For Network Personnel Only

TECHNICAL INFORMATION BULLETIN

THE MANNED SPACE FLIGHT NETWORK

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'Go' Signal Given On Manned Lunar Orbital Flight In December

The Manned Space Flight Network will be linked to the moon by a Unified S-band signal on Christmas Day, 1968, if everything goes as planned.

NASA Acting Administrator Thomas O. Paine announced on November 12 that the AS-503 (Apollo 8) mission will be a lunar orbital mission lasting up to six days. The earliest possible date for the mission will be December 21 and if all goes as planned, three astronauts--Frank Borman, James Lovell, and William Anders--will orbit the moon 10 times during a 20 hour period beginning December 24.

Two launch windows have been considered for the Apollo 8 mission: December 20 through December 27 and January 18 through January 24. These windows are based on a Pacific Ocean injection, an optimized free return trajectory, the lunar approach trajectories, the required propellant reserves, space vehicles payload capabilities, and transearth injection requirements.

The mission is designed in plateaus or "commit points" to minimize risks and to be sure that every system is functioning perfectly before the mission continues on to another plateau.

Launch to Translunar Injection--(TLI). The countdown will allow a launch on time using a variable flight azimuth between 72 and 108 degrees. The launch vehicle will place the spacecraft into a 100 nautical mile circular earth parking orbit. The S-IVB and spacecraft will then be checked out in preparation for the S-IVB restart and TLI burn.

TLI to Lunar Orbit--The S-IVB will be reignited during the second parking orbit to inject it and the CSM into a translunar trajectory. The nominal injection will provide a "free return" to earth if the deboost into lunar parking orbit is not initiated. (A second TLI opportunity exists one revolution later.) The S-IVB will then execute a retrograde dump of residual propellants at TLI +2 hours to achieve a "slingshot" effect. The "slingshot" concept will be used to reduce the probability of S-IVB/IU/LTA-B and CSM recontact, S-IVB/IU/LTA-B earth impact, and S-IVB/IU/LTA-B lunar impact. The S-IVB package will then coast in its "slingshot" trajectory until the moon's gravitational field increases S-IVB volocity sufficiently to place it into a solar orbit. Before the retrograde dump, the CSM will be separated from the S-IVB. At this point, the Spacecraft/LM Adapter (SLA) panels will be jettisoned. Star/Earth, Landmark/Earth, and Horizon/Lunar sightings will be conducted throughout both the translunar and transearth flight phases. The S-band high gain antenna will be checked out after S-IVB separation.

Lunar Orbit--The SM propulsion system will be used to deboost the

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TETR-2 Performing Well In Early Stages

The second Test and Training Satellite (TETR-2) was launched on November 8 and first performance reports indicate that the spacecraft is operating very well with only minor problems at MSFN and STADAN stations.

A summary of the early phases of the mission is as follows:

The TETR-2 Spacecraft was launched aboard a Delta Rocket from Cape Kennedy, Fla. on November 8, 1968. Liftoff occurred at 09:46:29 GMT and the spacecraft was placed in orbit at 10:46 GMT.

Detailed Activities

Pre-launch Phase---Launch simulations were performed on October 24 and October 31, 1968. All MSFN and STADAN stations performed satisfactorily.

Launch and Early Orbit Phase---The spacecraft was placed in orbit with a perigee of 381.36 kilometers and an apogee of 941.4 kilometers. The spacecraft subsystems were monitored and quick look messages indicated that all subsystems were nominal.

Subsystem Test and Stabilization Phase---The STADAN tracking stations are able to track and provide data to the

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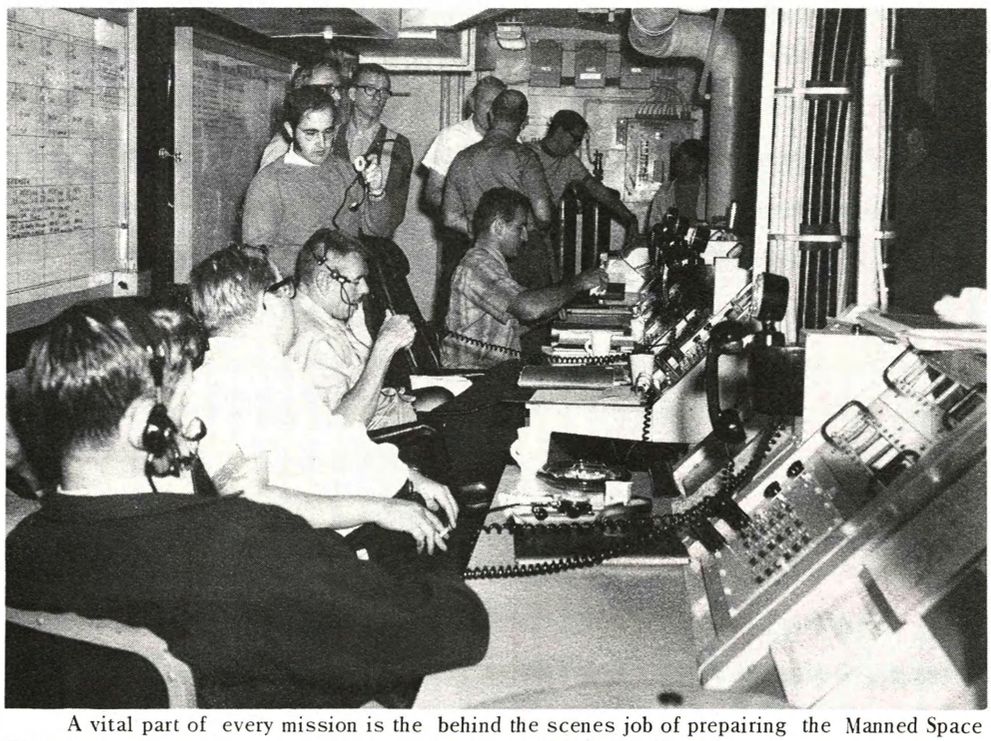

A vital part of every mission is the behind the scenes job of prepairing the Manned Space Flight Network so that every network station can provide support to the effort. An important part of this testing and checkout provided by GSFC simulation teams. Here the simulation team exercises the M&O crew of the USNS Huntsville late in September prior to the AS-205 mission. The objectives of the simulation exercise were to test the Huntsville's capability to support the AS-205 mission and to verify the air-to-ground remoting capabilities of the systems. At the consoles for the simulation are Richard L. Williams, network support group team leader; Clyde H. Knapp Jr. GSFC simulation director; and J. B. deGrasse, M&O supervisor, USNS Huntsville.

Go Signal Given

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spacecraft into lunar orbit. The lunar insertion orbit altitude will be approximately 70 x 196 miles. Following insertion and system checks, the orbit will be circularized at 70 miles. During this period, lunar landmark sightings will be taken.

Transearth Injection (TEI) to Reentry--After 10 lunar revolutions, the SM propulsion system will be used to boost the CSM out of lunar orbit. Lunar orbit insertion and TEI burns will occur behind the moon and will not be observed by MSFN stations.

Reentry--Prior to atmospheric entry, the command module will be separated from the SM. The latitude of the landing point will be determined primarily by the declination of the moon at the time of the transearth injection maneuver.

TETR-2 Performing

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Multi-Satellite Operations Control Center. At present, data is being collected to determine the operating parameters of the spacecraft subsystems.

The Spacecraft Subsystem Test and Stabilization Phase will last from launch to plus 7 days and will verify the operational readiness and determine the constraints of the subsystem; determine in-flight battery characteristics; and allow the spacecraft to attain stable attitude.

The Test and Training Phase will begin at launch plus 7 days and will last to the end of useful spacecraft life. During this period all MSFN Apollo stations USB systems, personnel, and equipment, and conduct operations and engineering tests will be exercised.

Ops Doc Status

The following operations documentation has been distributed recently:

Network Operations Manager's report for the AS-205 mission--distributed October 30.

AS-503 Mission Supplements to the NOD (scheduled launch 4th quarter, 1968)--distributed October 22. (Supporting stations: CNV, PAT, MIL, MLA, GBI, GBM, GTK, ANG, BDA, ACN, MAD, CYI, PRE, TAN, CRO, HSK, GWM, HAW, CAL, WHS, GDS, GYM, TEX, RED, VAN, MER, HTV, ARIA (6).

Network Operations Plan for Mariner Mars 69 (launch scheduled 1st quarter, 1969)--distributed October 28. (Supporting stations: ACN, BDA).

Network Operations Plan for Pioneer-D Launch Vehicle Support (launch scheduled November 6)--distributed October 12. (Supporting stations: BDA, ACN, ANG CRO, GWM, HAW, GBM, MIL, TAN.)

Network Operations Plan for test and Training Satellite-B (launch scheduled November 6)--distributed October 11. (Supporting stations: All fixed ground stations, and instrumented ships HTV, RED, and MER.)

Change 1 to Revision 2 of the Network Operations Directive--distributed October 26.

Change to NOD

Change 1 to Revision 2 of the "Network Operations Directive" has recently been distributed. This change incorporates ISI's and PDC's from the AS-205 Mission that were determined to be appropriate for inclusion in the NOD. In addition, many recommendations from station personnel were included.

Documents scheduled for distribution in the near future include: Program Support Plan for the AS-V. PSRD.

Documentation Briefing Report for AS-503 Mission-distributed October 29, 1968.

Network Operations Plan Intelsat III-F-2 Mission

Network Operations Plan for the Highly Elliptical orbiting Satellite (HEOS-A).

Reporters Wanted

The Technical Information Bulletin is published for personnel of the Manned Space Flight Network.

We are asking that all who are a part of the MSFN, especially Station Directors and M&O supervisors, become TIB reporters and relay accounts of important events in your area to us.

All items, a paragraph or several pages, may be addressed to J. Mulvihill, TIB Editor Code 820, Goddard Space Flight Center, Greenbelt, Maryland, or use the MSFN teletype facilities.

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NT & TF RESIDENT TRAINING SCHEDULE
JAN – JUNE 1969

COURSE	LENGTH WKS	JANUARY	FEBUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST
110 MSFTP-2	9							(SEE NOTE 1)	
132 NETWORK DATA FLOW	1								
200 642 B COMPUTER	8							(SEE NOTE 1)	
205 COMP. PROGRAMMING	6							(SEE NOTE 2)	
210 1218 COMPUTER	8							(SEE NOTE 1)	
230 RSDP PERIPHERAL	6								
320 LAND ANTENNA	6								
330 RECEIVER/EXCITER	7								
340 POWER AMP	7								
350 DIGITAL RANGING	5								
360 TDP/APP	7								
372 USB LEVEL II	3								
400 TELETYPE OPERATION	2								
410 TELETYPE MAINT	5								
510 RECORDERS	5								
520 TIMING	4								
600 APOLLO PROGRAM	1								
610 DIGITAL COMP FUNDAMENTALS	4								
620 M&O SUPERVISION	2								
640 MSFNOC	1								

NOTES:

1. LEVEL II CONCEPTS OF MSFTP-2, 642 B MOD COMPUTER, AND 1218 COMPUTER WILL CONSIST OF THE FIRST TWO (2) WEEKS OF THE SCHEDULED COURSE.
2. CONVENING DATE FOR THE FIRST SYSTEMS PROGRAMMING COURSE (205) IS TENTATIVE. ANY CHANGE FOR THIS COURSE WILL BE PUBLISHED.

REFERENCES:

1. GETC 008A 16/1715 OCTOBER
2. GETC 006A 4/1755 NOVEMBER