'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 velocity 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

Continued on Page 2

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. Lift-off 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

Continued on Page 2
Go Signal Given

Continued From Page 1

spacecraft into lunar orbit. The lunar
insertion orbit altitude will be approxi­
mately 70 x 196 miles. Following in­
sertion and system checks, the orbit
will be circularized at 70 miles. Dur­
ning this period, lunar landmark sight­
ings will be taken.

Transearth Injection (TEI) to Re­
entry—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 observ­
ed 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

Continued From Page 1

Multi-Satellite Operations Control Cen­
ter. 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 opera­
tional readiness and determine the con­
straints 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 documenta­
tion 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. (Sup­
porting 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 Pio­
near- 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 sched­
uled 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 Net­
work Operations Directive—distribut­
ed October 26.

Change to NOD

Change 1 to Revision 2 of the "Net­
work 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 recommen­
dations from station personnel
were included.

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

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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Address other communications to J.
Mulvihill, TIB Editor, NASA, Goddard
Space Flight Center, Code 820, Greenbelt,
Maryland 20771, or use the MSFN
teletype facilities.

NOTES:

1. LEVEL I CONCEPTS OF MSFTP-2,542 B M.O. COMPUTER,
AND 1228 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

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