

SKYLAB I MISSION COMMENTARY 5/13/73 CST 00:15 GET 135:09:15 MC-33/1

PAO This is Skylab Control at 11 hours 45 minutes. Now, we have reacquired the workshop over the tracking station at Vanguard. And, we're standing by to confirm we've got good data. Valid data will allow flight controllers here in Mission Control to send the proper command to initiate an attitude change maneuver. This maneuver again will be - it's about a 13 minute maneuver using the thruster attitude control system on the workshop. Pitching up 90 degrees, this will change the angle at which the Sun is striking the side of the workshop, an attempt to control the temperatures in the vehicle. We do now have confirmation that we've got attitude data, and that the attitude looks good on the orbital workshop.

PAO We've got a confirmation now of good solid lockup on the data.

PAO This is Skylab Control. We again have intermittent data and Flight Director Milton Windler has elected to hold the maneuver until we've got solid data. We have about 6 minutes remaining in this pass over the tracking ship Vanguard.

PAC This is Skylab Control. We have a little less than 1 minute of acquisition time remaining over Vanguard. And, we have not at this point resumed solid enough data lock to go ahead with the commanded maneuver change for the workshop. And we will be reacquiring in about an hour at Hawaii. During this pass over Vanguard, the instrumentation communications engineer has been going through a number of troubleshooting procedures to determine the nature of the data problem, to tie it down to either an onboard or a ground station problem, and to determine the proper workaround, as they say. And we now show that we've had loss of signal at Vanguard, we're predicting acquisition at Hawaii in 58 minutes 26 seconds. This is Skylab Control at 11 hours 55 minutes.

END OF TAPE

PAO This is Skylab Control at 12 hours 56 minutes. We have now acquired the orbital workshop on its eighth revolution over the Hawaii tracking station. We have good solid data and we've commanded the start of the maneuver which will change the spacecraft attitude - the workshop attitude for improved thermal control. And that maneuver is scheduled to require about 13 minutes. We have a report that it is progressing smoothly at this time. And we have about 4 minutes 45 seconds of acquisition remaining at Hawaii. We will be reacquiring at Vanguard about 21 minutes after we lose contact in Hawaii. The attitude control change, the attitude change that is being made at this time, is to place the Sun more end-on to the spacecraft. The normal attitude has the ATM, the Apollo telescope mount, solar panels pointed directly at the Sun. This also has the Sun shining directly on the side of the orbital workshop. Without the micrometeoroid panels, which have a thermal coating on them to reflect solar heat - solar energy, we're finding some increases in temperature within the workshop. As a means of getting an assessment of this temperature increase and controlling it, the attitude change is being made. The plan is to leave the spacecraft in the pitched up attitude, pitching up 90 degrees from the present attitude, leaving it in this position for 1 revolution; then pitching back to an attitude midway between the initial attitude and the pitched up attitude and holding it there for one revolution, and then returning to the normal attitude with the ATM solar panels again pointed directly at the Sun. This maneuver is being accomplished with the thruster attitude control system, controlled by the ATM.

PAO This is Skylab Control. We've lost radio contact now with the spacecraft as it passes over the horizon from the Hawaiian tracking station. And we'll be reacquiring in about 20 minutes over the tracking ship Vanguard in the south Atlantic off the coast of South America. Over Hawaii we had good solid data. We commanded the orbital workshop to begin an automatic attitude change. That maneuver was progressing smoothly as we lost radio contact. It will go to completion. The total maneuver is scheduled to take about 13 minutes, and we'll be able to confirm the new attitude over Vanguard. At the present time, our plan is to discontinue commentary operations following the Vanguard pass. The Houston News Center is scheduled to reopen at 6 a.m., at which time commentary operations will be resumed. This is Skylab Control at 13 hours 4 minutes.

END OF TAPE

PAO This is Skylab Control. The orbital workshop now is starting its 9th revolution of the Earth. And, we've just completed a 9 minute pass over the tracking ship Vanguard. During that pass we received solid telemetry data from the spacecraft, and verified that the vehicle had maneuvered to the desired attitude, pitching up 90 degrees from the normal attitude at which the ATM solar panels are pointed directly at the Sun. The new attitude has the multiple docking adapter end of the vehicle pointing at the Sun. The ATM solar panels are parallel to the Sun's rays and receiving little or no solar energy. During this period of time, the vehicle is being powered from stored battery power. We plan to stay in this attitude for 1 revolution, allowing the temperatures to drop on the orbital workshop. These temperatures running higher than normal, due to the apparent loss of the meteoroid panels, which in addition to protecting against meteoroid impacts, also have an effect on the way in which the vehicle absorbs and radiates thermal energy from the Sun. And we're seeing, consequently, an increase in temperatures. Engineers here in the Control Center and in the Marshall Space Flight Center are interested in watching the temperature curve as the temperatures come back down to determine the total amount of thermal energy absorbed by the workshop. During this period of time, the pressurization of the orbital workshop has been terminated; we're holding at 2 pounds internal pressure. And once we've gotten a better indication of what the total thermal energy absorbed by the workshop is, we'll continue that pressurization up to the desired 5 pounds per square inch. The plan again, is to hold at the current attitude for 1 revolution and then to pitch up to an intermediate attitude where we're about 45 degrees pitched up instead of the current 90 degrees. At a 45 degree angle, it'll be a compromise attitude with some solar energy being supplied striking the solar panels, and a portion of the energy, still supply electrical energy still supplied by the batteries, staying in this attitude for 1 revolution before returning to the normal attitude with the ATM solar panels pointing directly at the Sun. At this time we will terminate commentary operations. The Houston News Center will also be closing at this time. We will be reopening at 6 AM. This is Skylab Control at 13 hours 36 minutes.

END OF TAPE

SKYLAB I MISSION COMMENTARY 5/15/73 CST 06:53 GET 18:23 MC-36/1

PAO This is Skylab Control. Eighteen hours, 23 minutes since Skylab 1 lift-off. Skylab attitude control has just been shifted to the control moment gyros. Skylab now over the Vanguard tracking ship on the 12th revolution of the Earth. Prior to this time, attitude control has been provided by the thruster attitude control system, the RACS. The control moment gyros are fully spun up now, and just a few minutes ago, additive control was transferred to the gyros. Temperatures on structural members in the orbital workshop continue to run near or slightly in excess of 100 degrees. The orbital cluster was taken out of the solar inertial attitude for two revolutions during the night to allow readings from several temperature sensors which had gone off the scale. This temperature data is being used by the Marshall Space Flight Center in a thermal model in an attempt to determine how serious the problem is and to develop a plan to manage the thermal profile. Skylab, now, is back in a solar inertial attitude. The ATM telescope is unpowered at the present time, and the cluster pressure is holding at 1.9 pounds per square inch - decision having been made that there is no reason at this time to go to the full 5-PSI pressure. At 18 hours 25 minutes, ground elapsed time, this is Skylab Control.

END OF TAPE

SKYLAB MISSION COMMENTARY 5/15/73 7:35 CST 19:05 GKT MC37/1

PAO This is Skylab Control at 19 hours
4 minutes since Skylab 1 lift-off. Flight director
Neil Hutchinson, who has been leading the overnight shift
of flight controllers monitoring the Skylab workshop,
will hold a status briefing in the small briefing room
at the Johnson Space Center News Center at 8:15 a.m. central
daylight time; 8:15 a.m. central daylight time, briefing
by Neil Hutchinson, flight director on the overnight shift.
We've been informed that the Skylab 2 crew plans to leave the
Kennedy Space Center at 9 a.m. central daylight time for
their return to Houston. This is Skylab Control.

END OF TAPE

SKYLAB MISSION COMMENTARY 5/15/73 1:20 CST MC38/1

PAO This is the Skylab News Center at KSC. The engineering investigation of the inflight anomaly for Skylab and the effect on subsequent mission activities continues at the Marshall Spaceflight Center in Huntsville, Alabama. No new information has been uncovered which reveals the cause of the failure of the micrometeoroid shield during launch and the apparent subsequent fouling of the workshop solar array. The data continues to be analyzed by the engineering team. The data is somewhat incomplete in real time, since some of the events occurred between station passes and the tape telemetry data must be dumped at a ground station, processed and then analyzed. The analysis of the thermal and electrical systems effects continues on an intensive basis. The ATM solar arrays continue to work properly and there is no significant change in the status of the workshop solar panels. They are still in a partially extended position with no new estimate of the extent of their deployment. The thermal condition of the spacecraft is more troublesome than had been anticipated last evening. The meteoroid shield, in addition to providing a protection against small punctures, was painted in such a manner to provide a temperature balance in the spacecraft on the external skin. The two effects have been found to have contradictory mission requirements; that is to maximize the electrical power available, it's desired to point the solar arrays at the Sun constantly; however, this is the cause, this causes the skin of the now unprotected OWS to heat up excessively. Engineering evaluation and computer analysis is currently under way to find an optimum combination of solar oriented and nonsolar oriented orbit. The flight support team at JSC and MFSC, that's Johnson Space Center and the Marshall Space Flight Center, are continuing in their tasks of trying to develop an optimum flight plan for Skylab 2. Obviously the experiment activity which will be possible depends upon the resolution of the electrical and thermal questions. These resolutions are expected prior to the launch of Skylab 2 now scheduled for Sunday, May 20, 1973, at approximately 11 a.m. eastern daylight time. Preparations at the Kennedy Space Center are proceeding accordingly. By Saturday afternoon a full understanding of the technical situation will be available and an assessment of the mission impact will be made. The decision to launch or not to launch will be made at that time. Skylab Program Director, William Schneider, will be available at the Kennedy Space Center auditorium for a brief news conference at 3 p.m. eastern daylight time today, that's a little over a half an hour from now. The Skylab Program Director, William Schneider will be available for a brief news conference at the News Center at KSC today.

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SKYLAB MC-39

Time: 145 / CDT, 10226 GET

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PAO This is Skylab Control, at a GMT of 19:56. Here in the Mission Control Center an interim operating plan has been evolved by which two of the four flight control teams will work two twelve hour shifts from 7:00 a.m. to 7:00 p.m. and then from 7:00 p.m. to 7:00 a.m. While the other two teams are involved in planning in other areas of the building, planning what can be done to best exploit the mission, get the most out of it. Flight Director, Don Puddy, will, and his team, will pull the 7:00 a.m. to 7:00 p.m. shift each day between now and the launch of Skylab 2. Milt Windler's team will have the overnight from 7:00 p.m. to 7:00 a.m. That's teams one and three. Teams four and two headed up by Phil Shaffer and Neil Hutchinson, will be involved in planning in the back rooms and in other areas of Johnson Space Center. Our present estimate now for a change of shift briefing with Flight Director Don Puddy will be after he is relieved by Milt Windler. That would be at sometime after 7:00, perhaps around 7:30 p.m. in the JSC News Room small briefing room. The Flight Operations Management Room, down the hall from the main control room here, is developing a thermal management plan in case some of the workshop temperatures begin to rise uncomfortably high. And maneuvers again perhaps would have to be made to stabilize the temperatures later on in the evening. To repeat again, the estimate now for a change of shift briefing with Flight Director Don Puddy is for 7:30 approximately central daylight time in the Johnson Space Center News Room. At Greenwich mean time at 19:58, this is Skylab Control.

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Time: 1600 CDT, 1:03:29 GET

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PAO This is Skylab Control, 2100 GMT. Some current numbers on Skylab space station, which is now some 4-1/2 minutes out of the Honeysuckle, Australia tracking station. The current measurement of the Skylab orbit shows a perigee of 235.6 nautical miles, apogee of 237.1 nautical. Orbital period, 1 hour 33 minutes and 10 seconds, current velocity 25,096 feet per second. Total weight of the cluster at the present time, 169,414 pounds. Here in the Control Center, as mentioned earlier, the 2 off-shift control teams, flight control teams, are examining various aspects of mission planning, to live with the situation of the Skylab workshop. Similar work in the technical field is being done at Marshall Space Flight Center, Huntsville, Alabama. Numerous communication loops between the 2 centers are being used to - for conferences and exchange of information. The 2 teams of flight controllers here in Houston are - have been charged with numerous task items to look into. The best way to manage the power profile or available electrical power, and whether or not, for example, to soft or hard dock with the workshop when we do launch Skylab 2. Over the next several days the plan for the rendezvous, and docking of Skylab 2 with the orbiting workshop will emerge. And at 2103 GMT, this is Skylab Control.

END OF TAPE

SKYLAB MC-41

Time: 1700 CDT; 1:04:30 GET

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PAO This is Skylab Control at 2200 Greenwich mean time. Skylab space station presently crossing the northwest coast of Africa, and is over the Canary Island tracking station for perhaps another 6 minutes, for passing on down into the coverage by the Ascension Island tracking station. All systems seemed to be stabilized at the present time. On the last 2 stateside passes, some additional checks into the rate-gyros have been run, and confidence seems to be gradually building in the reliability of this system. However, it will take several additional runs and checks to build all the confidence that is desired to rely on this system for attitude control. In other activities in Mission Control, there's a certain amount of shade-tree engineering underway to develop ideas for a thermal cover that could be extended from the base of the ATM, out to the end of the workshop, which would offer some protection against thermal heating on the now exposed skin of the workshop. One rig being suggested is a sail-like device, rather like a roller-reefing gear on a sailboat. It would be extended at some spacing out from the workshop, not actually touching it, just a flat sheet that would extend back to the aft end of the workshop. As with many of the other suggestions it will remain to be seen as to how this problem will be solved. Schemes of this sort would require some additional crew training. And at 2202 Greenwich mean time, this is Skylab Control.

END OF TAPE

SKYLAB MC-42

Time: 1800 CDT; 1:05:31 GET

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PAO This is Skylab Control at 2301 Greenwich mean time. Skylab space station about a minute out of the Hawaii tracking station over the mid-central Pacific. At the present time the situation on the gaseous nitrogen used in the Thruster Attitude Command System, is that approximately 18 per cent has been used at this time. This is still comfortably above the experiment requirements or margins. Normally about 8 percent would have been used at this point in the mission. This gaseous nitrogen is stored in 22 titanium spheres, each of which hold 4-1/2 cubic feet of nitrogen, which are around the base of the workshop. On the rate gyro problem that was experienced earlier, 8 of the 9 rate gyros are now operating normally. One of the 3 that register in the, so-called, Y-axis is not functioning properly. However, 2 of the 3 are dependable now. We're on the Primary Attitude Control System, no longer using the TACS or the Thruster Attitude Control System, which used the gaseous nitrogen mentioned earlier. Current orbital measurements, perigee 236.4 nautical miles, apogee 236.7. And at 23:03 Greenwich mean time, this is Skylab Control.

END OF TAPE

SKYLAB MC-43

Time: 19:00 CDT 1:06:31 GET

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PAO This is Skylab Control at 0001 Greenwich mean time. And the mission of Skylab 1, Skylab space station now over the southwestern Indian Ocean, on the nineteenth Earth orbit. Next station to acquire will be at Carnarvon, Australia in 11 minutes 57 seconds from now. The last stateside pass, all the spacecraft systems appeared to be operating normally, with the exception of course of the power generating system which is dependant on the undeployed solar panels. On this upcoming stateside pass, on this revolution, people in the Houston area, if they're lucky and there's no cloud cover and they happen to be looking in the right direction, might possibly see Skylab at 7:59, starting at 7:59, crossing the northern sky from north to east for a total of 4 minutes 32 seconds. Maximum elevation 16 degrees. The spacecraft will be some 756 miles slant range from Houston. One revolution later, at 9:35 p.m., that's probably a better likelihood of spotting the Skylab space station as it crosses from northwest to southeast, for a total pass of 6 minutes 37 seconds. The maximum elevation is 44 degrees with a slant range of 375 miles. Current estimate on a change of shift briefing with Flight Director Don Puddy is still hanging in at around 8:30 p.m. central daylight time, in the Johnson Space Center News Room. If an earlier estimate comes along we'll relay that as soon as possible, but right now Don Puddy estimates that would be the earliest we could make it to the News Room after handing over to another Flight Director Milt Windler. The Skylab trajectory staying fairly constant at around 235, 236 circular. Velocity 25,095 feet per second. And at 0004 Greenwich mean time, this is Skylab Control.

END OF TAPE