

ASTP (USA) MC357/1
Time: 10:37 CDT, 99:17 GET
Date : 7/19/75

USSR (Russian)
USA (Russian)
USSR (Garble)
USSR (Garble)
USSR Apollo, Soyuz we (garble) orbital orientation.
USA (Garble)
USA (I'm beginning the experiment.)
USSR (Garble)
USSR We don't under - we did not understand you.
USSR (Garble) we did not understand you.
USA (Garble)
USSR Do you have station-keeping?
USA (Russian)
CC-H Apollo, Houston. You have until 99:39 for full
data take you need the time.
USA Okay.
USA (Garble)
USSR (Garble) established.
USA (Looking through the window)
USA (Russian)
USSR (Garble) waiting for you.
CC-M (Soyuz, this is Moscow. How do you read?)
CC-M (Soyuz, Soyuz, this is Moscow. How do you read?)
USSR (Standing by Moscow.)
CC-M (Roger, Soyuz.)
CC-M (How did the undocking go?)
USSR (The docking went normal. The pressure is normal.
We are now in orbit - orbital hold - mode. Apollo has left the field
of view and we cannot see him so far.)
USSR (The reflectors are opened - 50 meters..)
CC-H Apollo, Houston. We may lose ATS here. If we do, there
are angles in your flight plan.
CC-H Apollo, Houston. We may lose ATS here. If we do
there are angles for reacquiring in your Flight Plan.
ACDR Roger. I've got the plus - pitch plus - -

END OF TAPE

ASTP (USA) MC358/1
Time: 10:47 CDT, 99:27 GET
7/19/75

CC-H Apollo, Houston. We may lose ATS here; if we do
there are angles to reacquire in your flight plan.
ACDR Roger. I've got the plus - pitch, plus 15 and a
yaw, plus 214.
CC-H Roger. We still read you fine.
USSR (Russian)
USSR (Russian)
CC-H Apollo, Houston. It looks to us as if you may be
out a little far and we think that perhaps a correction down and to the
left would be appropriate.
DMP Yeah, that's the way we read the last one.
CC-H Roger.
SCDR Beacons On. Orientation lights ON.
ACDR (We see your beacons.)
CC-M (Soyuz, this is Moscow.)
USSR (Russian)
CC-H Apollo, Houston. Just another reminder; if we lose
the high gain acquisition, you'll need to go recorders ON.
ACDR Say again, Bo.
CC-H Roger. If we lose high gain antenna lock-on, you'll
have to put the recorders ON.
ACDR Okay. That's high bit rate, forward, command and
reset, right?
CC-H Apollo. It doesn't look like we're going to lose
you. We'll try to keep you clued if it looks like we will.
CMP Okay.
ACDR All right, Bo.
USA - -the camera - -

END OF TAPE

ASTP (USA) MC359/1
Time: 10:57 CDT, 99:37 GET
7/19/75

ACDR (Soyuz, this is Apollo. Turn off orientation lights.)
ACDR (Soyuz, this is Apollo.)
ACDR (Soyuz, this is Apollo. Turn off beacons and orientation lights, also.)
CMP (Soyuz, this is Apollo. How do you read?)
ACDR (Soyuz this is Apollo. How do you read me?)
CMP Houston, Apollo.
CMP (Soyuz, this is Apollo.)
ACDR (Soyuz, this is Apollo. Turn off your orientation lights and beacons.)
CC-H Apollo, Houston. Did you call?
ACDR Yeah.
CMP Hey, would you call the Center and have them - well, I guess we - we're not over the USSR but we have a problem. We can't get the Soyuz beacon and orientation lights off. Apparently they're not reading us.
CC-H Roger. Wilco.
f ACDR (Soyuz, this is Apollo. How do you read? Turn off your orientation lights and beacons, please.)
SCDR I thought I (garble) off.
USA (Turn off your orientation lights and beacons, immediately, please.)
SCDR Soyuz orientation lights off.
ACDR (And beacons too.)
ACDR (Also turn off your beacons, please. Turn off both the beacons and orientation lights.)
CMP (Soyuz, this is Apollo. Turn off your beacons please.)
SCDR Okay.
ACDR (Thank you. Thank you.)
SCDR You were calling our spacecraft?
ACDR (Yes, of course.)
CC-H Apollo, Houston. Experiments says it looks like we're getting good data.
ACDR I hope so.
CMP Roger. We had a hard time making them understand to get the beacons off.
CC-H Roger. We copied that.
ACDR I think the time factor was (garble).
PAO This is Apollo Control. The television presently on the circuits is a replay of the earlier television from the studio video tape recorder. It is not real-time television. The - both of the spacecraft are in darkness at this time, doing the UVA fly-by.

END OF TAPE

ASTP (USA) MC360/1
Time: 11:07 CDT, 99:47 GET
7/19/75

DMP (Soyuz, this is Apollo. Turn on beacons and orientation lights, please.)

CC-H Apollo, Houston. We show you've finished your sweep. Could you give us a range reading?

USSR (Garble) beacon, our beacon, ON.

DMP (Okay.)

DMP Okay, Bo. Our range reading is .05 to .06. I guess I don't have that much confidence.

CC-H Roger. .05 to .06. And - could you tell us if you visually saw the reflector covers open?

DMP Yes, I did, Bo. I could - with the spotting scope I could see each mirror inside of them.

CC-H Thank you very much.

CC-H Apollo, Houston. There are 2 minutes until ATS LOS. We'll see you at Orroral at 99:56.

ACDR Roger.

CMP Okay. And we're tracking in and out of - seems to be looking pretty good, Bo.

CC-H Roger. We'll have to - we'll try to give you a progress report or our evaluation at Orroral. But it looks pretty good.

USA Okay.

CC-H And Apollo, Houston. Just a reminder - the Soyuz crew would be interested in a range readout every now and then.

USA Yes.

ACDR (60 meters.)

USSR Roger. 60 meters and -

USSR 60 meters.

ACDR (Correct.)

END OF TAPE

ASTP (USA) MC361/1
Time: 11:17 CDT, 99:57 GET
7/19/75

ACDR (Soyuz, this is Apollo. And we're ready to turn
on spotlight.)
USSR (Okay.)
CC-H Apollo, Houston, through Orroral Valley for about
2-1/2 minutes.
DMP Roger, (garble) Bo. For your information, we think we got a
big bias in the (garble). (Garble.) Incidentally, that (garble).
CC-H Sorry, Deke. But you were very garbled. Could
you try again? Due to big -
DMP I said our VHF ranging has a great bias in it. We
gave you .05. I would say we were probably closer to 150 meters than
we were 100.
CC-H Roger. I think everybody here concurs.
CC-H Apollo, Houston. There is about a minute until
Orroral LOS. AOS at Quito at 100 hours and 26 minutes.
PAO This is Apollo Control. Loss of signal through
Orroral Valley. Next station, in 25 minutes, will be Quito, Ecuador. And,
of course, 55 minutes of continuous coverage of Apollo-Soyuz through
ATS-6 satellite. Upcoming this afternoon, in the Houston news center,
will be a briefing on ASTP science. ASTP project scientist, Dr. Tom
Giuli, will be the moderator. Participants in the briefing will be:
Dr. Farouk El-Baz of the Smithsonian Institution, who is one of the
principle investigators on earth observations and mapping; Dr. C. Stuart
Bowyer, principle investigator on extreme ultraviolet and helium glow
experiments; Dr. Friedrich Vonbun of geodynamics experiment; and
Robert Snyder, the multipurpose furnace and electrophoresis experiments,
plus the science demonstrations that have been run on ASTP. Here in
Mission Control, the flight directors are watching a replay of the 2nd
docking. Just now the heel of the boot of Italy is drifting by, under-
neath the spacecraft. This is - repeat - is not real-time television,
but a replay from earlier television today. Further data takes at
a distance of 500 meters is - are schedule later during this fly-around
of Apollo, around the Soyuz spacecraft. This 2nd data take - also out
of plane, to the right of Soyuz, will begin at around 100 hours 50
minutes. Real-time television is scheduled during that fly-around. It
will be during the next ATS-6 pass across the Atlantic. 22 minutes to
tracking station Quito. At 100 hours 3 minutes, as you were 100 hours
4 minutes ground elapsed time, Apollo Control.

END OF TAPE

ASTP (USA) MC 362/1
Time: 11:45 CDT, 100:25 GET
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PAO This is Apollo Control. 100 hours 25 minutes, ground elapsed time. Acquisition in 50 seconds through tracking station Quito. Apollo will do the 500-meter fly around of spacecraft Soyuz at this time. And, hopefully, we'll have a good TV picture. Should have acquisition momentarily through Quito. Spacecraft communicator, Bo Bobko, sitting back down after a leg stretch to begin his call to the crew.

CC-H Apollo, Houston through Quito for another minute and a half.

ACDR Roger. We've just rolled 180 degrees, Bo.

CC-H Roger. We have a item here. Your maneuver looked good. It looked like you were locked on for a good period of time, but we have some doubt that - their retro reflector was performing properly and so we're going to ask the Soyuz to use their rear retro reflector. To do this, we would ask you to relay to them, their control center would like to speak to them through their ship.

ACDR (Soyuz this is Apollo.)

USSR (Garble)

ACDR (Garble) Moscow wants to talk to you over our ship. Over.)

USSR We are ready.

ACDR They're ready, they got it.

CC-H Roger. Thank you very much and we'd like your attitude set to GDC, if it is not.

USSR (Thank you, we hear you excellently. We are now at 270 90. On the - from the right side we see the Apollo -)

CC-H Apollo, Houston, through Bermuda. Over.

DMP Loud and clear, Bo. Bo, we have a question.

CC-H Go ahead.

DMP We thought we could see a light leak in the window, or perhaps not covered, one or the other. Would that have any effect on the experiment?

CC-H We'll check.

USSR (This is Soyuz, I read you excellently. I hear you excellently.)

CC-H Command module, Houston, we don't believe that light leak could have affected it, but we're checking it thoroughly.

ACDR Okay and you heard and you might relay to Moscow we had a hard time getting them to turn off their beacons and lights.

CC-H Roger. We heard that.

SPKR (With the rear angle retroreflector. At the present time do the orientation with a yaw angle 270 90 in accordance with the frame on page 4.2 -

END OF TAPE

ASTP (USA) MC363/1
Time: 11:55 CDT, 100:35 GET
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USSR (- - 270; 90; 270; 90; in accordance with the frame on page 42-53. 42-53 page of the detailed Flight Plan. Change yaw angle - instead of 180.0 to 270; 90.)
USSR (How did you read the first half?)
CC-M (Soyuz, this is Moscow.)
USSR (Moscow, this is Soyuz.)
USSR (We've already done that and we're going at yaw 270; 90.)
USSR (Moscow, this is Soyuz. Our yaw was automatic.)
CC-M (Both Soyuzes, this is Moscow. This will be preformed in such a manner. The second maneuver in order to do the 500 meter data-take, Roger.)
CC-M (After completion of the data-take, do a maneuver to the right until Apollo appears in your right window. After that, follow the nominal program. How did you receive? Over.)
USSR (We're now doing it. Our yaw now 270; 90. The Apollo will - the Apollo will go off to 500 meters and we have to follow it and observe it visually through the right window. Correct?)
USSR (How did you read, Moscow?)
CC-H Apollo, Houston. Over.
ACDR Go ahead.
CC-H Apollo, did the light that was coming from the window appear to be as bright as that was coming back from the reflectors?
USSR (Russian)
USSR (Do 270; 90 OFF)
CC-H Apollo, Houston. In the blind it looks just as if you may have bumped the stick.
USSR (Russian)
CC-H Apollo, Houston. Over.
USSR (Russian)
USSR (No, we understood, but we have a questions. Didn't it come out right with the right window?)
CC-M (No, so far not.)
CC-H Apollo, Houston. Over.
USA Read, Bo. Read, Bo.
CC-H Roger. It looks to us as if the Soyuz has started their maneuvering. Can you see it?
USSR (Russian)
CMP Negative. Not yet.
CC-H Roger. We'd appreciate a call when you are able to see them maneuvering them to their proper attitude.
CMP Well, I'm not sure what - -
ACDR They're still yawed 90 degrees, Bo.
CC-H Is that 90 degrees orbital or in plane?
ACDR They're not yawed in plane, Bo. There 90 degrees to it.
CC-H Rog. Understand. And you had a question about a magazine before and I read you up a new one. If that is now finished, you are cleared to use CX05 which is located in F2
ACDR Thanks Bo. I know I grabbed that one when I couldn't find the probe and called down here (garble). (Garble) last time we came back to plane we were sort of in the dark (garble) sunrise right behind the Soyuz. (Garble)

ASTP (USA) MC363/2
Time: 11:55 CDT, 100:35 GET
Date: 7/19/75

CC-H Apollo, we did not read you. You have a bad echo.
ACDR Okay, just wanted to inform you that the last time
around we came into plane - in darkness yet - and it and turns out that the
sunrise's directly behind Soyuz. And we had a difficult time there until
the sun got overhead. Do you expect the same thing to happen at the 500
meter?

CC-H Roger. We understand the problem and I understand
that the geometry should be the same, so again the sun will be in your
eyes.

CC-H Apollo, I just gave you some bad information. The
sun will be behind you, so you should be able to see the Soyuz well.

ACDR Yes, we just - we just figured that out for ourselves
here (garble).

CC-H Apollo, Houston. To get a full data take on this
you need to start the maneuver by 101:08.

END OF TAPE

ASTP (USA) MC364/1
Time: 12:05 CDT, 100:45 GET
7/19/75

CC-H Apollo, Houston. To get a full data take on this, you need to start the maneuver by 1:01:08.

ACDR Roger. Is that the data take?

SPEAKER (Garble.)

CC-H Apollo, Houston. Over. That 1-0-1-0-8 is the start maneuver time.

ACDR Understand, Bo.

ACDR (I see you, Alexey.)

SCDR We see you.

ACDR Houston, Apollo.

SCDR (Garble.)

CC-H Apollo, Houston. Go ahead.

SPEAKER (Garble.)

ACDR (Roger.)

USSR (Garble.)

ACDR (Roger.)

ACDR Okay. On this start - here - right now - we're going in plane forward; and he's yaw 90 degrees. Affirmative?

CC-H Be -

ACDR Is he going to keep his present -

CC-H That's right. He's going to keep that present attitude.

ACDR Okay. Yaw 90 degrees to the velocity vector. All right.

CC-H And, therefore, you should be able to see his rear retroreflector.

ACDR (All right.)

CC-H That's correct.

ACDR (Initiating the maneuver.)

USSR (garble).

CC-H Apollo, Houston. Over.

CC-H Apollo, Houston. Over.

CMP Okay. He's working there.

SPKR (Russian)

DMP Okay. We stopped the maneuver, Bo, if you didn't catch that, I had a wrong switch configuration here.

CC-H Roger. May we suggest that you go back and start again.

CC-H Apollo, Houston. We have about 15 minutes until you need to start the maneuver out of plane to get the full data take.

DMP Okay.

CC-H Apollo - if somebody has a chance, we would like PEAK on the out-the-window camera.

ASTP (USA) MC364/2
Time: 12:05 CDT, 100:45 GET
7/19/75

USSR (Russian)
SPEAKER (Garble.)
USSR (This is Soyuz. I hear you excellently. How do
you read me?)
USSR (Moscow, this is Soyuz. I read you excellently.)
CC-M (Roger, Soyuz.)
USSR (Now the situation is as follows. Apollo went by
our rear, and we saw it through our right window. The distance was
about 30 or 40 meters. It is holding distance very well. Now I'm
watching it through the right window. And after that will (garble).
Over.)
USSR (It is a 180 degrees roll, in relation to us,
upside down.)
USSR (Russian)
CC-H Apollo, Houston. We'll be coming up on sunset
here, in just a few minutes.
ACDR Okay.
CC-H Apollo, Houston. There are about 5 minutes until
sunset at this time. If someone has a chance, gamma 1/2 on the out-
the-window camera.

END OF TAPE

ASTP (USA) MC365/1
Time: 12:17 CDT, 100:57 GET
7/19/75

CC-H Apollo, Houston. It looks like you just did your
maneuver. Could you confirm that?
CMP That's (Garble)
CC-H And Apollo, Houston. We're out of TV; we're just
watching data again.
USA Okay.
ACDR (Soyuz, this is Apollo. Now turn ON the beacons,
please.)
SCDR Beacon ON.
ACDR (Thank you.)
ACDR (Also, turn ON your orientation lights, please.)
ACDR (I see - turn on your orientation lights.)
SCDR Orientation lights ON.
ACDR (Thank you.)
USSR (Standing by.)
ACDR (Soyuz, this is Apollo. Now turn ON your ranging,
please.)
SCDR Ranging ON.
ACDR (Garble)

END OF TAPE

ASTP (USA) MC366/1
Time: 12:33 CDT, 101:13 GET
7/19/75

CC-H Apollo, Houston. Could we have you hit arrow
reset?
DMP Roger. We'll hit it again.
CC-H Roger. We don't think that it's any problem, but
we's just like to see if there is another (garble) light.
ACDR (Soyuz this is Apollo. Now turn off - please,
turn off your beacons and orientation lights. Over.)
USSR Beacon, off; orientation lights, off.
ACDR (Thank you.)
CC-H Apollo, Houston. It looks as if we're getting
data.
USA (Garble.)
CC-H And, Apollo, Houston, this data does look better
than the last.
USA Roger.
ACDR If you believe our VHF ranging, Bo, we're exactly
500 meters, but I don't.
CC-H Roger. Understand. You show yourself at 500
meters.
ACDR That's what the gage says.
CC-H Apollo, Houston. If you called you were very weak.
USSR (Garble) Soyuz what is the range now?
ACDR (500 meters.)
USSR (Garble) What is the range now?
ACDR (500 meters.)
USSR 500 meters.
CC-H Apollo, Houston. Experiments liked your data.
ACDR Okay. It looks good from here. Should be on the center in
the yaw and the pitch.
CC-H Roger.
END OF TAPE

ASTP (USA) MC367/1
Time: 12:43 CDT 101:23 GET
Date: 7/19/75

ACDR -- data take completed.
USA (Soyuz, this is Apollo. Turn on beacons and orientation lights. Thank you. I see your beacons and orientation lights.)
CC-H Apollo, Houston. Over.
ACDR (Garble) go ahead.
CC-H Roger. Looks like you're still above the red line but getting close and we'd like to remind you again about the switch over on the PSM. And if your switch we'd like you be in --
USA You want to switch (garble) the PSM or the (garble)?
CC-H Not now but when it gets down to 10 percent.
ACDR Roger.
CC-H And, Apollo, Houston. When you do do the switch over from PSM we'd like you to be in SCS min impulse.
ACDR Roger. SCS min impulse.
CC-H And we have LOS coming right up and we'll see you at MILA at 10202.
ACDR Roger.
USA Houston, Apollo.
USA (Soyuz, this is Apollo.)(?)
ACDR Roger. We're going LOS. You got about 9 and half minutes data.
ACDR Go ahead.
USA Apollo, Houston(sic). We got out to .24 on the EMS, which is obviously a bias.
CC-H Roger. .24.
PAO This is Apollo Control. Loss of signal through ATS-6 satellite as the Apollo crew continues the 500 meter out-of-plane data take for the ultraviolet - extreme ultraviolet absorption experiment. Later on during this LOS period, Apollo will move in to about 50 meters away from Soyuz, take extensive still photos of the Soyuz spacecraft out the window and then prepare for the separation maneuver which will put the two spacecraft on separate trajectories and there's a thousand meter distance in-plane ultraviolet absorption data take which will be shortly after separation. And then the crew will settle down for a meal period after a fairly long day. And that essentially runs out the so-called joint crew activities Flight Plan. And each spacecraft will go to their own solo flight plan. Our next station will be Merritt Island Launch Area in 32 minutes. We shall return at that time. This is Apollo Control at 101:32 ground elapsed time.

END OF TAPE

ASTP (USA) MC368/1

Time: 13:23 CDT, 102:03 GET

7/19/75

PAO This is Apollo Control, 102 hours 3 minutes ground elapsed time. 50 seconds away from acquisition through Merritt Island Launch Area tracking station, just adjacent to Kennedy Space Center in Florida. The Experiments Officer here on this team of flight controllers, Skip Larson, is uncertain at this point as to why the ultraviolet absorption experiment data was degraded, but he does suspect that some sort of reflectance (sic) interfered with the light beams emitted from the optical absorption spectrometer on the docking module toward the retro-reflector on Soyuz. And he's continuing to sort out the data and try to establish what the interference was. We're up live now and have contact with Apollo.

END OF TAPE

ASTP (USA) MC369/1
Time: 13:39 CDT, 102:19 GET
7/19/75

CC-H Apollo, Houston. Through ATS again. Standing by.
ACDR (Russian)
CC-H Apollo, Houston. When you have a chance, switch
the PSM. We show it's empty.
USA (Garble) - empty.
USA (Garble) 0-1-6.
CC-H And Apollo, Houston. The ATS angles are minus 24 and 1-5-0.
USSR (Garble.)
ACDR (Soyuz, this is Apollo. Maneuver completed.)
ACDR (Soyuz, how do you read?)
CC-H Apollo, Houston. Over.
CMP (Soyuz, this is Apollo.)
ACDR (Soyuz, this is Apollo. How do you read me?)
CC-H Apollo, Houston. Over.
CC-H Apollo, Houston. Over.
USA Go ahead, Houston.
CC-H Roger. You can switch your PSM. We show that it's
empty. And your high gain antenna's at minus 2-4 and 1-5-0.
ACDR Minus 2-4 and 1-5-0. Roger.
CC-H Roger. And the PSM is on systems checklist 1-3.
CMP Roger. And we're showing 14, but we'll switch over.
14 per cent.
CC-H Apollo, Houston.
ACDR Okay, Bo. I've got minus 2-4 and 1-5-0 on REAC.
CC-H Understand.
ACDR Houston, Apollo.
CC-H Apollo, Houston. Go ahead.
ACDR (Garble.)
USSR (Moscow, I read you excellently.)
CC-H Apollo, Houston. Go ahead.
ACDR Roger. I guess we're locked up now, and we're
switched over to the QUAD's.
CC-H Thank you.
CC-H And -
SCDR Vance - How read me?
CMP (Excellently, Alexey.)
SCDR Thank you very much for your big job.
CMP (Thank you, also. This was a very good job.)
SCDR - - was well done.
CC-H Apollo, Houston. Could you tell us if there's power to
the evaporator?
SCDR It was a very good show.

ASTP (USA) MC369/2
Time: 13:39 CDT, 102 19 GET
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SCDR Now I see your spacecraft very, very well. (Garble.)
ACDR (Unfortunately, I cannot see you. All of the sun
is in the window.)
SCDR Yes, yes, yes, yes. Sorry.
CC-H Apollo, Houston. Over.
ACDR Go ahead.
CC-H We'd like to confirm you've deactivated the activated
primary evaporators, and secondary, as well.
ACDR That's affirmative. We've deactivated them.
SCDR (Garble.)
SCDR After our flight - - after our flight - How you do?
ACDR (All right.)
CC-H Apollo, Houston. Over.
ACDR Go ahead, (garble).
CC-H Is that checklist to protect the camera from the
sun - -

END OF TAPE

ASTP (USA) MC370/1
Time: 13:39 CDT, 102:29 GET
7/19/75

CC-H Apollo, Houston. Over.
ACDR Go ahead.
CC-H Is that checklist to protect the camera from
the sun?
ACDR Yeah, sure is.
CC-H Okay, we couldn't tell whether you were trying to
show us something or protect the camera.
ACDR No, the doppler on that sun was right into the
camera. Now it just setting. And there's Soyuz. Maybe you can see
him. Right there at the sunset. It's beautiful.
CC-H Negative. We don't have a picture.
ACDR We couldn't see them for the last five minutes, Bo,
and -
CC-H Apollo, Houston. We're back in a data mode now.
ACDR (Soyuz, this is Apollo. Please turn on your orienta-
tion lights. Also, please turn on your ranging. All right.)
ACDR (Soyuz, this is Apollo. Please turn on ranging.)
USSR You say?
USSR Apollo, Soyuz. Repeat it.
USA (Alexey, please turn on your ranging mode.)
CC-H Apollo, Houston. We're just approaching the
experiment redline.
ACDR Roger. We have our separation burn and we're going away.
Tracking (garble)
CC-H Roger.
CC-H Apollo, Houston. The PI's would like the experiment
doors open a little early. If you can do it now, we'd appreciate it.
CMP Roger. Understand. Experiment doors open.
CC-H Roger.
USA (Soyuz this is Apollo. Turn on your orientation
lights, please. I do not see you.)
CC-H Apollo, Houston. Just of reminder. Part of pro-
cedure to turn the jets off before you open the EVA door.
ACDR All right.
SFE How do you read me?
ACDR (Very good. Very, very good Valeriy.)
SFE What did you say before?
USA (Nothing, Valeriy.)
USSR (Garble)
USA Houston, we're opening the door now.
CC-H Roger. Copy.
CC-H Apollo, Houston. We seem to have lost range data.
Could you please do a VHF range reset?
ACDR (Soyuz, this is Apollo. Now turn on ranging.)
USSR What did you say?
ACDR (Nothing, nothing. Ranging established. 1000 meters.)
CMP (Valeriy, distance exactly one third mile.)

END OF TAPE

ASTP (USA) MC371/1

Time: 13:49 CDT, 102:39 GET

7/19/75

CMP Houston, Apollo.
CC-H Apollo, Houston. Go ahead.
CMP Bo, right now it's very interesting. We're looking down on him and he's got a beacon flashing and we can see the two lights very well. He's pulling ahead of us and you can see the dark Earth in the background; it's just as if an airliner's maybe going underneath us and pulling ahead of us a little bit; maybe a thousand feet below us or so.
CC-H Roger. Thanks. We don't have TV, only data right now. Could we ask you to hit the VHF range reset again?
ACDR Okay, we'll try.
ACDR Okay, nothing happened again.
ACDR (Soyuz, this is Apollo. Please check your VHF ranging. Over.)
SCDR ON.
ACDR (Thank you, thank you.)
CC-H Apollo, Houston. I have UVA supplemental data here. Is someone free to copy?
ACDR (Soyuz, this is Apollo. Now please turn OFF your orientation lights.)
SCDR Okay. Orientation lights ON - OFF.
CMP Houston, Apollo.
CC-H Roger. I have a change to you at the end of this UVA. Ready to copy?
ACDR Go ahead.
CC-H Roger. At 102:50, we'd like to - there's a VERB 49 maneuver; we'd like to change that to read 10252, change the VERB 49 maneuver to UV inplane scan attitude 202, 301, 320, by 102, 59.
ACDR Roger. Change it to UVA inplane scan at angles 202, 301, 320 by 102, plus 59.
CC-H Roger. That's after this thousand meter coarse, and maneuver to out-of-plane attitude by 103, 04.
CMP Houston, Apollo. We have a little problem here on getting data. We haven't asked him to turn OFF his beacon yet, because it's just impossible to see the reflector at this distance.
CC-H Understand.
CC-H And Apollo, Houston. Down about 103:30 it calls for waste water dump; don't do that dump.
CMP Roger.
ACDR (Soyuz, this is Apollo. Now please turn OFF your beacons.)
SFE Roger. Beacon ON - OFF.
ACDR (Soyuz, this is Apollo. Please turn ON your orientation lights.)
SFE Orientation lights.
ACDR (Thank you.)
ACDR Hey, Bo. Can you tell us if they're getting data or not down there?

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CC-H	Experiments says we're getting data.
ACDR	(Garble)
CC-H	Apollo, Houston. It looks like you're still getting
good data.	
ACDR	Amazing.

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CMP Okay, Houston is that enough sweep data for you?
CC-H I'll check with Experiments.
CC-H Apollo, Houston. We'd like you to continue.
CMP Okay.
CC-H And Apollo, we'll probably lose you on ATS and not pick
you up again until Vanguard at 103:13.
CMP Okay, Bo. Do you want to give us a cut-off criteria on
this data - take?
CC-H Roger. I'll ask Experiments again.
CC-H And, Apollo, Houston. We'd like you to track the
light there for a second so we can see what the life looks like on our
data. And then be able to filter that out later.
CMP Okay.
CC-H And as soon as you do that you're - we're ready to terminate
the experiments.
ACDR - - (Garble).
CMP Okay Do you want to - never mind.
ACDR What I've been doing, Bo, is fuding orientation light to
where I think the beacon is because I think that's where the reflector is.
CC-H Roger. What they'd like you to do would be to
track the light for a bit so that perhaps they can determine something
from that and later filter that from the data. And as soon as you're finished
with that you're clear to go on to the in-plane scan attitude.
ACDR I understood that.
CMP You mean his beacon light, Bo.
CC-H Roger.
ACDR Okay. I'm done tracking the lights.
CMP Do you need any data on the beacon too?
CC-H Roger. We've got enough. You can now go to the
in-plane scan attitude.
CMP Okay. Roger.
CMP I'd be curious to know - could you see any data from that
little red light?
CC-H We don't think it looked any different but they're
evaluating it.
CMP Okay.
CC-H Apollo, we see you maneuvering and you're going to
lose ATS. We'll see you at Vanguard at 103:13.
CMP Okay. We're maneuvering and we'll do the out-of-
plane maneuver at 103:04.
CC-H Roger.
PAO This is Apollo Control, 103:02 ground elapsed time.
We've had loss of signal for the last several minutes, actually, through
ATS-6 satellite because of the maneuver being performed by Apollo as
it does the 1000 meter in-plane data-take for the ultraviolet experiment.
We'll have contact again with Apollo through tracking ship Vanguard
in approximately 10 minutes. At 3:00 p.m. Central Time, in the JSC

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auditorium, there will be a briefing on the ASTP science activities. The participants will be ASTP scientist, Dr. Tom Guili, Dr. Faouk El Baz, who is principal investigator for earth observation and mapping investigations. Dr. C. Stuart Bouyer, extreme ultraviolet and helium glow experiments, Dr. Fredrick Vonbon, geodynamics, and Mr. Robert Snyder, multipurpose furnace and electrophoresis experiments. That will be at 3:00 p.m. central time in the main auditorium at Johnson Space Center. The Apollo separation maneuver to begin this final data take at distance of 1 kilometer began at 102:22, was an RCS burn and during the course of that burn, as the spacecraft ditched over, they did lose lock through the ATS-6 satellite because the aten - the high gain antenna was not programmed to track the satellite automatically, therefore the next contact was made through the Madrid station through the the C-BAND OMNI antennas and shortly thereafter the crew was given new highgain atenna angles so that communications could be resumed through the satellite. The balance of the afternoon will be relatively quiet as the crew goes into a meal period in about an hour. Meal period starts about 1:04 hours ground elapsed time. The joint operations Flight Plan essentially ends at that point and the solo flight plan picks up at 105 hours on the extensive list of experiments scheduled for the remainder of the Apollo flight. Seven minutes to reacquisition through Vanguard. This is Apollo Control at 103:06.

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PAO This is Apollo Control. 103:13 ground elapsed time. 30 seconds away from acquisition through tracking ship Vanguard. And we're standing by for the spacecraft communicator's call to the crew of Apollo. As soon as we start getting in data and have solid lock-on through the tracking ship, we should have resumed communications with Apollo. We're some 25 minutes away from -

CC-H Apollo, Houston through Vanguard for over 7 minutes.

CMP Roger, Bo.

CC-H If you people have a second, I'd just like to give you a little report, here. There's no writing required.

ACDR Go ahead.

CC-H Well, we'd like to all congratulate you on the TV pictures. They were just great. Sorry we bugged you so much about the settings, but we've been running them down here, again and again, of that undocking and UVA stuff. Talking about TV, we would like you to turn off the 3 TV power switches down there on 181 - if you haven't already done so.

ACDR Yeah, I got those off by the checklist and the amplifier to bypass.

CC-H Great. The 150 data take - 150 meter data take - really looks smooth. I don't think you dropped out of there for more than a few seconds. Perhaps you were always on. The PI thinks there may have been some reflection, off of the Soyuz window, that degraded some of the data. Although, he thinks that we did receive good florescent state on the 150 meter data take.

ACDR Well, that's encouraging.

CC-H The 500 meter was flown perfect, just as was the 150. And we received excellent data. The PI has, on his little report here, that it was just perfect. 1,000 meters - we're still interpreting the data - and they're not sure of whether they got data off of the retroreflector or not, but that's still to be seen. However, it did look like you were locked up on something. And so you people flew it fine. We're still about 60 pounds above the experiment red line, and so there still should be enough gas to do everything else in the mission that's programed.

ACDR Okay. Great, Bo. And you can thank ol' Roger Burke, Steve Grega, and Bob Anderson, down there, that everything came off right. Cause they sure did all the work to make it go.

CC-H Roger. I'll tell them.

ACDR Bo, we have 1 question. On this urine dump - prepare for urine dump - we can dump it out of the bags, but also - what about the normal use of (garble). Can that be used? Over.

CC-H Apollo, Houston. At the scheduled urine dump times, you can dump any urine overboard from wherever you get it.

ACDR Okay, Bo. Thank you.

CMP And Bo, as long as nice words are being said, I'd

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CMP like to say that this is - the spacecraft's really been running well. G&N is just perfect, as we all know, the new docking system is flawless. This sure is a blessed thing for us up here.

CC-H Roger. Thank you.

DMP Just for your info. We got into trouble in the start of both of those sweeps. The 150, we passed it so fast getting into the PNP 31, that I hadn't stopped their opening rate yet, which is my fault. And the second one, we started the sweep burn and accel command instead of in rate command, which threw us out of attitude, obviously. I just knocked it off and went back and started all over; that's probably where a lot of our fuel went.

CC-H Roger. You had us all excited here on the beginning of each one of those, but you recovered beautifully. And those sweep burns were just as if they were drawn right over the nominal line.

DMP I had help up here, too.

CC-H Apollo, Houston. There is 1 minute until LOS. We'll see you at Rosman at 103:39.

ACDR Roger.

PAO This is Apollo Control. Loss of signal at 103 hours, 22 minutes from tracking ship Vanguard; 17 minutes to next station, Merritt Island Launch Area tracking station in Florida. In some 18 minutes the Science briefing, ASTP science briefing is scheduled to commence in the JSC auditorium. The science briefing will be in the auditorium only; it will not be on the Public Affairs broadcast line, it will be transcribed on a somewhat delayed basis. The Apollo-Soyuz air-to-ground will continue to be carried over the Public Affairs release line, and those persons desiring to hear the science briefing will have to attend it in person in the auditorium. 16 minutes to MILA; we'll return at that time. This is Apollo Control at 103:23.

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PAO This is Apollo Control at 103:39 ground elapsed time. We're some 50 seconds away from acquisition of Apollo spacecraft through the Merritt Island Launch Area tracking station. As mentioned earlier, the science briefing for ASTP science experiments is beginning momentarily in the main auditorium. This briefing will not be carried over the - Public Affairs Broadcast line. To hear it, one must be in the auditorium. We're carrying the live air-ground during this upcoming pass and that should start in about 15 seconds, that's with acquisition through Merritt Island Launch Area and overlapping coverage, naturally, with ATS-6 satellite for the next 55 minutes. Apollo Control standing by.

CC-H Apollo, Houston through Rosman for a little over a minute.

CC-H Apollo, Houston through Rosman for just a few seconds. We'll see you again at ATS.

CC-M (Everything normal onboard. Thank you. Ready to receive radiogram on form 03, on systems. Hold one minute. Both Soyuz, we have a question for you. Have you turned off the CO2 absorption?)

USSR Yes, we have.

CC-M (And turned on the automatic?)

USSR (Yes, Roger.)

USSR (We've disconnected the condensat - unite off.)

USSR (That's correct. We've unhooked it and hooked it

up to number 12.)

CC-M (Roger. Thank you.)

USSR (VHF turned off.)

CC-M (Roger. Thank you.)

USSR (Simplex FM is the only one remaining. Ranging

is also turned off.)

CC-M (Roger, Soyuz. Thank you.)

CC-M (Both Soyuzes (sic). Is form 03, ready?)

USSR (We're just now getting ready to do it.)

CC-M (Roger. Then take our radiogram on form 3 on

status of systems. Okay. Go ahead.)

USSR (Number 66. Orbit 70. Buffer battery volume 164 ampere-hours. Fuel of the main power: 88 kilograms. Reserve fuel of the reaction control engines: 20 kilograms. How did you receive this? Roger.)

CC-M (Volume main reaction control engines: 164, back-up:

20. Correct. Next TV show times - Go ahead.)

USSR (0034 to 0041. Plus 1 minute - and 1 minute to each of the times - the first time, the second time. Otherwise I was incorrect.)

CC-M (0 2 0 6 also plus 1 minute. 02:14 correct?)

USSR (Roger. Correct.)

CC-H - colling and we suggest that once you get comfortable, you shut down the secondary loop and the pump and we

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think with the cameras off and the power amp off, it should be comfortable there in the command module. We don't think the secondary loop without the evaporator - helps very much and we think the pump the secondary loop actually adds heat. And we'd like to caution you - go ahead.

USA Go ahead.

CC-H Oh we - just one little caution. We'd like to say that when shutting down the secondary evaporator you've got to be careful to stay in the reset position for about a minute or the evaporator will flash-freeze.

ACDR Okay. I think, Bo, the DM will probably, in my opinion, start cooling down since we've undocked. At least I think that's the case. It was pretty cold down on the Soyuz end up until we docked and I noticed it was pretty warm in there last night. (Garble) warm.

CC-H That's good news. We also think, with all the cameras off now and with the ATS power amplifier off and things like that, that we're not going to have a heat load in the command module.

END OF TAPE