

ASTP (USSR) PRESS CONFERENCE SR46/2

Time: 02:25 CDT, 43:05 GET

7/17/75

MCC-M (The man who will be on contact with the Soyuz during the docking will be Georgiy Shonin - Georgiy Shonin, Shonin. The head of the shift will be Vadim Korovetz. He was here yesterday in the evening.)

QUERY (Soviet Television. What is the distance between two ships at present?)

MCC-M (I think it's approximately 1800 kilometers.)

QUERY Scandinavian Telegraph Agency. Could you please specify once again where the docking will take place? I've understood that it will take place not over Germany but over Mediterranean? Specify, please.

MCC-M (The docking will take place over central Europe. The trajectory - the flight will not pass over the Mediterranean.)

QUERY United Press International. Are we to - - (English)

MCC-M What's your name? (English)

QUERY Gordon Joseloff, United Press International. Are we to infer that the television defect was in the system and not in one particular camera, and are we also correct in inferring that all TV cameras are now working? (English)

MCC-M Are now working? (English)

QUERY Are working properly. (English)

MCC-M How should we understand you? The defect was in all TV systems or in one particular camera, and now I understood you that all cameras are working?

MCC-M (The defect was in one of the blocks of the television system, one of the assembly parts. And due to the fact that we were short on time, we did everything possible to get the two cameras working that would show the docking itself. Right now we've got two cameras working.)

QUERY (Nachtshakadchad Hungary. Could you tell us approximately just where the orbit will pass over Europe? Approximately what countries, what towns?)

MCC-M (I can't tell you exactly right now, because there might be some very slight changes, but it will be more or less exact approximately 2 hours before the docking. So the ships will touch over central Europe and they will be hermetically sealed somewhere over the Ukraine.)

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MCC-M (... will touch over Central Europe and they'll be hermetically sealed somewhere over the Ukraine.)

QUERY (Soviet television. Will the crew on the ships see the docking itself directly or will they watch the approach of the two ships through the television cameras. If through the television cameras, then are those the cameras that will transmit to Earth?)

MCC-M (Both crews will watch each other as they approach from approximately 15 meters) 50 is what was said (through special optical instruments. Therefore, the Soyuz will not necessarily use the television camera.)

QUERY (Reuter's Press Agency. You said that you have two cameras working color television. Does that mean that the black and white do not work now? And my second question, will the TV cameras show the landing of the Soyuz?)

MCC-M (So far, we've got two color vision - color TV cameras working. If there will be the time we shall request the crew to do the same repair work with the black and white in order that they will start functioning. That they will start functioning.)

QUERY (Russian)

MCC-M (I don't represent Soviet television, so I can't say what'll happen where the ship lands, and you ask your question of Soviet television.)

QUERY (Warsaw Cultura. Could you, in more explicit detail, tell us what Colonel Shonin will do today, exactly?)

MCC-M (He carries on radio communication in the second shift with the Soyuz. He transmits everything that we wish to transmit to the crew and, the other way around, receives all their communications. He's CAPCOM, as the Americans call him.)

QUERY (Will the Soviet TV - This is from Earnest (garble) ABC News, New York. Will the Soviet TV stay on late tonight, so people can follow the docking between the Apollo and Soyuz?)

MCC-M (According to our planned program the television will show the docking, but as far as how late the TV will be transmitting tonight, again ask your question from the Soviet TV representative.)

QUERY Why is the communication when (garble).

MCC-M Good question.

MCC-M (That question can be answered simply because both the crew and communications cosmonaut who carries on the communications have identical training; and, therefore, for them it is easier to find a common language quickly, because they use both identically trained and they know all the ins and outs of the question.)

QUERY (Does the program foresee any orientation of the ships according to the heavenly bodies or will they only study the eclipse of the Sun? I know that previous flights carried out these operations.)

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MCC-M            The Soyuz ship twice a day orients itself on the Sun in order to keep the planes of the solar batteries flat between the coordinates of the Sun. The Apollo, however, does very often take readings of the heavenly bodies. But this is not a scientific experimental process; this is a purely technical part of the program.)

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QUERY In view of the question asked by my Polish comrade, are you gentlemen, Tsybin and Blagov, are you also cosmonauts?

MCC-M Nobody has any doubts to the fact that I am not a cosmonaut. Well, they wouldn't take us as cosmonauts possibly because we are slightly too high, too tall. No, neither Blagov, nor Kravets, nor I are cosmonauts. We are heads of shifts.

MCC-M (Garble) one last question. BBC, welcome.)

QUERY Well, thank you. You've said, Alexey, what an important day this is in coordinating two mission control centers speaking different languages in two different hemispheres, and I wonder if you could tell us, is there a role for translators in this complicated maneuver today. What is it, or is it largely preagreed and automatic?

MCC-M (Interpreters play an important role because, regretfully, so far we cannot do without them.)

QUERY Gordon (garble), United Press International. How much consultation has there been with the American specialists at Kaliningrad, and what kind of consultations?

MCC-M (We know the American specialists very well, particularly Jack Lewis, with whom we've done a great deal of consultations, and we are - we coordinate all our consultations and inform the American side of any problems or questions that we may have.)

QUERY (Two more questions. The head of the shift is a new profession, just as the cosmonaut is also a new profession. What type of education is needed for that, and are these any people and how many, if possible, could you tell us, could take your place?)

MCC-M (It may be inconvenient for he himself to answer that question, but they are irreplaceable, so far.

MCC-M Thank you. You helped me in the most difficult part of the answer. As for an education, we all have a higher technical education. Victor Blagov and I were graduated from the Moscow Aviation Institute, Vadim Kravets was graduated from the Kharkov Aviation Institute.

QUERY (One more question. UPI distributed the information by release by (garble) that our briefings are a little too prolonged. I have it here. Therefore, I should like to discuss with you how to make our briefings and press conferences shorter. The first proposal is not to ask questions. The second proposal is to ask questions but not to answer them. But the proposal to exclude UPI is not my proposal. As announced, the docking will take place at 19:15, Moscow time. According to our schedule, our next briefing, as usual, a short briefing, will take place at 6 o'clock. I think that we'll have Victor Blagov here this evening. Vadim Kravets is in the Control Center. Either we continue, as scheduled, at 6 o'clock, or else shall we postpone it until after docking? So I informed you of this proposal, and I think that during the day we shall inform you of when the briefing will take place. Now allow me to thank Sergei Tsybin

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for his information and thank you for your kind attention. And now I've got something for Houston. This is the Soviet press center, Moscow. The briefing was conducted by the shift leader, Comrade Sergei Tsybin. The press conference was conducted by the press center leader Savitsky. Thank you.)

END OF TAPE

ASTP (USSR) MISSION SR49/1  
Time: 03:11 CDT, 43:51 GET  
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KIO (This is the Soviet Mission Control Center. Moscow time is 11:11. Spacecraft is in 30th orbit. The spaceship right now is over the Atlantic. The crew is awake. They had a comm session with MCC Moscow through Ussurisk and Petropavlovsk-Kamchatsky. The crew informed everybody that they had a good deep sleep, telemetry data, and crew data. Everything is normal. Descent vehicle, 521; orbital module, 522; temperature in descent vehicle, 16 degrees; 19.8 degrees in orbital module. This is the beginning of the third working day for the crew. This is probably the most important, the most active day for the crew of this flight. This is the day of the meeting, the day of the docking for the crew. According to the program, the crew today right now is breakfasting, and then they will begin to check the systems. Leonov will have a session with MCC Moscow, while Kubasov will do the medical checks. After the end of AOS the crew will prepare to perform biological experiment and zone forming fungi. In this orbit, there will also be a TV transmission from the spacecraft. After the broadcast, they will begin preparations to perform the docking with the Soyuz) Apollo. (The crew has to do a manual orientation towards the Earth and keeping up orbital orientation. The Mission Control Moscow will provide the necessary data to the crew. In the next scheduled comm session, the crew will report data regarding the orbit. After that they will have breakfast and again will continue with the preparation for docking. They will put on the PGA's go into orbital module, and continue preparations for docking. Docking will be taking place in the 36th orbit. During the docking, they will make TV and monitor all the control systems, open the hatch of the orbital module. Then they will follow exact pressure integrity checks, pressurization of tunnel 2, the tunnel between Apollo and docking module. They will check integrity of all the seals. After that the cosmonauts will doff the PGA's, and there will be another TV reproduction, TV broadcast. In this they will report about the integrity checks. At 38th orbit, the commander, Alexey Leonov, will open hatch into the docking module, and the astronauts will enter the orbital module. Greeting will take place between Leonov, Kubasov, Stafford, and Slayton. They will have a meal together and have a TV report to ground. They will take pictures of one another and a meal. They will then conduct joint experiments. At the end of 39th orbit and beginning of 40th, the hatch will be closed to Soyuz, and they will do Zone Forming Fungi experiment. At the conclusion of comm session with Moscow through tracking ship Korolev, the crew of Soyuz will begin its rest period. As you can see, this will be a very very intense, very very busy day for both the cosmonauts and the Apollo crew members. This was Soviet Mission Control Center.)

END OF TAPE

ASTP (USSR) MISSION SR50/1  
Time: 03:30 CDT, 44:10 GET  
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KIO This is the Soviet Mission Control Center. Moscow time is 11:30. The spacecraft Soyuz is completing the 30th orbit of flight around the Earth. Crew activities on the 31st orbit. At the present the cosmonauts have personal time. After this they will get ready for the next communication session with the Mission Control Center. There are 13-1/2 minutes left until the beginning of the communication session. The comm session will be carried out through the tracking stations Ulan-Ude, Ussurisk, Petropavlovsk-Kamtchatsky. At the same time, upon completion of comm session, a medical check on the health status of cosmonauts will take place, then the cosmonauts will go over to the performance of biological experiments. This is the program of spacecraft Soyuz 19 activities on the 31st orbit. 12-1/2 minutes remain until the next regular comm session. Mission Control Center, Moscow.

KIO This is the Soviet Mission Control Center. In 1 minute the spacecraft Soyuz will enter the coverage zone of tracking station Ulan-Ude.

CC-M This is Moscow.

CC-M Soyuz 2. This is Moscow. I read you well. How do you read me?

SFE (I also read you well.)

CC-M Soyuz, this is Moscow. We have heavy load of radiocommunication. Please get ready to accept. First, without form, then form 14, continued, form 23, and pad 2. Number 38. On the 32nd orbit TV-9 should be carried out on TK-3 only, therefore connection R1 disconnect from TK-1 and connect to TK-3. Mount TK-3 on the bracket T2. PLU on PLU-2. Maximum brightness for portable lights. And after this session connect it back to TK-1 connection. 34th, TV-5 perform from the window again use TK-1. TK-1 mount on bracket 4. Data for mounting should be used for TV-18.2. Instruction page 166.

USSR TV-18.2?

CC-M Yes, yes. Page 166. After the session TK-1 to OM for TV transmission 9. On 35th orbit and 36th orbit, TV-5.1 and TV-8 do not carry out. Instead of TV-8 give a radio report. Did you read me?

USSR I'll take a note, now. Roger. Copy.

CC-M Give me confirmation, quickly.

USSR Form 38. On 32nd orbit TV-9 should be carried out on TK-3 only therefore connection R1 disconnect from TK-1 and connect to TK-3. Mount TK-3 on the bracket T2 PLU on PLU-2. Maximum brightness for portable lights, and after this session connect it back to TK-1 connection. 34th. TV-5 again use TK-1. TK-1 mount on bracket 4. Data for mounting should be used for TV-18.2 Instruction page 166. After the session, TK-1 to OM for TV transmission 9. On 35th orbit and 36th orbit TV-5.1 and TV-5 do not carry out. Instead of TV-8 give a radio report. Data for mounting should be used for TV-18.2. Instruction page 166.

MCC-M Absolutely correct. Pad 14.

USSR 1 minute, please.

CC-M Are you ready?

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USSR	I am ready.	
CC-M	59	05:02 22:101
		05:02 32:101
	60	06:37 21:099
	60	01:46 04:099
	61	09:19 41:100
	62	10:52 19:101
	64	12:24 49:101
	64	13:46 06:100
	65	15:18 13:101
	67	16:50 44:101
	67	18:17 58:101
	68	19:44 35:101
	70	21:17 35:101
	70	22:33 58:098
	71	00:06 07:099
	72	01:38 07:100
	73	03:10 28:100
	75	04:43 56:100
	76	07:18 58:099

END OF TAPE



ASTP (USSR) MISSION SR51/1  
Time: 03:52 CDT, 44:32 GET  
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MCC-M (100.76:06 18 58 099. 76:76 07 27 27 098. 77:09 01 10  
100. 78:10 33 32 100. Give me confirmation. Just give me the times  
of start from 58 to 72.)

USSR (59:05:02 42. He's giving the confirmation of the data.)  
...06 37 21. 60: 07 46 04 ... 09 19 47. 62: 10 52 13, 54: 12 24 49.  
54: 13 46 06. 65: 15 18 13. 67: 16 50 44. 57: 17 17. 58: 19 44 35.  
70: 21 17 39. 70: 22 33 58. 71: 2 00 6 06. 72: 01 38 07. 73: 03 200 28.  
75: 04 40 30. 76: 06 18 58. 07 27 23 9 7 09 01 10. 78: 5 3 32.

MCC-M (I confirm pad 14) (Get ready for - for pad two.)

USSR (I'm ready for pad two.)

MCC-M (39 Longitude 12.10. Period 88.89. Orbit 030 3 3 4.  
Time of burn 12 0 4. Number 59.)

USSR (Longitude, 12.10. 88.89. 033.34. Time 4.04. Cor-  
rection, 12:09, time of burn.)

MCC-M (Confirmed.)

USSR (Ready for 59. Pad 59. Do you have anything else?)

MCC-M (Yes. I'm giving you pad 23. Addition for the 43rd  
pad. The beginning of orbit 05:17:36 06:44: and they'll be no comm  
sessions.)

USSR (Okay, let's go further.)

MCC-M (49, 14:10:47. Moscow, 14:20-14:43. Shadow 14: to  
15:18. 50:15:39:39. Moscow 15:51-16:14. 16:10-16:47. 51st: 17:08:30.  
Moscow 17:24-17:39. Earth shadow, 17:39-18:16. 52: 18:37: Moscow.  
Earth shadow 19:34. 53rd: 20:06:12 Gagarin tracking 20:15-20:21.  
20:07:20. Moscow 20:29-40. Shadow 20:37-21:13. Don't hurry us,  
don't hurry. Day - Shadows 20:37-21:13. 54 21:35:03. Tracking ship  
21: 33-21:54. 21:37-21:34 Moscow. 22:02-22:10. Shadow 22:06-22:42.  
55: 23:03:54. Tracking ship 23:19-23:26. Shadow, 23:35-00:11. 56:  
00:32:44. Tracking ship, 00:52-59. Shadow. 01:04-01:040. Continue  
(garble). Giving additional information. After TV program, put  
TK 3 back into stowage bag. 57: beginning 02:01:35. Tracking ship  
02:25-02:32. Shadow 02:33-03:09. 58: 03:30:25. Tracking ship,  
03:57-04:04. Shadow 04:02-04:38. Okay. That's the end of the comm  
session. Pleasant, safe flight.)

END OF TAPE

ASTP (USSR) MISSION SR52/1  
Time: 04:09 CDT, 44:50 GET  
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KIO (Soviet Mission Control. This is 14:10. 10 minutes ago there was a scheduled AOS through Ulan-Ude through - to Mission Control Center. Some data was given regarding next orbit - number of pads and other telemetry data. It is in its 31st orbit at the present time. These are the following parameters for this orbit: maximum height, 223.94; minimum height, 221.35; period of rotation, 88.89; the inclination towards the equator, 51.78 degrees. Spacecraft is over the Pacific Ocean, approaching the equator. It is solar oriented and rotating at 3 degrees per second. This was Soviet Mission Control Center for Soyuz Flight.)

KIO (Soviet Mission Control Center. 12:20 Moscow time. Orbit 31 of Soyuz 19. The spaceship is now over the Pacific Ocean. The comm session for orbit 31 has been completed. Status report was normal. Parameters are the following - Air pressure in DV is 515 mmHg; in OM, 526 mmHg; DV air temperature is 19.6 degrees C; in the OM, 18.3 degrees C. There are no comments on the cosmonaut's health status. Valeriy Kubasov's heart beat is 72 per minute, respiration frequency is 26. The cosmonauts are now monitoring the zone-forming fungi and the microbial exchange data. Then the cosmonauts will tone - will check on the growth for the fourth time. They will monitor and then copy the data; they will copy this down into the onboard instructions, or onboard journal. They will also tape of their pictures, likewise copy them on onboard journal. After they take pictures of them and copy the data, they will stow the kits back into the plates. Then the crew will prepare for TV report. This report will begin in about 40 minutes when Soyuz 19 will acquire AOS through tracking station Djusaly. At the present time they are still working on the microbial exchange and taking data on zone-forming fungi. This was Soviet Mission Control Center.)

END OF TAPE

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Time: 04:30 CDT, 45:10 GET  
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KIO (Soviet Mission Control. Moscow time, 12:30. The ship has been in flight for 45 hours and 10 minutes. The ship is over the Pacific Ocean and the shadow of the Earth. The solar batteries are oriented towards the Sun. (garble) solar spin is 3 seconds - 3 degrees per second. At the present time the crew is conducting medical experiments - biological experiments, Microbial Exchange and Zone Forming Fungi. This is a joint Soviet/American experiment. At 12 o'clock, Moscow time, the distance of the two - between the two spacecraft was 1130 kilometers. The parameters of this orbit are 222 maximum height, minimum, 221.35. Period of rotation is 88.89. Inclination of the orbit toward the equator, 51.78. This is Soviet Mission Control Center.)

KIO (This is Mission Control. 12:40 Moscow time. This is the 31st orbit of Soyuz 19. The craft is now in daylight over the Atlantic. According to the program, the crew will perform biological - microbial exchange and joint U.S./Soviet Zone Forming Fungi Experiment, then prepare for the TV report, which will be conducted in 28 minutes when the craft will come into AOS through tracking station Djusaly. At the present time, the crew must put the camera in a designated place. This was the Soviet Mission Control Center.)

KIO (This is the Moscow Control Center. Moscow time is 12 hours 50 minutes. Soyuz 19 continues its flight. Soyuz is now located over the Atlantic Ocean and is approaching the African Coastline. On the 31st orbit the cosmonauts are preparing for a television report which will be conducted during - in approximately 18 minutes, over Djusaly, the Soviet tracking station. On the 32nd orbit, the crew will continue to prepare for the television report through the ground stations Ulan-Ude Djusaly, and Petropavlovsk-Kamchatsky. They will have a regular comm session with the center and will have TV transmission from onboard. They will mount the TV camera in the descent vehicle, and then they will be emptying the condensator, and preparing for docking with the Apollo spacecraft. And they will begin preparations for photographing the experiment on zone forming fungi. Right now the spacecraft is already located over the African continent, and 16-1/2 minutes remain until the next comm session from onboard the Soyuz. This is Moscow Control Center speaking.)

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Time: 05:00 CDT, 45:40 GET  
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KIO (Soviet Mission Control. Moscow 13 hours. This is the third day of work for the Soyuz 19 crew. 31st orbit has just been completed. The spacecraft is now over the African continent. At 12 o'clock the distance between the two crafts was 1130 kilometers. At the present time at 13 hours the distance between two crafts will be 893 kilometers. At 13:09 there will be another TV report. We have 8 minutes to this report. At the present time the crew is getting ready for this TV report. This is Soviet Mission Control Center.)

KIO This is the Soviet Mission Control Center. (Moscow time is 13:05. We have one correction. At 13 hours the distance between the two ships was 585 kilometers. The following are the parameters of the 32nd orbit:

Maximum height is 225.82 kilometers;  
minimum height is 221.24 kilometers;  
period of rotation is 88.89 minutes,  
inclination to the Earth is 51.78.

Until AOS with Mission Control we have 4 minutes. This is Moscow Mission Control Center.)

KIO (This is the Soviet Mission Control Center. In one minute the Soyuz spacecraft 19, Soyuz 19, will have covered - will enter the coverage zone of the Soviet Djusal tracking station.)

CC-M (Soyuz, Soyuz, this is Moscow.)

SFE (How do you read, Moscow? This is Soyuz 2, I read you well. How do you hear?)

CC-M (I read you well. Good morning! Our shift is on. How did you rest?)

USSR (Thank you, well. How you?)

CC-M (Excellently. I'm happy for you. Soyuz 2, I like to remind you. At 13:13 you have a TV session.)

SFE (Well, give us a command for it. We are ready. Just tell us when do you need the TV cameras to be turned on.)

CC-M (Roger. Understand.)

CC-M (And then the experiment with the gyroscope. Well, all right, I'll tell. I'll give you the command.)

(noise and garble)

CC-M (How is the image? Have you got an image?)

USSR (The lights on. Not yet. The TV camera is on. There is a picture. Well, we have to adjust it so far. Do you see the gyroscope?)

CC-M (Yes, we see it.)

USSR (Do you see at what point it is approaching?)

CC-M (Yes, I see it.)

USSR (This is not a - - how is the picture?)

CC-M (Excellent! We see you well.)

USSR (Can we start?)

CC-M (Go ahead.)

USSR (Good morning, dear TV viewers! Today we are meeting you for the first time aboard the Soyuz 19 spacecraft. Our spacecraft consists of several sections: the descent vehicle, the orbital module and the instrument module. Now we are in the orbital module. The orbital module is used to hold scientific experiments as well as for crew rest. On the outside of

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the orbital module is the docking units, it is right here. Here is also the hatch for transferring between the spacecraft. This hatch will be opened after the spacecraft are docked and after the pressure integrity check of the spacecraft has been completed. In the orbital module we have all the necessary things in order to conduct the scientific experiments, to life, and for the rest periods of the cosmonauts. Now you can see on your screens the control panel for the orbital module. From this module we can control our life support systems, the life systems - systems for the elimination of CO<sub>2</sub>, the oxygen system, the lighting system, the communication systems, and another - number of other systems. For example, from here we can switch on the power feed for the movie equipment; we can turn on our electric razor, our electric kitchen. In other words, from here we can switch on all the systems that are here. Next to this panel is another panel which is used by us to check the pressure integrity of the spacecraft, to dump pressure from the spacecraft, to monitor the pressure integrity of the tunnel between the spacecraft and also for pressurization and dumping pressure from the tunnel between the spacecraft. On the other side of this orbital module panel is another panel which we use when we want to - when we need to. This is the water supply panel. Here we have a special water dispensing mechanism, a special pump, here Alexey will demonstrate - Well, show us how the water is running. The little left and a little lower. Can you see it?)

CC-M (Yes, we can see it.)

USSR (Right here. Here the liquid assumes the form of a little

ball, but later we can pick it up, we can pick it up, it's easy to pick up water. Inside the orbital module we have the Apollo transmitter, which is used to measure the range - the distance between - and also the range rate between the two spacecraft. This data is used in order to calculate the - all the movements and maneuvers. Here is the container on the right. This container we shall use to carry our equip - to carry equipment into the Apollo. Here we rest, here we sit, here we sleep. For example, we slept here. There are two places here where we pull on our sleeping bags and rest in them. Alexey, for example, is sleeping in about this position. Here he pulls on his sleeping bag and today he slept here. My sleeping place is on the right, on the edge of the couch. Unfortunately, you can't see it from here, but we are used to it, just like in the old days when we flew together, I slept here also. It's not any worse this time. Here into the orbital module, after docking, the American astronauts are due to join us, and here we will have a meeting of the cosmonauts and astronauts, and for convenience of working here we have a small...)

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SFE (After docking the American astronauts are due to join us and here we will have a meeting of the cosmonauts and astronauts, and for convenience of working here we have a small table. And here I'm opening upward the table for you. During our space talks or space meals we will open up this table and use it for our work. Here - here I've folded it up and we will stow it away. In any case, we have in addition to this hatch we have two more hatches. There where Alexey is, there is a hatch for EVA. This can be used for EVA. Of course, naturally, after putting on the spacesuit first, and here incidently are where the spacesuits are stowed... not far from here. This area... We use this hatch for working outside the spacecraft. Directly under us is another, third, hatch. This hatch is used for transferring from the orbital module to the other room of our space apartment, so to speak, into the descent vehicle. In addition to this, here in the orbital module there are three portholes. Here's one. They can be used for the conducting of scientific experiments and for observing the Earth's surface. Now, for example you can see... I'll show you one of these hatches. And the other, another, another porthole is behind the TV camera on the other side. And the third porthole is up above. This one is located on the docking hatch, and we use it to observe the docking process. This same porthole will be used in order to conduct the artificial solar eclipse experiment which will be done after the first docking of the spacecraft. Here in brief is what I wanted to tell you about our orbital module, and with this Alexey wants to add a few words.)

SCDR (My dear TV viewers, we will have our next - during this TV take Valeriy said that we use this hatch for going into the descent vehicle, incidently our next TV session will be a more detailed one, we will tell you how we use this working module of our spacecraft.)

SFE (Moscow, this is Soyuz, how do you read?)

MCC-M (Excellently. Thank you for a good TV take. We're glad to see you and hear you in good form.)

USSR (How was the picture?)

MCC-M (Good. It was good, and still is good. We're still watching you.)

USSR (Color?)

MCC-M (We see it both in color and in black and white.)

USSR (Excellent. Well, we'll try... In general everything onboard now is in order. We're fully accustomed to weightlessness. We've gotten used to working in weightlessness, and you can guess by our faces that we are. We've had breakfast - we had a very good breakfast today. This morning we had a good breakfast. Yesterday we hardly had time to have supper because we went to sleep early, but today we caught up. And we've eaten everything that was scheduled for breakfast.)

MCC-M (I would like for one of you to take the board journal to take - to copy two radiograms.)

USSR (Which radiograms?)

MCC-M (One without form. One of form seven.)

MCC-M (Seven for the orientation mode.)

USSR (First without form.)

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MCC-M (Number 41. In order to conduct the S51 experiment on the 33rd and 34th orbits, the turning on of the movie camera will be at 15:42:00.)  
USSR (15:42:00)  
MCC-M (Turning off at 16:05:00. How did you copy?)  
USSR (Turn on TV camera - movie camera at 12:15:00 turning off of the T20 movie camera at 16:05:00.)  
MCC-M (Roger 41 confirmed.)  
USSR (What page on this form?)  
MCC-M (Page 35. Form number 40, orientation mode TKP 14:30:00.)  
USSR (#40 14:30:00)  
MCC-M (You'll have a reserve comm session over Ascension Island at 15:52 to 15:59.)  
USSR (Copied.)  
(Over where?)  
MCC-M (Over Ascension Island.)  
USSR (Excellent.)  
MCC-M (That's a spare comm session. Use it only if necessary. Did you do a globe correction?)  
USSR (Yes, we have. Second - Right down to the second, correct.)  
MCC-M (Everything at your homes is O.K. Everybody is proud of you. Everybody is happy.)  
USSR (About the spin. You know, anything that's not tied down rises to the ceiling. So if you lose your watch that you've been playing with you'll be looking for it until next year.)  
MCC-M (Alexey)  
SCDR (Standing by.)  
MCC-M One man who knows a lot about Alexander Mackedonsky and his airplanes, sends to you his best wishes. Have you got me? (English)  
SCDR Yes, I've got it. (English)  
MCC-M VF (English)  
SCDR Say it again, please (English)  
MCC-M (Garble) VF (English)  
SCDR His name, please. (English)  
MCC-M I don't know. (English)  
MCC-M He's a very good hunter. (English)  
SCDR O.K. (English)  
SCDR I know him. (Garble)  
MCC-M (We have a whole five minutes left, and all the data I had for you, I've already given you. We're continuing to observe you on TV.)  
SFE (Now I'll show you the gyroscope once again. You see, it is floating freely. Hey we've turned it on.)  
MCC-M (O.K. Valeriy, we don't see you any more.)  
SFE (Roger.)

END OF TAPE

ASTP (USSR) MISSION SR56/1  
Time: 05:27 CDT, 46:06 GET  
7/17/75

CC-M (On the next orbit we will continue the transmission  
and reception on form 23. Radiogram number 37.)  
USSR (Roger.)  
CC-M (1 minute left.)  
USSR (Roger.)  
CC-M (Have a happy flight. Will meet you at 14:31 over Moscow.)  
USSR (Roger.)  
KIO (TV coverage was transmitted from aboard the Soyuz.)

The flight engineer Valeriy Kubasov, told the TV viewers about the design of the orbital module. According to telemetry data, the status of the onboard systems of the spacecraft are normal. The air pressure in the descent vehicle is 513.5 millimeters of Mercury; and in the orbital module, 526 millimeters of Mercury. The air temperature in the descent vehicle is 18.9 degrees Centigrade; in the orbital module, 20.9 degrees Centigrade. During the session, the Mission Control Center transmitted to the spacecraft a number of radiograms. The radiogram was data for the orientation modes that will be performed at the beginning of the 33rd orbit and the radiogram on switching on the movie camera for running the experiment on photographing the Earth's horizon. The condition of the cosmonauts is good. The cosmonauts said they had a very great pleasure in breakfast. They liked their breakfast. They had bread, coffee with milk, and candy. Now the spacecraft is approaching the equator. As before, it is oriented with the solar panels toward the Sun and stabilized for a roll with a angular velocity of 3 degrees per second. The next conversation with the Mission Control Center will be performed when the Soyuz spacecraft will enter the zone of coverage of Tbilisi ground tracking station at 14:30 Moscow time. At the present time, the screen in the main room of the Mission Control Center shows information in light that, at Moscow time, 12 hours 30 minutes, the distance is 885 kilometers between the Apollo and the Soyuz spacecraft. This is Moscow Mission Control.)

END OF TAPE



ASTP (USSR) MISSION SR57/1  
Time: 06:00 CDT, 46:40 GET  
7/17/75

KIO (This is the Soviet Mission Control Center. Moscow time, 14 hours -. 46 hours and 40 minutes of the spacecraft Soyuz 19 has been in flight. Now the spacecraft is in the 34th orbit and is over the Pacific Ocean. According to the Flight Program, the cosmonauts are scheduled to dump off the accumulated condensate in the cabin. After this, they will begin the preparatory operations for preparing for docking between the spacecraft Soyuz and Apollo. During the last comm session, the cosmonauts received a radiogram form 7 on the orientation mode. This operation, the orientation mode, will be the beginning of the direct preparations for docking between the Soyuz and the Apollo spacecraft. Manual orientation towards Earth will be performed manually by the crew at the beginning of the 33rd orbit. After this, they will switch to automatic attitude hold using the infrared vertical and the angular rate sensing units. According to the radio communications that was - were performed during the last comm session, there are no remarks on the health and condition of the cosmonauts. The onboard systems are normal. As we have already reported, at 13 hours 30 minutes, the distance between the spacecraft Apollo and Soyuz was 865 kilometers. The next comm session with the Mission Control Center will be at 30 - in 35-1/2 minutes. This is Moscow Mission Control Center.)

KIO (This is the Soviet Mission Control Center. At Moscow, the time is 14 hours 15 minutes. The Soyuz 19 spacecraft is completing the 32nd orbit around the Earth. In accordance with the Flight Program, at the present time the spacecraft crew is - has to be preparing for - having a - for performing a manual orientation towards the Earth, and for ensuring continuous main - maintenance of orientation for docking, and, also, for conducting the experiment of photographing the daylight Earth horizon. 5 hours remain before one of the major operations of the joint Apollo Soyuz Flight. That is docking. The cosmonauts are periodically monitoring and checking the androgynous peripheral docking module. This unit is one of the major items that are compatible for docking and which have to be tested during this operation. The docking unit performs the following operation: absorbs the initial shock, the straightening out and the retraction of the spacecraft, a rigid docking, and also the airtight lock. Also, this unit performs the undocking and separation. The design of this androgynous unit has an internal tunnel for transfer of crews from one spacecraft to another. The compatibility of the Soviet and American docking units is ensured by using a single standard design and standardization of all the mutual interacting elements. The Soyuz docking unit, at the beginning, acts as a passive unit. In the repeated docking, it acts as an active unit. In the beginning of docking, the spacecraft are oriented towards each other very strictly in such a manner so that when the initial contact occurs, the guiding portions of one unit will be approximately opposite the unit of the other spacecraft. At contact, the units slide along the other and mate. There is then a joining of the rings of one unit - docking unit to another, the spacecraft are straightened out, and then they are retracted, hard docking, and the docking tunnel is then pressurized for airtight. Soon the 33rd orbit of the Soviet spacecraft Soyuz 19 will begin. At the present time, the spacecraft is over the Atlantic Ocean - over the sunlit portion of the Earth's

ASTP (USSR) MISSION SR57/2  
Time: 06:00 CDT, 46:40 GET  
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surface. In the beginning of the 33rd orbit, as we already said, the crew of the Soyuz spacecraft will perform a manual orientation towards the Earth, and then it will be transferred to automatic attitude hold. This will be done by using the infrared sensor units and the gyro angular rate sensor unit. This is Moscow Mission Control.)

END OF TAPE

ASTP (USSR) MISSION SR58/1  
Time: 06:29 CDT, 47:09 GET  
7/17/75

KIO (This is the Soviet Mission Control Center. Moscow time is 14 hours 29 minutes. The 32nd orbit has just been completed by the Soyuz 19 spacecraft. The orbital parameters - the predicted orbital parameters for the 33rd orbit are maximum height, 223.71 kilometers; minimum altitude, 221.13 kilometers; orbital period, 88.89 minutes. Orbital inclination to the equatorial plain, 51.78 degrees. For 14 hours and 30 minutes time the calculated distance between the Apollo-Soyuz spacecraft has to be - will be approximately 8 - 707 kilometers. At the present time the Soyuz spacecraft is over Africa. In 7-1/2 minutes the spacecraft will enter the zone of coverage of Tbilisi ground station. This is Moscow Mission Control Center.)

KIO (This is the Soviet Mission Control Center. In 1 minute the Soyuz 19 spacecraft will enter the zone coverage of the Tbilisi, Eupatoria, Djusaly, Kolpashevo, Ulan-Ude, and Ussurisk ground tracking station. The comm will be until 15 hours 3 minutes.)

SCDR (Moscow this is Soyuz, how do you read?)

CC-M (Excellently, how do you read me?)

SCDR (Excellent.)

CC-M (Awaiting for your report on the orientation.)

SCDR (Orientation and all axes is 180.)

CC-M (Roger.)

SCDR (After orientation - we have done our orientation and will - The indicator on the command warning device, after sometime, was turned off. Visually the orientation is good. But the point on the indicator was not within the circle. The orientation was is very exact.)

CC-M (Roger. Got your report.)

CC-M (According to our data, everything with you is normal. How did you read me?)

SCDR (Roger, understood. Now we can see that visually ourselves.)

CC-M (Soyuz, this is Moscow, listening to you. You and I have - are scheduled to have a happy time. I want to continue giving you form 23 on radiogram 37. Wait a minute. Let's talk in the language of numbers.)

SCDR (Form 23 is ready.)

CC-M (Radiogram number 37, continuation. I will start with orbit 59. Orbit 59. Beginning, 04 59 15. Shadow, 05 31 06 07. 60th, 06 28 05. Tracking ship Korolev, 07 03 07 10. Moscow, 06 40 06 46. Shadow, 06 59 07 36. 61st, 07 56 55. Moscow, 08 06 08 19. Shadow, 08 28 09 05. 62nd, 09 25 45. Moscow, 09 37 09 51. Shadow, 09 57 10 33. 63rd, 10 54 34. Moscow, 11 04 11 23. Shadow, 11 26 12 02. 64th, 12 23 24. Moscow, 12 32 12 55. Shadow, 12 55 13 31. 65th, 13 52 13. Moscow, 14 01 14 25. Shadow, 14 24 15 00. 66th, 15 21 02. Moscow, 15 33 15 56. Shadow, 15 53 16 29. 67th 16 49 51. Moscow, 17 06 17 20. Shadow, 17 22 17 58. 68th, 18 18 40. Moscow, 18 39 18 52. Shadow, 18 50 19 27. 69th, How do you copy?)

SCDR (Everything excellently.)

ASTP (USSR) MISSION SR58/2  
Time: 06:29 CDT, 47:09 GET  
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CC-M (69th, 19 47 29. Gagarin tracking ship, 19 57 20 02.  
Korolev tracking ship, 19 48 19 52. Moscow, 20 11 20 21. Shadow, 20 19 20 56.  
70th, 21 16 18. Gagarin tracking ship, 21 28 21 35. Korolev tracking ship,  
21 19 21 26. Moscow, 21 44 21 52. Shadow, 21 48 22 24. 71st, 22 45 06.  
Beginning, 22 45 06. Gagarin ship, 23 01 23 08. Shadow, 23 7 - -)

END OF TAPE

ASTP (USSR) MISSION SR59/1  
Time: 06:45 CDT, 47:25 GET  
7/17/75

CC-M (Gagarin ship 23 01, 23 08. Shadow 23 17, 23 53. 72nd  
00 13 54. Gagarin ship 00 34 00 41. 00 - Shadow 00 46 01 22. 73rd 01 42 42.  
Gagarin 02 06 03 14 - 2 14. 02 15 02 51 shadow. 74th 03 11 30. Ship Gagarin.  
0339 0346. Shadow 0344 0420. 75th 04 40 18. Shadow 05 13 05 49. 76th  
06 09 06. Tracking ship Korolev 06 44 06 51. Moscow 06 21 06 28. Shadow  
06 41 07 18. 77th 07 37 53. Moscow 07 48 07 55. Shadow 08 10 08 46. 78th  
09 06 41. Moscow 09 18 09 27. Shadow 09 39 10 15. 79th 10 35 28. Moscow  
10 45 11 00. Shadow 11 08 11 44. How did you copy? If normally, no need to  
read back.)

USSR (Give 75 and 76 again, please.)

CC-M (75th. Beginning. 04 40 18. Shadow 05 13 05 49. 76th  
06 09 06. Korolev 06 44 06 51. Moscow 06 21 06 28. Shadow 06 41, 07 18. How  
did you copy?)

USSR (Thank you. No need anymore. Correctly.)

CC-M (707 kilometers between you and Tom.)

USSR (707. Roger.)

CC-M (How's the orientation?)

USSR (8 degrees off according to the light.)

CC-M (Soyuz, this is Moscow. How do you read?)

SCDR (I read you.)

CC-M (We're about ready to work on the orientation. You should  
improve the orientation.)

CC-M (The point is that you will soon be in the shadow, and I'd  
like to just remind you of that.)

CC-M Soyuz 2, how did you manage that?

SFE We could - the visibility is very poor right now. There is  
some sort of layered cloudiness that interferes with the view right now.

CC-M Okay, everything is now - we've managed to get the orienta-  
tion to be exact. Alexey, don't forget to - to use the backup mode.

SCDR We've already done it.

CC-M Very good. I was just reminding you.

CC-M Soyuz, this is Moscow.

SCDR Standing by.

CC-M What about the ground elapsed time check?

SCDR We could do it.

CC-M How about at 47:35?

SCDR 5, 4, 3, 2, 1.

SCDR MARK. 47:35:00.

CC-M Did not understand.

SCDR What is Moscow time, now?

CC-M 14:55:00. At 3:00, it will be 47:40.

SCDR Roger. Correct.

CC-M This was somewhat unusual for me to hear this kind of a  
countdown.

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SCDR  
time.

We're using our chronometer for synchronization using Moscow

CC-M

No, of course, I understand what you were doing.

END OF TAPE

ASTP (USSR) MISSION SR60/1  
Time: 06:55 CDT, 47:35 GET  
7/17/75

USSR (- - (Garble) we are using our chronometer for synchronization using Moscow time.)  
CC-M (No. Of course, I understand what you were doing. But 5 minutes to 3 sounds a little too homelike.)  
USSR (Our flight time is now 47:40:00. And exactly at 3 hours - in 3 hours, we will start our flight time clock.)  
CC-M (Correct.)  
USSR (We're entering the shadow. We can see on the horizon already the darkness appearing.)  
CC-M (Roger. Understood you.)  
CC-M (We just saw on our screen the Apollo. Vance Brand is getting ready for the meeting.)  
USSR (How much time before comm?)  
CC-M (You have 4 minutes of comm left.)  
USSR (Can you give us some -)  
CC-M (Of course.)  
CC-M (At 14:58 Moscow time.)  
USSR (All right.)  
CC-M (30 seconds left.)  
CC-M (15.)  
CC-M (10.)  
CC-M (5.)  
CC-M (14:58:00, Moscow.)  
USSR (Correct.)  
CC-M (Copy this?)  
CC-M (I did not understand you, Soyuz. Did you copy?)  
USSR (It is all right we are synchronized now. We also have hung the slogans around here - "Welcome Aboard Soyuz" and other types of greetings.)  
CC-M (Very good.)  
CC-M (What about the tube with borscht? Is everything okay there?)  
USSR (Yes. We have prepared it. We've even gotten everything prepared, even three for Tom.)  
CC-M (Have you checked the docking module?)  
USSR (We have checked with docking module. We have just gotten the report. The hatch is closed and airtight.)  
CC-M (We have 1 minute left with you.)  
USSR (We've started our flight time indicator. But after getting out of the shadow, we will check our orientation.)  
CC-M (All right.)  
CC-M I'll be back on 1 hour. (English)  
CC-M (Have a happy flight.)  
USSR (Thank you.)  
KIO (This is Soviet Mission Control Center. Moscow time is 15 hours 5 minutes. The Soyuz 19 spacecraft has been in flight for 47 hours 45 minutes. The scheduled comm session has been completed. The program for comm

ASTP (USSR) MISSION SR60/2  
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has been completed in full. There are no comments on operational onboard system. According to the crew report during the last comm session, the spacecraft has been switched over to 180-degree yaw position, along the axis of the flight. The mode was monitored by the cosmonauts' sighting device. During the crew - comm session the crew performed a time check. At the present time the spacecraft has entered the shadow zone and is over the Pacific Ocean. The condition of the crew, according to telemetry and data, is normal. Pulse rate of the spacecraft commander is 50 per minute, flight engineer, 68. Respiration rate: spacecraft commander, 16; flight engineer, 22. The crew has begun monitoring the onboard systems and the performing of scientific experiments. This is Moscow Mission Control.)

END OF TAPE



ASTP (USSR) MISSION SR61/1  
Time: 07:12 CDT, 47:52 GET  
7/17/75

KIO (This is the Soviet Mission Control Center. Moscow time 15 hours 12 minutes. The Soyuz spacecraft is in its 33rd circular orbit. The spacecraft is in orbital orientation mode. The Soyuz 19 spacecraft crew is continuing its preparation for the joint experiment for docking the Soyuz and Apollo spacecraft. At 15 hours Moscow time, the spacecraft were 595 kilometers apart. About in 1-1/2 hours the distance between the spacecraft will make it possible to have VHF first voice contact between the astronauts and cosmonauts crews. In order to provide for two-sided VHF communication, 2 radio stations are established onboard. The Soviet one is 141.70 megahertz and 296.8 is the American built station. The radio system makes it possible to maintain stable communication between the spacecraft and at the same time with the tracking stations. At the end of the 32nd orbit, the Soyuz crew, according to the flight program, continues to prepare for establishing radio communication with the Apollo. At 48 hours and 50 minutes of flight time, it is expected to have the - the first direct communications established between the Soyuz and Apollo crews. This is Moscow Mission Control Center.)

KIO (This is Soviet Mission Control. Moscow time 15 hours 31 minutes. The 33rd orbit of the Soyuz 19 spacecraft is now underway. At the present time the spacecraft is over the Pacific Ocean, in the Earth's shadow. In accordance to the flight program, at the present time, the cosmonauts have to finish their lunch. After this the flight engineer, Valeriy Kubasov, has to - is scheduled to begin the experiment of photographing the Earth's horizon. And Alexey Kubasov [sic], the Soyuz commander, will be monitoring the orientation of the Soyuz spacecraft. What are the purposes of this experiment of photographing the Earth's horizon? There are a large number of almost invisible to the eye particles suspended in the air. These particles include products of man's influence and they do affect the climate and the quality of air. These are also responsible for parts - portions of cloud formation and for the haze over - over mountains. Of course, they are also - the - are responsible for pollution over highways and smog in cities. Of course, we know very little about these particles and of their origin and nature. The only way of studying them is to observe the optical effects that they - that they create. Least of all these particles were studied in the higher not-easily-accessible layers of the atmosphere. And it turned out that they can be studied most effectively by observing the horizon from aboard a spacecraft. Not the actual horizon itself, of course, but that blue or purple shine that is around the horizon and which attracted attention to itself as far back as Yuri Gagarin's flight. Scientific photography of this shine was first performed by Feoktissova and Tereskova space flights. And it will also be a subject