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For Network Personnel Only

TECHNICAL INFORMATION BULLETIN

THE MANNED SPACE FLIGHT NETWORK

Volume 6, Number 12 Goddard Space Flight Center August 15, 1969

TETR–C Launch On August 29

Launch of the third Test and Training Satellite (TETR-C) is set for August 29 aboard an improved Delta launch vehicle.

The TETR satellites basically provide an orbiting target for tracking by MSFN USB stations. TETR-1 and TETR-2 successfully completed assigned missions.

Using the orbiting satellites as a target, USB systems personnel will train in:

1. Premission checkout of USB systems at MSFN stations.
2. Mission simulations.
3. Development and verification of acquisitions and handover procedures, operating procedures, and orbit-determination programs.

TETR-C also will be used during MSFN engineering and operational tests to detect possible USB system problems.

The TETR-C contains an S-band transponder compatible with the MSFN

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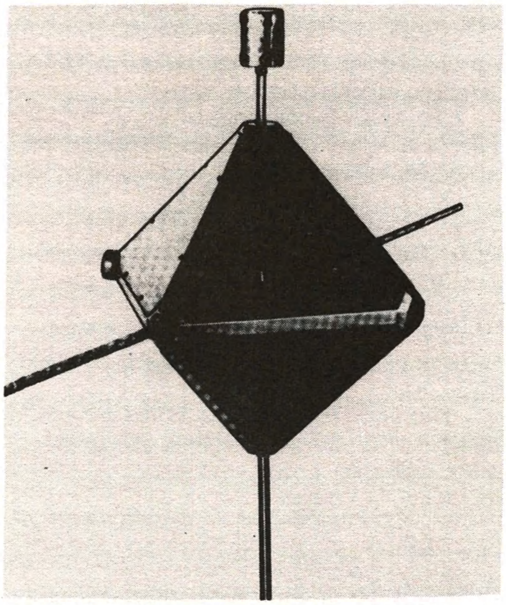

Test and Training Satellite C, due to be launched August 29, is the third such satellite to be put in orbit to exercise USB personnel and equipment.

Crews Selected For Apollo 13 And 14

Flight crews were named for Apollo Missions 13 and 14 (AS-508 and AS-509).

Prime crewmen for Apollo 13 are Astronauts James A. Lovell, Jr., commander; Thomas K. Mattingly II, command module pilot; and Fred W. Haise, Jr., lunar module pilot.

Apollo 14 prime crewmen are Astronauts Alan B. Shepard Jr., Commander; Stuart A. Roosa, command module pilot; and Edgar D. Mitchell, lunar module pilot.

The backup crew for Apollo 13 is composed of Astronauts John W. Young, John L. Swigert Jr., and Charles M. Duke Jr.

Backup crewmen for Apollo 14 are Astronauts Eugene A. Cernan, Ronald E. Evans, and Joe H. Engle.

Members of the support team for the Apollo 13 crew are Astronauts Jack R. Lousma, William R. Pogue, and Vance D. Brand. A support team for Apollo 14 has not been named.

Lovell, 41, is a Navy Captain. This will be his fourth space mission. Previous flights include Gemini 5 and 12 and Apollo 8. He was backup commander for Apollo 11.

Mattingly, 33, a Navy lieutenant commander, has not yet flown in space. Haise, 35, is a civilian. He was on the backup crews for Apollos 8 and 11. Apollo 13 will be his first space flight.

Shepard, 45, a Navy captain, was the United States' first man in space. He

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During Apollo 11 Mission

Network Performance Is Termed 'Magnificent'

MSFN performance for Apollo II was summarized in an operations message from the network operations manager to the MSFN on July 24, at 1630Z. The message read:

"There can be no doubt in anyone's mind that all of you comprise the 'greatest tracking network in the world.' Your performance was magnificent. We here in the MSFNOC, and I am sure the entire NASA organization, wish to express our thanks and congratulations for a job expertly done. Your 'can do' attitude is reflected in the overall success of the first manned lunar landing mission. We are proud to have been a small part of your outstanding effort and our attitude here is 'bring on the planets', the MSFN 'can support."

These words by the NOM emphasized the support by the MSFN, not only during the Apollo II Mission, but also in all of Mercury, Gemini, and Apollo missions that led up to the successful lunar landing.

In the summary of the NOM's report, issued a few days after splashdown, it was pointed out that there were no data losses on the MSFN that affected the accomplishment of the objectives of the Apollo II mission.

A summarization of system and station performance during the mission follows:

Unified S-Band. USB support for the mission was satisfactory. While several equipment problems occurred, utilization of redundant equipment and prompt station repairs kept downtime to a minimum. Considering the length of the mission and the complex procedures, operator errors remained minimal. USB station performance contributed significantly to the success of the Apollo 11 Mission.

Radar. Although data losses were higher than anticipated, C-band radar support was good. During rev 1, TAN was unable to verify the proper range level. Loss of range data for the pass resulted. MER was unable to acquire track during the TLI burn, but was later acquired. Ninety minutes of real-time data lost during the TLC phase was recovered and is being used for postflight analysis. All stations supporting the TLC phase tracked the S-IVB/IU at 60,000 nmi--28,000 nmi beyond the radars 32,000 nmi capability.

Telemetry. The telemetry support for the AS-506 Mission was excellent. Remoting of USB AGC presented no problem at MSC and MSFN. ALSEP errors, 1001-B 07/10/69 and 10025-A, 07/14/69, were transmitted after the network was placed on mission status. The PAM EVA testing not completed during the NRT was successfully completed with all required stations. Additional testing of the Parkes, HSK, GSFC, and MCC TV and telemetry distribution system was conducted and provided excellent support during the mission. The data transfers from the RED and the MER to ARIA

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MSFN Performance

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8 and 6 were accomplished without difficulty.

UHF Command. MSFN UHF command system performance was nominal from launch through BDA LOS. BDA transmitted the S-IVB safing command and received verification at 13:44:04 GMT. All UHF command requirements were completed at 1415 GMT.

RSDP Hardware. Hardware and software computer faults and telemetry and command data losses were mimimal.

RSDP Software. RSDP software performance during AS-506 was outstanding. PAM processing, fuel and oxidizer processing, APS relay thruster processing, and program reaction to abnormal PCM interrupts were resolved before launch.

SPAN. SPAN provided excellent support. All reports and messages were received on time.

Apollo Instrumentation Ships (AIS). Test support positions consistent with the insertion, translunar injection, and reentry support requirements were AIS assignments.

A/G Communications. A/G communications during AS-506 were nominal. Personnel support and equipment performance was excellent.

MSFNOC Systems Performance. Telemetry systems supported successfully throughout the mission. Computer-driven displays supported from launch through TLI. Timing and recorders incurred no downtime during the mission. Voice communications problems centered around low levels. There were no problems with the CCTV systems.

Crews Selected

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flew Freedom 7, a suborbital mission in Project Mercury on May 5, 1961. He recently returned to spaceflight status after being grounded for several years because of an inner ear disorder. Shepard's duties as chief of the Astronaut Office have been assumed by Col. Thomas P. Stafford.

Roosa, 35, is an Air Force major who will be making his first space flight.

Mitchell, 38, is a Navy commander. This will be his first space flight.

Both missions include lunar landings and exploration. Landing sites for Apollos 13 and 14 are expected to be selected this fall. Prime consideration in site selection will be to meet scientific objectives within operational capabilities. Continued exploration of the Moon's surface will lead to lunar sites in which it will be increasingly difficult to effect a landing.

The Apollo 12 crew, previously announced, is Charles Conrad Jr., Richard F. Gordon Jr., and Alan L. Bean.

TETR–C Set For Launch

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USB systems. The transponder returns an uplinked composite signal of PCM telemetry (1.6, 51.2, or 72 kbps), voice, angle tracking, ranging, and biomed information. These separate signals can be used singularly or simultaneously.

TETR-C is expected to orbit for 12 months. MSFN stations will be scheduled to track the TETR-C and accomplish the mission objectives.

The TETR-C will be launched from Cape Kennedy on a 108-degree launch azimuth and a 33-degree inclination with an apogee of 502 nautical miles and a perigee of 203 nautical miles.

Enclosed in the second stage engine compartment of the launch vehicle, the satellite will be ejected into earth orbit about 21 minutes after liftoff.

STADAN will perform interferometer tracking, telemetry data acquisition and commanding under the direction of the MSFN TETR Operations Manager. MSFN will perform tracking with the USB systems during the entire mission.

The TETR-C mission is divided into four functional phases that define mission objectives and support requirements. The phases are:

1. Prelaunch Phase (45-day period before launch)--Achieve and demonstrate operational readiness.
2. Launch and Early Orbit Phase (Launch plus 4 hours following launch)--Insert spacecraft into orbit, verify basic systems operation and USB transponder functions. Confirm orbit from C-band and S-band data.
3. Spacecraft Subsystem Test and Stabilization Phase (From 4 hours to 10 days after launch)--Verify the operational readiness and determine the constraints of the subsystem. Determine in-flight battery characteristics.
4. Test and Training Phase (From 10 days after launch to end of useful spacecraft life)--Exercise all MSFN USB systems, personnel, and equipment. Conduct operations and engineering tests.

Specific mission objectives include:

1. Providing at least three hours USB acquisition and tracking experience for each MSFN land station and operational Apollo ship.
2. Performing at least 10 handovers between each of the following station combinations:
MIL to GBM, MIL to BDA, MIL to ANG, GBM to ANG, CYI to MAD, BDA to ANG, CRO to HSK, HAW to GDS, GDS to GYM, GDS to TEX, GDS to MIL, GYM to TEX, GYM to MIL, GYM to GBM, TEX to MIL, TEX to GBM, and TEX to BDA.
3. Perform at least eight handovers with each Apollo ship.
4. Exercising the spacecraft PCM telemetry and voice turnaround capability at least six times by each land stations (PCM telemetry bit rate [1.6, 51.2, 72 kbps] will be a station option unless specified by TETR operations).
5. Performing a minimum of six remote voice tests with each land station (the MSFN network controller will provide a voice count from GSFC, via SCAMA to the participating station, to the spacecraft. Voice will be received at the two-way and supporting three-way stations).
6. Performing a minimum of six tracking exercises with maximum MSFN participation and using GSFC real-time computer support.
7. Performing at least eight handovers between all MSFN 85-foot antenna prime stations and the JPL/DSN 85-foot antenna wing stations.
8. Checking stations and ship equipment before and after major EIs and verifying and updating USB acquisition and handover procedures as required.
9. Providing spacecraft for the Network Test and Training Facility for USB systems test and personnel training as required.
10. The following tests should be performed by each operational ARIA.
A minimum of one hour USB tracking and two data transfers to a MSFN land station (using data transmitted from a land station to the spacecraft and back to the ARIA), and a minimum of four handovers between each ARIA (aircraft-to-aircraft), and four handovers between each ARIA and a land station or an Apollo ship.

Doc Status

Documentation recently distributed to the MSFN includes:

Network Operations Manager's Report for the AS-506 Mission--distributed August 5.

Network Operations Plan for TETR-C Mission--distributed July 23.

Network Operations Plan for OSO-G Mission--distributed July 1.

Network Operations Plan for ATS-E Mission--distributed July 7.

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