

ASTP (USSR) MISSION SRL05/1  
Time: 17:26 CDT, 82:06 GET  
7/18/75

KIO This is the Soviet Mission Control Center. Moscow time is 01:26, the 19th of July, 1975. The Soyuz and Apollo spacecraft continue to fly in a docked configuration. The spacecraft are located over the Indian Ocean in the coverage zone of tracking station Tananarive, on the island of Madagascar. According to the flight plan, the crew of Soyuz 19 are eating dinner now. The dinner menu, pureed meat, Stolovy; bread, honey cakes, and cherry-apple juice. Flight engineer Valeriy Kubasov prefers Borodinski bread rather than Stolovyi bread. The next scheduled communication of Soyuz 19 with Mission Control Center will be conducted through tracking station Orroral, Australia. 18 minutes are left until the beginning of coverage. Mission Control Center, Moscow.

KIO This is the Soviet Mission Control Center. Moscow time is 01:40. The Soyuz and Apollo are located over the Indian Ocean; soon they will emerge from Earth's shadow. In 5 minutes, the spacecraft will enter the coverage zone of tracking station Orroral, Australia. According to telemetry data received through tracking ship Yuri Gagarin, the air pressure in the descent vehicle is 506.4 mmHg. In the orbital module 513.5 mmHg. Temperature of the air in the orbital module - 22.8 degrees. In the descent vehicle - 18.5 degrees. In the communication which was conducted through tracking ship cosmonaut Yuri Gagarin, the Soyuz 19 crew reported to the Mission Control Center that they checked the integrity of hatch 4, the hatch between tunnel 2 and the orbital module. Integrity was stable. In 3 1/2 minutes, the spacecraft will enter the coverage zone of tracking station Orroral, and it is assumed that there will be a conversation between the Soyuz 19 crew and the Mission Control Center. Mission Control Center, Moscow.

KIO This is the Soviet Mission Control Center. The Soyuz and Apollo spacecraft have entered the coverage zone of the tracking station, Orroral.

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

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

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

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

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

CC-M Soyuz, Soyuz, this is Moscow. How do you read me? Answer

the communication signal. Over.

CC-M Soyuz, Soyuz, this is Moscow. Answer the signal. Over.

CC-M Soyuz, Soyuz, this is Moscow. Answer the signal. Over.

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

KIO This is the Soviet Mission Control Center. Moscow time is 2 hours 11 minutes. The Soyuz and Apollo spacecraft are presently located over the Pacific Ocean. In 14 minutes, they will enter the coverage zone of the tracking ship, cosmonaut Yuri Gagarin. The 57th Soyuz 19 orbit has begun. The projected parameters for the present, 57th orbit are as follows: Maximum altitude - 224.68 km; minimum altitude - 220.13 km; orbit period - 88.88 minutes; orbital inclination to the equatorial plane - 51.78°. According to the flight plan, in 10 minutes the cosmonauts will go to sleep. They are beginning a 7 hour sleep period. Mission Control Center, Moscow.

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KIO This is the Soviet Mission Control Center, Moscow time is 2:35. The Soyuz spacecraft is in its 49th orbit. Several minutes ago the Soyuz and Apollo spacecraft came out of the coverage zone of the tracking ship cosmonaut Yuri Gagarin. The telemetric data on Soyuz 19 spacecraft onboard system will be reported later. Thus, the fourth working day of the Soyuz 19 spacecraft crew has ended. This day was filled with many different activities and experiments. The cosmonauts woke-up at 9:50 Moscow time. After breakfast, the crew of the Soyuz spacecraft monitored the onboard systems and began preparations for their second transfer. At approximately 12 o'clock Moscow time the Apollo Command Module Pilot, Vance Brand, and the Docking Module Pilot, Donald Slayton, began to complete the operations for the transfer onboard of Soyuz 19 spacecraft. The Soyuz spacecraft crew was checking Tunnel 2 integrity and held nonstop radio-communication with the Apollo crew. At 13:12 Moscow time the Apollo Command Module Pilot, Vance Brand was onboard the Soyuz, and USSR Commander, Alexey Leonov was in Apollo Docking Module. The joint activity of the mixed crew has begun. Onboard the Soyuz spacecraft Valeriy Kubasov and Vance Brand were engaged in combined Zone Forming Fungus experiment, conducted different still and movie photography and had onboard TV transmission. On completion of these activities they had dinner. After dinner the crews began preparations for the third transfer. Using the inter-ship communication the crew exchanged the data on their preparedness to begin the transfer, and at approximately 18:20 Moscow time began to conduct the operation on third transfer. Alexey Leonov and Thomas Stafford transferred to the docking module and began Multi-Purpose Furnace experiment. At 12:20 Moscow time Alexey Leonov and Thomas Stafford transferred to the Soyuz orbital module and Vance Brand and Valeriy Kubasov transferred to Apollo docking module. On completion their transfer the crew performed the Zone-Forming Fungus and Microbial Exchange experiments. The first space press conference was conducted from 20:25 to 21:00 Moscow time, which was broadcast over TV. At approximately 22:20 Moscow time the crews began preparations for the fourth transfer. During the transfer Valeriy Kubasov and Donald Slayton collected the samples for Microbial Exchange experiment. At midnight Valeriy Kubasov and Thomas Stafford returned to their respective ships and closed the hatches 3 and 4, the hatches connecting Soyuz and Apollo spacecraft. Thus, all mutually planned transfers of the Soyuz 19 and Apollo spacecraft were completed. On return to their ship the Soyuz 19 crew checked on the hatch 4 integrity, the hatch which connects Tunnel 2 and the Soyuz orbital module. After the integrity check, they performed scheduled Zone Forming Fungus and Micro-organism Growth experiments, performed still photography of the Rhythm 1 device. Then, the cosmonauts had their supper. After supper they again checked the onboard systems and had their rest period. The rest period will last 7 hours. It was according to the schedule. During the whole working day the Soyuz 19 crew had constant communication with the Mission Control Center and Apollo spacecraft. At present the Soyuz and Apollo spacecraft are over Africa. Now the Soyuz crew is having rest. Mission Control Center, Moscow.

KIO This is the Soviet Mission Control Center. Moscow time is 3:15. It's July 19, 1975. The Soyuz and Apollo spacecraft their flight in docked configuration. The spacecraft is over Indian Ocean and is approaching Australia. The Soyuz is completing its 57th orbit and Apollo its 49th orbit around the Earth. The Soyuz crew is having rest. According to the telemetric

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data, received through the cosmonaut Yuri Gagarin tracking station, the onboard system status is normal. Pressure in the descent vehicle is 517 mmHg; in orbital module 521.8 mmHg; temperature in the descent vehicle 18.3° C; orbital module 22.7° C. Health status of the crew is normal. Mission Control Center, Moscow.

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KIO This is the Soviet Mission Control Center. Moscow time is 3:35. The spacecraft Soyuz 19 has began the 58th orbit of flight around the Earth. At the present time the spacecraft Soyuz and Apollo are flying over the Pacific Ocean and are approaching the coverage zone of tracking station Hawaii. The projected orbital parameters of the spacecraft Soyuz and Apollo on the 58th orbit, are as follows: Maximum altitude of flight - 224.59 kilometers; minimum altitude - 220.4 kilometers; orbital period - 88.88 minutes; inclination of the orbit toward the equatorial plane - 51.78 degrees. The crew of the Soyuz 19 continues to sleep. Mission Control Center, Moscow.

KIO This is the Soviet Mission Control Center. It is 5:25 in Moscow. The spacecraft Soyuz and Apollo continue their joint flight in docked configuration. The spacecraft Soyuz has begun its 59th orbit of flight around the Earth. The projected orbital parameters of the spacecraft Soyuz and Apollo on the current 59th orbit are as follows: Maximum altitude - 224.5 km; minimum altitude - 219.95 km; orbital period - 88.88 minutes; inclination of the orbit to the equatorial plane - 51.78 degrees. According to the telemetry data obtained during the communication session on the 58th orbit by the tracking ship Cosmonaut Yuri Gagarin, the air pressure in the descent vehicle is 517 mmHg; in the orbital module of the spacecraft Soyuz the air pressure is 521 mmHg. Air temperature in the descent vehicle is 18.9 degrees C, in the orbital module - 22.5 degrees C. The spacecraft Soyuz crew continues its sleep period. Mission Control Center, Moscow.

KIO This is the Soviet Mission Control Center. The time in Moscow is 6:30. The spacecraft Soyuz 19 has begun the 60th orbit around the Earth. The spacecraft Soyuz and Apollo in docked configuration are approaching the coverage zone of the American tracking station on Guam island. There was no communication session on the previous, 59th, orbit of the spacecraft Soyuz 19. The trajectory of flight wasn't within the coverage zones of the USSR tracking stations. The tracking stations Petropavlovsk-Kamchatsky and Academician Sergei Korolev went on the air for communication on the 60th orbit. Mission Control Center, Moscow.

KIO This is the Soviet Mission Control Center. Moscow time is 7:20. The spacecraft Soyuz 19 is flying on the 60th orbit around the Earth. At present time, the spacecraft Soyuz and Apollo are flying over the South America. The predicted orbital parameters of the spacecraft Soyuz and Apollo on the 60th orbit are as follows: Maximum altitude - 224.41 km; minimum altitude - 219,86 km. orbital period - 88.87 minutes; inclination of the orbit toward the equatorial plane - 51.78 degrees C. The next regular busy day of the Soyuz and Apollo crews is coming. Many dynamic tasks on the orbit will be carried out on this day. The Soyuz 19 cosmonauts continue to sleep. At 9:30 Moscow time the cosmonauts are scheduled to get up. Mission Control Center, Moscow.

KIO This is the Soviet Mission Control Center. The spacecraft Soyuz is completing the 60th orbit of flight. The spacecraft Soyuz and Apollo are approaching the equator over the Indian Ocean. On the basis of the telemetry data obtained from the tracking ship Academician Sergei Korolev, the onboard systems of the ship are working normally. Air pressure in the descent vehicle is 517 mmHg. In the orbital module it is

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521.8 mmHg. Air temperature in the descent vehicle is 17.9 degrees C, in the orbital module - 21.57 degrees C. The next regular communication session on the 61th orbit will be conducted through the tracking stations Ussurisk and Petropavlovsk-Kamchatsky. The cosmonauts are still asleep. They will wake up at the beginning of the 62nd orbit. Mission Control Center, Moscow.

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KIO This is the Soviet Mission Control Center. Moscow time is 8 hours 35 minutes. It is the 61st Soyuz 19 orbit. Right now the Soyuz and Apollo spacecraft are over the Pacific coast of North America. The communication session program for the 61st orbit was completed in full. According to the telemetry data, there is no comment on the onboard system status. The Soyuz and Apollo orbital parameters on this, the 61st orbit: Maximum altitude - 224.31 km; minimum altitude - 219.76 km; orbital period - 88.87 minutes; orbital inclination to the equatorial plane - 51.78 degrees. The scheduled working day is about to begin for the crew of Soyuz 19. According to the flight plan, the cosmonauts must get up at 9 hours 40 minutes, Moscow time. There remains one hour, one minute until the next communication session with the Mission Control Center, which will begin when Soyuz and Apollo enter the radio coverage zone of the tracking station Ulan-Ude. Mission Control Center, Moscow.

KIO This is the Soviet Mission Control Center. In Moscow, it is 9 o'clock am. The Soyuz and Apollo spacecraft are over the Atlantic in the Earth's shadow. It is the 61st orbit of Soyuz 19. The cosmonauts presently are sleeping. According to the flight plan, they will sleep for about 40 more minutes. The 5th work day of the Soyuz and Apollo crew is beginning. It is the day that the crew will bid each other farewell. The Soyuz and Apollo spacecraft will undock. The undocking will be performed twice. First the spacecraft will undock, and then perform a test docking during which the Soyuz docking system unit will be active. This time, the Apollo docking system will be passive. After completing the test docking, the spacecraft will perform the final undocking and continue their flight separately. At the time of the undocking and during the rest of the flight of Soyuz and Apollo, two final joint Soviet American experiments will be conducted. One of the experiments is the Ultra-Violet Absorption. The goal of the experiment is to measure the concentration of the atmospheric components and, in particular the concentration of atomic nitrogen and oxygen at the altitude of the Soyuz and Apollo flight. Reliable definitions of the concentration of these atmospheric components will permit an understanding of many, still puzzling, questions of the physics of Earth's upper atmosphere. It is especially important to measure the concentration of atomic nitrogen. Because the mass-spectrometer method of measuring the nitrogen atoms does not have the required accuracy, this method is fundamental. The experiment is based on the measurement of the absorption atoms in the frequencies of the light beams along the ray. For this purpose, light signals from the resonance sources onboard Apollo will be directed at a retroreflector located on the Soyuz. The beams will be reflected by a special mirror, accurately returning the rays to the receiving assembly, located in Apollo next to the emitter. The weakening of the signal over a defined distance depends on the concentration of the gas which is being researched - the greater the concentration of the gas, the weaker the signal. The quality is registered by the instrumentator in the scanning and isolating spectrometer which is located in the Apollo spacecraft. Earlier, a similar spectrometer was operated on Apollo 17, but the goals which that instrument was to help achieve were different. The success of the actual experiment, depends not only on the ground work on the intricate spectrometer assembly, but also depend, in a larger part, on the completion of orbital maneuvers to obtain the necessary respective positions of the

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spacecraft. In all, 3 measurements will be taken with three different distances between the spacecraft - 150 meters, 500 meters and 1000 meters. The measurement at the different distances permits the exclusion from the all the absorptions the contamination around each spacecraft. Each measurement will last not more than 8 minutes. However, because of the constraints of the experiment, the measurement can be taken at only one point in the orbit - in the area of the equator. For this reason, the experiment will take significantly more time. The majority of this time is for the Apollo maneuvers in order to obtain the computed orientation in order to receive the data. Before beginning this unusual experiment the crews must complete the preparatory operations. The spacecraft crew must give the commands and check the covered retroreflectors. In other words, open the protective cover which protects the optical surfaces of the retroreflectors from contamination. The cover is to be opened when the distance between the two spacecraft reaches approximately 100 meters. The Apollo crew will calibrate the spectrometer assembly. The calibration of this assembly is also completed in this part of the orbit. The operation of the basic parts of the device and the device's sensitivity will be checked and the visual axes of the spectrometer will be more accurately directed relative to the longitudinal axes of Apollo. The last operation is necessary. For the axes don't coincide. The operation is as follows: 1st the Apollo is directed on its longitudinal axis, towards the calibrated stellar source whose coordinates are programmed into the computer. Later, the spectrometer optical axis is directed on this very source and the onboard computer compares the coordinates. The result which is received, is the difference between these 2 axes, according to the linear magnitudes marked on telescope grid, and thus determine the real direction of spectrometer axis. This experiment will be conducted at the time of the final undocking of the Soyuz and Apollo spacecraft. Right now, Soyuz and Apollo are situated over the Atlantic Ocean over the lighted part of the Earth's surface. The 61st orbit of the Soyuz 19 is ending. The cosmonauts will soon awaken and will have 1st communication session of the 5th working day through tracking station Ulan-Ude, through the tracking station Ussurisk and Petropavlovsk-Kamchatsky. 31 minutes remain until the beginning of the communication session through the radio coverage zone of Ulan-Ude. Mission Control Center ...

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KIO There are 31 minutes left until the beginning of the coverage zone of the tracking station Ulan-Ude.

KIO This is the Soviet Mission Control Center. Moscow time is 9:26. In one minute the spacecraft Soyuz 19 will complete its 61st orbit. At present time the spacecraft Soyuz and Apollo are passing over the equator area, over the Indian Ocean. The cosmonauts will wake up soon. According to the flight plan they have to get up in 15 minutes. After getting up they will check out the onboard systems, will perform their morning grooming and perform the condensate dump, which accumulated during the night. After this, they will have personal time. At the end of the orbit they will make a check of onboard systems. This the program of the crew's activities for the next, 62nd, orbit of flight. In 11-1/2 minutes the spacecraft Soyuz and Apollo will enter the coverage zone of the tracking station Ulan-Ude. Mission Control Center, Moscow.

KIO This is the Soviet Mission Control Center. The spacecraft Soyuz and Apollo are located in the coverage zone of tracking station Ulan-Ude.

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

USSR Moscow, Soyuz. How do you read me? I came to (garble) chair and by habit depressed my, my - -

CC-M Roger.

USSR We made a check of pressure with the absolute pressure gage APG. The pressure is 514 mmHg. Everything is normal. No changes. Well, in general, now we're going to make a thorough check on onboard systems. It will take of about 1/2 hour. We'll go through all systems. Yesterday we finished all operations. Closed, everything is in complete integrity. This part of the job has been carried out quite normally.

CC-M Roger, thank you.

CC-M This is Moscow.

USSR Roger.

CC-M Alexey, I want to give you a correction for form 14. The times are floating a little bit. If you aren't too busy, I'll give it on the next orbit. We could do it now if you've got time.

SCDR Let's leave it for the next orbit. We have to wash ourselves and get ready for work.

CC-M I agree.

SCDR Moscow, this is Soyuz. Do you have something?

CC-M No, we don't.

SCDR Okay. We'll leave the communication and do our regular job.

CC-M One minute, please. How about a check?

SCDR Okay. Go ahead.

CC-M 48:00. There are 8 seconds left.

CCM One second is left.

CC-M Roger.

USSR All right. I am on standby.

KIO This is the Soviet Mission Control Center. Moscow time is 10:00. The spacecraft Soyuz 19 is flying in its 62nd orbit around the Earth. The spacecraft Apollo is performing its 53rd orbit of flight. The



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spacecraft are flying over the Pacific Ocean. A few minutes ago the Mission Control Center finished a communication session with the spacecraft. The cosmonauts woke up. They said that their sleep was sound and they slept well. After awakening they checked out the function of the onboard systems and are doing their morning grooming. Then they will perform a condensate dump and, according to the flight program, will start their personal time. At the end of the 62nd orbit, the crew of the spacecraft Soyuz 19 will carry out a thorough checkout of the onboard systems. On the basis of the telemetry data, obtained during the communication session, the onboard systems function normally. The air pressure in the descent vehicle is 517 mmHg; in the orbital module, 521.8 mmHg. The air temperature in the descent vehicle is 17.9 degrees C, in the orbital module is 21 degrees C. There are no comments on the health status of the crew. Mission Control Center, Moscow.

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KIO                    This is the Soviet Mission Control Center. A press conference has just begun in the Moscow Space Center. Here is Moscow Press Center.

KIO                    Attention, attention, this is the Soviet Press Center, Moscow. Yesterday Soviet cosmonauts and American astronauts continued their space activity. At 18:15 Apollo commander Thomas Stafford transferred from the CM to the DM, switched off the electric melting furnace, and took out of it the cartridges with the metal alloy samples. In five minutes the Soyuz 19 Commander Alexey Leonov performed the same type of transfer. In the docking module he stowed the metal alloy samples. After the Soyuz 19 Commander Alexey Leonov had returned to his ship and the Command Module Pilot Vance Brand to his, at about 19:20, the program of the second mutual transfer of the crew members from ship to ship was completed. In the 52nd orbit Stafford with tree seeds and halves of the commemorative medals transferred from the docking module to Soyuz 19 orbital module, and Valeriy Kubasov also with tree seeds and halves of the medals transferred to the Apollo docking module. After that the hatches of the tunnel between the ships were closed. At 20:28 the crews began a joint press conference for the pressmen accredited at USSR and USA press centers. After the press conference, in the 54th orbit they began the joint Soviet American experiment Microbial Exchange. The main task of this experiment is to find out the conditions and character of the transmission of microbes which "live" on cosmonauts' and astronauts' skin and mucous membranes during preflight preparations, during the flight itself and after it is completed. At 22:00 Apollo Commander Stafford gave the Soyuz 19 Commander Leonov the tree seeds, then they put together the halves of the commemorative medals. In an hour they continued the experiment Microbial exchange. The spacecraft commanders collected samples of microflora from themselves. At 23:45 Thomas Stafford said "good-bye" and returned to Apollo. Half an hour earlier Valeriy Kubasov returned to Soyuz 19. Here the Soviet cosmonauts and American astronauts joint activity in the docked spacecraft was completed. All transfer operations and joint activity of the crews were carried out exactly according to the schedule and program. After Kubasov and Stafford had returned to their ships and the hatches between them were closed and locked, the Soyuz 19 crew continued to conduct biological experiments Zone Forming Fungi and Micro-organism Growth. From 00:55 till 01:30, July 19, the cosmonauts had supper. After supper and regular evening procedures, Leonov and Kubasov retired for night sleep. According to the flight schedule the cosmonauts will have their rest from 02:30 till 09:40. According to telemetry data: the descent vehicle pressure is 517 mmHg; orbital module pressure - 521 mmHg; descent vehicle temperature - 17.9 degrees C; orbital module temperature is 21.6 degrees. The speaker at this morning briefing is Victor Blagov, shift Flight Director.

KIO                    (This morning's briefing will be conducted by Victor Blagov. I also know that Alexey Yeliseyev is here in the press center somewhere.)

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BLAGOV (Yesterday was a day of cosmic visits. There were 4 crew transfers carried out yesterday. Members of each ship's crew visited the other ship twice, and other members of the crew made one crew transfer. So each member of each crew could see the functioning of the work of his colleagues in the other ship. By 10:00 Moscow time, the ships are carrying out the following hours of flight: 91 and 84. Almost 43 hours have passed since radio contact was established between the 2 ships and almost 39 hours have passed that they have been traveling in docking manner - in docked manner. Their joint efforts will end approximately on the 55th hour of flight, this is counting from the moment that contact was established.)

BLAGOV (The crews of both ships are still sleeping because they had a very packed day yesterday in spite of the day - in spite of the fact that it was highly successful, they are very tired, and we decided we'd give them a little extra sleep. Not everything in the press release is exactly according to how it went. Not everything went according to schedule as the press release says. Each crew transfer took slightly longer than was expected and therefore we had to make certain corrections, because there were many transfers and each one was a little off schedule. Do you remember what Leonov said when he mentioned that five persons for such a ship as the docked Soyuz and Apollo is not enough to carry out the full program of work. Part of the program was compensated due to a reduction of the rest period in both ships. We will most likely have to seriously analyze Leonov's proposal to increase the members of the crew for such joint flights.)

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BLAGOV (During the fourth crew transfer after which the hatches were to be closed, we discovered an unforeseen event. Stafford and Kubasov for some reason we imagine, became a little stubborn and neither wanted to leave the other's ship. And so because of that, the fourth crew transfer was slightly prolonged by approximately 8 minutes, and instead of closing the hatches over Asia, they were closed somewhere over Australia. The last crew transfer took place at 11:45 Moscow time instead of 11:37 as was scheduled. However, in spite of the fact that their schedule was very tight, they managed to prepare everything right on time for the press conference that was held last night displaying their respect for your profession. I would like to express my thanks to the representative of the Canadian TV because there was absolutely no interference yesterday. And please convey our gratitude to the president of the Canadian television in Halifax. This morning when they wake up and they prepare for their work, the crews of both ships will be busy with the following: there will be no more crew transfers but there will be an undocking operation, and immediately after undocking there will be the artificial solar eclipse. The Apollo will eclipse the Sun and the Soyuz will do the photography. Then, the second docking maneuver will take place, this time, the Soyuz will be the active ship, and the Apollo the passive. Everything will be carried out just as during the first docking, that is of the rigid docking, pressurization and so forth. There will not be any crew transfers. Then, the final undocking maneuver will take place and during 3 orbits of the Earth, they will carry out ultraviolet experiments. After this - after these experiments, the two ships will carry out their final separation and each will then work autonomously according to each program. After the final undock - undocking maneuver, the Soyuz has 2 more days of flight, the Apollo, five; after which they will land, the Soyuz somewhere in the eastern part of our country and the Apollo in the Pacific (garble). I have - we have no doubts that all this will be carried out strictly according to schedule as has been done previous - has been done so far. That's all. The questions. Closed.)

KIO (The Nebsanavacha correspondent, Hungary. First, he would like to know, when you speak of the 55th hour of work in docking mode, could you tell us what time that is in Moscow time? And second, yesterday I was listening to television and I heard some of their conversation, and one of the crew said that they were very tired after their tense work, and that they took a pill of something. Could you tell me what that pill was?)

BLAGOV (According to the program, the joint - the joint work was - is to be carried out for 103 hours, the 103 hours end at 22 hours, 20 minutes Moscow time, 19th July, today. Due to the fact that the crews - the crew worked yesterday for 17 hours straight, we discussed the situation with Boris Yegorov, whom you know, and he suggested that they take a pill of Phenobut which is a mild tranquilizer, a mild sleeping pill also, which leaves no bad side effects. This is a Soviet medication produced here.)

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KIO (Polish press agency, as far as I know the Soyuz is to carry out 2 different maneuvers, in orientation. One is ion orientation - is that right? No I know that, but - ionic and orbital.)

BLAGOV (The Soyuz have several modes of orientation, the main one is manual, when the pilot watches the stars out of the hatch. The Soyuz can also orient itself automatically. It has two modes, one is the Earth mode, and the second mode is the ion mode. They can work separate - these two modes can work separately...)

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BLAGOV (...and the second mode is the ion mode. They can work separately - these two modes can work separately and simultaneously.)

KIO (The Canadian Star would like to know just how was the agreement reached - what - can the Canadian television would not interfere and second, is that one more sign of cooperation?)

BLAGOV (Possibly that you yourself helped us in that, and the incident was liquidated. On behalf of our shift we even brought you a small souvenir to be transferred over to the Canadians in the Halifax TV. And I hope that in the future we shall cooperate with Canada also in space research. If you would receive my souvenir later, I would be glad to give it to you.)

KIO (France Press. Could you tell me is a great deal of electric power utilized on the active ship during docking?)

BLAGOV (The mode of the - du - of the ship's work during docking, is not - does not differ greatly from its other modes. We're keeping careful track of the expenditure of electric energy, and all the other operations, of course, are included in this. And after we conclude all the operations, I think that we shall have about 50 percent of our power remaining in the solar batteries and other sources. The Sun itself, as you know, is inexhaustible and continues to replenish our solar batteries.)

KIO (Garble), Voice of America. Mr. Blagov, you made passing reference to a consideration of the increasing number of crew members for such an effort. What are your thoughts on increasing the number of crew members in the Soyuz and also what future operations of this sort do you contemplate? (English)

BLAGOV (You read a great deal in the press these days about continuing cooperation between our 2 countries in space research, and this also includes cooperation in the shuttle service and in the Salyut service. We will be very happy to take part in such a program. And (garble) Parkins - Parkinson's law is also active in the accomplishments. Any more questions?)

KIO (Could you tell us - the Prague-Moscow-Prague Journal - Could you tell us if the correcting engines would start - would be used during the second docking maneuver?)

BLAGOV (Due to the fact that the distance between the ships will be approximately 220 meters, there is no reason to include the main engine, the small engines will be functioning.)

SPKR ((garble) television)

KIO (Which stage of today's work do you believe is most complicated for the crews of the ships?)

BLAGOV (I've said before at earlier briefings that the most complicated maneuver of course is the docking maneuver itself. Today there will be a second docking maneuver. This is a very pretentious and complex operation.)

KIO (France Press. You just said the word - used the word shuttle. Is there a similar word in Russian?)

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KIO (I'm sorry. Do you have a similar program in Russia?)

BLAGOV (I know that - I know that neither of us have such a program, the United States is drafting one now, and I think that possibly in - by 1980 it may be realized. I don't want to go into great detail now, but possibly there is no sense in drawing up autonomous programs. Possibly we could cooperate and use each other's equipment and knowledge. We are very certain that such distant space flight as flights say to Mars are practically impossible to carry out by one single country even by such countries as the United States or the Soviet Union. The cosmic programs so far are still very very extensive.)

KIO (The French television correspondent would like to know if the Center - Control Center in the Soviet Union also functions for the Soyuz and the Salyut. And can it track - keep track of all the other stations on orbit together with the Soyuz mission.)

BLAGOV (The Kaliningrad Center can keep control of 2 or more ships, but the Salyut is not controlled by Kaliningrad, it is under the Eupatoria Control Center. Eupatoria can also handle more than 2 flights at the same time, they have 3 Soyuz and the Soyuz and Salyut.)

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KIO (You spoke of the good cooperation with the Canadian television as an example of cooperation. Could you say that in this flight, the other big television companies located throughout the world did anything to facilitate this flight, within their possibilities of course?)

BLAGOV (Prior to the flight itself, we analyzed all the possible interference we could expect from radio and TV interference, throughout the world, and we reached the conclusion that there would be no serious interference. As for cooperation, I think that the main broadcasting and television companies did their best to inform the public of what is taking place in space.)

KIO (Could you give us the coordinates of the Soviet landing area if you have them exactly. Where are they?)

BLAGOV (The orbit is right on schedule and you know that we never launch a ship without calculating the entire orbit from start to finish. I spoke of this earlier. We know where the ship is going to land, it's in the region of Karaganda near the town of Arkalyk. I could find it on the map, it's not a very small town.)

KIO (We'd like to thank Victor Blagov for your kind attention.)

BLAGOV (In the second half of the day, we may have some astronauts and cosmonauts here if you'd like to meet them, and, as usual, our next briefing will be at 6:00. Thank you.)

BLAGOV The twins, Soyuz and Apollo, are growing normally.  
(Laughter)

KIO This is the Soviet Press Center. You were listening to a transmission of a press briefing from Moscow Press Center.

KIO This is the Soviet Mission Control Center. Moscow time is 10 hours 43 minutes. It is the 61st Soyuz 19 orbit. The Soyuz and Apollo spacecraft are presently over the southern tip of Africa. According to the flight plan, the cosmonauts have personal time now. Later, at the end of the orbit, they must perform a monitoring of the onboard systems. And so, the 5th busy working day has begun for the crews of the Soyuz and Apollo. This is the day they will say good-bye. Approximately at 22 hours 30 minutes, the joint activities of the Soyuz and Apollo spacecraft in space orbit will end. This day will be filled with dynamic operations. At approximately 15 o'clock Moscow time undocking of Soyuz and Apollo will be performed. The Apollo spacecraft will move approximately 250 meters away from Soyuz. The Soyuz crew will photograph Apollo through the front hatch. In this way, the solar eclipse experiment will be conducted. After conducting that experiment, the spacecraft will approach each other again and the second docking in space will take place. This time the active role will be played by Soyuz 19 androgynous peripheral installation. Apollo androgynous peripheral installation will be passive. After this, in the course of about 2 orbits, the spacecraft will continue their joint flight. According to the flight plan, at approximately 18 hours 20 minutes Moscow time,



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the final undocking of the Soyuz and Apollo spacecraft will take place. After this will begin, in the course of three orbits, the joint Soviet American Ultra-Violet Absorption experiment. The goals and tasks of this experiment have already been explained in our earlier commentaries. And so we approach the end of the next orbit of the flight of the Soyuz and Apollo spacecraft. The Soyuz 19 crew activities program, for the next, the 63rd orbit: At the beginning of the orbit, the cosmonauts will continue monitoring of and work on the onboard systems of the spacecraft. Then they will begin preparations for a communication session with the Mission Control Center. The session will take place through the coverage zone, through the area of coverage, of the tracking stations Ulan-Ulde, Ussurisk, Petropavlovsk-Kamchatsky. During this communication session it is anticipated that there will be a TV report from onboard Soyuz 19. After the Soyuz and Apollo spacecraft have flown out of the coverage zone of the Soviet tracking stations, the Soyuz 19 crew will eat breakfast. The cosmonauts are having a meat assortment, Borodinsky bread, praline candy and coffee with milk for breakfast. After breakfast, before the end of the 63rd orbit, the Soyuz commander, Alexey Leonov, will put the cassettes into a container. And flight engineer Valeriy Kubasov will begin to conduct the scheduled operations in the frames of biological experiments: one-sided Microbial Growth experiment, and the joint Soviet American Zone-Forming Fungi experiment. This is the program of Soyuz 19 crew activities for the next, 63rd, orbit. Presently the spacecraft are over the lit surface of the Earth, in the coverage zone of the American tracking station Tananarive, on the island of Madagascar. Mission Control Center, Moscow.

END OF TAPE

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KIO This is the Soviet Mission Control Center. It is 11:00 in Moscow. It is going ... (noise) 15.58 km, orbital period - 88.87, orbital inclination to the equatorial plane - 51.78 degrees. In 8.5 minutes Soyuz and Apollo spacecraft will enter the coverage zone of the tracking station Ulan-Ude. During the communication session from onboard Soyuz 19 it is planned to carry out a TV report. Mission Control Center, Moscow.

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

CC-M Soyuz, this is Moscow. How do you read me? Answer for communication.

CC-M Soyuz, this is Moscow. How do you read me? Answer for communication.

CC-M Soyuz, Soyuz, this is Moscow. How do you read me? Answer for communication.

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

CC-M Soyuz, this is Moscow. How do you read me? Answer for communication.

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

USSR Moscow, Soyuz. I read you excellently.

CC-M I read you well. Are you ready for TV-12?

USSR With commentaries?

CC-M Quite right. Did you carry out all the preparatory operations for the session?

USSR All, all, all, all.

CC-M Now I will have the pleasure to let your back ups [the back up crew] speak.

SPEAKER I thank you, 48. I heard and understood everything.

FILIPCHENKO Soyuz, how do you read me? This is Filipchenko.

USSR Anatoly, thank you. I read you very well.

FILIPCHENKO We have come now with Kolya into the Control Center. We know that we had a good sleep, now we hear your cheerful voice, and we are now greeting you already from the Control Center. At home we were sitting at the Cosmodrome, and now we are already here in the Control Center. How is everything with you?

USSR Thank you, Tolya, everything is okay here, as they say "according to schedule". For the time being everything is proceeding smoothly. Well we'll see how it will be later.

FILIPCHENKO Well, I hope it will be well later too. I want to give you regards from your wives, from your near ones. They are very excited, of course, watching your flight, worried, and wish you all the best. Well, and naturally, they are waiting impatiently for you after the return of your spacecraft to your native land.

USSR Tell them not to worry. Why should they?

FILIPCHENKO I'll tell them, of course.

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USSR Everything is normal here. We feel well. We sleep here perfectly well. If we were not restricted, we would rest still more. By the evening, of course, we are very tired, but after we sleep, we feel excellently. We sleep well, because during the first two nights we slept only three hours each, during the third - six hours (laughter), and during one - nine and a half.

FILIPCHENKO Well, on the average it is normal.

USSR On the average it is normal. Today we had a nine-hour rest.

FILIPCHENKO Well, and how are our colleagues? Still sleeping?

USSR They are sleeping perhaps. But they have to get up soon, approximately at 11:20. Poor fellows, they got tired yesterday.

FILIPCHENKO Give them also our regards.

USSR Certainly. Yesterday we simply had a very strenuous day, of course; three transfers, a great many of TV sessions. All together we had a lot of work. Well, of course, we all got a little tired yesterday.

FILIPCHENKO Well, naturally, there is a lot of work. We are watching here and worry that everything went off well. I hope everything will be well. Soon undocking will begin. In four hours approximately.

USSR Yes, today we have also an important day: undocking, second docking, the Solar Eclipse experiment. In all, it is also a very important day.

FILIPCHENKO Yes, you will have to work much more, of course. I want to let Nickolay Nickolaevich tell you several words.

USSR Okay.

SPEAKER Is the picture good?

USSR Moscow, Soyuz. How is the picture?

RUKAVISHNIKOV Soyuz, this is Rukavishnikov. I saw you perfectly, a very good picture is coming from you. I see now, Alexey Arkhipovich, a small white cap rotating on your camera. Everything is seen clearly, a color picture.

USSR This is the color filter there.

RUKAVISHNIKOV No, that one, that one, this one, right.

USSR Cap.

RUKAVISHNIKOV Aha, I got you. Well, once more I want to give the best regards from us and everybody present in MCC. Now I'll pass the communication to Shonin again, and he wants to transmit some business messages to you, because 7 minutes remained until the end of the zone. Good-bye.

USSR Good-bye, Kolya.

RUKAVISHNIKOV Until I meet you. We are waiting for you impatiently.

MCC-M Soyuz, this is Moscow. How do you read?

USSR Read you well.

CC-M I have three radiograms for you, two with pad, and one without. Prepare pads 2 and 14.

USSR Give without pad first, then 2, then 14.

CC-M Without pad: take the joint crew activities plan, do you have it?

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USSR Here it is.  
CC-M Pages 42-35. Open. Excuse me, 42-53. Take a pencil  
also.  
SPEAKER Anatoliy Vasilyevich, while Georgy Stepanovich will have  
a business conversation, let us talk a little, if you do not mind.  
USSR I have 53.  
CC-M In the square of activities topics for 10:50 GET, do  
you see it?  
USSR In what square?  
CC-M At the top of the page there is a square. Activities  
(garble) 100:50 GET. Cross out this square completely. Have you done it,  
yes? Now receive the radiograms with pad.  
USSR With or without pad?  
CC-M With pad, with pad. I have already transmitted the one  
without pad, you have already fulfilled it.  
SFE Now with pad 2, because Alexey went to take the 14th.  
CC-M Pad 2, number 53.  
SPEAKER Yes, indeed, the cosmonauts will have a very ...

END OF TAPE

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Time: 03:19 CDT, 91:59 GET  
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SFE (Garble) 114th Alexey went.  
CC-M Form 2, number 59.  
MCC-M The cosmonauts will really have a very busy day today.  
Couldn't you tell something about the operations that will be shortly performed?  
USSR (Garble)  
CC-M Number 59. Longitude - 206; period is 88.87; orbit - -  
SFE Repeat the period, please.  
CC-M 88.87. Hurry up, Valeriy. Orbit - 062.4; Ignition time -  
11:33:52. Give me the acknowledgment message.  
SCDR Repeat, please, the orbit and ignition time.  
CC-M I'll repeat radiogram number 59. Longitude - 206; period -  
88.87; orbit - 062.4; ignition time - 11:33:52. Do you confirm, Alexey? Are  
you ready with form 14? Number 58. Here is a correction only for the  
ignition time. Orbit 64 - 13:25. The 64th orbit - (12):25:53; (54th) -  
12:47:16; hurry up, guys! 65th - 15:19:24; 67th 16:51:56; 67th - 18:19:12.  
USSR 67th?  
CC-M 16:51:56; 18:19:12.  
USSR Go on.  
CC-M 68th - 19:45:54; 70th - 21:18:54; 70th - 22:35:28.  
USSR Go on.  
CC-M 71st - 00:07:37; 72nd - 01:39:38; 73rd - 03:12:01; 75th -  
04:45:30; 76th - 06:20:31; 76th - 07:29:19; 77th - 09:02:57; 78th - 10:35:20.  
Here is a correction for orbit 76 - the second. 07:29:12. How did you  
read me? We have 30 seconds left.  
USSR Quite well. We had a double check. We have everything.  
The acknowledgment message is unnecessary.  
CC-M That's all we have for you. Get ready with form 20 for  
the next communication session. You haven't given it to us for a long time, and  
we did not have time to receive it.  
USSR What about form 3? We've got it too.  
CC-M No form 3. We have it.  
USSR Well, okay (garble).  
CC-M They ask - ask during the next orbit.  
USSR Okay. We'll have it ready.  
CC-M Good luck.  
KIO This is the Soviet Mission Control Center. Moscow time  
is 11:28. A few minutes ago the Soyuz and Apollo spacecraft left the  
coverage zone of tracking station Petropavlovsk-Kamchatsky. The communication  
session program for the 63rd orbit, the present orbit, had been carried out.  
There are no comments on the cosmonaut health status. Soyuz 19 onboard systems  
status is nominal. According to telemetry data the air pressure in the  
descent vehicle is 511.4 mmHg; in the orbital module - 506.4 mmHg; descent  
vehicle air temperature is 18.5 degrees C; in the orbital module - 22 degrees  
C. During the previous communication session the Mission Control Center  
transmitted telegrams to Soyuz 19. These radiograms included gyro correction,

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data for descents on orbits, and unformatted radiograms. During this communication there was a TV transmission from on board the Soyuz 19. The next scheduled communication session with the Mission Control Center will be in the 63rd orbit through tracking stations Tbilisi, Djusaly, Kolpashevo, Ulan-Ude and Ussurisk. We have 1 hour and 3 minutes left before the next session. According to the flight program the cosmonauts are to have breakfast. Here is the menu for their breakfast: assorted meats, Borodinsky bread, praline candies, and coffee with milk. The spacecraft is now over the Pacific Ocean in the coverage zone of the American tracking station on the Hawaiian Islands. Mission Control Center, Moscow.

END OF TAPE

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Time: 04:13 CDT, 92:53 GET  
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KIO This is the Soviet Mission Control Center. Moscow time is 12 hours 13 minutes. The Soyuz spacecraft has been in flight for 92 hours 53 minutes and it is completing its 63rd orbit. Apollo and Soyuz spacecraft are continuing their flight in a docked configuration. The following orbit parameters are projected for the 64th orbit: Equator crossing at 12 hours 24 minutes; apogee - 224 km; perigee - 219.48 km; orbital period - 88.87 minutes; orbital inclination in relation to equatorial plane - 51.74 degrees. Both spacecraft will be in Earth's shadow at 12 hours 56 minutes. They will leave the shadow at 13 hours 32 minutes. The following crew activities are planned for 64th orbit: Zone Forming Fungi experiment will be performed, then cosmonauts will have a communications session with MCC-M, following which the descent vehicle and orbital module will be pressurized up to 800 mmHg. All the onboard systems will be checked at this time, and then preparations will start for the Solar Eclipse Experiment. Movie cameras and still picture cameras will be prepared. Cosmonauts will don PGAs. Moscow Mission Control Center.

KIO This is Soviet Mission Control Center. In 45 minutes both spacecraft will be in the coverage zone of the Soviet tracking stations.

MCC-M This is Moscow, how do you read me? This is Moscow, how do you read me? This is Moscow, how do you read me? This is Moscow, how do you read me? Soyuz, this is Moscow, answer please. Soyuz, Soyuz, this is Moscow. How do you read me? Soyuz, Soyuz, this is Moscow. Please answer to check communications. Soyuz, Soyuz, this is Moscow. How do you read me?

SFE Moscow, this is Soyuz. I read you well.

SFE Moscow, this is Soyuz 2. I hear you well. How do you read me?

MCC-M Soyuz, hello. I read you well. This is Moscow. We are ready to receive your information concerning the position of window shutters in the orbital module and the location of PLU.

SFE Repeat, repeat.

MCC-M Are the window shutters closed in the orbital module?

SFE Yes, closed.

MCC-M Roger. Is PLU is on PLU TK-1?

SCDR Where should the PLU be?

MCC-M It should be on PLU TK-1.

SCDR Camera is in our way - or should camera be in the back and PLU-TK-1 in front. We shall turn it on and it will light everything. Do you see? We will move it in one minute.

MCC-M The picture wasn't bad. Let's wait. Maybe it will get better.

MCC-M Soyuz crew, this is Moscow. Are you ready to take form 20 radiogram?

SFE A little bit later for form 20.

SCDR We feel very well, we slept well. My pulse is 48 and Valeriy's 51. All is fine.

KIO Leonov, the Soyuz commander, is talking with MCC-M. Flight engineer Kubasov is performing systems check.

MCC-M Soyuz, this is Moscow. I am ready to receive your report on purging.

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SCDR We are only now beginning it. You will be watching it.  
KIO Cosmonauts will be pressurizing orbital module and descent  
vehicle up to 800 mmHg.  
SFE Moscow, this is Soyuz 2. I am ready to give form 20 data.  
MCC-M We are ready, Soyuz. First 01 is 0, 02 is 0, 03 is 0,  
04 is 1, 05 is 0, 06 is 0, 07 is 0, 08 is 0, 09 is 1, 010 is 0.  
KIO Flight engineer Kubasov has transmitted to MCC-M medical  
data.  
MCC-M Soyuz 2, please report to us the parameters for 12 and 13.  
SFE For form 20?  
MCC-M Yes, for form 20.  
SFE 012 is 0, 013 is also 0.  
MCC-M Roger, thank you. This is Moscow.  
SFE Pressurization is in progress. Valves are open. Purging  
is on, do you see?  
MCC-M Yes we see. We read you.  
SFE Pressure is 60.  
MCC-M Roger, Soyuz 2 - 550.  
SCDR We have now collected all of the equipment and packed  
it in a bag. There is a lot of it. We will start stowing everything after  
the completion of pressurization.  
MCC-M Roger, Soyuz.  
SFE No, everything is packed. We just need to transfer it to  
DV.  
MCC-M Roger, Soyuz 2.  
SFE The press is 610.  
MCC-M Roger, Soyuz 2 - 610.  
KIO The descent vehicle and orbital module are being  
pressurized. Cosmonauts are monitoring the pressurization on absolute  
pressure gauge and are preparing for the Solar Eclipse Experiment. They  
are preparing their movie and still cameras.

END OF TAPE



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SFE 680.  
CC-M Roger, 680.  
SFE Pressure - 690.  
CC-M Roger.  
SFE 610.  
I am getting a lot of noise from you.  
CC-M Roger.  
SFE Moscow, this is Soyuz 2. Systems were checked during  
the last orbit. Everything is normal.  
CC-M Roger.  
SFE We recorded the monitoring data on the form in front  
of us.  
CC-M Roger, Soyuz 2.  
SCDR Increase of 10 mm in 13 seconds.  
CC-M Roger, Soyuz.  
SCDR It could even freeze.  
CC-M Roger, Soyuz, freeze again.  
SFE Pressure is 750 in the spacecraft.  
CC-M Roger, 750.  
SCDR There is a cool air coming through. There is even  
some consensation - like a little smoke.  
CC-M Roger.  
CC-M Soyuz 2, this is Moscow. How do you read the pres-  
sure now?  
SCDR I didn't understand you.  
CC-M What is the pressure now in the module?  
SCDR The pressure is 780 now.  
CC-M Roger, 780.  
KIO The Mission Control Center is talking with the crew,  
asking them about the pressure parameters in the orbital module. The  
cosmonauts are reporting that they are even noting some cool air in the  
orbital module. The pressure is close to normal.  
SFE Pressure 800.  
CC-M Roger, 800 mm. This is Moscow.  
SFE Purging off. Just so I don't forget - There is freez-  
ing of a valve. Therefore I have to move it a distance of around 100  
mm. Otherwise it may freeze again, and I won't be able to close it.  
CC-M Thank you, Soyuz. I understand your information.  
This is Moscow.  
SFE Valve is now closed. I checked how much was used up.  
CC-M What pressure do you have now?  
SCDR How much? Zero? Everything is correct.  
KIO Purging of orbital module and descent vehicle is over.  
It is up to 800 mmHg.  
SCDR Moscow, this is Soyuz, how do you read me?  
CC-M I read you well Soyuz. This is Moscow.  
SCDR Pressure is still zero.