing by to confirm it.
	CMP	Roger, Bo. Let's give it a check.
19 12 48	DMP	(Soyuz, this is Apollo. Hatch 4 is open?)
	ACDR	Something's shaking.
19 13 01	CMP	Okay, Bo, the configuration looks good.
	CC-H	We copy, Vance.
	ACDR	Oh, hell, that's Vance thrusting.

	DMP	I don't know.
	CC-H	And, Vance.
	DMP	(Soyuz, this is Apollo. Is your step 22 finished - completed? Over.)
	CC-H	Vance, on panel 10 - check that the PHONE/MIC INTERCONNECT is ON and the FM's ON.
	DMP	I think that's those guys shaking around there.
	CMP	Okay. The PHONE/MIC INTERCONNECT is ON. The F - VHF FM is on RECEIVE. And the setting's about 5.
	ACDR	We're running a couple of minutes behind ...
	CC-H	Thank you.
19 13 44	ACDR	How's that pressure?
	DMP	Well, it's staying right there. Looks like they're having trouble with their hatch.
	ACDR	Yeah.
	ACDR	(Soyuz, this is Apollo. How do you read me?)
19 13 59	SCDR	Hey, Tom, hatch 4 is open, open.
	ACDR	(Roger.)
	DMP	Good show.
19 14 05	ACDR	(We're now working on step 23, and we are equalizing the pressure between the Soyuz and the docking module.)
	CMP	Hey, Deke?
	DMP	Go ahead, Vance.
	CMP	Did you want panel 6 MODE to VOX to adjust sensitivity?
	ACDR	Okay. It's open, Deke. That's enough. It's open.
19 14 25	DMP	Yeah. Oh, boy, we might have missed a step here in - -

	CMP	We sure did.
	DMP	- - the comm configuration, Tom.
	ACDR	Hold it. Just a second.
19 14 28	CMP	Okay. You got it. How's that?
	DMP	When we stepped ahead. Where the heck was that? It's by the TV camera thing.
	CMP	Okay. Let me put it to VOX.
	CC-H	Docking module pilot, would you move to the right a bit, so we can see the picture?
	DMP	Roger.
	CC-H	Thank you.
19 14 55	DMP	Oh - somewhere.
	ACDR	Watch - back, back, back, back.
	CMP	It's right around - "Prepare Apollo TV."
	ACDR	It's back one more step.
	DMP	I think it's time - was around 41 minutes. I don't think we're to it yet.
	CMP	Okay.
	DMP	It's just ahead.
	CMP	Let's see - the time is - -
	DMP	Yeah, it was here. Yeah. Right.
	CMP	Okay.
	DMP	Okay.
19 15 24	CMP	About 52, I guess.
	ACDR	Okay, here we go. Now ask him to do it.

	DMP	Okay. But we got the valve open?
	ACDR	We got the valve open.
	DMP	Okay.
	CC-H	Apollo, Houston. We're still - not reading Soyuz comm, but we are reading you hot mike.
	ACDR	Okay.
19 15 45	DMP	Okay, Vance. Now, on panel 6, MODE to VOX.
	CMP	Okay, VOX -
	DMP	VOX sensitivity as required - approximately 7.
	CMP	Okay.
	DMP	On panel 98 - thumbwheel VOLUME down to eliminate squeal.
19 15 51	CMP	Okay. You got it.
	DMP	Great. Okay, that did it.
19 15 57	ACDR	(Soyuz, our step 23 is completed. We are now working on step 24.)
	DMP	Yeah. We're through with that, too, Tom.
	DMP	Right here - 25. ... Here, let me get the light on.
	ACDR	...
	DMP	... Camera. Just a sec. Yeah. We're right on schedule. Okay, there.
	ACDR	Okay. Go to unlock.
	DMP	The camera is running.
	DMP	Okay. Right on schedule.
	DMP	Perform hatch opening.

19 16 33	CC-H	Deke, Houston. We're not hearing Soyuz. Can you hear them all right?
	DMP	No. We're not hearing them, Bo.
	ACDR	(Soyuz, how do you read?)
	DMP	Are you hearing us?
	ACDR	(I am ready to open hatch 3.)
	CC-H	We don't hear them down here.
	DMP	... you reading us, Bo?
	CC-H	We read you, Deke, loud and clear but we do not read Soyuz.
19 17 01	DMP	Okay. Well, we're not reading them much either.
	ACDR	We - we can read them - a little bit.
	CC-H	Understand.
	DMP	Picture looking okay down there, Bo?
	CC-H	We've got a great picture of Tom and the hatch.
19 17 19	ACDR	All right. (Okay. I am opening hatch 3.)
	DMP	Okay, the camera - -
	ACDR-DM	Ah-hah! (Hello!)
	DMP-DM	It'll stay open.
	DMP-DM	Go ahead - go ahead, Tom.
	SCDR-OM	Sure is good ...
	ACDR-DM	Alexey ...
	SCDR-OM	...?
	ACDR-DM	Just a moment.
	ACDR-DM	Fantastic.

SCDR-OM ...

DMP-DM (How are things going?)

19 17 50 ACDR-DM Let's cut the film, then we'll cut in - turn it off, then we'll turn it on again.

USSR ...

DMP-DM Oh, listen. That's that ...

DMP-DM Okay, at 51, you're supposed to go into the Soyuz.

ACDR-DM Come in here and shake hands.

ACDR-DM ...

ACDR-DM (Come here, please.)

ACDR-DM Looks like they got a few snakes in there, too.

DMP-DM Yeah.

ACDR-DM They're almost as bad off as we are ...

19 18 57 ACDR-DM (Alexey. Our viewers are here. Come here, please.)

USSR ...

ACDR-DM (Yes. Come here.)

USSR ...

19 19 24 ACDR-DM Okay, turn on the camera; hit the REMOTE.

DMP-DM Okay.

ACDR-DM Here.

SCDR-OM Glad to see you.

ACDR-DM Glad to see you.

ACDR-DM Here.

SCDR-OM Deke.

	DMP-DM	(Very - very happy to see you.)
	SCDR-OM	...
	ACDR-DM	(This is Soyuz and the United States.) (Laughter)
	USSR-OM	(Laughter)
	ACDR-DM	... (Valeriy! Come here. Valeriy! How are things?)
	SFE-OM	Hello. I'm glad to meet you.
	ACDR-DM	(We too.)
	ACDR-DM	Okay.
19 20 29	CC-H	Command module, Houston. We're still not hearing Soyuz well. Are you hearing them?
	ACDR-DM	Loud and clear. Can you see us on your picture?
	CMP-CM	Rog.
	ACDR-DM	... there.
19 20 51	CC-H	Vance, in order to check the configuration, would you check on page S/1-40.
	ACDR-DM	(Laughter)
	CMP-CM	Say again.
	CC-H	We'd like you to check the configuration as per S - Systems Checklist 1-40.
	CMP-CM	Rog. Which checklist?
	CC-H	The Command Module Systems Checklist.
	CMP-CM	Roger. Rog. Okay.
	ACDR-DM	Yeah?
	MS-DM	(Laughter)
	SCDR-OM	It's a good picture?

	ACDR-OM	How do you read, Houston?
	CC-H	We read you loud and clear, Tom.
	ACDR-OM	Okay. Did you get the picture?
19 22 11	CC-H	Roger. We've got a good picture of the hatch and you people inside there, in the tunnel.
	ACDR-OM	Okay.
	ACDR-OM	(Do you have a book for me? A book?)
	SCDR-OM	(Moscow, this is Soyuz. Read you very well.)
	USSR	(... is over its own AOS.)
	ACDR-OM	Okay.
	DMP-DM	Tom, are you ready for the camera off yet?
19 25 40	CMP-CM	Are you reading Soyuz now?
	ACDR-OM	Hold on to that.
	DMP-DM	I'll just hold onto this ...
	CC-H	Apollo, Houston. Go ahead.
	CMP-CM	Houston, how's your comm now?
	CC-H	Roger. We read you well, Vance.
	CMP-CM	And Soyuz?
19 26 39	MCC-H	We're not reading Soyuz.
	CC-H	We are not reading Soyuz.
	USSR	(Moscow, this is Soyuz. How do you read?)
	CC-M	(I read you well. We are very grateful and excited by these warm words. And we will work even better.)
	USSR	(Thank you very much.)
	DMP-DM	Okay, Tom, I guess - -

19 27 31	CC-H	Apollo, Houston. We are now reading Soyuz.
	CMP-CM	Roger.
	USSR	(Everything is nominal. Have you turned off the other camera?)
	DMP-OM	...
	USSR-OM	(Once more we would like to thank you for these warm words and would like to say, in answer, there is so much to say, and we have so little time.)
19 28 36	DMP-OM	Bo, you reading us?
	ACDR-OM	Houston, Apollo. How do you read?
	CC-H	We read you well. Go ahead.
	ACDR-OM	Okay. Do you want Deke to give his headset now to Alexey?
19 28 55	CC-H	Tom, we would like everybody around the table and the TV set up, and then we'd like Deke to give his headset to Alexey.
19 30 28	CC-H	Apollo, Houston. We're getting a pretty good TV picture from the orbital module, but it appears to be upside down. Could you check the shoe?
	ACDR-OM	Oh, Jesus, ...
	ACDR-OM	...
19 31 08	ACDR-OM	Okay.
	DMP-OM	Got it?
	ACDR-OM	Going to have to turn it to - -
19 32 18	ACDR-OM	Okay, let me see.
	DMP-OM	I think we can get it, Tom, so it'll - -
	ACDR-OM	Okay.
	DMP-OM	- - look ...

ACDR-OM ... for a while ...

ACDR-OM Bo, how's your picture?

19 33 31 CC-H The picture looks good. If the f-stop is not full open, please open it.

ACDR-OM Okay. Turn.

ACDR-OM See that all right, Bo?

19 34 23 CC-H Apollo, Houston. It's still a little dark, but if that's full open, that's as good as we can do.

ACDR-OM Yeah, she's wide open.

DMP-OM It's wide open.

CC-H Roger. The only other thing is to verify that the proper lights are on in the Soyuz.

ACDR-OM Okay.

ACDR-OM ...

19 35 18 CC-H That looks good now, and we're ready for the SC's speech, sir.

ACDR-OM Okay.

19 35 51 ACDR-OM Okay. We got - Alexey's on Deke's headset. How do you read, Houston?

CC-H We read you loud and clear, and we have a good picture.

ACDR-OM Understand. And Alexey has on Deke's headset.

MCC-H The astronauts are on the line, sir.

FORD Gentlemen, let me call to express my very great admiration for your hard work, your total dedication in preparing for this first joint flight. All of us here in Washington in the United States send to you our very warmest congratulations for your successful rendezvous and for your docking and we wish you the very best for a successful completion of

the remainder of your mission. Your flight is a momentous event and a very great achievement, not only for the five of you, but also for the thousands of American and Soviet scientists and technicians who have worked together for 3 years to ensure the success of this very historic and very successful experiment in international cooperation. It's taken us many years to open this door to useful cooperation in space between our two countries. And I'm confident that the day is not far off when space missions made possible by this first joint effort will be more or less commonplace. We all look forward to your safe return, and we follow with - with great interest the success so far, and we look forward to talking with you on Earth again when you do end your flight. General Stafford, Tom, now that you've had an opportunity to test the new docking system, do you think it will be suitable for future international manned space flight?

19 38 32 ACDR-OM Yes, sir, Mr. President, I sure do. Out of the three docking systems I've used, this was the smoothest one so far. It worked beautifully.

FORD About 3-1/2 hours ago, I sat here in the Oval Office and watched the docking procedure. It looked awfully simple from here; I'm sure it wasn't that simple for the five of you. Let me, if I might - -

ACDR-OM ... it's a lot - -

FORD Yes, Tom. Let me say a word or two, if I might, to Colonel Leonov. The docking was a critical phase of the joint mission. Colonel, could you describe it, and would you describe the reaction of the crews on meeting in space after such a long preparation?

19 39 32 SCDR-OM Mr. President, I'm sure that our joint flight is a beginning for future cooperation in space between our countries. Thank you very much for very nice words to us. We'll do our best.

FORD Colonel, I think you and the other four have done very, very well so far, and may I congratulate you and your associates on this great achievement. Now, Dr. Slayton, Deke, you've had a very, very long

record of distinguished service preparing other astronaut crews for various space missions, and we're extremely pleased to see you on the crew of the first international manned space flight. As the world's oldest space rookie, do you have any advice for young people who hope to fly on future space missions?

FORD Deke, did you have a chance to hear my question?

DMP-OM No, sir, Mr. President, unfortunately.

19 41 12 FORD Can I repeat it and - -

DMP-OM Well, Tom just repeated it for me, sir. Well - yes, I have a lot of advice for young people, but I guess probably one of the most important bits is to, number one, decide what you really want to do and then, secondly, never give up until you've done it.

FORD Well, you're a darn good example, Deke, of never giving up and continuing, and I know it is a great feeling of - of success from your point of view to have made this flight *** your four associates.

DMP-OM Yes, sir.

FORD Vance Brand, I know that you're still in the Apollo and holding the fort there. It's been my observation that the crews on both sides have worked very hard to learn Russian on the one hand or English on the other. Has this training period, which is so important, stood the test in the complicated procedures that all of you must execute in this very delicate mission.

19 42 33 CMP-CM Mr. President, I believe it really has. I think, in a way, our project in - in particular, the training that we've undergone, has been a - sort of a model for future, similar projects. I think it's been a real pleasant experience to work on learning Russian and to be able to work with the cosmonauts, and I think we'll have some ideas that would probably help people in the future on similar tasks.

19 43 08 FORD Thank you very much, Vance. I might like to say a word or two to Valeriy Kubasov, the other member of the cosmonaut crew. I might say to him, as well as Colonel Leonov, I remember both of you, on that enjoyable Saturday last September, when both crews visited the White House and joined me in a picnic over in Virginia. We flew from the White House over to this picnic just across the river. We had some crab specialties that I enjoyed and I think you did. I'm sure you're having a little different menu, somewhat different food on this occasion. What are you having over there out in space?

SFE-OM We are having good spacefood. There are some Russian soup, some Russian ... (laughter), some juice, some coffee, and a lot of water (laughter). No beer; no crab.

19 44 39 FORD Well, let me say in conclusion, we look forward to your safe return. It's been a tremendous demonstration of cooperation between our scientists, our technicians, and, of course, our astronauts and their counterparts, the cosmonauts from the Soviet Union. I congratulate everybody connected with the flight, and particularly the five of you who are setting this outstanding example of what we have to do in the future to make it a better world. And may I say in signing off, here's to a soft landing.

19 45 27 SFE-OM Thank you, very much.

ACDR-OM Thank you, Mr. President. It's certainly been an honor to serve the country and work here.

FORD We'll see you when you get back.

19 45 36 ACDR-OM Yes, sir.

ACDR-OM ... 15.

ACDR-OM ... Deke?

DMP-OM Yeah?

ACDR-OM Okay, ... on that check *** ... Apollo TV setup. You got that setup done?

19 47 05	ACDR-OM	Houston, Apollo.
	CC-H	Roger, Apollo. We're standing by for your presentations.
	ACDR-OM	Okay. You're ready for the presentation now, and how much more time do we have on ATS, Bo?
	CC-H	We still have about 10 minutes.
	ACDR-OM	(Yes.)
19 47 27	ACDR-OM	Deke, come on down.
	DMP-OM	Okay.
	ACDR-OM	We got 10 minutes here, and we'll do it real fast.
	ACDR-OM	...
19 48 21	ACDR-OM	... Okay, Deke. Put on your helmet.
19 48 28	ACDR-OM	Turn on the TV.
	DMP-OM	Ready?
	MS-OM	... (Laughter)
19 48 39	ACDR-OM	(Alexey, Valeriy. Permit me, in the name of my Government and the American people, to present you with five flags for your Government and the people of the Soviet Union. May our joint work in space serve for the benefit of all countries and people on the Earth.)
	SCDR-OM	Your people ...
	ACDR-OM	Thank you very much, Alexey, thank you. (Thank you very much.)
19 50 01	CC-H	Apollo commander, Houston. We're still not hearing the Soyuz crew well. Could you ask them to check their FM configuration?
	ACDR-OM	Roger. (Houston says that - that they still don't hear you very well. Check your VHF FM.)

	DMP-OM	... Valeriy.
19 50 27	ACDR-OM	Valeriy will check it right now, Bo.
	CC-H	Roger.
	SFE-OM	Houston, Soyuz, how do you read me?
	CC-H	Roger. That time we read them - read them well. It seems that they are ...
	SCDR-OM	Houston, how do you read me?
19 50 54	ACDR-OM	Did you read Alexey then?
	CC-H	Roger. We did read him then.
	DMP-OM	If we're supposed to be on VOX, Bo, I think that's part of the problem. We're slipping or else not keying.
	ACDR-OM	(A very long day.)
	SFE-OM	A very long day.
	ACDR-OM	A very long day.
	CC-H	Roger, Deke; we agree. It seems they aren't coming through on VOX very well and, Deke, if you can move over to your right a little bit, it - we'd have you better in the picture.
19 51 32	DMP-OM	Well, we'll try that.
	DMP-OM	Yeah, okay, thank you.
	ACDR-OM	Okay. Valeriy's checked the VHF FM, and he said it's ON. (Please speak in your headsets.) Oh ...
	SCDR-OM	Houston, Soyuz. How do you read me?
19 51 57	CC-H	We read - (we heard you well now.)

19 52 06	SCDR-OM	Just now, Tom Stafford gave me - gave us little flags from American people and their - from American Government. Thank you very much for these very expensive presents. Soyuz crewmen - gave Soyuz flag to Tom Stafford from our people and from our Government.
	ACDR-OM	(Thank you, Alexey.)
19 52 44	SCDR-OM	A very long day. About 2-1/2 years.
	MS-OM	(Laughter)
	DMP-OM	Yeah.
	CC-H	Deke, Houston. We don't know if you can get to it, but if you can, would you check that the camera's in AVERAGE and not PEAK?
19 53 04	DMP-OM	In AVERAGE not PEAK. Okay, in work.
	ACDR-OM	I can try it, but ... on those things.
19 53 35	ACDR-OM	There it is.
	DMP-OM	You got two choices there, Bo. Which one do you like?
	ACDR-OM	That's lots better on the monitor.
	DMP-OM	...
19 53 47	ACDR-OM	Is that better, Bo?
	CC-H	Roger. That looks like a better picture now, Apollo.
	DMP-OM	Okay.
	ACDR-OM	What was it in?
	DMP-OM	Well, it was the opposite of what I just put it to.
	MS-OM	(Laughter)
	ACDR-OM	Yeah. Look at this - the monitor's - -

	ACDR-OM	... the gifts. Put the Amer - -
	DMP-OM	Got that done. Okay.
	ACDR-OM	Didn't we get a UN flag? Stow flags in the TSB.
	DMP-OM	Okay.
19 55 28	CC-H	Apollo, Houston. There are 2 minutes until LOS. We will see you at Vanguard at 1:38 transfer time.
19 55 36	ACDR-OM	Roger. 1:38 transfer time.
	DMP-OM	Okay. What do we do next here, Thomaso?
	ACDR-OM	What time do you have?
19 55 52	ACDR-OM	I got 30:26.
	DMP-OM	Yes ...
19 56 15	DMP-OM	I'll tell you, Tom, I think -
	DMP-OM	... connect those connectors here ...
	SCDR-OM	...
	CC-H	Command module, Houston. We would like you to turn the three TV POWER switches on panel 181 OFF.
19 56 52	CMP-CM	Roger. 181, the three TV POWER switches OFF.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

20 09 08	CC-H	Apollo, Houston through Vanguard for 7 minutes.
	ACDR-OM	Okay, Bo. We have the cables hooked up between the two spacecraft. How do you read?
	CC-H	We read you well, Tom.
20 09 20	ACDR-OM	And I'm now putting on the speaker ***
	CC-H	Understand you're putting on the speaker box.
	MCC-H	What's the problem?
20 10 48	ACDR-OM	Still reading us, Bo?
	CC-H	Roger. We still read you well.
	CMP-CM	...
	ACDR-OM	Yeah, Vance. I read you.
	ACDR-OM	Bo, how do you read through the speaker box here in the Soyuz?
	CC-H	Tom, we read - -
	ACDR-OM	Bo, how do you read through the speaker box. Over.
	CC-H	We read the speaker box although not quite as clear as the headset.
20 11 15	ACDR-OM	Okay, I can read you loud and clear through the speaker box, Bo. Thank you.
	ACDR-OM	Yeah, okay. Right, Vance.
	CC-H	Command module, Houston. Over.
	CMP-CM	Go ahead, Houston.
	CC-H	We'd just like to remind you about the maneuver at 55:52, so that we can have ATS when we come back into coverage.
	CMP-CM	Understand, Bo.

	SFE-OM	Vance, how do you read me?
	CMP-CM	(Valeriy - all right, Valeriy. Very good.)
	SFE-OM	(Okay, I read you also.)
20 15 13	CMP-CM	(Apollo, Soyuz.) (Laughter) (Soyuz, this is Apollo.)
	SCDR-OM	...
	CMP-CM	(Alexey, are you ready for inertial orientation?)
	CC-H	Apollo, Houston. We're going over the hill here at Vanguard. We'll see you at MILA at 17:00.
	CMP-CM	Roger.
	SCDR-OM	Ready for orientation.
	CMP-CM	(All right. We will be doing inertial orientation.)
20 33 15	CC-H	Apollo, Houston through MILA for 5 minutes ...
	ACDR-OM	Roger. How do you read, Bo?
	CC-H	Tom, we read you rather weakly.
	ACDR-OM	Well, the speaker box is on.
20 33 54	ACDR-OM	How do you read now?
	CC-H	We read you better now.
	ACDR-OM	We have the speaker box in here. I'm going to turn the speaker box off as long as we're in Soyuz.
	CC-H	Roger. We understand.
	DMP-OM	... He is eating his spinach.
	SCDR-OM	...
	DMP-OM	75 ... 2 ...
	CMP-CM	...
20 34 23	DMP-OM	We MARK 24. Thank you.

	CC-H	We MARK 24. Thank you. And we - during the rev - -
20 34 36	DMP-OM	MARK. And the 220 ...
	CMP-CM	... We show the ... coming up on our pass.
	ACDR-OM	Okay, Vance. How do you read? Okay.
	CMP-CM	Roger. About 30 seconds before we can update.
	ACDR-OM	Okay, Vance. Select flight ***
	CMP-CM	...
	ACDR-OM	Okay. You've already done it. Okay.
	CMP-CM	Yeah.
	ACDR-OM	Okay. If you - the step's already completed.
20 36 01	CC-H	Apollo, Houston. We will go LOS in less than a minute. We'll see you on ATS at 56:20.
	ACDR-OM	Roger.
	ACDR-OM	What's that in, phased elapsed time and transfer time, Bo?
	CC-H	I'll have to look that up, Tom. Hold on just a second.
20 36 35	CC-H	Right now, our transfer time is 2:05, and we'll have ATS at about 2:10.
	ACDR-OM	The ATS in 5 minutes. Thank you, Bo.
20 41 48	CC-H	Apollo, Houston. How do you read? Command module?
	CMP-CM	Loud and clear, Bo. And we've shift - switched off the VHF FM for a while.
	CC-H	Okay. And we would like you to turn those three TV POWER switches back ON on panel 181.
20 42 11	CMP-CM	Stand by.
20 43 07	CMP-CM	Okay, Bo. You've got VHF back, too.
	CC-H	Roger. And we're getting a TV picture. We see you, Vance.

	CMP-CM	Roger.
20 44 28	SCDR-OM	(George, we have an awful lot of work here, and we haven't paid any attention to that. We just can't find those joint documents.)
	SCDR-OM	Tom Stafford and Deke Slayton are sending best wishes to you.
	CMP-CM	(The command module also sends its greetings.)
20 45 25	CC-H	Apollo commander, Houston.
	ACDR-OM	Go ahead, Bo.
	CC-H	Sir, we'd like you to verify that you turned the speaker box in the Soyuz off.
	ACDR-OM	That's affirmative. I did.
	CC-H	Roger. We're getting a squeal, and we thought that maybe you hadn't had a chance to do so.
	ACDR-OM	No. I'll recheck it but - -
	CC-H	Understand.
	ACDR-OM	The speaker box is on in the docking module.
	DMP-OM	Don't you want that one on, Bo? It's supposed to be on per the Flight Plan but we can turn it off.
	CC-H	Roger. Why don't you try turning that one off, Deke, for us, please? Or whoever has a chance.
	DMP-OM	Okay.
20 46 29	DMP-DM	Okay. It's off. Is that any better?
	ACDR-OM	How do you read now, Bo?
	CC-H	That's much better.
	ACDR-OM	Yeah, I can tell we don't have a squeal now.
	DMP-DM	Okay.

	CC-H	And, Deke, while you're up there, if you could shift that camera on 874 so it looks down the hatch, we'd get a better picture. I'm sorry.
	DMP-DM	Okay. I thought it was. I'll check it.
	DMP-DM	Okay. How does that look to you?
20 47 24	DMP-DM	I can't tell much on this monitor, Bo. So you had - check it and let me know when you like it.
	CC-H	Roger, Deke. Hold on just a second, please.
	DMP-DM	Okay.
	CC-H	That's good, Deke.
	DMP-DM	Okay.
20 49 35	USA	...
	USA	(...)
	USSR	Switch 236.
	USSR	... 1764. ...
20 52 48	ACDR-OM	(Laughter) Houston, Apollo.
20 52 51	CC-H	Apollo, Houston. Go ahead.
20 52 53	ACDR-OM	Yeah, Bo. Are you getting ... picture in the orbit - in the Soyuz now - in the orbital module? All I can get on my monitor is just the - a screen. It's really - really brightened out.
	CC-H	Right now, we're looking at one - -
	ACDR-OM	Okay. Thank you.
	CC-H	- - down through the hatch, and we see that quite well.
	CC-H	The other camera we were getting a picture on, but you're often in front of it. But that's just supposed to be a stowage location for that camera.
	ACDR-OM	Okay.

20 53 37	ACDR-OM	Okay. We got the document set up.
	CC-H	Roger. You're getting ready to sign - -
	ACDR-OM	We're going to sign the document soon. Roger.
20 54 01	CC-H	Tom, we're looking over your left shoulder now, and we see the table quite well. So if you're getting ready to sign the certificate, that should be a good shot.
	ACDR-OM	Okay.
20 57 04	CC-H	Joint crew, something seems to be floating up the docking module tunnel. It's probably the certificate tube.
	DMP-OM	We'll recover the tube in a minute there, Bo.
	CC-H	Roger. I just didn't want you to be looking for it.
	DMP-OM	Thanks. Appreciate that.
21 02 31	CC-H	Command module, Houston. Could we have you open the lens on your TV camera wide open.
21 02 39	CMP-CM	Rog. Can do, Bo.
21 03 21	CMP-CM	It's all the way open, Bo. It has been.
	CC-H	Thank you.
21 07 39	ACDR-OM	Houston, Apollo.
	CC-H	Apollo, Houston. Go ahead.
	ACDR-OM	Yeah, Bo. Do you have a camera on in the orbital module?
	CC-H	I don't know - -
	ACDR-OM	...
	CC-H	- - sir. We're looking at the one down the tunnel at you.
	ACDR-OM	Let's take a look at the one in the orbital module.

CC-H Okay, we'll ask INCO. Roger. We see the one in the orbital module, and we see the tubes.

CC-H That's soup on the right - "soaks" on the right-hand side?

DMP-OM In English, you spell that c-o-c-k-a.

21 08 39 ACDR-OM What is the joke?

21 13 05 CC-H Apollo commander, Houston.

ACDR-OM Go ahead.

CC-H We're getting a good picture here, and we're wondering what you're eating down there. If you have a - -

ACDR-OM ***

CC-H - - chance, maybe you could tell us a little about it.

ACDR-OM Sure thing. Right now, I've just finished some strawberries, reconstituted. And Deke and I - Deke's eating some, too. We're getting ready to eat some borscht, that you can see here.

CC-H Roger.

ACDR-OM Got the tube.

CC-H We see the tube.

ACDR-OM After that, I'm going to have turkey with cran - apple and cranberry sauce. Also, I have apple juice here, which they made a little joke and had a different label on the other side of it. This says (unusual juice.) This something different. It's apple juice.

DMP-OM My menu is borscht and ... and Roquefort cheese and apple and cranberry - and apple and plum sticks and sweet apple juice. You can tell I like apples.

CC-H Roger on the apple juice.

21 15 01 ACDR-OM And this is "Jantar" cheese, known as "syr Jantar."

CC-H Amber cheese.

ACDR-OM And here is Russian bread, known as "...", little bitty, small, miniature loaves of it.

SCDR-OM Turkey.

ACDR-OM Turkey, which is "indeyka" (in Russian).

CC-H We can read it.

21 19 47 ACDR-OM Houston, how much more time do you have on ATS?

CC-H We have about 10 minutes left on ATS.

ACDR-OM Okay.

ACDR-OM I guess you're getting a good picture from the docking module looking down here in the tunnel, right?

CC-H We're getting both the picture through the tunnel and the one over your left shoulder.

ACDR-OM Okay.

ACDR-OM Here's cranberry dressing.

ACDR-OM You always have to have cranberries with turkey, right?

CC-H Say again, Tom. I understood the cranberries. I didn't understand the last.

ACDR-OM Usually have that with turkey.

CC-H Roger.

21 21 02 CC-H Command module, Houston. Over.

CMP-CM Go ahead, Bo.

CC-H Vance, we'd like you to check that the command module camera is on AVERAGE, and we'd like you to turn up the lights a bit, in the command module, if you can conveniently do so.

CMP-CM Okay. I'll see what we can do.

21 27 02 CC-H Apollo commander, Houston. We've lost TV. We're going to get a little bit of data here before we go over the hill.

	CC-H	Command module, Houston. Over.
21 27 36	CC-H	Command module, Houston.
21 28 05	CC-H	Command module, Houston.
	CMP-CM	Go ahead, Bo.
	CC-H	Roger. We're getting ready to go LOS here at ATS, and we'd like you to turn the three TV CAMERA POWER switches on 181 to OFF.
	CC-H	And, Apollo, Houston. There is approximately 1 minute until LOS. We'll see you at Vanguard at 57:21. That's about 3 hours plus 10 minutes transfer time.
	CMP-CM	Okay, Bo. You said about two words, and then you cut out completely. Sorry I didn't get your information.
	CC-H	Understand. I'll say them again. We would like the three TV POWER switches on panel 181 turned off. And we're going LOS; we'll see you at Vanguard at 57:21.
	CMP-CM	Okay, three switches coming OFF.
	CC-H	Roger.
21 29 52	CC-H	Apollo commander, Houston. If you read, do not do the TV camera relocation in step 38.
	ACDR-OM	All right, Bo. Sure will.
	CMP-CM	And we got one of our standards alarms, Bo.
21 30 08	CC-H	We copy.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

21 41 55	CC-H	Apollo commander, Houston through Vanguard for 6 minutes.
	ACDR-OM	Okay, Bo.
	CC-H	And could you tell us how you're progressing on your activities?
	ACDR-OM	We're still eating.
	CC-H	Understand.
	ACDR-OM	We're running a little late, but we'll get back with it shortly.
	CMP-CM	And, Houston, command module.
	CC-H	Go ahead, command module.
	CMP-CM	Have you guys worked on a computer patch for this computer alarm triggering thing?
	CC-H	Roger. We have one, and we're going to give it to you just before sleep, so that you can put it in then.
	CMP-CM	Okay, it's triggering quite often now.
	CC-H	Understand.
21 43 07	CC-H	Command module, Houston. Have you been getting any more CRYO PRESSURE alarms?
	CMP-CM	Negative. No more of those, Bo.
	CC-H	Thank you.
21 45 07	CC-H	Apollo - command module, Houston. Could we have you set a RESET on the computer, please?
	CMP-CM	Please repeat.
	CC-H	We'd like you to punch error RESET on the computer.
	CMP-CM	Right.

	MCC-H	We know what to do with the net, sir.
	CC-H	Apollo, Houston. There is 1 minute until LOS. Next AOS is Goldstone at 57:39 for 3:29 transfer time.
21 47 04	CMP-CM	Roger. See you then.
21 59 14	CC-H	Command module, Houston through Goldstone. How do you read?
	CC-H	Command module, Houston through Goldstone for 6-1/2 minutes. How do you read?
	CMP-CM	Read you fine. You were cut out by ground traffic. Please go ahead.
	CC-H	Roger. I've got a note here about this ICDU fail indication. Are you ready to copy?
	CMP-CM	Ready to copy.
	CC-H	First, just the prose. We want to inhibit the CMC generation of an ISS warning for ICDU fail indications.
	CMP-CM	Roger. Stand by. I've got to turn the VHF off to copy.
	CC-H	Roger.
22 00 22	CC-H	And, Vance, while you're down there, on 181, we need those TV camera switches back on.
	CMP-CM	Roger.
	CMP-CM	Ready to copy, Bo.
22 01 27	CC-H	Roger. We wish to inhibit the CMC generation of an ISS warning for ICDU fail indications. And this will keep false ICDU failures from turning on the caution and warning tone during the sleep period.
	CC-H	The jet on monitor EMP can - can be run in a normal fashion, and will still set the ISS warning for jet problems. To perform the inhibit, execute the following. Are you ready to copy?

CMP-CM Ready.

CC-H VERB 25 NOUN 7 ENTER, 1323 ENTER, 4 ENTER, and 1 ENTER. And you can do this any time you wish, now while we have data over Goldstone.

22 02 19 CMP-CM Okay, I understand that when I load this that the EMP will go into effect. The ICU [sic] EMP. And this is VERB 25 NOUN 7 ENTER, 1323 ENTER, 4 ENTER, 1 ENTER.

CC-H Right on the numbers.

CMP-CM Okay, I'll do it right now.

CC-H We're watching.

CMP-CM Okay, it's complete. I still have an ISS light on. I guess that won't harm anything.

CC-H I'll check on that with Guidance.

ACDR-OM Houston, Apollo.

CC-H Apollo commander, go ahead.

ACDR-OM Yeah, for one thing, Bo, you might have them check the frequency of the Los Angeles tower. It's coming through loud and clear.

CC-H Understand.

DMP-OM So is London, and Paris, and New York.

ACDR-OM I'll take that back, Bo. It's ground control, not tower.

CC-H Roger. Understand. Los Angeles grounds.

CMP-CM And where do we stand on the RCS curve these days, Bo?

CC-H Say again, Vance. You were cut out. I'm sorry.

CMP-CM Roger. Where do we stand on the RCS curve?

CC-H Let me check. Vance, I understand we're very close to nominal, very, very close.

	CMP-CM	Roger.
	CC-H	And, command module, Houston. We request that you terminate battery Alfa charge.
22 05 02	CMP-CM	Okay. Terminate bat Alfa charge.
	CC-H	Apollo, Houston. There is 1 minute until LOS. We'll see you on ATS at 57:52.
	CMP-CM	Roger. Understand.
	CC-H	And that's about 3 hours and 41 minutes, transfer time.
	CMP-CM	Okay, and we have most of the presleep checklist done in advance. Did you want any memory dump tonight, Bo?
	CC-H	Roger. Understand you've got most of that presleep finished.
	CMP-CM	Rog. One item on it is the E-memory dump, and I wondered if you'd like to have that.
	CC-H	Say again, Vance.
	CMP-CM	Page 1-49, E-memory dump, VERB 74.
	MCC-H	Okay, ... FIDO.
22 13 06	CC-H	Apollo commander, Houston. It looks as if Moscow was trying to call Soyuz through the ship.
	ACDR-OM	...
22 16 05	CC-H	Apollo commander, Houston. We see you around the table there through ATS.
	CC-H	Docking module pilot, Houston.
	DMP-OM	Yes, go ahead, Bo.
	CC-H	Deke, it looks like to save a little time, we could do steps 49 and 55 together, when you get to that point.
	DMP-OM	Okay.

	CC-H	49 is the hatches 3 and 4 integrity check, and 55 is the multi furnace - multipurpose furnace operations.
	DMP-OM	Okay.
	CC-H	And, command module, Houston.
	CMP-CM	Go ahead.
	CC-H	We'd like you perhaps to do step number 59, which - 57, which is the getting the hoses ready, when they're coming back.
	ACDR-OM	Sure. No sweat.
	DMP-OM	Okay, Bo, that's 49 and 55, you said?
	CC-H	That's right, Deke. Steps 49 and 55 together when - you get to them.
	DMP-OM	Okay.
22 19 13	CMP-CM	Okay. Houston, Apollo. Got a P52 option 3 here for you a few minutes early, if you're watching.
	CC-H	Negative. We are not watching at this time.
	MCC-H	Go ahead.
	ACDR-OM	(Valeriy, come into the docking module.)
	DMP-OM	Bo, the DP.
	CC-H	Go ahead, sir.
22 22 02	DMP-OM	I presume at this stage of the game you're interested in expediting things ASAP. Is that correct?
	CC-H	Roger. That's affirmative.
	DMP-OM	Okay.
	DMP-OM	That influences my activities here in the furnace once they get started. Thank you.
	CMP-CM	Houston, command module.
	CC-H	Go ahead, command module.

22 22 28	CMP-CM	Okay, here's the results of P52. Stars 44 and 35, NOUN 5, all balls; NOUN 93, X, 00.019; Y, 00.042; Z, minus 00.00.
	CC-H	Understand. Stars 44 and 35, all balls; plus 19, plus 42, and all balls.
	CMP-CM	Roger. Except Y is minus 42.
	CC-H	Understand. Minus 42.
	CC-H	Command module, Houston. How do you read?
	CC-H	Command module, Houston. Do you have a torquing time for us?
	CMP-CM	CM. Please repeat.
	CC-H	Roger. We would like a torquing time, if you have it.
	CMP-CM	Okay, you're - you're echoing. I understand you want some kind of time. Let's see, we've been into the transfer 3. Stand by.
	CC-H	Command module, Houston. We would like a torque time.
	CMP-CM	Oh, okay. Rog; 03:52:50.
	CC-H	Roger. Transfer time of 03:52:50.
	CMP-CM	Rog.
22 24 57	CC-H	Command module, Houston. We never did get a good time hack from you on the transfer time. We have - coming up on 03:54:05 -
	CC-H	NOW.
	CMP-CM	Yeah, you're right on. I've got 03:54:15 -
22 25 17	CMP-CM	MARK.
	CC-H	Thank you.
	ACDR-OM	Bo, I'll be working on the multi furnace - pur - multipurpose furnace shortly and getting closed out.

	CC-H	Roger. Understand.
	ACDR-OM	And we've already added the nitrogen.
	CC-H	Understand you've added the nitrogen. How much?
	DMP-OM	20 millimeters.
	ACDR-OM	20 millimeters.
	CC-H	Understand. 20 millimeters.
	DMP-OM	We're up to 537, total.
	CC-H	Understand. 537, total.
	CC-H	Docking module pilot, Houston.
	DMP-OM	Go ahead, Bo.
22 29 42	CC-H	We've been having some problem with the - the gas in the furnace, and we'd like to tell you that it's important that you tighten those valves tight when you do the procedure, and see if that might help our leak.
	DMP-OM	Okay.
	CMP-CM	Houston, Apollo.
	CC-H	Go ahead.
22 30 51	CMP-CM	Okay, per the presleep checklist, I'm to report to you BAT C volts are 37, PYRO BAT A volts are 37, and PYRO BAT B volts are 37.
	CC-H	Understand. All 37.
	CMP-CM	And happy to give you a - VERB 74 if you want it - per the procedure.
	CC-H	We're not quite ready for that. We'll give you a call, sir.
	CMP-CM	Right.
22 33 31	CC-H	We see the "coming in" sign.

ACDR-OM I'll pan this, Bo, on the closeout.

CC-H "Welcome aboard, Soyuz." We see that, too. And the sketches. It's upside down right now, but I guess in space it doesn't make any difference. We read, "Oh, brave new world that has such people in it." It's still a little upside down. Do you see that sketch of Deke with his cowboy hat? And Tom next.

ACDR-OM That's some of Alexey's art.

CC-H Roger.

ACDR-OM Here's another one.

CC-H I guess that's Vance and you, Tom, huh?

ACDR-OM Yeah. It says (Welcome Soyuz.)

CC-H We see the ... again.

ACDR-OM Okay. I'm going to locate it - this camera down on TA-2.

ACDR-OM Houston, Apollo.

CC-H Apollo commander, Houston. Go ahead.

22 36 13 ACDR-OM Okay, Bo. I'm getting this located on TA-2 on step 42.

CC-H Understand. On step 42.

ACDR-OM I know I'm supposed to look up at the hatch, but it looks like it's going to be difficult from this angle. I don't know, even though we fitted it before over at Baykonur.

CC-H It looks pretty good. We can see the hatch.

22 41 11 CC-H Docking module pilot, Houston. When you move the TV camera to 873, verify that it is AVERAGE.

DMP-OM Okay, Bo.

DMP-OM Bo, you want that ... on the back to be AVERAGE. Right?

	CC-H	Roger, Deke. We would like it in AVERAGE.
	CC-H	Docking modu - module pilot, Houston.
	DMP-OM	Okay, Bo.
22 47 25	CC-H	When you did the experiment activ - putting it into the furnace, did you do steps 8, 9, and 10 on page 7.2 of the Docking Module?
	DMP-OM	Yes. Affirmative.
	CC-H	Understand.
	ACDR-OM	Hey, Valeriy. (We'll see each other tomorrow.)
22 51 30	DMP	Okay, Bo. If you read, we're both back in the DM and the hatch is going LOCKED.
	CC-H	Roger. Understand. You're in the DM.
	DMP	(Hatch 3 closed. Good, Valeriy. Yes. Thank you.)
22 53 43	DMP	(4 closed.)
22 56 20	SFE	Number 4 closed.
	ACDR	(Roger. We are getting ready for a new pressure dump from tunnel 2. Over.)
	SFE	(Apollo, Soyuz. We are ready for tunnel 2 depressurization.)
22 57 56	ACDR	Roger. And I'm beginning to dump the tunnel 2 pressure.
	SFE	I'm monitoring.
	DMP	...
	CC-H	Command module, Houston. Over.
	CMP	Go ahead.
22 59 48	CC-H	On panel 181, we would like the three TV CAMERA POWER switches turned OFF.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

22 59 56	CMP	That's the end of our TV for tonight, huh?
	CC-H	Roger. They've been getting a little warm, and so we've been turning them off here when we don't have TV.
	CMP	Okay.
23 00 17	ACDR	(Access to the docking module from the Soyuz is closed.)
	SCDR	Roger, Tom.
23 00 45	CC-H	Apollo, Houston. There are 2 minutes until ATS LOS. We'll see you at Orroral at 58:44. That's about 4 minutes from now.
23 00 54	ACDR	Okay.
23 01 55	DMP	Hey, Bo, this is DP. How do you read?
	CMP	Houston, Apollo.
	ACDR	Yeah.
	ACDR	No, stand by. We ought to have them on ATS yet.
23 02 29	CC-H	Apollo, Houston. Did you call?
	ACDR	Bo, are you still there?
	CC-H	Roger. Still here.
	DMP	Yeah, Bo, DP here. Can you read?
	CC-H	Say again. And we are just ready to go over the hill.
23 02 39	DMP	Okay. We're supposed to have had a greater than 4 on the voltmeter for the furnace pressure. I'm reading 3.6 here. I'm supposed to inform you and stand by.
23 02 50	CC-H	Understand. We're going over the hill. We understand 3.6 instead of 4.

23 05 30	CC-H	Apollo, Houston through Orroral for another 3-1/2 minutes.
23 05 35	DMP	Okay, Bo. DP here again. That pressure is slowly decreasing, so maybe we're just going to have to wait until we get to the proper time on that step.
23 05 45	CC-H	Roger. Just suspend furnace - -
	SFE	Apollo, Soyuz. How do you read me?
	CC-H	- - operations for now, and we'll call you back.
	ACDR	(I hear you excellently, Valeriy.)
23 05 52	SFE	Hatches number 3 and 4 leaking.
	ACDR	Say again. (Repeat, please.)
	SFE	- - number 3 and 4 leaking.
	ACDR	(You have a big leak or a small one?)
23 06 18	CC-H	Docking module pilot - -
23 06 19	SFE	Delta-P is - -
	CC-H	- - Houston. You have clearance to proceed with furnace operations.
	SFE	- - 6 millimeters for 6 minutes.
	ACDR	I think it'll cool down that much in that period of time. I can't read that on my gage, Bo.
	SFE	...
	CMP	(Valeriy, maybe you are forgetting the temperature.)
	SFE	No, no, no.
23 06 53	CC-H	Apollo, Houston. We're getting a lot of interference with our communication. If you can turn down the speaker box, it probably would help.
	CMP	(... Valeriy.)

	SFE	6 millimeters for 6 minutes.
	CMP	(Just a little bit), huh?
	SFE	We must open and close the ...
23 07 29	CC-H	Apollo, Houston. There is a little over a minute until LOS. We would like you to proceed with furnace operations with the current pressure. And we'll see you at Hawaii at 59:02.
23 08 15	CC-H	Apollo, Houston. Did you copy my last transmission about the furnace?
23 08 50	CC-H	Apollo, Houston.
23 09 05	CC-H	Apollo, Houston in the blind. Would you have the Soyuz crew go to SIMPLEX AM?
	SCDR	Yes. (For a period of 5 minutes. Over.)
23 09 34	CC-H	Apollo, Houston. Over.
23 09 47	ACDR	Okay. You want to repressurize?
23 22 56	CC-H	Apollo, Houston. We're AOS through Hawaii for 6 minutes. How do you read?
	ACDR	Okay, Bo. And we've had one problem. Let's talk about it right away.
	CC-H	Okay. Understand, the problem with tunnel 2. And could we go ahead and have the Soyuz go SIMPLEX AM so their guys can uplink to them through Hawaii?
	ACDR	Okay.
23 23 19	ACDR	(Soyuz, Apollo; right now, turn on SIMPLEX AM, please.)
	ACDR	(Soyuz, how do you read me?)
	SCDR	I read you loud and clear. Just a moment.
	ACDR	(Moscow wants to talk to you.)
	CC-H	Okay, Tom. We're standing by for your status report.

	ACDR	Okay, Bo - Pardon me - Crip. On this one, I couldn't see any decrease in our pressure. Our rule says that if it's less than 15 millimeters for 5 minutes, it's okay. I guess they have a rule that if it's greater than 1 millimeter for 6 minutes, it isn't okay. So there's a big discrepancy between ground rules, I guess, that somebody overlooked.
	CC-H	We - we're aware of that, Tom, and I guess - -
	SCDR	(I heard you.)
	CC-H	We're looking at the procedure on - in your Docking Module Checklist, 8-4, where that gives the check, and we're assuming that you all have progressed there.
	SCDR	(Soyuz; how do you read?)
23 24 33	ACDR	Right. We've already gone through it; reequalized the pressure, opened the hatch, pumped the pressure up, and equalized with them. We've had both hatches open again, and now we're doing another one.
	CC-H	Copy that.
	ACDR	But I think when you bleed the pressure down, it's going to decrease the temperature in that tunnel, then the pressure is going to fall off some more.
	CMP	Yeah.
	CC-H	We concur.
23 24 59	SCDR	(Capital, Moscow.)
	SCDR	(Moscow, Soyuz. Do you hear us?)
	SFE	(Moscow, this is Soyuz. I hear you well.)
	SCDR	(Did you hear Soyuz?)
	SCDR	(I heard you beautifully.)
23 26 08	SCDR	(Now, we are observing Mexico.)

	SCDR	(... millimeters.)
	SCDR	(Repeat, repeat.)
	SCDR	(Valve is closed now.)
23 27 30	ACDR	Okay, Bo. It's the end of - of 6 minutes here, nearly. I can't see any change in ours. Of course, our gage does not have the fineness that theirs does.
23 27 42	CC-H	Roger. Copy that. And we're about a minute from LOS, Tom. And next station contact is going to be Goldstone in 6 minutes. And I guess if Deke is just standing by waiting on that, we suggest that he can go ahead and press on with the furnace operations.
	DMP	Yes. I'm already pressing through with that now.
	DMP	...
	SFE	(This check was already said on SIMPLEX AM.)
	SFE	(...)
23 28 45	CC-H	Apollo, Houston. Why don't you just stand by on the hatch thing, instead of trying to repeat it if it's flunked again from the Soyuz, and we'll let it try to stabilize a little bit. We'll talk to you at Goldstone about it.
23 28 57	ACDR	All right. Real good, Crip.
23 34 01	CC-H	Apollo, Houston. We're AOS through Goldstone. We've got you for 3 minutes.
	ACDR	Okay.
	CC-H	Apollo, Houston. AOS through Goldstone for 3 minutes.
	CMP	Roger - -
	ACDR	Roger. Read you - -
	CMP	- - got you.
	ACDR	- - loud and clear. How us?

	CC-H	Loud and clear, also, now.
	ACDR	Okay, is Moscow still talking to them?
	CC-H	That's a negative, we're not configured for that right now. I guess we're - I understand that their test still was failing. Can you give us the amount of delta-P it was failing on?
	ACDR	Stand by. We haven't heard from them in a while.
23 34 41	ACDR	(Soyuz, Apollo.)
	SCDR	*** ahead, Tom.
	ACDR	(What is pressure of hatch number 3? Over.)
23 34 51	SCDR	Delta-P is 10 millimeters for 10 minutes.
	ACDR	I understand. (10 millimeters, 10 minutes, right?)
	SCDR	You are right.
	CMP	Rate of 1 millimeter a - -
	ACDR	Yeah. Evidently, they're saying 1 millimeter a minute again. I can't see any change on my gage in here, Crip.
	CC-H	Roger. We copy that. Our gage just doesn't have that resolution, of course.
	ACDR	No, we sure don't.
	ACDR	Why don't you relay that to Moscow. I mean, I'm sure you are, but - -
23 35 46	CC-H	We'll get that word to them.
23 36 50	CC-H	We'll see you in Newfoundland in 7 minutes.
	ACDR	Say again.
	CMP	Rog. 7 minutes over Newfoundland.
	CC-H	Rog. And just hold up on that pressure thing. We'll try to talk to you a little bit more about it there.

	CMP	Okay.
23 37 02	DMP	And the furnace is running.
	CC-H	Copy, furnace running.
23 44 04	CC-H	Apollo, Houston, we're AOS Newfoundland, and got you for a total of about an hour here. And we have coordinated with Moscow, and you're GO to continue in your procedures with the delta-P integrity check that we've had.
	ACDR	Okay, good. Yeah. I said, we'd better give you a call, because our CO_2's getting up to 15. There's no problem, but we just wanted to tell you.
	CC-H	Copy that. Press on with it, then; get it out.
	CMP	Did they say what action they'll take over in Soyuz?
	CC-H	I guess we're - we're just going to go ahead and continue with no action right now and just keep a - keep an eye on it.
	ACDR	Okay, Bo. Just to reconfirm, you want us to go ahead and - and go ahead and go through our transfer back in the command module - affirmative?
	CC-H	That is affirmative, Tom. We want you to continue on.
23 45 17	ACDR	Okay. Real good.
23 48 13	CC-H	Command module, Houston. Vance, if you can, we're a little bit out of our attitude, and we want to make sure we got ATS all tied up through this evening. If you could just - do us another VERB 49 to get back on, we would appreciate it.
	CMP	Okay, Bo. Be glad to. Interesting, though, I don't know how we quite drifted out.
	CC-H	We assume that you did it during your P52 when you were in FREE.
	CMP	Perhaps.

	CC-H	Yeah. We've - seen that occur, you know, when we were running sims down here. And it has occurred a couple of other times a little bit earlier in the mission.
	CMP	Okay.
23 49 42	CC-H	Apollo, Houston - for the command module. Vance, if you'll go ahead and give us ACCEPT, we'll go ahead and - load your jet on monitor for you.
23 49 52	CMP	Okay, you have POO and ACCEPT, Crip.
	CC-H	Rog. And you're squared away with what we did on your masking that ICDU problem. We're confident that this jet on monitor will - would handle any problems that really come up in your ICDU tonight.
	CMP	Okay, fine, and is there anything in particular I'm prohibited from doing with the computer?
	CC-H	That's a negative.
	CMP	Okay.
	CC-H	The only - the only thing that would reset it - would enable that failure bit again, was if you did a VERB 40 for some reason. Which we don't - there's no reason you should be doing it.
	CMP	That's right. Okay.
23 54 10	ACDR	(... Valeriy.)
23 54 13	CC-H	Apollo, Houston. Are you calling?
	DMP	... Soyuz calling.
	CC-H	I'm sorry, Deke. If that's you, you're unreadable.
	DMP	Rog. That was Soyuz calling.
	CC-H	Sorry about that.
23 54 30	ACDR	(Soyuz, Apollo. How do you read?)
	ACDR	(I read you well, Alexey.)

	ACDR	(Speak, Soyuz.)
	ACDR	(Understood you.)
23 59 51	ACDR	Okay, Vance. I'm going to open the equalization valve.

00 00 02	ACDR	(Alexey, I hear you excellently. How me?)
	ACDR	(Yes. Roger. Right now, pressure is zero, isn't it? I understood you.)
	DMP	(Right now, we are opening hatch 2.)
00 00 53	CC-H	Apollo, Houston. Tom and Deke, we hear you talking to Soyuz. And, I guess, for Vance, we're not hearing the downlink on relay. Did we change that configuration on panel 10 at all?
	CMP	Okay, Crip. A little while ago, we were doing something important and that. We had an LA tower or somebody cutting in. So, yes, I turned it off. Sorry about that.
	CC-H	Okay. Understand. If you don't mind turning it back on, we'd appreciate it.
00 01 21	CMP	Okay. You got it back.
	CC-H	Were they trying to clear you up for a landing or something?
	CMP	Sounded like they were clearing somebody else.
	ACDR	Yeah. Too far left.
	CMP	They wouldn't ever talk to us. So we got mad and shut them off.
	CC-H	Well, that'll teach them.
00 01 40	ACDR	Okay. Hatch 2 is open, Crip.
	CC-H	Rog, Tom. Very good.
00 01 51	ACDR	(Soyuz, Apollo. Hatch 2 is open.)

	SCDR	... 2 is open. *** to do, Tom?
00 02 11	CMP	(Repeat, please, Alexey.)
	SCDR	What did you say?
00 02 21	CMP	(What did you say?)
	SCDR	Ask him, what is he going to do?
00 02 34	ACDR	(Right now, we are crossing over.)
	CMP	(Tom wants to sleep.)
	SCDR	It is a good idea.
00 02 55	CC-H	I imagine you guys are getting a little bit tuckered by now.
	CMP	Oh, just somewhere in the middle to a little bit tuckered, yeah.
	CC-H	Well, we hope that you can get it squared away and get to bed here pretty quick. Incidentally, next time somebody's up in that vicinity, we'd appreciate another delta-P reading on hatch 3.
00 03 30	CMP	Okay. That's in work.
	CC-H	Okay. I'm sorry. I didn't want to make anybody make a special trip.
00 03 43	DMP	Okay, Crip. We're back on the air here, and I'm reading about a - as close to zero as you can read.
	CC-H	Okay. Very good. Thank you, Deke.
	DMP	Roger.
00 04 10	DMP	Okay. And, Crip, I've completed step 54 here, and went through 55 earlier, and I'm kicking off on 56 now.
00 04 27	CC-H	Okay, Deke. Real fine.

	CMP	Crip, for a first timer, it sure is interesting to see how easily you can lose things up here. I've lost my spoon twice now and I was really worried about it, and each time I saw it flying by just a little bit later. So, it seems you don't lose things permanently.
	CC-H	Well, that's good to hear. I imagine there's probably plenty of places for them to get lost. Unfortunately, we don't have that little screen like we had back on Skylab to collect things there.
	CMP	That's right.
	CC-H	Vance, talking about atmosphere a little bit, can you tell us when you got the LiOH can in today?
	CMP	We put one in first thing this morning.
	CC-H	Okay.
	CMP	And we haven't done anything since.
	CC-H	Yeah. You'll notice that a little bit later, you got one scheduled for this evening, too.
	ACDR	...
00 06 29	CMP	Okay. I guess we - we'll have to check that.
00 08 14	ACDR	Crip, how do you read back - me back in the command module?
	CC-H	We're reading you loud and clear now, Tom.
00 08 19	ACDR	All right.
00 11 51	CC-H	Apollo, Houston. We've finished with the computer, and you can go ahead and go back to BLOCK, and you can go ahead and give us that E-memory dump anytime now - anytime you're ready.
00 13 18	ACDR	Houston, Apollo. Do you read? Over.
	CC-H	Loud and clear, Tom. Go ahead.
	ACDR	Are you reading Vance?

	CC-H	Negative. I'm reading you loud and clear, but I have not heard Vance call.
00 13 36	ACDR	Okay. Here comes the VERB 74, Crip.
	CC-H	Okeydoke.
00 19 09	CC-H	Apollo, Houston. We show that you're still in ACCEPT. You can go back to BLOCK on the computer. And, Tom, if you got a few minutes, we'd like to talk to you about where you are this evening as far as getting to bed and about getting up in the morning.
	ACDR	Okay, go ahead.
	CC-H	Okay, had a little squeal there on the - coming through the squawk box. The - I guess it looks to us like you're probably pretty close to an hour away from getting to bed, and that's going to make wakeup come - come kind of early in the morning. Do you still feel like you want the call as we previously talked about it, to get you up on time? Are you interested in - -
	ACDR	Stand by.
	CMP	How early was that, Crip? We're discussing it; we forgot.
	CC-H	Okay. 66:40 is when we were going to give you a ca - call. That's about 6 hours and 40 minutes from now.
00 20 28	ACDR	Well, I think we can keep pressing on. We'll try to keep pressing on the same Flight Plan then.
	CC-H	Okay; your option. Men of steel.
00 21 42	CC-H	Apollo, Houston. We've still got about 20 minutes of this ATS pass and a little bit of Orroral Valley. And, Tom, we had - understand your concern about keeping everything on time. You might continue to think about it. If you change your mind before we go LOS here, well, just let us know.
00 22 03	ACDR	All right, Crip.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

00 34 36	CC-H	Apollo, Houston. You gents have time to chat about a few more items before I say good night to you?
	ACDR	Go ahead.
	CC-H	Okay, Tom. Just to make us feel comfortable with the tunnel 2 situation, we would be interested in getting a - one more delta-P reading, if we could, off of hatch 3. I would like to also tell you that with that problem we've had with the ducer in O_2 tank 2 there is a potential that you might end up getting a CRYO PRESS C&W tonight. That - your option as to whether you want to turn off the speaker box and put a guy on a headset for the evening, but - whatever way you feel comfortable. We don't think it is probable but it is possible. Also, one other item, I don't know whether you worked it in or not, but if Vance did get a height measurement, we'd be interested in it just for recordkeeping purposes.
00 35 41	ACDR	Okay, the thing was ..., and the answer ...
	CC-H	I'm sorry, Tom. I could not read you.
	ACDR	Okay. We didn't get it in the time line.
	CC-H	Okay. I understand we did not get the height measurement.
	ACDR	Negative. We'll get you some more stuff later on. We're going to go to bed.
00 36 02	CC-H	Okay. I'm going to go ahead and say - -

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

REST PERIOD - NO COMMUNICATIONS

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

06 55 39	SCDR	(Moscow, Moscow, this is Soyuz. How do you read me? Over.)
06 56 02	SCDR	(Moscow, this is Soyuz. How do you read?)
06 56 37	SCDR	(Moscow, Moscow, this is Soyuz. How do you read?)
06 56 55	SCDR	(Moscow, this is Soyuz. I read you poorly, with interference.)
06 57 03	SCDR	(Moscow, Soyuz. How do you read?)
06 57 13	CC-M	(I read you well. Good morning.)
	SCDR	(We've had enough sleep, enough rest. We're working now.)
	SCDR	(... Once we got 10 millimeters it remained on that level. The DV pressure is 190. The total pressure is ...)
	CC-M	(We know the reason, and our recommendation ...)
		(Music: Midnight in Moscow)
06 59 10	USSR	(On the line.)
	SCDR	(What other forms do you have?)
	CC-M	(I think we should check the time and correct the gyro position.)
07 00 26	USSR	(Right away. Over.)
07 00 38	CC-H	Good morning, Apollo. We are with you through the end of an ATS pass. We're about to go LOS. Our next station contact will be Santiago in 41 minutes. I know it's kind of early to start a day, but, might as well get up and get with it. Incidentally, we're not positive whether you guys chlorinated your water last night. If you did, you left the potable water valve closed, and it would be kind of potent if you took a drink out of it.
07 01 07	DMP	It would be what, Crip?

	CC-H	Be kind of strong if you took a drink out of it. So if you did - if you did chlorinate, you better open up the potable water valve for a while before you - before you take anything to drink. If you didn't, you're probably going to need to chlorinate it before drinking out of it.
	DMP	Okay, stand by. We'll check that.
07 01 26	CC-H	Okay. That is something that Vance would probably normally do in the presleep checklist. That's where it's called out, and we're just not sure whether you did it or not.
07 01 38	ACDR	Hey, Vance?

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

07 41 36	CC-H	Apollo, Houston. We are AOS through Santiago. It's a real short pass. About a minute and a half.
	DMP	Okay, Crip. We're with you.
	CC-H	Roger. For that upcoming pass, we've got - I've got a new stop time for the camera, if somebody wants to note it down.
	DMP	Please stand by just a minute. ... see my ....
	CC-H	That's on the rev 39.
07 42 37	DMP	Okay, Crip. Go ahead.
	CC-H	Okay. The start time is the same. The stop time is now 68:04:10. And we're about 30 seconds from LOS. We'll have you again when you lock on the ATS. And we should be able to get you at about 67:39. 67:39.
	DMP	67:39.
07 43 03	CC-H	Roger. That's about 16 minutes.
07 55 55	CC-H	Apollo, Houston. We're talking at you through the ATS. Should have you about 40 minutes.
08 01 37	CC-H	Apollo, Houston. We're talking at you through the ATS. Got you for about 33 minutes.
	DMP	Okay, Crip. We prepared breakfast here, and I'm just coming up on the first Earth obs pass, and the mapping camera is running, and we're waiting to see something.
	CC-H	Very good. Coming up on the tip of Africa right now looks like.
	DMP	That's affirm. We're still over the water.
08 05 18	CC-H	Apollo, Houston. We'd be interested in finding out what the status of the POTABLE INLET valve is, whether it is open or closed, and what went on regarding chlorination, if you can help us out, please.

	CMP	Okay. Good morning, Crip. Give you some words on the water.
	CC-H	Okay, Vance, we'd appreciate it.
	CMP	Okay. I chlorinated last night, and per the procedure had the POTABLE INLET valve OPEN. And afterwards closed it because I supposed you still wanted to be filling up the waste tank. I had a drink about 10 minutes after I chlorinated that didn't taste too bad. And I've been drinking it quite a bit this morning and - tastes great. The valve is still closed, but I'll try to get through the junk to open it if you want it.
08 06 54	CC-H	Okay, Vance, we'd like to go ahead and have it OPEN. And the reason we call for it, is that we've had some problems in the past with - with that thing closed, and not getting good circulation through there, and giving you a pretty good blast of chlorine. That was why we alerted you to it.
	CMP	Okay.
08 07 50	CC-H	Apollo, Houston. I am going to need to get some updates to today's activities to you, primarily regarding the furnace, and the fact that we got the sample in there a little bit late, and we're going to have to modify how we handle the sample as far as cooling it down. And I was trying to do it, if I could, without interfering with Deke's pass coming across here. You guys help me out there, when you think you might be able to copy some of it down, without interfering with your breakfast.
	CMP	Okay, why don't you let us wait a little while. We're getting a little tied up here.
08 08 25	CC-H	Okay, fine.
08 11 46	ACDR	Hello, Houston; Apollo.
	CC-H	Good morning, Tom. Go ahead.
	ACDR	Well, we're doing a bunch of things at one time here, but let me give you the crew status report.

CC-H Oh, we'd appreciate hearing that.

ACDR First of all, we're still very much alive and healthy. Feel in great shape, but to the more mundane things. Ready to copy?

CC-H Yes, sir. Shoot it at us.

08 12 26 ACDR All right. For yesterday: I ate all my breakfast. For meal 2, there wasn't much time and we used a snack, and that's all there was - had jerky, apricots, and orange-pineapple juice for meal 2. For the third meal over in Soyuz, it was like at Tashkent; ate everything in sight.

CC-H Brave man. How were the ears?

ACDR Roger. (Laughter)

ACDR Okay, I had 5 hours of good sleep. I had three Lomotils, just as a prophylactic mode. And I'm full up to my ears with fluid. And my dosimeter - same as the day I launched - 11001. Okay, for the CP. Ate everything for breakfast. He had the same kind of snack for the second meal; he had an orange-pineapple drink, jerky, and apricots. And for the evening meal, he had everything but the romaine soup. 5 hours of good sleep. He had two Lomotils - same mode, just a preventive. Estimates 90 seconds of fluid. PRD reading, 48107. For the DP, ready to copy?

08 14 32 CC-H Yes, sir.

ACDR Okay, he had everything for breakfast plus two orange drinks - orange-pineapple drinks. For - he had the same thing for lunch, apricots, jerky, and an orange-pineapple drink. Evening meal was over in Soyuz, with everything. Okay, his PRD reading is 61004. 5 hours of - 5 hours of excellent sleep, two Lomo's in a preventive mode, and estimates 20 gulps.

CC-H Tom, Surgeon would appreciate knowing when you took the Lomotil and also they - doesn't really recommend taking it prophylactically.

ACDR Yeah, we all had them before we went to bed last night, but what was the last comment?

08 16 31 CC-H Under - understand you took them before you went to bed, was that right?

ACDR That's right.

CC-H Okay, and Surgeon was just saying that - that he did not really recommend taking them prophylactically.

ACDR Yeah, well he's not up here 100 miles above the Earth jammed full in a spacecraft and having to meet a tight time line either. He can just walk out to the potty, where we can't.

CC-H Rog.

08 17 11 CC-H Okay, we got all the report there. Appreciate it. We did a little bit of research regarding some of the food problems you people had had locating some of this stuff. And we think it may have occurred because all of it was not tied together for the stuff that we've got in B-1 there, but it all - all should have been packaged in. You'll probably find it when you - as you're going through and using, the next couple of days. I believe tomorrow's the last - correction, I believe today's the last day that you'll be eating out of that particular locker.

08 17 46 ACDR Yeah.

08 21 45 CC-H Apollo, Houston. I - in looking at the Flight Plan here, I know that Deke's busy there with the mapping pass on the orb science thing, but we need to, if we can, go ahead and get that BATTERY Bravo on CHARGE. If somebody has got time to - to go ahead and put it on CHARGE, we'd appreciate it.

ACDR Crip, that just amplified more about my previous comments. With drogues and probes in here, and one person on the center couch, you can't even move to one side to the other here.

08 22 25 CC-H Okay, we copy that. Fine.

08 27 47 CC-M (- - this is Moscow.)

	CC-M	(Soyuz, this is Moscow.)
	CC-M	(Soyuz. Soyuz. This is Moscow.)
	CC-M	(Soyuz. This is Moscow.)
08 28 49	SCDR	(Moscow, Soyuz. I hear you well. How do you read me?)
	CC-M	(I hear you well.)
	SCDR	(We were just eating breakfast. That's why we do not answer.)
	CC-M	(Sorry for the interruption.)
	SCDR	(That's okay. Now we're ready to work.)
	CC-M	(We will give you a radiogram. Pad 2. Write down the times, please, of TV report. And then you can continue preparations for this TV report.)
	CC-M	(Have a chance to eat yet?)
	SCDR	(No. But that's all right. Don't worry about it. We've checked the systems. Everything is normal.)
	CC-M	(Everything shipshape?)
	SCDR	(We're acclimated to this as though we have been living for quite a long time.)
	CC-M	(Okay. Roger.)
	SCDR	(Okay.)
	CC-M	(Pad 2, number 15, longitude 208.88.89. Orbit 046.4. Time of burn 11:51.39. How did you read me?)
	USSR	(Longitude 208.88.89. 046.6, 11:51.39.)
	CC-M	(Correct. The time will be of the burn 9 - 92:11 to 32. That means you have 1 more minute left. Next comm session is 12:51 to 13:14 Moscow. 13:30 to 13:35 through Vanguard. That's a reserve comm session.)

	CC-M	(Soyuz, this is Moscow. We can see you on the TV screen. Are you about ready?)
	SFE	(Good morning, my respected viewers. The Soyuz spacecraft, which we are on, has been in orbit around the Earth for 3 days. Yesterday was a very special day for us onboard ship. We were the hosts to the American crew, and had the first international such reception. American astronauts Tom Stafford and Deke Slayton opened the hatch on time and we were able to meet them, to be the first to greet them, shake their hands at the border between the Soyuz and Apollo - -
08 34 06	CC-H	Apollo, Houston. We're going over the hill; Hawaii at 13 minutes. 68:28. 68:28.
	SFE	(- - because of this - -
08 34 16	ACDR	Okay, Bob.
	SFE	(- - finished preparation in space. Everything went well, especially the minutes preceding the docking. We had very smooth docking - self docking. We did everything, completed everything, the initial part of the joint training - joint activities. We gave you a short TV report regarding this first meeting. This was very exciting moment for both cosmonauts and astronauts. These minutes flew by very rapidly. We exchanged the experiments, various other hardware, that are necessary to perform joint experiments, joint activities. We had to spend a little bit more time than we anticipated. We fell behind schedule a little bit. Alexey did tell you that this was exciting mission - exciting greeting for us and I concur him. This was a meeting which emphasized the good will of our people - -)
08 48 29	CC-H	Apollo, Houston talking at you through Hawaii for 5 minutes.
	CC-H	Apollo, Houston. We see that you have got the BATTERY on CHARGE. It'd help us out a little bit if you could give us a rough time when you turned it on.

	CC-H	Apollo, Houston. How do you read?
	CC-H	Apollo, Houston. How do you read?
	DMP	How do you read us, Crip?
08 50 06	CC-H	Okay. We're with you now, and we see the BATTERY Bravo is on the - on the line charging. It would help us out here in keeping the status up, if you could tell us about when you turned it on.
	DMP	Well, I guess about 10 minutes ago. I had to leave that Earth obs to come over here and get with it.
	CC-H	Copy that. I need to - to pass on to Tom, here, in his upcoming transfer, we've got called out in his procedures to do a helium inject at 10 minutes on his transfer time. And we want to delete that because we got the furnace sample started a little bit late yesterday.
	DMP	Delete the helium inject.
	ACDR	Okay. No helium inject.
	CC-H	Yeah. Tom, if you wanted to, I could make those changes in your transfer procedures. We're going to pick it up - what we're going to do is do it a little bit later.
08 52 13	CC-H	Apollo, Houston. Stand by 1.
	CC-H	Apollo, Houston. The battery charge current looks a little bit low, and we haven't saw Bravo come up. Deke, we'd appreciate it if you'd verify for us on panel 5 that you got the BATTERY RELAY BUS BAT Bravo circuit breaker OPEN.
	DMP	Yeah, it's OPEN.
	CC-H	Okay. Thank you.
	DMP	I can tell you, the reason you weren't seeing it, though, because I'd switched it over to C instead of Bravo.

08 53 04 CC-H We're going over the hill. We'll - see you at 65:58 on the ATS.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

09 18 18	USA	How do you read?
09 18 49	DMP	(Alexey.)
	SCDR	(...)
	DMP	(Thank you.)
	CC-H	Apollo, Houston. Good morning.
	CMP	Good morning, Bo. How are you?
	CC-H	Just fine. I have a couple of notes. Can you listen for a second?
	CMP	Sure. Go ahead.
	CC-H	Okay. We believe the speaker boxes are causing a comm squeal, and we would ask that you keep the speaker boxes in the command module and the DM turned full down when possible.
	CMP	Okay.
	CC-H	And we're convinced the integrity check problem last night with tunnel 2 was thermal, and the Soyuz will increase their tolerance to 10 millimeters.
	ACDR	Rog. That's what we said it was at first onboard here, I think.
	CC-H	Roger.
	CC-H	And I have two notes for the DP, if he's ready.
	CMP	He'll be on comm in just a second, Bo.
	CC-H	Okay.
	ACDR	And, Bo; Vance and I are in the docking module right now.
	CC-H	Roger. Did the clock sync go on schedule?

ACDR That's affirm. It was on schedule, and we're working on - just up to step 7.

CC-H Understand; step 7.

CMP And we're - we're coming up to 17 minutes.

09 20 32 CMP MARK it.

CC-H Roger.

ACDR Hey, Bo. One thing for the thermal people. Last night in our sleep condition, we only had one set of hoses coming up to the DM. We had two down in the CM, and it seemed to work out lots better.

CC-H Understand.

DMP Okay, Bo. This is the DP...

CC-H Roger. The first is, in the Flight Plan, delete the waste water dump at 69:35.

DMP Okay. Got that, Bo.

CC-H Okay. And the other is, on rev 40 for orbital science, the stop time is now 69:30:50.

DMP 69:30:50.

CC-H Roger. That was the stop time for M5 on rev 40.

09 22 29 USSR This is Salyut station.

DMP Okay.

CC-H And that's it. Thank you.

ACDR Roger, Bo. Understand that. Also, Bo, you said to omit the multipurpose furnace helium injection at - on the third step there and we were not - we omitted the helium injection. We're just standing by for your instructions.

09 22 56 CC-H Roger. When you have a chance, I'll give you an update to your Docking Module Checklist and tell you where to put that helium injection in.

ACDR Okay. We're standing by.

CC-H Okay. On step number 20 that occurs at approximately 1 hour and 12 minutes time -

ACDR Okay. I'm there.

CC-H Okay. On the bottom of the page, at about 1 hour and 14 minutes, perform multipurpose furnace helium injection procedures for MA150 AS-3, page docking Module 7-5.

ACDR What was the experiment number?

CC-H MA150.

ACDR Okay. Perform helium injection MA150 on page 7-5.

CC-H Roger. And we still have been having some problem with our helium, and we ask that when you do those injections, you make sure that all of the valves are tight and you make sure that those two valves down in 880 are closed tightly as well.

09 24 20 ACDR Roger. Understand.

CC-H And if we still have some problem, we'll probably have you do an air injection, but that will be later.

ACDR Understand, Bo.

09 24 42 ACDR Okay, Bo. And on to this, I guess I'll be doing the helium injection. Looking at the - since I'll be the one in here at that time, I'll take care of that.

CC-H Roger; sir. That is for you.

ACDR All ready. It looks like we're clicking away on schedule.

CC-H Okay. And if you still have a second, on D/4-2 - -

09 25 31 CC-H Apollo, Houston. Do you read?

09 26 59 USSR (...)

ACDR Hello, So - Soyuz; Apol - Apollo. (How do you read?)

	SCDR	5 by 5, Tom.
	ACDR	Roger. (I read you, too.)
09 27 16	ACDR	Hello, Houston; Apollo. How do you read?
	CC-H	We read you now very well.
	ACDR	Okay, Bo. You just dropped out completely there. We are on page 4-2 waiting for your instructions.
	CC-H	Okay. On 4-2, we were going to have you eliminate the step that starts, "AC perform furnace shutdown" and those other items which refer to the MA150 cartridge - cartridges being put in the bag. So where it says, "Obtain MA150 cartridge bag," delete it and "Put it in the bag," delete it, and the access portion, those things, delete it. We may add an air injection there, and we will have the MA150 samples removed a little later.
	ACDR	Okay. So in other words, we'll just be - I understand, when I inject the helium to the 150 but do the cool-down time. We just won't take it out then and deactivate it.
	CC-H	Roger. Now I'll let you know about that later.
09 28 20	ACDR	Okay. Real fine. Thank you.
09 28 25	CMP	How did the Earth obs go, Deke? Good? How did the Earth obs go? Pretty good?
09 28 32	CC-H	Command module, Houston.
	CMP	Go ahead, Bo.
	CC-H	Sir, on pa - on 181, we would like you to check that the TV POWER switches are ON. The three switches.
	CMP	You'll just have to stand by there a minute, Bo. This is a ...
	CC-H	Okay.
	CMP	If you think it was bad on the ground, you ought to see it up here. Let me get the attitude here and look ...

09 31 17	SCDR	Apollo, Soyuz. What steps are you doing now?
	ACDR	(Now we are working at .... Vance, speak further.)
	CMP	Deke, do you read us?
	DMP	Yeah, I'm reading you guys.
09 32 44	CC-H	Command module, Houston.
	CMP	Go ahead, Bo.
	CC-H	Sir. Could you give us a call when you have those switches on 181, and we'd like to check that the CM camera is in MASTER.
09 33 01	CMP	Okay. The three POWER switches on 181 were just turned on, Bo.
	CC-H	Thank you.
	ACDR	Stand by for MASTER.
	CC-H	And we're going to TV now.
09 34 01	CC-H	Command module, Houston. Can you verify that the command module camera is in MASTER?
	ACDR	It's in MASTER.
	CC-H	Thank you.
	ACDR	(Soyuz, Apollo. We are now starting pressurization in docking module.)
	USSR	...
	CMP	Okay, she's in MASTER, Bo.
	CC-H	Thank you.
	DMP	Okay.
	ACDR	Okay, Deke. We're pressurized.
09 35 41	ACDR	Okay, Bo. We're pressurizing the docking module, in case you didn't hear us.

	CC-H	Roger, understand. And we still have a squeal, and we think that it may be the Soyuz speaker box. Could you ask them to turn off their speaker box?
09 36 26	CMP	(Soyuz, Apollo.)
	SFE	Go ahead.
	CMP	(Please switch off our speaker box in the orbital module.)
	USSR	(...)
	USSR	(Turn it off.)
	CMP	(Do you understand?)
	DMP	(Soyuz, Apollo. Right now I'm in the docking module. Pressure 490 millimeters mercury. Over.)
	CMP	Okay, attitude, pressure ...
09 37 47	CC-H	And, docking module, Houston. Just for your information, we have a good picture of you in the DM.
	ACDR	Roger. We're doing a pressure integrity check here, Bo.
	CC-H	Roger.
	ACDR	(Hello, I think that it is very early ...)
	USSR	(...)
	DMP	We don't see you on the screen now.
	SFE	What about now?
	DMP	(We are now working at it...)
	CMP	Are you still getting that squeal, Houston?
	CC-H	Apollo, we're still getting the squeal.
	CMP	Okay, we asked them to turn off the box, and I think - -
	DMP	Want us to turn this one off in here?

	CMP	- - and I think Valeriy indicated that they've done that.
	CC-H	Seems better, now.
	ACDR	Bo, do you want us to turn off - let me turn off the speaker box here in the docking module.
	CC-H	Apollo, Houston. It sounds better now.
	ACDR	Okay, how do you read now? Is that better?
	CC-H	Roger. That's better now.
	ACDR	Say again, Bo.
	CC-H	It is better.
	ACDR	Okay, we just turned off the speaker box in the docking module.
09 39 20	CC-H	Roger.
	DMP	Just for your information, the volume was all the way down on the speaker box, but it takes turning the switch off to really kill that noise.
09 39 49	DMP	The fish look healthy this morning, Bo.
	CC-H	The fish do, huh?
	DMP	Yeah, we have them over here on the wall. They're swimming around happily.
09 40 06	ACDR	(We have a lot of fish, yes, Bo?)
	CC-H	(A lot of fish, yes.)
	DMP	(Laughter)
	CC-H	Was the fish experiment done on day 2? Could you tell us that?
	ACDR	It sure was. I shot all kinds of pictures of those little rascals, but that was done down in the command module.

	CC-H	Understand. And we'd like you to try that speaker box on in the docking module, but leave the volume all the way down, and let's see how that works for just a few minutes.
	DMP	That's just the way it was, but we can do that, yes.
	CMP	Okay.
	DMP	Okay. You're in that configuration now with the speaker box.
	CC-H	That still sounds good.
09 41 04	ACDR	(Good.)
09 42 09	DMP	(Soyuz, ...)
	ACDR	(Soyuz, our step 9 is completed. Over.)
	SFE	Roger. Step number 8 is completed.
	ACDR	(We have also completed 9.)
	SFE	Turn on to pressure equalize.
	ACDR	(Roger.)
	CMP	(Valeriy, the partial oxygen pressure is 180, and the partial pressure of carbon dioxide is 4.)
09 43 23	CC-H	Docking module, Houston.
	CMP	Go ahead.
	CC-H	The camera on 873 is picking up some of the lights. We ask that you tilt it down a bit.
	CC-H	Roger. That looks better.
	DMP	Rog.
	SCDR	... opening hatch number 4.
	ACDR	(Roger.)
	CMP	Okay. 42.

09 45 02	CC-H	Docking module, Houston. Can you verify that Soyuz turned their speaker box off?
	CMP	Valeriy, Vance. (Is your speaker box turned off?)
09 45 22	SFE	(Yes.)
	CMP	Bo, he answered that he did.
	CC-H	Roger.
09 45 33	SFE	Number 4 is open.
	ACDR	Roger.
	DMP	(Hatch 4, OPEN.)
	USA	... equalize.
	DMP	(I am equalizing the pressure between the docking module and Soyuz.)
	USA	(I just completed ...)
09 46 35	ACDR	(Soyuz, Apollo. Please prepare Apollo TV camera. Over.)
	ACDR	(Turn on Apollo TV camera, please.)
	CMP	Okay if we go with camera 6 to Soyuz?
	ACDR	Take camera 6 to Soyuz.
	CMP	...
	ACDR	Yeah, about 3 5.
	USA	...
	SFE	Apollo TV camera, ON.
09 48 13	ACDR	(Roger.)
	CC-H	Command module, Houston.
	ACDR	Go ahead, Bo.

	CC-H	We've been having trouble with our TV. Could you confirm that - that you've selected SLAVE on the CM TV camera?
09 48 46	ACDR	That's affirm. We just did that ...
	CC-H	Thank you.
	ACDR	(... I am opening hatch 3.)
	CMP	Is the TV okay now, Bo?
	CC-H	Roger. We hear you.
	CMP	Rog. Is your TV okay now?
	CC-H	The TV is okay now.
	CMP	Good.
09 50 14	CC-H	If you gentlemen can move aside a bit, we'll be able to see better.
09 53 31	ACDR	Okay, Bo. I'm transferring the TSB into Soyuz. We're working on step 16.
	CC-H	Roger, Tom. We see you.
09 53 57	CMP-OM	Okay, Tom. Do you read?
	ACDR-DM	Read you loud and clear, Vance.
	CMP-OM	Okay, we're in the orbital module and ... on comm here.
	ACDR-DM	Okay. (Step 16 carried out.)
	ACDR-DM	Looks like a bunch of snakes in there, Valeriy.
	DMP-CM	Okay, I'm starting fuel cell purge, and don't worry about *** warning lights.
	SFE-DV	(Yes.)
	USA	(...)
	USSR	(Laughter)

09 54 55	SCDR-OM	Valeriy, but I am going to go to Apollo spacecraft.
	SFE-DV	(Yes, yes.) (Laughter)
	SCDR-OM	That is right.
	USA	(Yes.)
	ACDR-DM	(Valeriy, ... nitrogen.)
	SCDR-OM	Going to go.
	USA	Okay.
	ACDR-DM	(... nitrogen.)
	ACDR-DM	(Nitrogen.)
	USSR	...
	SFE-DV	To take you from this -
	SCDR-OM	Everything is okay.
09 55 30	DMP-CM	Okay, Bo. We're working on 56 and Valeriy's determining if he needs any nitrogen down there.
	SCDR-OM	How does method for our change work?
	CC-H	Roger.
	SCDR-OM	I can make you present. Okay?
	DMP-CM	Houston, CM. Would you say we're about over ...?
	CC-M	(Soyuz, Soyuz, this is Moscow.)
	SFE-DV	(Moscow, this is Soyuz. Read you excellently.)
	CC-H	Command module, Houston - -
	SFE-DV	Roger.
	CC-H	- - you look like you're ... little north of there by now.
	CC-M	(Moscow, we must transmit several radiograms. I am watching the TV screen. The picture is good.)

	SCDR-OM	(Vance Brand, Valeriy Kubasov, and I are onboard. In a few seconds, I will transfer to Apollo spacecraft. The hatches are open.)
	CMP-OM	(Moscow, gocd morning. This is Vance Brand.)
	CC-M	Good morning, Vance. We are glad to meet you in the Soyuz spacecraft.
	CMP-OM	(I am also very glad to be here.)
	ACDR-DM	(Moscow, Stafford in the docking module. Who will speak today?)
09 57 21	CC-M	Good morning.
	ACDR-DM	(Johnny, is it Johnny?)
	CC-M	Yes.
	ACDR-DM	(Good morning. Well, good afternoon in your view.)
	CC-M	Time in Moscow, 1 hour ...
	USSR	(This is Soyuz. We are ready.)
	CC-M	(This is Moscow. We ask you to close the OM and ... window curtains when carrying out TV reports, except TV10-4, for a high illumination level.)
	USSR	(Received.)
	CC-M	(Write it down, please.)
	DMP-CM	Houston, this is the CM.
	CC-H	Go ahead.
09 58 34	DMP-CM	Yeah. I think our O_2 FLOW gage is ...***
	CC-H	Say again, please. We didn't understand you.
	DMP-CM	...***
	SFE-DV	(Wait, wait.)
	SCDR-OM	(One moment.)

	SFE-DV	(Wait.)
	SCDR-OM	(One moment, one moment. The flight engineer must write down as I am leaving. He will take care of it.)
	SFE-DV	(Moscow, this is Soyuz 2. I am ready.)
	SFE-DV	(... Soyuz, ...)
	USSR	(...)
	SFE-DV	(... Soyuz.)
	USSR	(...)
	SFE-DV	(... I am writing down. Repeat again. A little slower, or I cannot follow you.)
	SFE-DV	(To connect TV2-7, TV10-2; to connect -)
	SFE-DV	(To connect the connectors? This is Soyuz, Moscow, this Soyuz 2. How do you read me?)
	SFE-DV	(Connectors or US connector. If so; then with what?)
	SFE-DV	(Moscow, this is Soyuz 2. I don't read you.)
10 02 26	SFE-DV	(Moscow, this is Soyuz 2. I don't read you. US connector ... 47-9.)
	ACDR-DM	(Okay. 30 millimeters.)
	ACDR-DM	Okay, Bo. We need 30 millimeters of nitrogen, and I'll be adding it shortly.
	SFE-DV	(TK-1.)
10 03 10	CC-H	Roger. We understand. You need 30 millimeters.
	SFE-DV	(... to connect.)

	SCDR-DM	(You mean, connect the connector 347-10-1 to the connector 347-10. Like that, right?)
	ACDR-DM	Okay. (I am now increasing nitrogen pressure.)
	SCDR-OM	(... Apollo, I will find it immediately.)
	CMP-OM	Step 20.
	SFE-DV	(Moscow, this is Soyuz. Why did the TK-1 picture disappear?)
	CMP-OM	(Enough.)
	ACDR-DM	(Okay, I added 30 millimeters of nitrogen.)
	SFE-DV	(Moscow, this is Soyuz 2. Have you anything more or not?)
	USSR	(...)
	SFE-DV	(Well, right now we have work on transfer operations.)
10 05 36	ACDR-DM	Hey, Bo. How do you read?
	CC-H	Go ahead. We read you loud and clear.
	ACDR-DM	Okay. I see you on *** here. Alexey just gave me a present. Do you know who it is?
10 05 47	CC-H	It looks like you.
	ACDR-DM	(Thank you, Alexey, thank you very much.)
	MCC-M	(10 millimeters in 6 minutes.)
	ACDR-DM	I'll have to add a little more hair to it, though, Bo.
	CC-H	Roger. We have about a minute and a half until ATS LOS. And we'll see you at Hawaii at ...
	SCDR-OM	(... 10 millimeters. Roger; 10 millimeters.)
10 06 21	ACDR-DM	Roger. And Alexey's getting ready to transfer into the ... into the docking module; step 19.
10 06 27	CC-H	Roger. Understand.

10 07 29 MCC-M (... Soyuz, ... let the cables go and they are floating. Right now they are leaving. We must say goodby to them.)

10 07 38 MCC-M (Goodby, Alexey. I'll see you in 5 hours.)

10 21 23 CC-H Apollo, Houston through Hawaii for less than a minute. Standing by.

ACDR-DM Okay, Bo. Look, I'm in here in the docking module with Alexey. He's got his headset on - on the Soyuz - you know, J-box. And he doesn't have any intercom. I don't hesitate, though, as far as taking him on over into the docking module [sic]. But he can't read me.

CC-H Understand. He can't read you on intercom.

ACDR-DM That's affirmative.

CC-H Apollo, Houston. I take it you're - you're just planning to press on.

ACDR-DM That's right. No use just staying here. We can talk and understand each other real well. There's no problem. He just doesn't have any intercom. But we can talk real well together. I've got his volume full increased. I've got his microphone power on. And I don't know of anything else to do. I've checked all the connections. The connections are tight.

10 22 28 CC-H Roger. Understand.

10 22 33 ACDR-DM And - I've got the volumes full up. The microphone is on. He's also - We got his TV camera hooked up. The TV power is on. But - no dice as far as intercom. So we're going to press right on. We'll work it out some - once we get down in the command module.

CC-H Understand. And we're about a minute - or less than a minute - from LOS. And we'll see you at Vanguard at 70:10, which is about 7 minutes from now.

ACDR-DM Okay. I'm going ahead and go through that helium inject that you told me to.

10 23 08	CC-H	Roger.
10 24 52	DMP-CM	(Soyuz, this is Apollo.)
	CMP-OM	Deke, we read you loud and ...
	DMP-CM	Okay. They're ready to do the solar orientation.
	CMP-OM	Say again.
10 25 04	DMP-CM	Ready to do the solar ...

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

10 30 39	ACDR-DM	Okay. (Hatch 3 is closed.)
	CMP-OM	(Yes, Tom.)
10 30 48	ACDR-DM	Okay. Our hatch is closed here.
	CC-H	Apollo, Houston through Vanguard for 5 minutes.
	ACDR-DM	Okay, Vance. Let me tell you - Bo, pardon me. Let me tell you where we're at. We're on step 23. I've just closed hatch 3 and closed the EQUALIZATION VALVE. Alexey does not have any intercom, so we're going to press right on. I can talk to him in here real well. No problem.
	CC-H	Roger. Does he have any communications with the Soyuz?
	ACDR-DM	Yeah, he can read Soyuz okay. But he can't talk.
10 31 27	SCDR-DM	(...)
	CC-H	Understand. He can read, but he cannot talk.
	ACDR-DM	He's trying to call you now.
	CC-H	And, Apollo commander, Houston. Can the Soyuz commander read you?
	CMP-OM	Yes. (In the docking module.)
	ACDR-DM	Oh yeah, yeah, yeah. He can - he can read us real good.
	ACDR-DM	Vance, transmit to Alexey, will you?
	CMP-OM	(Alexey - -)
	ACDR-DM	Read him?
	CMP-OM	(Do you read me?)

10 32 24	CC-H	Understand. It sounds like a mike problem then, huh?
10 32 26	SFE-OM	Number 4, closed.
	ACDR-DM	Yeah. And I've checked - his mikes are close to his mouth. And I've checked the switch and all that. We're going to press right on this transfer. We may give him a different headset over in the command module.
	CC-H	Understand.
	CMP-OM	(Tom, our hatch 4 is closed.)
	ACDR-DM	Okay. (Read you, Vance.) And, okay. And (we are ready for pressure dump from tunnel 2.)
	CMP-OM	(Wait a minute.)
	ACDR-DM	(Current strength is 24.)
	SCDR-DM	***2, 1 minute.
10 33 14	ACDR-DM	Okay, Bo. I'm ready to depressurize tunnel 2. And I'm waiting on them, when they give me the GO.
	CC-H	Understand.
	ACDR-DM	Just tell me when you're ready over there, Vance. I'm waiting.
	SFE-DV	Apollo, Soyuz ready for depressurization from tunnel 2.
	ACDR-DM	(We read you.)
	SFE-DV	Tunnel 2.
10 34 10	ACDR-DM	(We read you; we read you. I'm beginning the depressurization of tunnel 2.)
10 34 23	ACDR-DM	Starting tunnel 2 depressurization.
	CC-H	We copy.
	CC-M	(We are reading the dump of pressure - on the gage.)

	CC-H	Apollo, Houston. There is 1 minute until LOS. We'll see you at ATS, at 70:30. That's about 15 minutes from now.
	ACDR-DM	Roger. 70:30.
	CMP-OM	See you there.
10 35 20	ACDR-DM	Okay, Vance. I've vented 200 millimeters.
	CMP-OM	Roger.
10 35 45	ACDR-DM	...
	ACDR-DM	...
10 35 58	ACDR-DM	Okay, coming up on 270. Close it. ...
10 35 59	CMP-OM	Okay.
10 51 58	CC-H	Apollo, Houston through ATS. How do you read?
	CC-H	Command module pilot, Houston. How do you read?
	ACDR-DM	Hello, Houston; this is Apollo.
	CC-H	Roger. Go ahead.
10 52 25	ACDR-DM	Okay. We're now on step 27, Bo. We're depressurizing the docking module.
	CC-H	Understand. And command module pilot, Houston. How do you read?
	CMP-OM	Okay, Bo, I'm reading you 5 by 5.
	CC-H	Command module pilot in Soyuz, do you read?
	CMP-OM	Right, Bo. Read you 5 by.
	CC-H	Roger. We would like you to have Valeriy check the switches in the Soyuz called out on page 6.3-72 in book number 3 - I'm sorry, that's book number 2, which are the DM PRESS TO TALK, ON; the MICROPHONE POWER, ON; and the COMM CABLE, ON, on the orbital module panel.
	ACDR-DM	Vance, you read?

	CMP-OM	Yeah. Stand by 1, Bo, and we'll get Valeriy up here.
	DMP-CM	Vance is reading you. So, he can take care of it in there, Bo.
	CC-H	And, Apollo commander, Houston.
	ACDR-DM	Go ahead, Bo.
10 54 14	CC-H	If the switches in the orbital module don't fix Alexey's communication, we would like to have Deke get out the spare Snoopy from U-2 and pass it into the DM before Alexey transfers into the command module, and let him change out his headsets before he transfers into the command module.
	ACDR-DM	All right.
	CMP-OM	And, Bo. Please give us this information again about which switches to check in here in the Soyuz.
	CC-H	Roger. It's in book 2, 6.3-72, and those are the switches that are called out in the checklist for establishing communications in the DM.
	CMP-OM	Thank you. Okay. Got any idea ...
	CC-H	Docking module pilot, Houston.
	DMP-CM	Go ahead, Bo.
	CC-H	Deke, we've been having quite a bit of trouble with the speaker boxes, so we request that you don't use the speaker boxes, but rather the Snoopy hat as much as possible.
	DMP-CM	Yeah, that's what we're doing. You want us to turn them off completely?
	CC-H	Understand.
10 56 12	ACDR-DM	Okay, Deke. I've finished. I'm on step 28, the CM-DM pressure equalization. You ready?
	SFE-OM	(Alexey, how do you read me? Over.)
10 56 22	DMP-CM	No, not quite, Tom. We had exactly the same problems here we had in simulation; namely, the floodlight is

always floating.

10 56 44	ACDR-DM	Deke, I'm equalizing pressure.
	CMP-OM	Okay, Alexey. (How do you read?)
	ACDR-DM	Okay, Deke. If we need to, that spare Snoopy's back in U-2, below that Earth obs - Earth observation stuff.
	DMP-CM	Okay, tell me if you want it.
	SCDR-DM	(I do not hear.)
	SFE-OM	(How can't you hear? We hear you.)
	SCDR-DM	(I hear.)
	SFE-OM	(Yes?)
	SCDR-DM	(Yes.) Okay; loud and clear.
	SFE-OM	(Let's finish.)
	CMP-OM	(Yes.)
	CMP-OM	Houston, that fixed the problem. (Everything is normal now.)
	CC-H	(Roger.)
	SFE-OM	(We hear you. We hear you.)
	SCDR-DM	Okay. Vance, how do you read me?
	CMP-OM	(Excellent, Alexey.)
	SCDR-DM	Deke, how do you read me?
	DMP-CM	(Excellent, Alexey.)
	SCDR-DM	Hey, Deke, how do you read me?
	DMP-CM	(Excellent, Alexey.)
	SCDR-DM	Okay.
10 57 57	SCDR-DM	(Valeriy, we are opening hatch number 2.)

10 58 14	ACDR-DM	Okay. I'm going to open hatch 2.
	ACDR-DM	Okay. You ready for Alexey to come in, Deke, for the photographs?
	DMP-CM	Okay. Stand by a sec here. Let's see. Got good ATS. Monitor looks okay, and I got the TV camera set up.
	DMP-CM	Just 1 sec here. Let me check this light.
	DMP-CM	Okay. I got all the cameras ready to turn on. ... Suit yourself.
	ACDR-DM	Okay. ... go?
	SCDR-DM	Yes.
10 59 13	ACDR-DM	Okay. Opening hatch 2 and Alexey should be coming in.
	DMP-CM	Okay.
10 59 35	DMP-CM	I just turned that speaker box off.
	ACDR-DM	Okay.
	DMP-CM	Okay. ...
	DMP-CM	... and I turned them off ...
	ACDR-DM	...
	SCDR-DM	Yes.
	SCDR-DM	(Ready.)
	DMP-CM	..., Alexey. (Where are you?)
	SCDR-CM	Hello. Oh! Howdy partner. My old friend.
	DMP-CM	(Welcome!)
	DMP-CM	(To America.)
	DMP-CM	Here we go.
	SCDR-CM	Where is my place?

DMP-CM Well, for now come right into here.

SCDR-CM Okay. Back. Okay.

DMP-CM Yeah. There we go. Good show.

SCDR-CM Back.

ACDR-DM ...

SCDR-CM Okay.

DMP-CM (How do you feel?)

SCDR-CM Very well. How are you?

11 00 50 DMP-CM (All right.)

DMP-CM Okay. Now ...

SCDR-CM Back.

DMP-CM Do you think ... Flight Plan?

SCDR-CM Yes. Just a moment.

DMP-CM ... cameras ...

SCDR-CM Oh. This one?

DMP-CM That's your Flight Plan.

SCDR-CM Okay.

DMP-CM ...

SCDR-CM DAC 2.

DMP-CM Yeah, and here's the photo card.

DMP-CM ...

CMP-OM Houston, Apollo.

CC-H Go ahead, Vance.

CMP-OM Or rather, Soyuz. How's your view in here in the orbital module?

CC-H Right now - Vance, right now we have the picture on the command module. We have a good view.

DMP-CM ...

CMP-OM Okay. Shortly we'll be coming on and give you a little explanation of what's in here.

CC-H Roger. We're looking forward to it.

DMP-CM ...

CMP-OM Hey, by the way, if you're looking, Bo, there's Valeriy's family. His wife, Lyudmila, and two children - daughter, son. Let's see, it's Kat - -

CC-H Roger. We can see Lyudmila and Katya.

CMP-OM Lyudmila and Katya - Dmitri. Yeah, that's it. The boy, the youngest, is Dmitri. Good-looking family, huh?

CC-H Roger. We can see them here on the TV.

CMP-OM Katya is down on the shore of the Black Sea right now in a dacha having a - or in a camp - summer camp, he says.

11 04 28 CC-H Roger. That's a fine-looking family there.

CMP-OM Okay. And whenever you're ready, I think we're ready to go ahead and show you around the Soyuz a little bit.

CC-H Roger. We're ready and a lot of people are anxious to see that craft.

ACDR-CM ... so let me check with ... about that.

CMP-OM Okay. My friend, Valeriy, here is ready to show you and - please start, Valeriy.

SFE-OM Hello, American people. This is your Soviet/American TV center in space. That's ... onboard the docked Apollo/Soyuz spacecraft. I am going to tell you about Soyuz spacecraft. The Soyuz spacecraft consists

of some compartments: the orbital module, the descent vehicle, instrument assembly unit, and propulsion system. The propulsion system has one main cham - chamber engine and two chamber backup engine. These engines are used for maneuvering in orbit and deorbiting in the - at the end of the mission. The instrument assembly unit is pressure tight and contains all spacecraft main systems, which are used during orbital flight only and are not recovered. We are in orbital module. The orbital module is used for conducting scientific experiments and for crew - and for crew rest. There are areas ... for sleep, work, and rest for cosmonaut and for astronauts.

SCDR-CM Astronauts.

SFE-OM Astronauts.

SCDR-CM Astronauts.

DMP-CM Okay.

SFE-OM Space food. We keep in this locker.

SFE-OM Vance, out there also in the kitchen.

CMP-OM Very good. That's lunch, huh?

SFE-OM There is orbital module - orbital module panel. You can see on your TV screens now.

SFE-OM The purpose of the panel is to control and monitor the orbital module systems. These are the following: environmental control system, the TV and the illumination system, the radio system ... and the other - some systems. Next to this panel, there is the other one. We can use this panel for monitoring pressure integrity check or for Soyuz spacecraft in tunnel 2, and for air pressurizing and pressurizing of Soyuz and tunnel 2.

11 08 46 SFE-OM There are water systems - with the water supply and ... If one put the water supply - the water supply gun in your mouth - -

CMP-OM Yeah. If you put it in the mouth, that's the way to take a drink, huh?

SFE-OM You can drink.

11 09 42 SFE-OM There are two windows in the orbital module, the right one and the left one. One can observe the ground surfaces through these windows. We use this window for scientific experiment. There are three hatches in the orbital module. It is hatch number 4. This hatch is used for transfer from one spacecraft into the other spacecraft. This hatch was opened after docking and pressure integrity check yesterday. There is the other hatch. Here it is. We use this hatch for extravehicular activities. Welcome into Soyuz. The ... hatch is used for transfer from the descent vehicle. There are two folding desks in the orbital mod - -

11 11 31 SFE-OM This desk we used yesterday to sign the joint document to start our joint activities in space. Tom Stafford, Deke Slayton, Alexey Leonov, and me sit at this desk and ... - and had our space talks. We - we are using this desk for our space lunch, too. Our space - spacecraft, Soyuz, has two living compartments. The second living compartment is the descent vehicle.

SFE-OM You ***

11 12 55 CC-H Vance, Houston. We seemed to have lost Valeriy's voice.

SFE-OM ...

CMP-OM Okay. We'll try a quick voice check, here.

CMP-OM Do you hear him now?

CC-H Negative.

SFE-OM ...

CMP-OM Do you hear now?

11 13 36 CC-H Negative. We do not. It looked like you were about finished there with the tour. Perhaps you

		can get it squared away, and we'll see you again in the descent vehicle.
	CMP-OM	Okay. Yeah. That was a real good look anyway, and we'll see you down in the descent vehicle soon.
	CC-H	Roger. And I know Valeriy can't hear us. Would you please thank him for a most interesting tour.
	CMP-OM	Will do.
	CC-H	And, command module pilot, Houston. It looked to us as if Valeriy may have knocked something with his elbow there over on the orbital module panel.
11 14 15	CMP-OM	Okay. We'll check.
11 15 40	CC-H	Apollo, Houston. How do you read?
	ACDR-CM	Bo, how do you read me?
	CC-H	Roger. We read you. We see you're getting ready for the tour of the command module.
	ACDR-CM	Okay.
11 16 17	CC-H	Apollo, Houston. We lost communications with Valeriy. Did you do anything in the command module that may have caused that?
11 16 27	ACDR-CM	Could be. What do you want me to check on panel 10? I tried to hook into the center headset, but I could - couldn't get anything. So I moved over. I'm on the right-hand-seat headset now.
	CC-H	Understand.
	ACDR-CM	Hey, Vance?
	CMP-OM	Yeah. Hey, we checked our switches here and everything's in order, so why don't you check over there?
	ACDR-CM	Okay. What particular one on 10? You want VOX on that?
	CMP-OM	That's affirm.
11 17 13	CC-H	Tom, you've got a loud squeal now.

11 17 19	SCDR-CM	Hello, American people. Hello, American people. How do you read me?
	ACDR-CM	There, we got rid of it then.
	SCDR-CM	How do you read me?
	CC-H	Apollo, Houston. We can't read you. We suggest you use the checklist, Apollo systems, on page 1-40.
	DMP-CM	Check. Check.
11 17 54	DMP-CM	... see that page. Okay. Panel 10, Tom. MODE to VOX. ... on this one.
	ACDR-CM	...
	DMP-CM	MODE to VOX; VOX SENSE ...; VHF FM, RECEIVE.
	ACDR-CM	What?
	DMP-CM	VHF FM, RECEIVE.
	ACDR-CM	...
	DMP-CM	VHF - -
11 18 18	CC-H	Apollo, Houston. We hear you trying to call, but you are not understandable. There is a very loud squeal coming over the comm system.
11 18 28	DMP-CM	POWER, AUDIC.
	ACDR-CM	What?
	DMP-CM	POWER, AUDIC; MASTER thumbwheel to 5; INTERCOM, T/R; INTERCOM thumbwheel, full decrease.
11 18 45	DMP-CM	That did it. ... - -
11 18 47	SCDR-CM	(Moscow, this Soyuz. How do you read me?)
	DMP-CM	- - VHF AM, OFF?
	ACDR-CM	Yeah.
	DMP-CM	AUDIO CONTRCL, BACKUP?

	ACDR-CM	Yeah.
	DMP-CM	PHONE/MIC control, ON?
	ACDR-CM	Yeah.
	DMP-CM	Okay.
11 19 03	ACDR-CM	How do you read now, Bo, okay?
	CC-H	Roger. We read you much better now, but you still have quite a bit of static.
	ACDR-CM	Okay.
	DMP-CM	Yeah. We have a super loud squeal here. You read us okay now?
	CC-H	We've gotten rid of our squeal.
	DMP-CM	So have we.
	ACDR-CM	Does this light still stay on, here?
	DMP-CM	Yeah. That's supposed to be ...
11 19 42	CC-H	Apollo, Houston. There's so much background noise - -
11 19 44	SCDR-CM	(Moscow, Soyuz. How do you read?)
	CC-H	- - that we can barely read you.
	ACDR-CM	Understand. You can barely read.
	CC-H	Roger. When you are close to the microphone and speak loudly, we can read, but it's difficult.
	SCDR-CM	Houston, this is Soyuz commander. How do you read me?
11 20 01	DMP-CM	Okay. It's ready to tour, Tom, whenever you are.
11 20 07	ACDR-CM	Okay. (Alexey. I will now show you our spacecraft, the Apollo. We are very happy to meet with you here in the Apollo. This spacecraft - -)

11 20 27	CC-H	Deke, if you can get to it, we would like the VOX thumbwheel down on panel 10 about one step.
	DMP-CM	Stand by; no way I can get to it.
11 20 42	ACDR-CM	How's that? How's that, Bo?
	CC-H	Down one more step.
11 20 52	ACDR-CM	Okay. How's that now?
	CC-H	That's much better.
	ACDR-CM	Okay.
	CC-H	And if somebody has a chance, if they can put a shade or something over the hatch window, it would help the TV picture.
	ACDR-CM	Okay.
11 21 16	SCDR-CM	(Valeriy, how do you read me?)
	SFE-OM	(Very well.)
	SCDR-CM	(Do you have comm with Moscow?)
	ACDR-CM	How's that, Bo?
	CMP-OM	Which cable are you on, Tom?
	CC-H	That's an improvement.
	SCDR-CM	(No, huh?)
	ACDR-CM	Say again.
	DMP-CM	He wants to know what portable cable - -
	ACDR-CM	Okay. You want to continue on, Bo?
	CC-H	Roger. Continue.
11 21 46	CMP-OM	(How - -)
	ACDR-CM	(The Apollo, this is - -)
11 21 49	CMP-OM	(- - not)

11 21 52	ACDR-CM	(The Apollo is the spacecraft aboard which the astronauts have flown to the Moon and also to our space station Skylab.)
11 22 03	SFE-OM	(Wait just a minute, it's early.)
11 22 06	SCDR-CM	(Early, isn't it?)
	SFE-OM	(Yes.)
	ACDR-CM	(This is the orientation indicator. This is the main indicator for our operations, and this is the backup indicator.) Bo, can you see that on the set?
	CC-H	Just from the side; we can't really get a good view of the indicator.
	ACDR-CM	Roger. (Here is the computer. The role of the computer aboard the Apollo is a very important one. The computer makes it possible for us to tell the distance between the Soyuz or other vehicles - spacecraft in space. If I want to know our exact orbit, I can interrogate the computer. For an example: if I want to know the height of our orbit, I can ask the computer.)
11 23 21	CC-M	(Everything is heard well.)
11 23 26	SFE-OM	(Roger.)
11 23 29	CC-M	(...)
	ACDR-CM	(Now, the - a computer is thinking after I ask it - it's thinking what to - how to respond. And now you can see our apogee of 124 miles by 121 miles. Then, here, you can see our perigee and apogee. It's a very smart computer.)
11 24 10	SCDR-CM	(We will begin or not?)
	SFE-OM	(Okay.)
	SCDR-CM	(Moscow, this is Soyuz. How do you read?)
	CC-M	(Soyuz, Moscow - -)
	SCDR-CM	(I read you well. When are we having a TV session - from the Apollo?)

	DMP-CM	Picture looks good here, Tom.
	ACDR-CM	Okay.
11 24 34	CC-M	(Then let's ...)
	ACDR-CM	Okay. You seeing this down there, Bo?
	SCDR-CM	(I don't see the light of the ...)
	CC-H	Tom, Houston. We'd like you to try to move down to the LEB as quickly as possible so we can get it on - -
11 24 48	SCDR-CM	(You have a picture, don't you?)
	CC-H	- - USSR TV, too.
	ACDR-CM	Okay. Good. (Let's begin.)
	SCDR-CM	(That's all.) Okay. (How is the picture?)
11 25 05	ACDR-CM	(Alexey, this is another - -)
	CMP-OM	(Yes. Fine.)
	ACDR-CM	(- - important place for work of - -)
	CMP-OM	(Yes.)
	ACDR-CM	(- - the Apollo crew. Here's - -)
	CMP-OM	(Yes.)
	ACDR-CM	(- - where we have the - -)
	CMP-OM	(Yes.) Uh-huh.
	ACDR-CM	(- - sextant and telescope.)
	SFE-OM	(...)
	SCDR-CM	Okay.
	SFE-OM	(...)

11 25 36 SCDR-CM (Now we have the second day of our flight. We finished the second transfer. Vance Brand is with Valeriy Kubasov onboard the orbit spacecraft and I am in the Apollo with Tom Stafford and with Deke Slayton.) Tom, come here. (Tom Stafford. You know the American astronaut who's made three space flights. You know him. And now his fourth flight. Deke Slayton is sitting to the right. He is an old space veteran but this is his first flight into space. Now I am asking Tom Stafford.)

SFE-OM ...

SCDR-CM Tom is that! Okay.

ACDR-CM (Soviet TV viewers. I am very happy to meet with Valeriy and Alexey here in space.)

11 26 26 SFE-OM (Repeat ...)

CMP-OM (Yes. After him.)

ACDR-CM (Here we have our onboard computer and if I ask our computer what our apogee and perigee are, the computer will think about how to respond. Now you can see 122 miles by 121 miles. A very smart computer. And this is the second important workplace for the crew.)

SCDR-CM Tom, which Apollo system is the heart of the spacecraft? (I asked, "Which - which system is the heart of the spacecraft?")

ACDR-CM (The heart of the spacecraft is the computer and the inertial gyro platform.)

SCDR-CM Okay.

ACDR-CM (And also the fuel cells. Fuel cell is the power - electrical power source.)

SFE-OM (Hour 1.)

SCDR-CM (And here we have number of switches.)

CMP-OM Oh - -

SCDR-CM Okay, Tom, ... (Groan) put it here. Okay.

ACDR-CM (Here - this is the second important place for the Apollo crew. Here, we have the telescope and the sextant. We observe - we look at the stars through the telescope and determine our orientation. Also, during the approach to the Soyuz, we looked at the Soyuz through the telescope.)

SCDR-CM Tom, do all Apollo spacecraft systems have primary and backup modes? (I asked, "Do all these systems of the Apollo spacecraft have the primary and emergency backup modes?")

11 29 13 ACDR-CM (Yes. All its systems have the primary and backup modes. For example, this is the main indicator, and here's the backup indicator. We have a main and also a backup inertial plat - gyro platform. Here, we have a fuel cell plus a battery.)

SCDR-CM Tom, does it take much time to learn to operate all spacecraft systems? (I asked, "Did it take a long time to learn how to operate all these systems?")

ACDR-CM (Yes, it does take a long time, Alexey. I think about a year - a year's work - should take a year before the astronauts know all the systems.)

SCDR-CM Where do you sleep here? What is this?

ACDR-CM (Here is the place where I sleep. This is the Apollo commander's place. You know who the Apollo commander is?)

SCDR-CM I know. Tom Sta - (laughter).

11 30 30 SCDR-CM (Dear viewers, with this, we are ending our short TV coverage. I think we'll meet again in space at least once, or more. And, certainly, we'll see each other on Earth after we return - after we all return, each of us to his own homeland - in the Soviet Union and in the United States of America. Thank you, Tom. Thank you very much.)

ACDR-CM (Here we have a small kitchen aboard - -)

11 31 02	MCC-H	Uh-huh. Okay. If you can get a word in, let's tell them we're going to switch over to the descent vehicle.
	ACDR-CM	(- - there is very little room here but, after all, nobody has to do any dishes.) (Laughter)
	CMP-DV	Okay, Bo. How are you reading us down in Soyuz, now?
	MCC-H	Fine.
	CC-H	Vance, we're reading you well.
	SCDR-CM	Just now, ... - -
	CMP-DV	Okay.
	SCDR-CM	- - ... tour.
	CC-H	Tom, we've had an interesting tour, there - -
	SCDR-CM	Beautiful.
	CC-H	- - and we're about ready to switch over to Soyuz now.
	ACDR-CM	(All right.)
	SCDR-CM	It was a very small time!
11 31 34	CMP-DV	Okay. Valeriy and I are down in the descent vehicle, the part of the Soyuz that is really the control center and the part that comes down for landing. And Valeriy's on the - in the right seat - (flight) engineer's seat - about ready to give you a few words. But first, I'd like to make sure that we have communications with Valeriy now. We lost him a little while ago.
	DMP-CM	Tangled in cables.
	SFE-DV	How do you read me?
	CC-H	Vance, would you relay that we read Valeriy.
	CMP-DV	(All right, Valeriy.)

SFE-DV Okay! We are in the descent vehicle now. The crew control center - monitors the operation of the spacecraft main systems from the descent vehicle. There is an instrument board. Here it is. You can see it on your TV screens now. I - I would like to illustrate the purpose of this panel to you.

DMP-CM Try to get it stowed, for now, is all.

SFE-DV So-called globe instrument. Shows automatically the - point of the Earth our spacecraft is flying over at this moment. In front of me - in front of me, there is a - -

11 33 20 CC-M (That's a film, isn't it?)

SFE-DV - - there is another panel. It shows us how the system is operating - now. This panel has the caution and warning displays. There is one more unit - here. Here it is. We can send digital data - use this panel in automatic systems. Here are two command signal devices. The right one and the left one. We can send about 380 code - -

DMP-CM It's better where we can find it.

SFE-DV - - functions to control the spacecraft. You can see the two couches now. The left one is - Soyuz commander, and the right one is mine. Vance is now in - Soyuz commander couch. We take these seats during landing and lifting off. At this time, we have a pressure garment assembly on. Now the PGAs are in the orbital module. There are two controllers. The left one - left one. Oh. (Laughter) Left one!

CMP-DV Pretty hard to see.

SFE-DV Uh-huh. Left one - is used to - for orientation maneuvering relative to center of gravity. The right one - is used to translate the spacecraft center of gravity - relative the orbit and change the spacecraft orbit. The descent vehicle has two windows and a special lighting device - special light - -

CMP-DV ...

11 36 26	SFE-DV	Generally speaking, the descent vehicle has more equipment than the orbital module. That's why you - we prefer spend our free time in the orbital module. And, Vance, would you - would you like to say - how - do you like the Soyuz spacecraft?
	CMP-DV	Of course, Valeriy. Wouldn't be in here right now if I didn't enjoy coming in and looking around and - Looks to us like it's be a good air - -
	ACDR-CM	... go ahead and finish. Get that out.
	CMP-DV	- - a good spacecraft to be flying in. We've really enjoyed your tour here. Okay - -
11 37 16	CC-H	Roger, Vance. We heard that well.
	CMP-DV	- - Valeriy says - Valeriy says that will be the end of his tour down here. It's a real interesting place down here; first time I've had a chance to be here in flight. And I guess we'll turn it back to you now, Bo.
	SCDR-CM	(We'll be finishing our daily session.)
	CC-H	Roger. Thank you very much, Vance, and thank Valeriy again for us; that was a very interesting tour.
	SCDR-CM	Okay.
	CMP-DV	Right.
	SCDR-CM	(What time do we finish the session? Tell us.)
	CC-H	Command module, Houston.
	DMP-CM	Go ahead, Bo.
	SFE-DV	... with our modules ...
11 37 48	CC-H	On panel 181, we would like to have you turn the three television camera POWER switches OFF.
	DMP-CM	Okay. Stand by, Bo.
	SFE-DV	... (Let's start to give ...)

11 38 10	SFE-DV	(Continuation of familiarization.)
	SCDR-CM	(Roger. Let's go right now.)
	CC-H	Apollo, Houston. There are 2 minutes until ATS LOS. The next station is Vanguard at 71:41.
11 38 58	ACDR-CM	Okay, Bo. And we got the three cameras OFF for you.
	CC-H	Thank you.
11 39 02	ACDR-CM	Also, I got that helium injection on about - time there for you.
	CC-H	Roger.
11 39 22	SFE-OM	(Moscow, this is Soyuz. Turn it on.)
	CC-M	(...)
	SFE-OM	(Do you have any estimate - -)
	ACDR-CM	(All right.)
11 40 03	SFE-OM	Okay. (... We have a picture.)
11 40 13	SFE-OM	(We have the American TV camera here. Good evening, comrade TV viewers. We are on the - onboard of the spacecraft. Onboard we have - Leonov is now in the Apollo, and here we have Vance Brand. In Soyuz with Brand; we are in the orbital module of the Soyuz spacecraft. We have just had two TV sessions for the American people in regard to the - about the Soyuz spacecraft vehicle and now we want to tell you about our program and also tell you somewhat about our spacecraft. Yesterday at 4 o'clock, we completed the first transfer. And here we have our TV session where there were a lot of movies made and a lot of still pictures. And also we exchanged - we will have to exchange souvenirs, and also we are scheduled to perform a number of joint experiments. As you see, the program is very tight. Here in the orbital module, we have everything that is necessary for us to work comfortably.)
	CC-M	(We have too much light on the right; you - you look like negatives on film. That's excellent. Take the light off completely.)

SFE-OM (How is it now?)

CC-M (Excellent.)

SFE-OM (We just put the light in a different place.)

CC-M (Roger.)

SFE-OM (Here in the orbital module, we have many different lights; the light which we use for picture taking, for television, and for movie photography. Our TV session is coming to a close, so with this, we will say goodby to you, our dear comrade TV viewers; and the best of everything. Goodby.)

CC-M (Thank you, Soyuz 2 and Soyuz 1. Everything went well.)

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

12 01 31	CC-H	Apollo, Houston through Vanguard for 7 minutes.
	DMP-CM	Okay, Bo.
	CC-H	Roger. We read you, Deke. And we would like, on panel 10, the VHF FM thumbwheel positioned to 4, which should be about one number lower.
	DMP-CM	Okay. Stand by, Bo. We're working the area.
12 01 58	CC-H	Roger.
12 04 40	DMP-CM	(Soyuz, this is Apollo. Ready for orientation.)
12 05 09	ACDR-CM	Okay, Vance. We're maneuvering to inertial attitude. And once we get there, we'll set up a P20.
	CMP-OM	Okay.
12 05 28	CMP-OM	(Valeriy says he is ready for the maneuver.)
12 06 06	SFE-OM	Tom. Tell him ..., Tom.
	SFE-OM	(Groan) (...)
12 07 49	CC-H	Apollo, Houston. There is 1 minute until LOS. ATS acquisition at 72:03.
12 07 57	ACDR-CM	Roger, Bo. And we're maneuvering to the inertial attitude for comm, and we'll be all set to proceed on the orbital - on the orientation for the tour.
	CC-H	Roger.
	ACDR-CM	And it looks like we are right on the time line today.
	CC-H	Very good.
12 08 42	ACDR-CM	(Soyuz, this is Apollo. Orien - orientation established.)
12 08 50	CC-H	Apollo, Houston. We like to remind you not to PRO until 72:05.

12 24 43	CC-H	Apollo, Houston through ATS. How do you read?
	ACDR-CM	Bo, read you loud and clear. We're about ready to proceed in 10 seconds on that P20.
	CC-H	Roger. Understand.
	ACDR-CM	And we're on the way. We're maneuvering.
12 32 07	ACDR-CM	Houston, Apollo.
	CC-H	Apollo commander, Houston. Go ahead.
	ACDR-CM	Okay, Bo. Is all the TV cameras set up the way you want them here?
	CC-H	We're not watching TV right now. First, on panel 181, we'd like you to turn the three TV POWER switches ON.
	ACDR-CM	Roger.
12 33 06	ACDR-CM	Okay, Bo. You got the three POWER switches ON.
	CC-H	Roger. And when we get the cameras on, I'll give you a call so we can adjust them.
	ACDR-CM	All right.
	ACDR-CM	Okay, we got one camera shooting out the window and the other one shooting across the spacecraft.
	CC-H	Roger.
	ACDR-CM	Looking out the window, it looks pretty good.
12 37 21	CMP-OM	Apollo, Soyuz.
	ACDR-CM	Go ahead.
	CMP-OM	Are you - Tom, are you in the local horizontal attitude yet?
	ACDR-CM	Oh, yeah. We're - we're - we're - Deke's doing Earth obs, and we're in local - we're - we're in Earth obs attitude.

CMP-OM Okay. So you'll be staying in this attitude for a while for this tour we're going to have. Right?

ACDR-CM Yep.

ACDR-CM Hey, Vance. Have you had your Florida tour yet? I'm skipping back in the Flight Plan. Go ahead.

CMP-OM I ... did.

ACDR-CM Oh, yeah. Okay. I've got that in here.

12 39 46 CC-H Apollo, Houston. We're getting - getting an inside view of the command module now. And we'd like you to move that camera a little bit to the left and down, so that we can get a better view of the crew.

ACDR-CM How's that, Bo?

CC-H Could you move it a little more left, please?

CC-H Okay, that looks pretty good to the left. Now if you'd move it down a bit.

CC-H All right. Hold on there for a second, and let us watch the picture stabilize.

ACDR-CM All righty.

CC-H Apollo commander, Houston. Over.

ACDR-CM Go ahead.

12 41 48 CC-H We're having some difficulty with noise here. Would you ask the Soyuz commander to please give us a voice check.

ACDR-CM Roger.

SCDR-CM Oh.

SCDR-CM Houston, this is Soyuz commander. How do you read me?

CC-H Roger. We read him. Now can we have Valeriy to ... - -

SCDR-CM Houston. How do you read?

ACDR-CM Say again, Bo.

CC-H We read Alexey well. Could we have Valeriy give us a voice check?

ACDR-CM (Valeriy, please give a comm to MCC-Houston.)

ACDR-CM Say, Vance. Do you read? Have Valeriy give Houston a count, will you?

12 43 11 SFE-OM Houston, Houston. This is Soyuz. How do you read me?

CC-H Roger. Whoever spoke that time, we read ... - -

SFE-OM How do you read me?

ACDR-CM That was Valeriy giving you a call.

CC-H Okay, we read him.

ACDR-CM All right.

CMP-OM Okay, was the communication satisfactory?

CC-H We have some noise, and we're trying to track it down. We did, however, read Valeriy quite well.

CMP-OM Very good.

DMP-CM Hey, Bo. Can somebody there tell me quick where you got some more IR film stashed?

CC-H Say that again, please.

12 44 03 DMP-CM IR film for the 70-millimeter solar camera.

CC-H You're saying you want the film location for the 70-millimeter camera.

DMP-CM IR.

SCDR-CM Do you know ... ?

CC-H Yeah. Roger.

SCDR-CM ... looks like Vance.

CC-H Deke, the IR film is located in A-6.

ACDR-CM ...

CC-H Apollo, Houston. Over.

ACDR-CM Go ahead.

12 46 05 CC-H We're having some voice problems here with the S-band. My voice is being turned around to us. We'd like you to - check S/1-40 again and reverify the position of the switches.

ACDR-CM S/1-40 in work.

CC-H Roger. Not so much the switch to VOX as the thumb-wheel setting.

ACDR-CM Okay.

12 47 01 ACDR-CM Okay, Bo. I got VOX SENSITIVITY on panel 10 as about 5. Let's see, the checklist calls it 8. You want it up or down?

CC-H I'll check with INCO.

CC-H Tom, we'd like you to leave the VOX at 5.

ACDR-CM Okay.

CMP-OM Will the - -

12 47 29 ACDR-CM VHF FM thumb - thumbwheel is 5 ...

CMP-OM - - ... experi-

CMP-OM (We're doing that.)

ACDR-CM The S BAND's at - -

CMP-OM (We're doing this later. Right?)

ACDR-CM - - S BAND thumbwheel is not full decrease. ... want me to put that in full decrease?

CMP-OM ...

ACDR-CM How do you read, Bo?

CC-H Go ahead. We read you, but you have a background noise.

DMP-CM (Laughter)

ACDR-CM Yeah, anytime that I get the S BAND thumbwheel out of full decrease, it goes.

CC-H Understand. S BAND thumbwheel goes full decrease.

DMP-CM ...

12 48 31 ACDR-CM And the POWER is at AUDIO, the MASTER is 5, like the checklist. The INTERCOM is T/R, INTERCOM thumbwheel is full decrease. VHF AM is OFF. AUDIO CONTROL panel is BACKUP. And the PHONE/MIC CONNECT is ON.

CC-H Roger, Tom. And we would like the VHF FM thumbwheel down to 2.

12 49 08 ACDR-CM Roger. Okay, it's down to 2.

CC-H Roger. Could we have a check with one of the Soviet crewmembers now?

ACDR-CM Okay.

ACDR-CM Okay. Did you read Alexey?

CC-H Negative. We did not.

ACDR-CM Okay. Vance, have Valeriy give Houston a call.

CC-H Tom, if Valeriy gave us a call, we did not hear. Would you please move the FM thumbwheel up to 3?

ACDR-CM Then you didn't read Valeriy at all then?

CC-H Negative.

CMP-OM Okay, Valeriy - Valeriy was just speaking to you. Let's try it again.

CC-H Roger. We'd like to try the thumbwheel in 3 - -

SFE-OM Houston, Houston. This is Soyuz. How do you read me? How do you read me?

	CC-H	Now we read him well.
	CMP-OM	Good.
12 51 25	SCDR-CM	Houston, this is Soyuz commander. How do you read me?
	SFE-OM	Apollo, Apollo. This is Soyuz. How do you read me?
	SCDR-CM	Apollo, I read you loud and clear. Soyuz -
	SFE-OM	(Alexey, how do you read me?)
	SCDR-CM	(I read you excellently. I hear you excellently, Valeriy.)
	SFE-OM	(Where are we flying now? Over what?)
	SCDR-CM	(Well, take a look at the gyro. It's easiest to tell.)
	SFE-OM	(I'm now in the orbital module. So go down and take a look at the globe.)
12 52 12	CMP-OM	Houston, Soyuz.
	CC-H	Go ahead, Vance.
	SFE-OM	(This is the Mediterranean.)
	CMP-OM	Okay. We're coming up over the Mediterranean Sea now. Just left North - North Africa, and I assume you'll be ready to carry some words from Valeriy on - looking down on the Soviet Union, shortly. Is that correct?
	CC-H	That's affirmative. And be advised that the weather is going to be a bit cloudy under you and to the north, but to the south, it may be clear.
	CMP-OM	Okay.
	SFE-OM	(We've just passed over Africa, and we're now over the Mediterranean.)
	SFE-OM	(Moscow, this is Soyuz 2. How do you read me? Over.)
	SFE-OM	(Moscow, this is Soyuz 2. How do you read me? Over.)

12 54 05 SFE-OM (I also hear you well. We're now in the orbital module, near the porthole, and - getting ready for the TV coverage. That's why you are not seeing us well.)

DMP-CM ...

SFE-OM Much better.

SFE-OM (On the TA-3 bracket.)

SFE-OM (Yes. It's not on TA-3.)

SFE-OM (We're trying to have it handheld.)

CMP-OM Okay, Bo. I think we're about ready to go here. Looks like we're coming up over the Black Sea, and right now Valeriy is getting in position. Got a little bit of spaghetti in the cabin here; various cables and cords. He's ready to tell you a little about his homeland here, the Soviet Union, a very big country. Okay, Valeriy. Please go ahead.

SCDR-CM I see my airfield where I flew 10 years ago in Graberin. (Laughter.)

12 56 11 SFE-OM Dear American TV people, you ... about the Soviet Union. Some of you visited my country and you enjoyed the beautiful people, cities and towns, rivers, forests, mountains, and fields. Alexey Leonov and me visited the United States several times and we did enjoy its beautiful landscapes. (Moscow. Answer.)

CMP-OM Are you reading, Bo?

CC-H Roger. We hear Valeriy.

SFE-OM Roger. It would be wrong to ask which country's more beautiful. It would be right to say there is nothing more beautiful than our blue planet. You will enjoy the sight of it together with us and we shall help you, explaining what flows below the spacecraft. We are going to tell you about a little part of our country, which you will see on your TV screens. Our spacecraft, Soyuz, is approaching the U.S.S.R. territory. Our country occupies one-sixth

of the Earth's surface. Its population is over 250 million people. It consists of the 15 Union Republics. The biggest of them is the Russian Federal Republic with the population of 135 million people.

SCDR-CM Valeriy, please. Tell our people about ...

SFE-OM (Alexey. Where are we flying now?)

SCDR-CM (Past the Volga.)

SFE-OM (Volgagrad.)

SCDR-CM (Oh, we passed Volgagrad.) (Just passed the Volga.)

12 58 54 SFE-OM We are approaching the Volga River now. This river is the biggest in the universe. At the moment, we are flying over the place where the Volgagrad City is. It was called Stalingrad before. In winter 1942-1943, German fascist troops were defeated by the Soviet army here. 330 000 German soldiers and officers were killed and taken prisoner here. (Moscow, this is Soyuz 2.)

MCC-M (... 14:19 ...)

SFE-OM (Okay.)

MCC-M (3 minutes.)

SFE-OM (I won't have time to finish it in 3 minutes.)

SCDR-CM (Moscow, this is Soyuz. How do you read?)

MCC-M (I read you well. How me?)

SCDR-CM (I read you excellently.)

SCDR-CM (I am now in the command module of the Apollo spacecraft. I am here together with Deke Slayton and Tom Stafford. We are flying over the Soviet Union's territory, and we are observing everything which is speeding by below us. We began our observations over the Crimean peninsula and now we're approaching the Ural Mountain range. It's a beautiful Earth below us; blue, covered with slight cloud. The ... is visible today.)

CC-M (Soyuz 1.)

SCDR-CM (On the line.)

CC-M (Would you do that in English, please.)

SCDR-CM (It looks like today's a very beautiful day on - over the entire territory of the Soviet Union. There's a lot of sunshine everywhere - Earth. Green fields -- -)

CC-M (In English, in English, Soyuz 1.)

SCDR-CM Okay.

CMP-OM Houston, Soyuz.

CC-H Command module pilot, go ahead.

13 01 42 CMP-OM Okay. I guess Valeriy's finished, and you got a word - a few words at the end there from Alexey, talking to his people on the ground. It's a very long tour over the Soviet Union. We're still passing over it. The eastern part here is steppe, or desert, and there's just a lot of country here - lot of farmland down here on the steppes, apparently. I think very shortly we'll be at the Pacific, and here's some more words from Valeriy.

SFE-OM - - of April 1961. From that time, we celebrated the 12th - the 12th of April every year as a Cosmonaut Day. Our spacecraft was launched from here, too.

SCDR-CM By the way, 3 years ago - 3 days before, Valeriy Kubasov and me was launched from this Baykonur launch pad.

SFE-OM We are going to land here after the end of the mission. This part of Kazakhstan was not cultivated until 15 years ago. Today, it is one of our breadbaskets. A new city, Kaliningrad, was - Kaliningrad appeared here. It was only 10 years ago. Not far from here begins the Siberia, the biggest part of our country, rich in natural resources.

CC-H Command module pilot, Houston.

SCDR-CM We are over mountains now.

CMP-OM Okay. Go ahead.

13 04 47 CC-H We've been getting a good picture here. We can see the clouds and the mountains pass below. You might tell Valeriy we've been enjoying it.

CMP-OM Okay.

CMP-OM Okay. Apparently - yeah, it's a little hard to see the ground now. Valeriy's still looking at the clouds.

SFE-OM (Monitoring pressure integrity. Everything's normal.)

CC-H Command module pilot, Houston.

CMP-OM Go ahead.

CC-H We've lost our TV. Tell Valeriy that we enjoyed the tour. I remember how interesting and pretty a country it is from my visits there.

13 05 34 CMP-OM Right. We'll just call this the end of the tour, because we are coming up on the Pacific very shortly. Course, a lot of interesting cities here in the Soviet Union, especially in the eastern part, and as you can tell, Soviets very much remember the war 30 years ago. Fortunately, we've come a long way since then, for around the world. Okay. You've got it, Bo.

CC-H Thank you very much.

SCDR-CM (Thank you. Excellent.) (Laughter)

13 06 14 SFE-OM (Where are we flying over now?)

CC-M (...)

SFE-OM (Mongolia, Porgonia [?], ... - Altai Mountains.)

SFE-OM (Yes. Standing by.)

CC-M (...)

SFE-OM (Roger.)

CC-M (...)

SFE-OM (Yes, we know how to disable it. I enabled it only for this session.)

CC-M (...)

SFE-OM (Roger. And there was 20 altogether?)

CC-M (...)

SFE-OM (... sounding since the last session on Soyuz after we turn it on.)

ACDR-CM Loud and clear.

CC-M (...)

SFE-OM (Roger. Understood.)

SCDR-CM I move my pen here. Next time, your pen. (Laughter)

SCDR-CM (Pressure in tunnel 2 is now 280. Initial pressure is 265.)

CC-M (Roger.)

CC-H Command module pilot, Houston.

CMP-OM Go ahead.

13 09 11 CC-H We've still been having some comm problems, and we think that possibly Valeriy has got his mike in constant key. And that's on the orbital module panel, PUSH-TO-TALK, TRANSMIT, and if it is, maybe you could ask him to only go to the PRESS-TO-TALK mode.

CC-H Apollo commander, Houston.

ACDR-CM Go ahead, Bo.

CC-H Sir, before on page 4-2, I had you change some of the furnace operations. Now it seems that the furnace is cooling down as it should, and we would like you to do all the furnace operations without any exception, as scheduled.

	ACDR-CM	Okay. What place you want me to pick up then?
	CC-H	The ones - the changes I gave to you were on D/4-2 and I had you make a few deletions. You'll have to do those steps that I previously had told you to delete and continue as if everything was normal because it is now.
13 10 46	ACDR-CM	Okay. I'll get up there in just a minute. I'm changing lens on the TV camera.
	CC-H	Okay. Roger.
	SCDR-CM	(... Yes, yes, there is time for still and movie picture taking. There's not going to be any undeveloped film.)
	ACDR-CM	Houston, Apollo. What you're talking about is the shutdown on sample 150 ... Right?
	SFE-OM	(This is Soyuz 2.)
	CC-H	That's affirmative.
	ACDR-CM	Roger.
13 13 57	CC-H	Apollo, Houston. There is about a minute and a half until LOS. Next station is Guam at 72:57.
	ACDR-CM	Roger.
	USSR	(Just a minute.)
	USSR	(Yes. Go ahead with the next question.)
	USSR	(The question is: from where to do the transmission. ... docking.)
	SFE-OM	(Moscow, Soyuz 2. How do you read? Over.)
	SFE-OM	(Soyuz, how do you read? Over.)
13 17 27	CC-H	Apollo, Houston through Guam for about 6 minutes.
	ACDR-CM	Okay, Bo.
	CMP-OM	Loud and clear, Bo.

ACDR-CM Okay, Vance. DRIVE MOTOR, ON. MODE is RECORD.

CMP-OM Okay, here we are in Apollo/Soyuz in the Soyuz spacecraft. Valeriy Kubasov and myself. And at the moment, we want to show you a few interesting demonstrations. Physics. (Laughter) And I'm going to do a little talking in English and explaining. Valeriy will explain to you in Russian. First thing we have to show is a book gyro. A book gyro is simply something shaped like a book that can be re - rotated about three axes. Interestingly enough, it's stable about two of those axes and unstable about the third. It's stable about the minimum - about the axes of minimum and maximum moment of inertia and unstable about the middle axis. Now let's give you a little demonstration of this.

CMP-OM The first; maximum. As you can see, we have a stable situation here.

CC-H Less than a minute until LOS. ATS at 73:38.

CMP-OM Next; minimum.

DMP-CM Roger.

MS ...

13 23 48 CMP-OM Well, that's fairly stable, anyway. Mainly the - in between the axis, and this should be unstable.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

13 55 08	CC-H	Apollo, Houston through Santiago and then ATS.
	ACDR-CM	Roger, Bo.
	ACDR-CM	Let's see, Soyuz commander. I found it.
13 58 20	CC-H	Apollo, Houston. Over.
	ACDR-CM	Go ahead, Bo.
	CC-H	Just a stowage note. You'll find the Soyuz commander's meal is in L-3, which is stowed at the opposite end of L-3 from the pantry.
	ACDR-CM	We've already got it out, thank you.
	CC-H	Roger. And I have one other thing. At 17:18 Moscow time, or at 73:58 GET, which is over Madrid, Moscow would like to talk to the Soyuz commander, and we'd like you to have him relay to Soyuz - to have SIMPLEX A and the other items necessary to do that.
	ACDR-CM	Okay. SIMPLEX A for him.
	CC-H	Roger. Moscow would like to talk to the Soyuz commander, and it'll have to be set up.
	ACDR-CM	Okay.
14 00 03	ACDR-CM	Okay, Bo. I'm going to SIMPLEX A now.
	ACDR-CM	Houston, Apollo.
	CC-H	Roger. Stand by for a second, please. Apollo, Houston. We'd like our spacecraft to remain on Bravo, and we'd just like the Soyuz commander set up so that he can speak through his <u>own</u> spacecraft, SIMPLEX A on radio.
	ACDR-CM	Oh, okay. I understand. Vance, did you read that?
	CMP-OM	...
	ACDR-CM	Okay.

	CC-H	And I'll give you a call a minute or so before Madrid.
	ACDR-CM	Okay.
	CMP-OM	(It is possible. He sees ...)
	ACDR-CM	Okay. He wants SIMPLEX Alfa for the setup for the Soyuz commander. Moscow wants to talk to him over Madrid at, set it up for 5:10. It's about 10 minutes. 5 plus 10.
	ACDR-CM	Go ahead.
	CMP-OM	*** after ours?
14 01 33	ACDR-CM	No, it'll go through yours. Go through Soyuz.
	CMP-OM	Okay.
	ACDR-CM	That would be AM.
	CMP-OM	...
	ACDR-CM	That's affirmative. Okay, Houston, Apollo.
	CC-H	Go ahead.
	ACDR-CM	Okay; Soyuz is configured for A SIMPLEX.
14 03 29	CC-H	Roger. Understand. It will be about 5:12 transfer time when we will be over Madrid. 5:15 transfer time.
	ACDR-CM	Roger. 5:12 to 5:15.
	CC-H	Roger. I'll give you a call a minute or so before we get to Madrid.
	ACDR-CM	Real good.
14 03 42	CC-H	And I have a Flight Plan note for you. When you have a chance, please call me.
14 05 51	ACDR-CM	Okay, Bo. What have you got on the Flight Plan change?
	CC-H	At 76 hours and about 42 minutes.

ACDR-CM Go ahead.

CC-H We understand the President of Ecuador and the Ambassadors of the United States and the U.S.S.R. will be visiting the Quito site during the pass. These gentlemen are President Rodriquez, Ambassador Brewster, and Ambassador Shlyapnikov. I'll spell those if you wish.

ACDR-CM Yeah, I got the Brewster.

CC-H Okay; Rodriquez: Romeo, Oscar, Delta, Romeo, India, Quebec, Uniform, Echo, Zulu. Brewster and - -

ACDR-CM Okay.

CC-H Sierra, Hotel, Lima, Yankee, Alfa, Papa, Nectar, India, Kilo, Oscar, Victor.

ACDR-CM Okay. I got those two, and that's at 76:40 something, right?

14 07 19 CC-H Roger. 76:42 over Quito. And it's requested that you relay our thanks to Ecuador and its people for their support to the AST Program after sending your greetings to the station visitors.

ACDR-CM Will do. Be glad to.

CC-H Thank you.

ACDR-CM Oh, Bo, one thing. On the furnace shutdown, it's still too hot on that sample.

ACDR-CM We don't have the cool light yet.

CC-H Roger. Understand. We don't want to shut it down until the start of the third transfer, as per the nominal procedures.

ACDR-CM Okay.

ACDR-CM Okay. I told Alexey about the pass at Quito. We're all squared away.

CC-H Roger.

14 11 09 CC-H Apollo, Houston. Over.

ACDR-CM Go ahead.

CC-H Apollo, it seems that we don't have any TV from the DM, and on panel 808 - 808 in the DM, we would like TV STATION POWERS, ON for cameras - for TV STATIONS 1 and 2.

ACDR-CM Okay.

14 13 45 ACDR-CM Okay, Bo. TV POWER is ON there for you.

CC-H Thank you.

CC-H Apollo, Houston. We're getting the TV from inside the command module. We see Alexey preparing his food there. And we'd like you - to ask you to put the shades into the windows to keep the light from shafting in our picture.

ACDR-CM Stand by. It's kind of hard to move around here.

ACDR-CM Okay, Bo. I guess you want the bigger window shade up. Probably the worst one would be the left one.

CC-H We can't really tell yet, Tom. You're kind of in front of the camera right now.

ACDR-CM How's that, Bo?

CC-H We'll have to wait for the camera to settle down, and we'll tell you in just a second.

ACDR-CM Okay. I got the center hatch window in.

ACDR-CM Right now we're preparing the meal and putting hot and cold water with the food items.

CC-H Roger. We can see that.

ACDR-CM And now we - -

CC-H And we'd like you to check the camera, and if it's in PEAK, we'd like to have you put it in AVERAGE.

ACDR-CM Okay.

ACDR-CM Bo, it's in the AVERAGE right now.

	CC-H	Roger. Thank you. And we're just about over the Madrid site.
	ACDR-CM	Okay. I can see you're getting some bright spots in there. I can't tell where they're coming from.
14 19 15	CC-H	Tom, we're still getting some light there. Could you just try turning off the strut lights, and see if that helps?
	ACDR-CM	Yeah.
	ACDR-CM	Is that better?
	CC-H	No, it really isn't.
	ACDR-CM	Yeah, it's the strut. I can see - I can see it's a reflection of the strut lights down there. I turned off the right-hand one. I don't get any more down where my hand is.
	CC-H	It's the left-hand one or the left-hand area of the LEB that's giving us the light shafting.
	SFE-OM	(Moscow, this is Soyuz 2, how do you read?)
	SCDR-CM	(Valeriy, check communication with Soyuz.)
14 20 33	CC-H	Apollo, Houston. We'd like the battery B charge terminated.
	ACDR-CM	... Go ahead.
14 21 02	ACDR-CM	Okay. We got the strut lights off.
	SCDR-CM	(... one is on T-1. Now Soyuz 2 is starting.)
	CC-H	Apollo, Houston. It doesn't look like the lights. It looks like it's probably coming from the windows. If you can get to them, we'd appreciate your putting up the shade.
	SFE-OM	(... It's already ... Alexey.)
	ACDR-CM	Okay.
	DMP-CM	Hey, Tom?

	ACDR-CM	Yeah.
	DMP-CM	... there ...
	ACDR-CM	Keep talking to him.
	SCDR-CM	(I didn't understand. I didn't understand. You have strong noisy interference.)
	ACDR-CM	Okay, Bo. I think this stuff's coming in from the right window over there - I mean the left-hand window.
	CC-H	Roger. We agree. If you can get to it, we'd appreciate you putting up the shade.
	USSR	(... end of communication.)
14 22 19	CC-H	Apollo, Houston. If you're at the shades, perhaps you could put them up in all the windows. And then we'll have constant light.
	SFE-OM	(Moscow, this is Soyuz 2. I didn't understand you.)
	ACDR-CM	Say again, Bo.
	CC-H	I say, if you've got the shades there, maybe you can put them in all the windows, and then we could probably have constant lighting.
14 22 43	SFE-OM	(I do not understand you.)
	SFE-OM	(Moscow, this is Soyuz 2. I can't understand you at all. Very strong interference.)
14 24 10	ACDR-CM	Okay, Bo. How does that look? That was a real chore, I'll tell you.
	CC-H	Hold on just a second, while we wait until that camera settles.
	SFE-OM	(Which light should I turn on? I didn't understand.)
	USSR	(Roger.)
	ACDR-CM	Now, we've got to have some light, Bo. A little bit.
	CC-H	It's starting to look a lot better. Just wait another second, please.

ACDR-CM Okay.

SFE-OM Okay. (The light is switched on according to instructions. I'll do everything.)

14 25 44 ACDR-CM Okay. Alexey said he doesn't have comm with Moscow.

CC-H Roger. Understand. No comm with Moscow for Alexey. Could we ask you to turn the lights up on 5 and 8 a bit?

ACDR-CM Stand by.

ACDR-CM How's that?

CC-H I think that'll probably be good.

USSR (ON, right now.)

USSR (We're ready.)

USA (Okay.)

SFE-OM (Moscow, Soyuz 2. We can begin to introduce our friends the first time we find ourselves with the Americans. Dear TV viewers, I am now with Vance Brand in the orbital module. I would like to ask him to say a few words.) Vance, say some words for the Russian people, please.

CMP-OM (Hello. Okay. Good day. I'm very happy to be here. This is my first time in orbit, and we have found very good hospitality here aboard the Soyuz. Soon we shall eat, and I think that I very much would like to try to taste this food. It can be said that our project here are - is a very important one, and, as you know, everything is proceeding according to program. I think that everything is going very well. Of course, we are friends; we understand each other very well. And I think -)

ACDR-CM Some bread fell off, Deke.

CMP-OM (- - that soon we'll have dinner. I think we'll soon have dinner. Thank you.)

ACDR-CM Here. Some bread fell off.

SFE-OM I want to ask one more question for. Do you like to fly in Soyuz spacecraft?

CMP-OM (Of course. Soyuz is a good spacecraft. It's very good here. Very comfortable.)

14 29 46 SFE-OM Thank you very much.

14 29 48 SFE-OM (Now we will continue our TV coverage. Our joint activities with Vance Brand, who was visiting here, will soon come to an end, for this joint activity began at 4 hours at Sun - very little is left. The only procedure that we have left to do is our joint dinner. We have conducted all of our joint experiments, all our joint tasks. We have held several TV coverage sessions about the flight, and now the concluding stage of our joint stay here is approaching. To Vance, for you to remember your stay here, I would like to present to you from the Soviet - the Russian people - a medal of the Soyuz and Apollo. Now you would - you can be able to see it on your screens. The same kind of medal was presented yesterday to Stafford and Deke Slayton - yesterday. And today I am presenting this medal to Vance Brand.)

14 31 15 CMP-OM (That's wonderful. Thank you very much.)

SFE-OM It is a gold medal from Russian people to you.

CMP-OM (This is the emblem of the Apollo-Soyuz, yes?)

SFE-OM Apollo-Soyuz Test Project.

CMP-OM (The Apollo-Scyuz.)

SFE-OM (Now we are beginning the - really, we are beginning the final - the conclusion portion of our joint activities here in the Soyuz spacecraft before - No, because soon both of you - both of us will go into the Apollo. We are now beginning our space dinner because we have worked a great deal of time already, and we need some sustenance. Space dinner, as you know - There's some background noise here. There's some interference, I don't understand what it is.)

SFE-OM (Space food consists of several courses. I can't even hear myself. There's some interference here.)

14 32 57 SFE-OM (Moscow, this is Soyuz 2. How do you read? Over.)

SFE-OM (... interference. Moscow, this is Soyuz 2. How do you read? Over.)

CC-M (I hear you normally.)

SFE-OM (Moscow, this is Soyuz 2. How do you read? Over.)

CC-M (We read you. Let go of your intercom button.)

SFE-OM (Roger. We had some interference. How is the picture right now?)

SFE-OM (... Our space food consists of several courses: For the first course today is shchi with sauerkraut, a green shchi. Vance likes green shchi; and for me, shchi with sauerkraut. Second course we have meat, chicken with egg; for the third course, we have juices, black currant juice with sugar. We have coffee. Here we have black plums - plums and strawberries. Here we have everything that is necessary in order to prepare this food. On my right, here is our unique - kitchen. It's an electric kitchen, very comfortable and convenient to use. And I think that our house - housewife at home might be envious of such a kitchen. If I can call this a first course, it's right here. It's already heated. This is a tube which contains the food inside, and I've placed it inside and now am heating it. I would like to ask Vance how he likes our space food.)

CMP-OM (Yes, very much. I like, especially, your bread, the meat, and also the shchi - the soup. I think that Russian food is basically similar to American food. There is not too much of a difference.)

ACDR-CM Houston, Apollo.

SFE-OM (And this evening we're scheduled to be in your spacecraft, so we'll try your food.)

CMP-OM (Okay.)

ACDR-CM Hello, Houston; Apollo.

CC-H Apollo, Houston. Go ahead.

ACDR-CM Roger. You want Alexey to give a commentary about food here?

CC-H Roger. We would like - some commentary by Alexey.

SCDR-CM (Yes.)

ACDR-CM (Are you ready?)

SCDR-CM (Soyuz 1 is ready.)

14 36 25 CC-H Apollo, Houston. We would like some commentary by Alexey about space food, if he's ready.

ACDR-CM Okay. We're up here now on our lunch. In fact, Deke has prepared most of it, since he's in that part of the spacecraft. Alexey's here in the center getting ready to eat. We'll have Alexey say a few words to you.

CC-H Apollo commander, Houston. When you move forward, your hat comes into the picture, and it causes it to bloom. Also, there's a checklist on panel 3 that's causing it to bloom a bit.

CC-H That's good.

SCDR-CM (... is being carried out.)

ACDR-CM Are you reading Alexey?

SCDR-CM Thank you.

CC-H Negative. We have not read Alexey yet.

ACDR-CM Houston, are you reading Alexey?

14 37 46 CC-H Negative. We have not read Alexey yet.

SFE-OM (Where is this to be plugged in? To which connector? But I don't have the TV camera 3. It's in the Apollo now.)

ACDR-CM Now Alexey is eating some steak, some beef steak.

SFE-OM (I'm writing, I'm writing.)

CC-M ... connector ...

ACDR-CM Looks like it's barbecued, even. Looks like it's roasted on a grill, but it's in a pack that preserves it.

SCDR-CM (Sit down.)

SFE-OM (... Right now 347/10 is on 347/10-1.)

ACDR-CM Have you been reading Alexey before, Houston?

SCDR-CM (...)

CC-H We have before, but not lately. And we do not read him now.

ACDR-CM Okay. I think that's switched over to Soyuz is what - Hey, Vance, would you tell Valeriy to set Alexey up so he can talk into Houston?

14 39 20 ACDR-CM While they're taking care of that, Alexey's continuing to eat his beef steak. He also has strawberries, almonds - -

SFE-OM (... how do you read? Over.)

SFE-OM (Alexey, how do you read? Over.)

CC-H I can see Alexey depressing his mike, but we're not reading - -

SFE-OM (... Over.)

CMP-OM Tell you what, Bo. If you want, while we're getting the comm squared away, we can talk a little about our food over here.

CC-H Roger, Vance. That seems like a good idea. We've got a good picture of you, and we see you fine. If you'd like to, you can tell about the Soviet food.

ACDR-CM Also - Hey, Vance, tell Valeriy that Alexey reads him and the rest of us loud and clear, but he can't transmit.

CMP-OM Okay, Bo. Well, let's press on.

SFE-OM (So, in the third - in the third - transfer, you don't have to do TV coverage 11.1 from the docking

module. This is what Moscow said. Your TV - 11.1 TV session is canceled. Did you lo - did you copy?)

14 41 02 CMP-OM Okay, Bo. Let's start on the meal here, if you're all set. I think you can see - I think you can see that Valeriy has spread out a meal for us on the table. We have a little collapsible table here on Soyuz, and right now it's covered with food that's under little rubberband-type devices, such that it won't float away. Most of the food comes either in tubes, such as what you see here, or in cans - like a tuna can - or just in packages - cellophane packages. The - -

SFE-OM (Yes.)

CMP-OM (Yes.) (Laughter) There is an example of something in a cellophane package. It's bread. Now, also, there's a heater for heating up these tubes. The heater's over here on the wall. Don't know if you can quite see it. It's - anyhow, it's an electric heater. And Valeriy, just a short time ago, put two tubes of soup in there and heated them up for us. It didn't take long for them to heat up, so now Valeriy has just opened up one of his tubes, and he's trying a little of this soup. This is called shchi, a very common and delicious soup. Incidentally, the foods over there in the Soviet Union are somewhat similar to ours. Naturally, some dishes that are different. General - I like things like their ice cream, bread, shish kebab, things like that. Here on the table Valeriy seems to like his shchi very well. I think some of the best space foods are these canned meats, like we have here: chicken with eggs, chicken, also tuna, various fishes are very good.

14 43 26 CC-H Apollo, Houston. On 181, we would like the COMMAND MODULE 1 and 2 TV POWER, OFF, but we'd like them ON again before the VTR coverage of the transfer back.

CMP-OM Okay. We have napkins - -

SCDR-CM (Valeriy, how do you read me?)

SFE-OM (Weak.)

SCDR-CM Valeriy, how do you read me?

SFE-OM (I read you very weak.)

SCDR-CM (Valeriy, I have no comm with Moscow at all. I just changed my headphones, and I'm now speaking from Deke's place. I did not do my TV coverage of space food. The way I understood you is not to do the TV seance from the docking module. 1.)

SFE-OM (2. When you come in here, take with you - take 4 cartridges with you. Did you understand?)

SCDR-CM (Roger. Over.)

14 44 36 CMP-OM Okay. So anyway, Bo, we're about to start eating, and we'll eat with knives and forks and spoons, just the way you would down on the Earth. Most of the food will stick to the spoon well enough, and things that won't, of course, will be eaten out of the tubes, or, like the bread, will be eaten in bite-sized bits. All in all, it's a very convenient setup up here. With that, unless you have any questions, I think we'll press on and eat.

CC-H Roger. Thank you, Vance.

ACDR-CM Okay, Bo. If you look on TV, you see Alexey eating some soup. In fact, it's potato soup.

CC-H Roger. We've got a picture of Alexey eating there.

ACDR-CM How's the soup, Alexey?

CC-H Apollo, Houston. We're going to finish our TV here, and we would like you to go down to panel 181 and turn the three TV power switches off.

ACDR-CM All righty. You want it off now, right?

CC-H Roger. But we would like them back on before the VTR coverage of the transfer.

ACDR-CM Okay. When will that take place? Is that in the Flight Plan?

CC-H That's about 74:55.

ACDR-CM Roger. 74:55, Bo.

SCDR-CM Houston, this is Soyuz commander. How do you read me? Hey, Bo, how do you read me?

14 46 37 CC-H (I read you well.)

SCDR-CM Okay. Houston, just now - right now, Tom, Deke, and me are in the Apollo spacecraft. We fill with lunch; it is a good lunch. I like it very much, but it is mostly the same. The best part of a good lunch is not what you eat, but with whom you eat. Just now I eat my space food with my very good and very nice old friends, Tom and Deke. Before I have beautiful dinner on Apollo spacecraft - in Apollo spacecraft. I have potato soup, strawberry, and steak, bread, and the cold tea. I like it very much.

14 47 46 CC-H (Very good. I read you very well.)

ACDR-CM Did you get that on the tube?

CC-H Negative. Unfortunately, we didn't see that on TV, but we did understand it quite clearly.

ACDR-CM Okay. Good.

CC-H Apollo, Houston. We think that the earlier problem with the communication may have been that the Soyuz was not properly configured for the transmission of Leonov's voice down here.

ACDR-CM Okay.

CC-H Apollo, Houston. We think that it may have been in mode that they talked over Madrid.

ACDR-CM Roger.

14 51 20 CC-H Apollo, Houston. There are 2 minutes until ATS LOS. We'll have you at Wallops at 74:40.

ACDR-CM Okay. And I'll get those TV cameras off, Bo.

CC-H Thank you.

ACDR-CM Right now Alexey is finishing his dessert; he's eating strawberries.

14 51 41 CC-H Understand.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

15 01 06	CC-H	Apollo, Houston through Wa - Wallops for approximately 5 minutes.
	ACDR-DM	Roger. Through Wallops.
15 04 50	CC-H	Apollo, Houston. There is approximately 1 minute until LOS. Next AOS is Santiago at 75:10.
15 28 53	CC-H	Apollo, Houston through Santiago on a short pass; ATS is at 75:17.
	ACDR-DM	Roger. Hey, Bo, this is Tom.
	CC-H	Go ahead, sir.
	ACDR-DM	Okay, I'm in the docking module working on step 2 of the third transfer. Do you want us to go up here and - and go through this ch - checklist, as far as removing these samples?
	CC-H	Roger. We'd like you to do everything as in the checklist nominally.
15 29 24	ACDR-DM	Okay. The temperature's 29 degrees and the FURNACE COOL light's on, so we can go do it.
	CC-H	Roger. And I have one deletion for you - on step 11 on D/4-8 - you can eliminate all those references to TV 11-1.
	CC-H	Apollo commander, did you copy that?
	ACDR-DM	I got it. I've already got it marked out.
	CC-H	Okay. The only thing is that you do have to stand by for their AOS.
15 30 10	ACDR-DM	..., Bo.
15 39 14	CC-H	Apollo, Houston through ATS. How do you read?
	ACDR-DM	5 by.
	CC-H	And, Apollo, we would like the three TV CAMERA POWER switches on panel 181 turned ON.

ACDR-DM I think they're all ON, Bo.

CC-H Understand.

ACDR-DM Thought they were.

SFE-OM Apollo, Soyuz. How do you read me?

ACDR-DM (Excellently, Valeriy.)

SFE-OM Apollo, Soyuz. How do you read me?

ACDR-DM (I hear you excellently, Valeriy. Stand by.)

SFE-OM What step are you doing now?

ACDR-DM (...)

15 40 33 SFE-OM Apollo, Soyuz. What step are - step are you doing now?

ACDR-DM (... Valeriy.)

SFE-OM Please, Apollo. What step are you doing now?

ACDR-DM (Step 2.)

CC-H Apollo, Houston. Over.

ACDR-DM Go ahead, Bo.

CC-H I'm - I'd like to check and see if the transfer time was started on schedule.

ACDR-DM Yeah, it was. We started the transfer time on schedule. We had to go back and pick up the furnace sample and sign in a couple of books and things.

CC-H Roger. Understand.

ACDR-DM Okay?

CC-H Roger. We're coming up on 14 minutes transfer time.

ACDR-DM Roger. We'll be making it up.

	CC-H	Roger.
15 45 31	ACDR-DM	Okay. Hatch 2's closed. (Hatch 2's closed ...)
	ACDR-DM	(Valeriy, Vance, now I'm working on step 7 in the docking module.)
	CMP-OM	(Step 7.)
15 46 22	SFE-OM	Soyuz tunnel 2 pressure equalization.
	DMP-CM	..., Bo, are you reading okay?
	CC-H	Roger, Deke. We read you all right.
	DMP-CM	Okay. Yeah, I got mixed up. Our commentary says ...
15 47 04	ACDR-DM	(Soyuz, this is Apollo. I am now beginning pressurization.)
15 48 00	ACDR-DM	Okay, Bo. We're pressurizing the DM.
	CC-H	Roger. Copy.
	ACDR-DM	(Soyuz, this is Apollo. Pressure in the docking module up to 490 millimeters.)
	ACDR-DM	Bo, this is Tom. How do you read?
	CC-H	We read you all right, but we've lost our TV picture.
	ACDR-DM	Yeah, I noticed the monitors were jumping around in here in both the cameras here in the DM.
	CC-H	Roger.
15 51 01	ACDR-DM	I mean the image in the monitor is jumping around.
	CC-H	Docking module, Houston. Over.
	DMP-CM	Go ahead, Bo.
	CC-H	Hatch 2 has been doing well today and with your concurrence, we suggest that you - eliminate or cut short the hatch 2 pressure integrity check.
	DMP-CM	Sounds great. I'm ready to press on.

DMP-CM (Soyuz, this is Apollo. Step 8's completed. How's your step 9? Over.)

CC-H Apollo, Houston. Could you tell us which camera you have in MASTER, please?

ACDR-DM Did you call me, Bo?

CC-H Roger.

CC-H Apollo, Hous - -

ACDR-DM ... you have an echo.

CC-H Apollo, Houston. Could you tell us which camera's in MASTER at this time?

ACDR-DM You got a horrible echo. Are you calling the command module or the docking module?

CC-H Docking module, which camera is in MASTER at this time?

DMP-CM The - the Soyuz is in MASTER, Bo.

CC-H Roger. Thank you.

DMP-CM Hey, Bo. Per checklist, the one in the command module's also in MASTER. I guess they all can't be, right?

15 54 23 DMP-CM Hey, Bo, command module. How do you read?

CC-H Command module. We would like the command module camera into SLAVE.

15 54 41 DMP-CM Roger. Command module's in SLAVE.

ACDR-DM Okay, Vance. We're ready for you to open hatch 4, number - step number 9.

CMP-OM ..., Tom.

ACDR How you doing there, Vance?

SFE-OM Apollo, Soyuz. ... in step number 9.

ACDR-DM (Roger. Understood.)

15 57 05	ACDR-DM	Okay. (Pressure equalization between the docking module and the Soyuz now.)
15 57 28	SFE-OM	Apollo, Soyuz. Hatch number 4, open.
	ACDR-DM	(Roger. Understood you.)
	ACDR-DM	(Step 10 complete.)
	SFE-OM	Roger.
	ACDR-DM	(I will open hatch 3 when you are ready.)
	SFE-OM	Roger.
	SFE-OM	We must await AOS.
	SFE-OM	(This is Soyuz 2.)
	SCDR-DM	(I read you well.)
	SFE-OM	(Moscow, this is Soyuz 2. How is the picture?)
	ACDR-DM	I'm just standing by here, Vance, waiting.
15 59 37	SCDR-DM	(Nothing is happening overhead.)
	USA	(How is it now?)
	ACDR-DM	Yeah, we were just talking about the ....
16 00 20	SCDR-DM	(What did you want to say to him?)
	ACDR-DM	I'm showing Alexey all the fish we have in the docking module.
	SCDR-DM	(Apollo is ready.)
	DMP-CM	(Ready to open hatch 3?)
16 01 14	SCDR-DM	Roger. (Hatch 3 is open.)
	SCDR-DM	(I spent the last film on him.)
16 05 30	ACDR-DM	(Valeriy, do you need any nitrogen?)
	ACDR-DM	Houston, how do you read? Docking module.
	CC-H	Docking module, read you loud and clear.

ACDR-DM Okay. Up to step 13 now. Looks like we're back on schedule and appreciate the help on the rapid check on hatch 2.

CC-H Roger. I understand. Step 13 on schedule.

ACDR-DM Pardon me, no; it was step 15. I couldn't read this thing. I've already gone through 13. We're up to step 15.

CC-H Roger.

ACDR-DM (All right.)

ACDR-DM And they don't need any nitrogen.

CC-H Understand. No nitrogen required.

16 07 47 ACDR-DM Hello, Houston; docking module.

CC-H Docking module, Houston. Go ahead.

ACDR-DM Everything is going smooth here. Is Lunney around there?

CC-H Roger. He's listening.

ACDR-DM Okay. You might tell that all ... mission - that I just happened to check the roll index angle that we put on, you know, between the command module and docking module.

CC-H Roger.

ACDR-DM It's about as close as you can get it to zero. Maybe it's less than a 20th to a 50th of a degree off.

CC-H Was it better than Apollo 10, is his question?

ACDR-DM Yeah. (Laughter) In other words, the zero line is just darn near splitting the other index line.

CC-H Roger. He copies.

USA (Laughter)

SCDR-OM (Comm check at 19:24.)

16 15 43	ACDR-OM	Houston, Apollo. How do you read me over in the orbital module?
	CC-H	Apollo commander, read you 5 by in the orbital module.
	ACDR-OM	Roger; Bo. Read you 5 by. All connected up in the comm over here in the OM.
	CC-H	Understand.
	SFE-OM	Deke, how do you read me?
	DMP-CM	(Excellently, Valeriy.)
	USSR	(This is Soyuz. How do you read? Over.)
	CC-H	Command module, Houston.
	DMP-CM	Go ahead, Bo.
	CC-H	We would like the CM1 and CM2 POWER, OFF, on panel 181.
16 18 36	DMP-CM	Okay. CM1 and 2 coming OFF.
	ACDR-OM	Yeah.
	SFE-OM	Vance, how do you read me?
	CMP-DM	(I read you excellently.)
	SCDR-OM	(Valeriy, how do you hear me?)
	SCDR-OM	(Valeriy, how do you read me? I don't read you now.)
16 23 30	ACDR-OM	Houston, Apollo.
	CC-H	Apollo, go ahead.
	ACDR-OM	Okay, Bo, sounds like Valeriy's having the same trouble Alexey had this morning. He can read everybody, but he can't transmit. But Vance and him are going to press right on through the transfer.
	CC-H	Roger, Tom. We'd like to get the voice checks here before you close the hatch in case we are going to change out a headset.

ACDR-OM Roger. Will do.

CC-H And, Tom. Just for a check, would you give us a short count?

ACDR-OM Roger. 1, 2, 3, 4, 5, (5, 4, 3, 2, 1. How did you read that?)

CC-H (We heard you right. Thank you.)

SCDR-OM Houston, this is Soyuz commander. How do you read me?

SFE-DM I read you loud and clear.

SCDR-OM I give you short count: 1, 2, 3, 4, 5, (5, 4, 3, 2, 1. How do you read me?)

16 24 33 CC-M (Thank you, loud and clear.)

SCDR-OM How do you read me?

ACDR-OM Loud and clear. How me?

SCDR-OM Hey, I read you loud and clear, too ...

ACDR-OM Okay. I'll check with Moscow. (Moscow, how do you read me? This is Apollo commander.)

ACDR-OM Houston, this is Tom. In the Flight Plan, you want us the check with Moscow, too? Over.

CC-H That's right. I heard you call, but I didn't hear Moscow answer.

16 25 13 ACDR-OM (Moscow, Moscow. How do you read me?)

CC-H (Moscow, this is Houston. How do you read? Over.)

ACDR-OM (Moscow, Moscow, this is Apollo. How do you read now?)

ACDR-OM Bo, I don't get them anyplace. Maybe we're configured wrong back on the command module, I don't know.

CC-H Negative. We're not reading Moscow either.

ACDR-OM Okay.

CC-H We're checking the ground right now.

	ACDR-OM	(Moscow, Moscow. This is Apollo. How do you read? Over.)
	ACDR-OM	Moscow, Moscow, this is Apollo. How do you read me? Over.
	MCC-M	(Soyuz, this is Illarionov. How do you read me?)
	SFE-DM	(Valeriy, Soyuz 2. I hear you well.)
	MCC-H	(Soyuz, this is - On 19, you have - you're using the hand button and also try to - Moscow can't hear Tom. Turn on the mike power on the control panel if it's not turned on. And also take your hand control because Moscow at home can't hear Tom.)
	SFE-DM	(Roger.)
	MCC-H	Turn on mike power; mike power's turned on. Is there a light aboard - intercom on. Moscow should be hearing you. Let Tom ask - try to get in touch with Moscow again.)
	ACDR-OM	(Moscow, Moscow, this is Apollo. How do you read me?)
16 28 57	CC-M	Apollo, this is Moscow. Read you loud and clear. How me? Over.
	ACDR-OM	Roger. (Yes, I hear you excellently.)
	CC-H	(Moscow, this is Houston. How do you read me?)
	CC-M	Loud and clear. How me?
	CC-M	(All right. Our tests have been completed. You can start your tests.)
	MCC-M	Leonov, this is Moscow. How do you read?
16 29 39	SCDR-OM	Roger. Hatch 4 is closed.
	CC-M	(Good.)
	MCC-M	Soyuz 1, Soyuz 1, this is Moscow. How do you read?
	SCDR-OM	Moscow, this is Soyuz. I hear you loud and clear.

MCC-M Roger. (I also read you well.)

SCDR-OM Okay.

ACDR-OM Hello, Bob. How is it going?

MCC-M Good, Tom, good.

MCC-M Deke, docking module, docking module pilot. This is Moscow. How do you read?

DMP-CM (I read you excellently. How do you hear?)

MCC-M (Deke, I also hear you well.)

CC-M Soyuz 2, Moscow. How do you read? Over. Soyuz 2, this is Moscow. How do you read? Over.

ACDR-OM (Alexey, are you ready to dump pressure in tunnel 2?)

SCDR-OM ... just a moment, just a moment.

CC-H Apollo, Houston. There is less than a minute until LOS. AOS will be at Orroral at 76:13, which is in about 2 minutes.

DMP-CM Okay.

END OF TAPE

ASTP AIR-TO-GROUND VOICE TRANSCRIPTION

16 30 14	ACDR-OM	Okay. (Roger. I understood you.)
16 32 28	SCDR-OM	Deke, hatch number 4 is closed. Ready for tunnel 2 depressurization.
	CC-M	(Soyuz, this is Moscow. Soyuz, this is Moscow.)
	SCDR-OM	(Standing by, Moscow.)
	CC-M	(Hear you excellently. Second comm check with Houston MCC and the U.S.S.R. specialist group at 20:18 Moscow time. How did you receive? Over.)
	CC-M	(Soyuz, this is Moscow. How did you receive? Over.)
	CC-M	(Soyuz, Soyuz, this is Moscow. How did you read second comm check at 20:18?)
	SCDR-OM	(We received.)
	CC-M	(Soyuz 1, we hear you normally. Second comm check at 20:18. Over.)
	SCDR-OM	(I've already given you the readback many times. Second time check 20:18. Over.)
	CC-M	(Well, you just now came through to us. Before that we couldn't hear you.)
	SCDR-OM	(Did you hear Soyuz 2?)
	CC-M	(No, Soyuz, we did not.)
	CMP-DM	(I am initiating integrity check of hatches 3 and 4, Alexey.)
	SCDR-OM	Okay.
	SCDR-OM	(Moscow, this is Soyuz. How do you read me?)
	CC-M	(Soyuz, this is Moscow. Excellently. How do you read me? Over.)
	SCDR-OM	(You didn't hear Soyuz 2?)

	CC-M	(Not - negative. We did not hear him.)
16 37 03	SCDR-OM	(But there won't be any comm there because now I have no communication with that point.)
	CC-M	(Roger.)
	SCDR-OM	(I couldn't handle the TV coverage. For some reason it couldn't work there.)
	CC-M	(Roger.)
	SCDR-OM	(Right now, Soyuz 2 is asking for you. Do you hear him? You don't hear him?)
	CC-M	(No, we don't. But if you are getting the signal, Soyuz, then the idea is should it come here, too.)
	SCDR-OM	(I hear him very weakly. Very weak.)
	CC-M	(Roger. Soyuz, this is Moscow. There's a request for you. Don't forget after you finish work to finish - to turn off the VHF AM whenever necessary.)
	SCDR-OM	(Roger. I heard it.)
16 38 26	CC-H	Apollo, Houston. There are just a few seconds until LOS. We'll see you at Quito at 76:44.
16 38 33	ACDR-OM	Roger. 76:44, Quito. Thank you.
17 05 01	CC-H	Apollo - Soyuz. Apollo, Houston, through Houston.
	ACDR-OM	Roger, Bo. Reading you loud and clear.
	CC-H	Roger. This is the Quito pass. I know you may not have been able to bring a note over from Apollo; do you need any help?
	ACDR-OM	(No.)
	ACDR-OM	You want us to go ahead?
	CC-H	Roger. You can go.
17 05 40	ACDR-OM	Roger. This is the Apollo-Soyuz crew. We want to say hello to the people of Ecuador and also particularly to the President Rodriquez. Also, to the

American and Soviet Ambassadors, who are at the site. We want to thank you so much for the wonderful help and support that you have given the Apollo-Soyuz Test Project. We've looked down upon your wonderful country, your beautiful country, many times, and we hope that someday we have the opportunity to visit there.

17 06 37 CC-H Command module, Houston. When someone has a chance, on panel 181, we would like the CM CAMERA TV POWER, ON, CM CAMERA 2 TV POWER, ON.

SCDR-OM Right now, Tom Stafford and me in orbital module of the Soyuz spacecraft. We are crewmen - on Soyuz-Apollo spacecraft. We are sending our best wishes to the people of Ecuador. Thank you very much for your attention.

ACDR-OM Deke, you want to say hello in there?

ACDR-OM Hello, Houston; Apollo.

CC-H Apollo, Houston. Go ahead.

ACDR-OM Roger. Did the voice relays get through?

CC-H We heard your greeting and Alexey's also, and we heard them loud and clear.

ACDR-OM All right. Good.

CC-H Command module, Houston.

DMP-CM Yeah, go ahead, Bo.

17 08 12 CC-H Command module, when someone has a chance, we would like, on panel 181, CM CAMERA number 2, TV POWER to ON.

DMP-CM Yeah, I got your message on that, but I've still got to get the camera connected.

CC-H Okay, and - has Valeriy's comm been good?

DMP-CM Yeah. Seems to be.

CC-H Fine, thank you.

17 09 41	CC-H	Apollo, Houston. Less than a minute until LOS, Bermuda at 76:52.
17 10 20	CC-H	Command module pilot, Houston. How was the check of tunnel 2?
17 12 41	CC-H	Apollo, Houston ...
	DMP-CM	Okay, Bo. We have the power on down there now and we'll need ...
	SCDR-OM	Valeriy, do ycu read me?
	SFE-CM	I read you well. How you read me?
	SCDR-OM	Okay. I read you well.
	SFE-CM	Well?
	SCDR-OM	Very well.
	SCDR-OM	You want to drink some juice, Valeriy?
	SFE-CM	Yes.
	SCDR-OM	What about beer?
	SFE-CM	Sure.
17 13 40	DMP-CM	You still with us Bo?
	CC-H	Roger. Still here.
	DMP-CM	Okay. Did you hear Valeriy that time?
	CC-H	Roger. As soon as we get ATS coverage, we'll start the comm checks with the Soyuz, and we'd appreciate it if you'd give us a call when you in the Apollo are ready for the comm checks as well.
	DMP-CM	Okay.
	CC-H	And command module pilot, Houston?
	DMP-CM	He's not hooked up yet, Bo.
	CC-H	Roger.

DMP-CM ...

CC-H Apollo, Houston. If you were calling, you were broken up. Please say again.

DMP-CM Okay. Vance is ready to start ...

CC-H We still not - cannot read you, Apollo.

DMP-CM Roger, Bo.

ACDR-OM Houston, how do you read me in the orbital module? Over.

CC-H We read you with an echo, Tom; how do you read us?

ACDR-OM I read you loud with an echo. Over.

17 17 15 CC-H Command module, Houston. On panel 10, we would like you to turn the PHONE/MIC INTERCONNECT switch OFF.

DMP-CM Okay, it's OFF.

CC-H Apollo commander in Soyuz, Houston. How do you now read?

ACDR-OM I still read you with an echo now, Bo. However, I didn't hear myself; give me a short count.

CC-H 1, 2, 3, 4, 5, - Houston out.

ACDR-OM And you still have the echo.

CC-H We're reading you much better.

17 18 02 CC-H Command module, Houston. Could we have you check the S-band thumbwheels on panel 10 to full decrease.

DMP-CM It's full decrease.

CC-H Apollo commander in Soyuz. How do you read Houston now?

ACDR-OM Roger. Read you loud and clear with no echo.

CC-H Roger.

	MCC-H	(Soyuz, this is Illarionov. How do you read me?)
	MCC-H	(I don't hear you. Soyuz, this is Illarionov. How do you read me?)
	SCDR-OM	(Valeriy, this is Soyuz. I read you excellently.)
	CC-M	(I also read you well. Your picture was well liked here.)
	SCDR-OM	Okay. (Laughter)
	SFE-CM	(Houston, this is Soyuz 2. How do you read? Over.)
	MCC-H	(Soyuz 2, this is Illarionov. I hear you excellently. Give me a count.)
	SCDR-OM	One picture together with Valeriy Illarionov from - for mission ...
17 19 50	SFE-CM	Houston, Apollo ...
	SCDR-OM	- - Apollo spacecraft. Tom Stafford sit down on docking modude. Deke Slayton - -
17 19 58	CC-H	Apollo commander, Houston.
	SCDR-OM	... behind you. ...
	SFE-CM	(How do you read the count? Over.)
	SCDR-OM	- - Vance Brand - -
	ACDR-OM	Go ahead, Bo.
	CC-H	You seem to be on hot mike there.
	ACDR-OM	We're on hot mike?
	CC-H	No, I'm sorry; it was Alexey who was broadcasting.
	CC-H	Docking module pilot, Houston. How do you read Houston?
17 20 28	DMP-CM	Roger. Read you 5 by, Bo.

CC-H We read you weakly. Could you move your mike so that you may be speaking more directly into it, sir?

DMP-CM That any better?

CC-H That is better.

DMP-CM Okay.

CC-H Command module pilot, Houston. How do you read?

DMP-CM They don't hear you transmitting.

CC-H Command module pilot, Houston. How do you read?

CMP-CM I read you loud ...

CC-H Vance, you came through well at the beginning of your transmission, but then you cut out in the middle of the word.

DMP-CM He's reading you fine, Bo. How do you read him now?

CC-H Roger. We read you, but we do not read Vance at all.

CMP-CM Okay.

CMP-CM How do you read, Bo?

CC-H That time we read you clearly. Could we have a short count?

17 21 45 CMP-CM Rog. 1, 2, 3, 4, 5, 5, 4, 3, 2, 1.

CC-H Roger. Read you clearly.

MCC-H (Soyuz 2, this is Valeriy Illarionov. How do you read me?)

SFE-CM (Valeriy Illarionov, I read you excellently.)

MCC-H (We, too.)

SFE-CM (Roger. Excellent. I've given you a count, did you read it?)

	MCC-H	(No - no, we didn't, that's why we asked you again. Give it to us again, please.)
	SFE-CM	(This is Soyuz 2 giving a count. 1, 2, 3, 4, 5, 7, 8, 9, 10. How did you read? Over.)
	MCC-H	(Excellent. Thank you.)
	CC-H	And command module, as soon as everybody's settled there, we can get the camera focused, and we'll be ready to allow Moscow to do their checks.
	DMP-CM	Okay. Stand by 1; we're still trying to get the cables tied up here.
	CC-H	Roger.
17 23 03	CC-M	(Soyuz, Soyuz. This is Moscow.)
	CC-M	(Soyuz, this is Moscow. How do you read? Over.)
	CC-M	(Soyuz, Soyuz. This is Moscow, for comm. Over.)
	SCDR-OM	(Moscow, this is Soyuz. I hear you excellently. How do you read me?)
	CC-M	(Excellent. Before this, you didn't hear?)
17 23 44	SCDR-OM	(Negative.)
	CC-M	(Roger.)
	CC-M	(Soyuz 2, this is Moscow. How do you read?)
	SFE-CM	(Moscow, this is Soyuz 2. I hear you well. How do you hear me? Over.)
	CC-M	(Excellent. I hear you excellently.)
	MCC-M	Apollo commander, this is Moscow. How do you read?
	ACDR-OM	Roger, Bob. Read you loud and clear. How me?
	MCC-M	Roger, Tom. Read you loud and clear. Command module pilot, this is Moscow. How do you read?
	CMP-CM	Loud and clear, Bob. How do you read?

17 24 19	MCC-M	Roger, Vance. Loud and clear. Docking module pilot, this is Moscow. How do you read me - Deke?
	DMP-CM	Yeah, I read you 5 by 5, Bob.
	MCC-M	Roger, Deke. Read you loud and clear. Good comm checks, all three.
	ACDR-OM	Okay. Okay, Bo. We've had good comm check with Moscow. And we're ready for one with you guys, I guess.
	CC-H	Roger. We still have a few minutes left until the conference, and we would just like to get the TV adjusted at this time.
	ACDR-OM	Okay. Tell me what you want with it. I've got it sitting where I thought it was supposed to be.
	CC-H	Roger. We just lost it on the eidaphore. Hold on 1, please.
	CC-H	Deke, we'd ask you to take the cue cards down. They caused the picture to bloom.
	DMP-CM	Copy.
	CC-M	(Soyuz 1, this is Moscow, for comm. Would you copy, please? To do TV 11.3, at the 54th orbit. To switch on - -)
	SCDR-OM	(Would you say again, please? You were interrupted.)
	CC-M	(In order to 11.3 - TV 11.3, at the 54th orbit, turn on TK camera 1. And at 347 - US 347/13 and cable 347/10.)
	SCDR-OM	(Unclear. Please repeat.)
	CC-M	(347/10-1 and US 347/10.)
17 26 23	ACDR-OM	What do you got there now, Bo?
	CC-M	(Connect those cables together.)
	SCDR-OM	(Please don't hurry. We have - we have a big conversation. I couldn't get the numbers down. So don't hurry.)

	CC-M	(All right. Later.)
	SCDR-OM	(Connect TK-1 camera.)
	CC-H	A little more.
	CC-M	(US 347/10-1 to US 347/10.)
	CC-H	Another tad.
	CC-M	(US 347/10-1 to US 347/10.)
17 27 15	CC-H	Apollo, Houston. We'd like zoom 15.
	SCDR-OM	(US 347/10-1 to US 347/10.)
	CC-M	(US 347/10-1 to US 347/10. Roger. You copied correctly.)
	DMP-CM	Okay. How's that?
	CC-M	(After this comm session.)
	CC-H	That looks pretty good. Just a second, while we - you let the camera settle.
	DMP-CM	We're getting all that extraneous communication from other places here, too, right now.
	CC-H	Apollo, Houston. There is a bright spot on your right. If there is a window, we'd appreciate the shade on it.
17 28 27	CC-H	And, Deke, while you're close here to the camera, we'd like it to be zoomed in just a bit more.
	DMP-CM	Getting a lot of echo there, Bo. Could you give me that last one again?
	CC-H	Roger. While you are in that position, we would like to - you to zoom in a bit more.
	CC-H	Just a little more, if you can.
	CC-H	That looks good, Deke.
	DMP-CM	Okay. And when I get unsnarled up there, we'll be in great shape.

CC-H (Moscow, this is Houston. Our check is completed. Everything's okay.)

CC-M Roger, Houston. Read you loud and clear.

CC-H Apollo commander in Soyuz. We're going to start our press conference now. And we would like to ask you, sir, to begin with a statement, if you would.

17 30 43 ACDR-OM Thank you, Houston. Say a couple of words, here.

17 30 46 MCC-H Could ... the PHONE/MIC INTERCONNECT OFF.

ACDR-OM It's been a most rewarding 2 days here in space working with the Apollo-Soyuz Project. The success of the mission that both the United States, the Soviet Union, and the rest of the world has seen is the results of the determination, the cooperation, and the efforts by the governments of the two countries, by the managers, engineers, and all the workers involved. It's been a very rewarding experience. Yesterday, when I first opened the hatch and said hello to Valeriy and Alexey, I had a couple of thoughts. However, due to communications, we could not - talk to them directly. The thoughts were that when we opened this hatch in space, we were opening back on the Earth a new era in the history of man. I would have said (we were opening back on Earth a new era in the history of man). How this new era will go depends on the determination, the commitments, and the faith of both the peoples of both countries and of the world. I'm sure that it will work out in the future for good. Again, it's been a real pleasure to be on the mission and work with the cosmonauts. I'll turn it over to Alexey.

17 32 16 SCDR-OM Okay. The representatives of two countries are conducting the joint Soviet-American flight because our people and our government want to work together in spirit of cooperation because a lot of experts in America and in the Soviet Union did a great job to make this flight possible. This work became possible in the climate of detente and a developing cooperation between our countries. This is why it is an important step on the endless road of space exploration by joint effort of all mankind.

ACDR-OM Okay, Bo. We're back to you.

CC-H Roger. It's Moscow's turn to ask the questions that have been proposed by the press there.

CC-M Thank you, Bo. (Soyuz, this is Moscow. First question to the Soyuz Flight Engineer Kubasov. You were the first welder in space. Do you foresee the establishment of a permanent orbital station, through the efforts of all interested countries, based on the principle of equal benefit for all nations?)

SFE-CM (Do you have a picture, Moscow? This is Soyuz 2.)

CC-M (Yes, we do. It's a good picture.)

SFE-CM (Roger. And indeed, during the flight of spacecraft Soyuz 6, I had occasion to do the first welding in space. Today and yesterday, we took part in an experiment on the multipurpose furnace. One experiment as well as the other are in the area of space metallurgy. I think that this area has a great future. It seems to me that some time will pass, and mankind will have many new metals, many new alloys, with new qualities. We'll be obtaining these materials in conditions, which could never be created on the Earth, but which could be available only in space. And it seems to me that the time will come when space will have whole plants, factories, for the production of new materials and new substances with new qualities, which could be obtained or made only in space.)

CC-M (Thank you, Valeriy.)

17 35 43 MCC-M The second question from the Soviet Press Center is for Deke Slayton. Deke, do you read?

DMP-CM Yeah, go ahead.

MCC-M Deke, you flew over Europe during the war. How does this continent look to you from outer space, now? Over.

DMP-CM Well, it's mighty beautiful from up here; I'll tell you that. Unfortunately, we haven't had enough time to look at it - particularly over the continent of

Europe. There's been a lot of cloud cover, and we've been very busy. In the next few days, we hope to do more of that. But the little of it we've seen is downright beautiful. I just wish everybody down there could have the opportunity to come up and see it for themselves.

MCC-M Thank you very much, Deke. The third question from the Soviet Press Center is for Vance Brand. Vance, for 3 days now, you have not heard any news. What kind of news would you like to hear from us journalists? Over.

17 36 48 CMP-CM Naturally, I'd like to hear good news instead of bad news. For example, it'd be nice to hear that everything is more peaceful in many areas of the world, that the world is truly coming together as - right at this moment, as we really believe it is, over a course of several years. We think since the program started that the world has been getting smaller. We would like to see, at the same time, good news result from that - in a political and international sense, throughout the world.

MCC-M Thank you, Vance.

CC-M (The next question to the Soyuz spacecraft commander, Alexey Leonov. Where in your homeland would you like to plant the seeds for the trees, which you are supposed to be exchanging?)

SCDR-OM (I was born in Siberia and grew up there. So, in my conscience, the most beautiful tree, the most long lasting tree and the most undemanding tree is the fir. And this type of tree constitutes the - the major type of tree of our Earth and brings the greatest benefit to the - to all humanity. So probably we should plant the pine and the fir.)

CC-M (Thank you. The next question to Valeriy Kubasov. You have children; what would you like to wish to them from space, as well as all the children of the world?)

17 38 44 SFE-CM (Well, of course, we would like to wish happiness to all children, so that their future would be a good one, so that this - their future would be a peaceful one, so that they would always live with

their parents and - in happiness, so that they would never lose their fathers and brothers as occurred during the last war. I would like to wish to all the children who are now alive, who now live on the Earth - the majority of them are school children, now they're on vacation - I would like to wish them a good vacation, so that they will gather their strength for the upcoming studies in school. That's the end of the answer.)

CC-M (Thank you.)

17 39 38 MCC-M The next question is for Tom Stafford. Tom, taking into consideration the existing world problems, in your opinion, are the expenses connected with the space flights justified? Over.

ACDR-OM Understand completely; a question that has been asked many times. Certainly in reviewing the data, we think that - in fact, we know the cost is justified in, number 1, the scientific effort that we have put out; number 2, the great benefits that are going to be derived from this from both countries. In fact, the total efforts - the total benefits that'll be derived in the end will far outshadow the costs that have been spent upon it. Over.

CC-M Roger, Tom. Thank you very much for that.

CC-M (And one more question to Alexey Leonov. Could you transmit to Earth a sketch that would depict the meaning, the essence of your - of the joint mission in space of your two spacecrafts?)

SCDR-OM (Well, it's probably quite difficult to do this very quickly right now, but I could transmit this drawing. This drawing was made a long time ago. This image.)

CC-M (Excellent. Thank you.)

SCDR-OM (As far as the question, is to say. I have done many of the drawings here. For example, here's Tom Stafford. Does it look like him?)

17 41 36 CC-M (Very much. Very excellent. Thoughtful.)

SCDR-OM (Now I'll show you a very complete - a very young Stafford. Here he is, younger.)

CC-M (Excellent; exceptional.)

SCDR-OM (And one other person from Texas. This is our friend Deke Slayton. But the portrait of Vance Brand; I just gave it to him and he is not here. So you see, here's a whole cosmic portrait gallery in space. Thank you very much.)

CC-M Bo, we are finished. Thank you. Go ahead.

17 42 28 CC-H (Thank you.) The first question is for Tom Stafford. How do you evaluate the operation of the Soyuz crew, during the first days of the flight?

17 42 42 ACDR-OM Well, my evaluation of the Soviet crew, during the first day of the flight, has been very good. As you know, these are lot of long, complicated, and very tedious procedures that we've had to go through in these transfers, a lot of interface that's taken a long time to work out. And things have gone very well. Yesterday we ran a little longer than we expected but, again, they had a lot of extra food for us to eat and, also, the calls from the head of the Soviet Union and the President of the United States delayed us a little bit. But, overall, the cooperation has been outstanding and their procedures have been wonderful. Over.

MCC-H (The second question is to Valeriy Kubasov. What contribution can the experience gained on this flight be made - make in - to the - into future cooperation in space between the - the Soviet Union and the U.S.S.R.[sic]? In other words, what new things have you learned in the last few days which could be useful in the future to astronauts and cosmonauts?)

SFE-CM (First of all, we found out that we can work together in space and cooperate. If - until this time, we had only been preparing for it - training it. Now we have tested it out in practice. Yesterday and today have proved to us that at the time of our meeting in space - during our rendezvous, our docking, and now during the time of joint activities - we accomplished it all. And this is the most

important thing. This proved that we can work together; we can cooperate in space and, secondly, we checked out and proved that the docking system works - that it works as it was designed. In other words, that the technical ideas that had been - and the technical design and the ideas that had been used have proven themselves. Yesterday this was also proven. Thirdly, of course, we received additional flight experience at the same time on - in two spacecraft. This would give us a great deal in terms of training or preparing for future flights.)

CC-H The next question is for Vance Brand. But before we ask that, we ask that Valeriy Kubasov may move a little to his left and forward, so we can see him better. The question for Vance is the same as the one that Valeriy answered. How might your experiences on this mission contribute to future cooperation in space between the U.S.S.R. and the U.S.A.? That is, did you learn anything in the last few days that would help future astronauts and cosmonauts?

17 46 07 CMP-CM Well, I think the greatest part of our learning, Bo, has been in our training, which preceded this flight and all things considered, I think there's where we learned how to communicate: how to plan our training, plan the various aspects of this flight. Upon getting up here - in space, we did run into surprises, but only minor surprises as a result of our training. I think - I've learned a lot - I think, of course, that if we had another joint flight someday that I'd find it much easier to approach, and if somebody else was on this flight, I'd have a lot of suggestions for him. And I'd certainly recommend such a thing, incidentally.

17 47 06 CC-H Thank you.

MCC-H (The third question to Leonov - Alexey Leonov. How comfortable do you consider the Apollo spacecraft to be and how do you like the American food?)

SCDR-OM (Today, I have spent 6 hours aboard the spacecraft Apollo in flight - in space, but before this I had been aboard this spacecraft many times before in training. And as a pilot, as a cosmonaut, I like this spacecraft very much. Its appearance, its

maneuverability, its capabilities, but of course the Apollo has proven itself already that it's a reliable spacecraft, which makes it possible to accomplish many difficult missions. And even the most difficult mission, which is - involves flying around the Moon and even partially a landing mission. Today I saw it - how it looks in space flight. I like its capabilities for making observations. There are a sufficiently large number of windows to observe the Earth and its equipment. Today, in our flight, I had to do a TV report about space food from onboard the Apollo spacecraft, but for technical reasons it didn't come through because there was no communication. But I can say that the food, which I selected way back on Earth, was the same here and I liked it very much. I liked the way it's prepared, its freshness, and also with the - in the terms of attention paid by the crew. But once again, I'd like to say that space food is not the same food, which is eaten by people on Earth, no.) But as an old philosopher says, "The best part of a good dinner is not what you eat but with whom you eat." Today I have dinner together with my very good friends Tom Stafford and Deke Slayton because it was best part of my dinner.

MCC-H Thank you very much. (Thank you, Alexey.)

CC-H The next question is for Deke Slayton. Now that you have finally made it into space, how do your experiences compare with all the stories the other astronauts have been telling you for years?

17 50 59 DMP-CM Well, I'm afraid I haven't discovered anything new. It's been pretty much the same. We've had the same kind of problems up here that people have complained about since MR-3, I guess. Not enough space, and a little congestion to the time line, difficulty in keeping up with things. It's just a lot slower getting things done up here than you realize when you're down there in one-g. Everything takes a little longer. In some respects, it's easier because weighty things are easier to move around, but, on the other hand, everything just tends to take off if you let go of it. So - but it's been a great experience. I don't think there's any way anybody can express - how beautiful it is up here. I've listened to it for 13 or 14 years now, and I still don't think there's

any way that any of us can express it properly. And as I said earlier, I surely wish it was possible for a whole lot more people down there to come on up here because I think it'd make for a lot better world.

CC-H Thank you, Deke.

MCC-H (The next question is to - is for Alexey Leonov. What type of space flight would you like to participate in the future?)

17 51 24 SCDR-OM (I am deeply convinced that all of us now - those that are flying aboard spacecraft and those who are not flying, but who are watching and listening to us - all of us are participants of only the beginning of a great human journey into outer space, and there will be all kinds of various space missions in the future. Of course, I would like to once again to be aboard some other spacecraft, which would be able to fly for a long time around the Earth so that with the eyes of an artist I could see the multi-faceted appearance of our Earth in very varied colors and appearances to forever retain it into memory and to give it to people. But also we would like - I would like to be at altitudes higher than we are now. From there, the Earth looks completely different. I think that at the beginning of our journey - I think that I am at the beginning of my journey and still we have - we have still a reserve of strength and age and I think we will participate in future space missions.)

17 52 46 CC-H The next question is for General Stafford; it's the same as the one Colonel Leonov just answered. What kind of mission would you two like to fly in space yourselves?

ACDR-OM Well, you're talking about the next mission. I would think, naturally, with the background in flight tests that you'd always like to fly a new and a better and a more modern device, and we have one coming along called the Shuttle. I would certainly like to fly that. And I would hope that if Alexey would have a vehicle developed by their country that we could fly maybe in a joint mission. And that would be my - my wish: since man's progress has always been a geometric progress and the benefits derived from science and technology has always helped all of mankind - I

would hope that the next mission - say if I do fly one - will be one of the more modern type of vehicle that could have more benefits for everybody.

SCDR-OM (And I also agree with Tom and I'd like to say that it's - the spacecraft is one thing, but another thing is with whom you're flying and I'd - this is what I'd like to point out, that I would always like to fly in space with friends to whom one trusts and who trusts in one and with whom it is not dull to work with.)

CC-H The next question is also for General Stafford. From a practical standpoint, did you find talking to each other in the listener's native tongue a desirable way to communicate during the complicated rendezvous and docking maneuvers?

17 54 27 ACDR-OM (Of course, it is very important.) I say, of course, it was necessary again. We developed this technique out of working together over a period of nearly a year, and that was over a year and a half ago that we determined that, if we would listen to the other person speak in your own tongue, the individual would speak slower, also more distinctly, and would make fewer mistakes. And so it worked out beautiful as you saw in the rendezvous, and the end results you saw on television, and what you're seeing now. It's also been a great experience for us as far as a - way of communicating with each other. Over.

MCC-H (And the last question to Alexey Leonov. How do you think that - how important do you think the rescue capabilities that was demonstrated on this flight will be in future space missions?)

17 55 28 SCDR-OM (We - when we began working on the Apollo-Soyuz Program, the first part of our program was the working out of a rescue system and of a single, androgynous docking unit and testing of that unit. And now we can say that we have done - we have completed the major part - basic part of this program. We have tested these docking units. They work well and they hold us together tightly - strongly. This was the beginning of a large effort in standardizing future systems not just with both our governments or both our countries because future spacecrafts of our country and of the United States would use such units.

But we suggest that other states - other countries which will dev - begin developing in this direction, we suggest that they should also have standardized docking units, so that they would be able to perform any kind of service and render any type of assistance to other crews in space. And it is pleasant to us that the beginning of this great grandiose human effort in space has been initiated by our crews here - by our crews of the spacecraft Apollo and the crew of the spacecraft Soyuz.

MCC-H (Thank you very much.)

17 57 02 CC-H The next question is for Vance Brand. Now that Americans have met Russians in space on an international venture for the first time, what do you think the chances are for a joint manned exploration of a planet?

17 57 18 CMP-CM Well, I think, frankly, that the chances are very good, but I don't think it will happen right away. They say that - well, it would probably take at least 20 or 30 years before we would be ready as a world to go out and explore a planet. I think that's probably reasonable. The only thing, in everything else that we have done, in aviation, for example, we've found that progress was always much faster than we expected. So perhaps the time will come when we will be thinking of exploring planets, probably together - within the next 20 years. I think that would be the way to do it. I think it would save us time, effort, money; it would pool resources, it would - in other words, it would be interesting and it would bring ben - bring back benefits to the whole world.

MCC-H Thank you, Vance. The last question is for General Stafford. And it is the same as Colonel Leonov just answered, and that is how important do you think the rescue capability demonstrated on this flight will be in future missions?

17 58 38 ACDR-OM Well, when - as long as you have motion, you're going to have accidents. Needless to say that - we do all our - our utmost efforts to minimize all the risk. However, after a long period of time, you could conceivably and possibly have some mishap that would require a rescue. The total system we have demonstrated here - the new docking device, the rendezvous

system using techniques from both countries, the communications procedures and techniques - could be available in the future if required. Not on an instant's notice, but it could be available. So I think we have taken a great step, that indeed we have opened a new era in the history of man on this, and it will be beneficial. Over.

17 59 26 MCC-H Roger, Tom. Thank you. That was the last question. I'll now bring the press conference to a close and you gentlemen can get back and continue your work. (Press conference is over. Thank you.)

MCC-H (Good flight.)

SCDR-OM Thank you very much.

MCC-H (Thank you.)

END OF TAPE

ASTP-AIR-TO-GROUND VOICE TRANSCRIPTION

17 59 57	SCDR-OM	Valeriy, how do you read me?
	SFE-CM	Loud and clear. Thank you.
	SCDR-OM	Okay.
	CC-H	Command module, Houston.
	DMP-CM	Go ahead, Bo.
	CC-H	On panel 181, we would like the three TV POWER switches OFF.
18 03 56	CC-H	Command module, Houston.
	DMP-CM	Yeah.
	CC-H	Roger. We've been having some problem with one of the TV cameras, and we would like to take the TV camera that is now on 871 in the DM and substitute it for the camera that is now in the TSB, which will go into bracket 11 for the tour.
	DMP-CM	Okay, you want to use the 871 camera on panel [sic] 11.
	CC-H	Roger. There is a camera now in the TSB that's going onto 11, and we would like the 8 - camera that's in 871 to go onto 11.
18 04 37	DMP-CM	Understand.
	CC-H	And you'll have to disconnect them and hook them up again as they are swapped.
	CC-H	And, Apollo, those cameras may be a little warm, so you may have to hold off for a few minutes before you can change them out. And we have one other thing, and that is TV 2.9, the shoe should be on the right instead of the left.
	DMP-CM	Okay, 2.9. Stand by and let me check that.
	CC-H	That's the one that's going to be looking out the window.

18 05 26	ACDR-OM	Hey, Vance, I'm - -
	DMP-CM	Okay. Shoe on the right.
	ACDR-OM	Apollo, how do you read?
	CC-H	Houston reads you loud and clear, Thomas.
	ACDR-OM	Deke, how do you read?
	DMP-CM	I read you fine, Tom.
	ACDR-OM	Okay. The battery finally went dead on the Nikon flash. When you come over on transfer 4, will you or Vance, either one, dig out a spare battery for the Nikon. Yeah, I think it's in B-5.
	DMP-CM	Yeah. I think you're right. Okay.
	ACDR-OM	Thank you.
18 06 10	ACDR-OM	Bo, how's the weather back in Houston?
	CC-H	I'll have to ask somebody; I haven't been out in quite a while. (Laughter)
	ACDR-OM	Yeah, I could imagine; I could imagine.
	CC-H	And we'd like the PHONE/MIC CONNECT switch ON.
18 06 33	DMP-CM	MIC CONNECT to ON. Okay. Stand by.
	CC-H	And we're just about to go LOS. We'll be AOS at MILA at 78:21.
18 06 49	DMP-CM	Copy.
18 08 18	CC-H	Apollo, Houston through Wallops. How do you read?
18 08 28	MCC-H	He reads us.
18 09 05	CC-H	Apollo, Houston through Orroral. How do you read?
18 41 25	CC-H	Apollo, Houston through MILA. Over.
	CMP-CM	Roger, Houston. How do you read?

	CC-H	Roger. We read you loud and clear. We need the CAMERA switches ON, on 181.
18 41 41	CMP-CM	Okay. We have all three ON.
	CC-H	Roger. We're not getting any TV here yet. We should in a second, and I can tell you about the picture.
	CC-H	Command module pilot, Houston. We have about a 90-second wait here, until we get a warmup. Let me give you a bit of a weather briefing. Florida looks like it'll probably be clear, as will New York, but there are quite a few clouds over the middle At - Atlantic coast.
	CMP-CM	Okay.
	CMP-CM	Okay. I can see the coast of the U.S. coming up.
18 43 32	CC-H	Vance, we're getting a good picture. You're clear to start your tour.
18 43 38	SFE-CM	(Good day, dear friends. We find ourselves now on spacecraft Apollo. The American astronaut, Vance Brand, Deke Slayton, and I are in the command module.)
	CC-H	Command module, Houston. We need the PHONE/MIC CONNECT switch to ON.
	SFE-CM	(Right now, Vance Brand will tell you about American territory on which we are flying.)
18 44 12	DMP-CM	Okay. We got the PHONE/MIC ON, Bo.
	CC-H	Okay.
18 44 20	CMP-CM	(Moscow, this is Soyuz. How do you read me? Dear television viewers of the Soviet Union. At the present time, we're going to make a little tour over the eastern part of the United States. This is a 6-minute tour, since we're flying with the speed of approximately 8 kilometers a second. This part of the United States is - about 200 years ago - this place developed about 200 years ago. Here, most of the industrial concentration of the United States is located. It's composed now of 50 - the United States is composed of about 50 states, and it will start with Florida. At the present time, we're flying

over sunny Florida. It's a very warm climate in Florida - about - over 300 sunny days a year. There's much exotic forms of nature, a lot of citrus fruits. In this peninsula, there are many palms, citrus groves, and various other types of growth. Also, many alligators and crocodiles. Here, there is located the Kennedy Space Center. Among all the flights that took off from the Kennedy Space Center we, also, took off - on this flight. It's very difficult to see the Earth at the present time, because there is some cloudiness below us. At the - in the middle of your screen, we see North Carolina. Only 72 years ago, the first airplane flew in this state. At the present time, in the horizon, we see the Blue Ridge Mountains. On the right, there is the State of Virginia.)

18 47 44 USSR (Apollo, this is Soyuz.)

CMP-CM (The State of Virginia is a very historical state - the site of many battles, the birthplace of many presidents. In the 17th century, the first settlements appeared in the State of Virginia. We now can almost see Washington, to the left of us. Of course, this is the Capitol of the United States - the political and cultural center of the United States. To the left - now, there is - you can see New York, the largest - one of the largest cities in the world. Around us, also, we see several other states: Massachusetts - the Goddard Space Center. In 1920, Dr. Goddard flew one of his first rockets - experimental rockets. We hope that the cooperation and understanding between our two countries is developing with the same speed as the speed that Dr. Goddard's rocket first flew. Thank you for your attention and for listening to us on this tour.)

18 49 47 CMP-CM You still there, Bo?

CC-H Thank you, Vance. You came through loud and clear. Unfortunately, there were quite a few clouds there, and we couldn't see an awful lot of the east coast.

18 49 55 CMP-CM (New England to the North and in the center of our screen, we saw a lot of cloudiness, so we couldn't really tell you enough.)

CC-H (Thank you very much.)

	CMP-CM	Roger.
	SFE-CM	Thank you very much, Vance.
18 50 21	SCDR-OM	(I got you. Be nice for us to get a geologist in here, so you could measure some of the things we see.)
	SCDR-OM	(I couldn't understand you. Why don't you repeat that?)
	SCDR-OM	(I'm repeating again. 3:37 MILA, 3:47 ...)
	SCDR-OM	(That's good, okay.)
	SCDR-OM	(You want Valeriy, right?)
18 51 44	SCDR-OM	Valeriy, how do you read me?
	SFE-CM	(Very broken. Read you well.)
	SCDR-OM	(How do you read me, Valeriy?)
	SFE-CM	(Read you well.)
	SCDR-OM	Okay.
	SCDR-OM	(I'm listening.)
18 52 19	CC-H	Command module, Houston. Standing by for ATS acquisition.
	CMP-CM	Okay. You should have it, Bo.
	SCDR-OM	(We had a connection 347 hooked up. 347/10.)
	CC-H	And, Apollo, Houston - -
	SCDR-OM	(347/10. We had two connectors hooked up. I connected TK-1 to the connector 347/10.)
18 53 15	CC-H	Apollo, Houston. We'd like to remind you to go to POO at this time.
18 53 27	CMP-CM	Okay, you have POO.
	CC-H	Thank you.

	SCDR-OM	(Kubasov, Kubasov, Valeriy.)
	SFE-CM	(Yeah, who's calling Soyuz 2?)
	SCDR-OM	(Kubasov.)
	SFE-CM	(Yeah, who's calling Soyuz 2?)
	SFE-CM	(What's the matter?)
	SCDR-OM	(I am Soyuz. I am calling you.)
	SCDR-OM	(Listen, did you connect TK-3 connector to J-box?)
18 54 51	CC-H	Command module, Houston.
	SCDR-OM	(Roger.)
	CMP-CM	Go ahead.
	CC-H	Just a reminder - -
	SCDR-OM	(Moscow, this is Soyuz. How do you read me?)
	SCDR-OM	(When I came over there. I connected our TK-3 and mounted it there. Then I returned it to another mount, but I didn't disconnect the connector according to the documentation.)
	SCDR-OM	(I wasn't supposed to do it anyway. Did you copy? Moscow, how did you copy?)
18 55 49	CMP-CM	Gee, Bo, would you try again. You were cut out earlier.
	CC-H	Roger. It was just a reminder to give Valeriy his meal, so he can take it back to the Soyuz with him.
18 56 00	CMP-CM	Rog.
18 56 20	CC-H	Apollo commander, Houston.
	ACDR-OM	Go ahead, Bo.
18 56 26	CC-H	I know you don't have a Docking Module Checklist, but on this next transfer, on step number 26, we would like you to delete the steps where you take the DM Soyuz tunnel vent isolation and open it, and a DM

SOYUZ TUNNEL VENT to VENT. I'll call those out again when we get into the transfer. And the reason is that the Soyuz is going to be performing a check on the tunnel 2 integrity and we do not want to dump the tunnel to vent - to vacuum.

ACDR-OM Okay, Roger. Do you want to take it down just to the normal - pressure? Down to draw pressure minus 260?

CC-H It goes down to 50 and then we'll just leave it there and we'll vent it at some later time.

18 57 12 ACDR-OM Okay, I understand. You just want us to take it to 50.

CC-H Roger.

18 57 20 ACDR-OM Okay, real good.

19 00 59 ACDR-OM Houston, Apollo.

CC-H Apollo, Houston. Go ahead.

ACDR-OM Roger. Did you want to cover this presentation of seeds and these medals on TV? Over.

CC-H Roger. And we see you on TV now.

19 01 56 CC-H Command module, Houston.

USA ...

CC-H On panel 10, we would like to request you to check the S-band thumbwheel to 3.

CC-H Command module, Houston. Over.

CC-H Command module, Houston. That was the FM thumbwheel to 3.

19 02 30 ACDR-OM Okay, Bo. You ready?

CC-H Roger. We can see you holding the box there.

ACDR-OM Okay. (I'm beginning. Allow me to present to you on behalf of the United States of America, to give your people and your government a present of the United States, a present to your people.)

SCDR-OM I am sure good trees must grow from these seeds.

CC-H Apollo commander, Houston. We're not reading Alexey.

ACDR-OM Okay. Say again, Bo. Did you see that?

CC-H We read you, but we didn't read Alexey during the last part of his acceptance.

SCDR-OM (How do you read me?) How do you read me?

CC-H Now we read you, Alexey.

19 04 10 ACDR-OM (Joint medal for the Soyuz-Apollo mission between the United States of America and the Soviet Union.)

CC-H Just hold it for a second, Tom. It's a little bright. Maybe the camera will be able to pick it up. We can see that it says Apollo-Soyuz and it shows the spacecraft.

19 04 45 SCDR-OM (Good evening, dear television friends. It's 22:00 in Moscow time. The terminating final activities are going on onboard our two spacecrafts. Still lower, a little lower. The present time onboard the Soyuz spacecraft we have the Apollo commander, Tom Stafford, and in the Apollo, Valeriy Kubasov, together with Deke Slayton and Vance Brand. Our joint activities are coming to an end and we will have our fourth and final transfer coming up soon. The joint operations include Tom Stafford's transmittal to me of a box of seeds, of very fast and rapidly growing pine trees. They should grow very well and very rapidly in a good climate when they are planted on our Soviet territory. The joint operations also include an exchange of medals. One-half of the medal was placed on the Apollo spacecraft, and the second half of the medal was placed on the Soyuz spacecraft. And now, here together in a orbit of the Earth, we will be connecting these two halves of the medal. The medal is an emblem of our joint flight joined in docked spacecrafts, Apollo and Soyuz, with the two U.S. and U.S.S.R. flags side by side. I'm taking this medal and handing it over to

Tom Stafford, and Valeriy Kubasov will be taking the other medal from the other spacecraft and bringing it back to us.)

19 07 12 ACDR-OM Okay. (Thank you very much.)

SCDR-OM (What have we done in this time? We had very saturated program - had to do quite a number of operations in a very limited amount of time. We had to do a series of transfers, also watch the systems onboard our spacecraft. All this requires very careful monitoring, very careful observations. Also, at the same time we had to perform a whole series of reports, still pictures, movies. We only had five people here between the two spacecrafts - five crewmembers, and that's really not enough people to do all the things that we had to do, but we had to find a way to do it.)

19 08 23 ACDR-OM Okay, Houston.

CC-H Roger, Apollo. We saw the joining of the medallion. We got a good picture of the medallion in our TV.

ACDR-OM Okay. Command module, say again.

SCDR-OM (Who turned it off? We really shouldn't have anything bother anybody.)

19 09 32 ACDR-OM Vance, how do you read?

19 09 39 ACDR-OM Deke, how do you read?

19 09 48 CC-H Apollo commander, Houston. We read you.

ACDR-OM Okay. I was just trying to get through to see if the - Deke and Vance are putting the medallion together with Valeriy. They want - we were going to say something on TV and I was listening to ...

CC-H Roger.

19 11 09 CC-H Command module, Houston.

CMP-CM Go ahead, Houston.

CC-H We see you there with the medallion and we'd like to have the filter adjusted so that the couch lights don't blossom in the picture.

	CMP-CM	(Yeah, we don't have the filter.)
	CC-H	(Roger.)
	CC-H	And, command module, Houston. We'll be standing by for the clock sync in 3 minutes here.
19 12 50	CC-H	Command module, Houston. We didn't hear you; although you looked like you were talking to us here just a minute ago.
	ACDR-OM	Vance, how do you read; I haven't been reading you at all.
	CMP-CM	Okay, Houston. Reading you loud and clear; and, Tom, reading you loud and clear.
	ACDR-OM	Okay. I can read you now.
	CC-H	Roger. We can understand you now, Vance, and we'd suggest you get the clock sync on time and then proceed with some of these other activities.
	CMP-CM	Okeydoke.
19 15 02	CMP-CM	(Soyuz, this is Apollo.)
	SCDR-OM	How do you read me?
	CMP-CM	(Good, Alexey. We've got about 50 seconds to time sync.)
	CMP-CM	(Giving countdown now. 7, 6, 5, 4, 3, 2, 1 -)
19 16 00	CMP-CM	MARK.
	SCDR-OM	We are synchronized.
	CMP-CM	(That's good.)
	CC-H	We copied the clock sync.
19 17 09	CC-H	Apollo, Houston - command module, Houston.
	CMP-CM	Go ahead.

	CC-H	The lights are - in our picture are blossoming pretty badly, perhaps you could either get the filters on them or block them in some manner.
	DMP-CM	Filters aren't on, Bo.
	CMP-CM	We're looking for the big camera filter, Bo.
	CC-H	Understand.
	ACDR-OM	Hey, Vance, it was either back on the one in 605 or in F-2.
	CMP-CM	Rog. Not in F-2.
19 20 09	CC-H	Command module, Houston. We ho - heard the Apollo commander before ask for a set of Nikon batteries. To save you the problem of looking up where they are, they're in B-5.
19 20 22	DMP-CM	Got you.
19 26 36	DMP-CM	Okay, Bo, if you're reading, I got the 35 flash batteries.
	CC-H	Negative, we did not read, but we do now, thank you.
19 28 32	CC-H	Apollo commander, Houston.
	ACDR-OM	Go ahead, Bo.
	CC-H	Looks like you're having fun - if you'd like to tell us about any of the things you're doing, we'd be anxious to hear.
	ACDR-OM	Oh, okay. Well, we're just finishing up the third period up here, and relaxing a little bit. We've had a wonderful experience here. And Alexey and I are looking at the procedures to go through now. We also had a snack.
	CC-H	We saw the snack.
	ACDR-OM	Bo, are you sending the TV over to the Soviet Union at this time? Over.
	CC-H	Roger. All the TV we get goes to the Soviet Union.

ACDR-OM I'd like to just say hello to the people there.

CC-H I think we've got time.

ACDR-OM Okay. It'll take about a minute or 2.

CC-H Roger. I think we've got the time.

19 29 41 ACDR-OM (Dear Soviet television viewers. Allow me as the representative of the United States of America to send to you best regards from the people of the United States.)

END OF TAPE