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TECHNICAL INFORMATION BULLETIN

... THE MANNED SPACE FLIGHT NETWORK

Volume 6, Number 15 November 25, 1969
GODDARD SPACE FLIGHT CENTER

Texas Station Has Long History

Corpus Christi, Texas MSFN station has become an Apollo tracking station and is performing an essential role in the Manned Space Flight Network support of the space program in three stages.

In 1959, Rodd Field, part of the Naval Air Station, was chosen as a Mercury station location. Antenna separation, soil conditions, water, sewage disposal, communications, transportation, electric power, and topography passed the tests of the survey team.

By April 1960, construction of station facilities had begun. Offices, equipment, storage, and maintenance were housed in the renovated hanger, and control and acquisition antennas were placed on the roof.

The equipment had been completely installed and thoroughly checked by April 1961. The Corpus Christi facility was ready to support Mercury missions.

The second stage in the history of the Corpus Christi station started in 1962 when NASA and industry engineers began designing and developing new network systems required for Project Gemini. Rebuilding for Gemini began in March 1964, and the facility had been modified and checked out for Gemini missions by summer 1964.

While the station supported Gemini missions, construction for the Apollo expansion program began. A Unified S-band building, generator building, and hydromechanical building were built. The new Apollo station at Corpus Christi was complete in September 1966 and dedicated in March 1967.

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Team Results

Part of the ALSEP scientific package left on the lunar surface by the Apollo 12 astronauts is teamed with a 148-pound satellite, the Interplanetary Monitoring Platform-E (IMP-E or Explorer 35), sixth in the IMP series, which has been orbiting the Moon since July 1967.

The purpose of the scientific measurements they will be making is to see if a lunar magnetic field can be detected, which would give scientists information to help determine the Moon's structure and composition.

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TETR Celebrates First Anniversary

Test and Training Satellite 2 (TETR-2) celebrated its first anniversary in space during November. The spacecraft and the Manned Space Flight Network stations using the spacecraft have racked up some very impressive records.

TETR-2 was launched as a secondary payload aboard a Delta rocket on November 8, 1968 at 09:46:29 GMT from Cape Kennedy. Since that time, until November 9, 1969, TETR-2 had made 5,494 orbits of the earth. During those earth orbits, Manned Space Flight Network stations have accumulated 7,116 minutes of Unified S-band tracking; supported 667 passes of the spacecraft; participated in 434 handover exercises with the spacecraft; conducted 174 local voice tests; and 125 remote voice tests.

Of the 7,116 minutes of track, Bermuda has the highest participation with 852 minutes. Other tracking totals are:

Merritt Island, 623 minutes; USNS Vanguard, 604 minutes; Canary Islands, 515 minutes; Hawaii, 481 minutes; Texas, 445 minutes; Antigua, 425 minutes; Grand Bahama, 414 minutes; Madrid, 411 minutes; Guaymas, 369 minutes; USNS Huntsville, 304 minutes; Carnarvon, 302 minutes; Ascension, 288 minutes; USNS Redstone, 244 minutes; Goldstone, 188 minutes; Guam, 186 minutes; Honeysuckle Creek, 152 minutes; Madrid Wing Site, 117 minutes; USNS Mercury, 101 minutes; Engineering Training Center, 84 minutes; and Instrumented Aircraft, 11 minutes.

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Canary Island Experts Solve Printer Problem

After many trials and tests, solution to a problem that has been plaguing MSFN console operators for months came about almost accidentally.

The problem that faced console operators at Canary Islands and other MSFN stations was that printouts from the Motorola high-speed printer were difficult to read because of the small print and the lack of contrast between the print and the paper. Canary Islands Data Systems Supervisor Roger L. Lee and his personnel had been experimenting with several different plans to make the printout more readable.

According to Mr. Lee, one night, by chance, a copy of the high-speed command history printout was held before a light--and the problem was solved. The printer burns small holes in the dark

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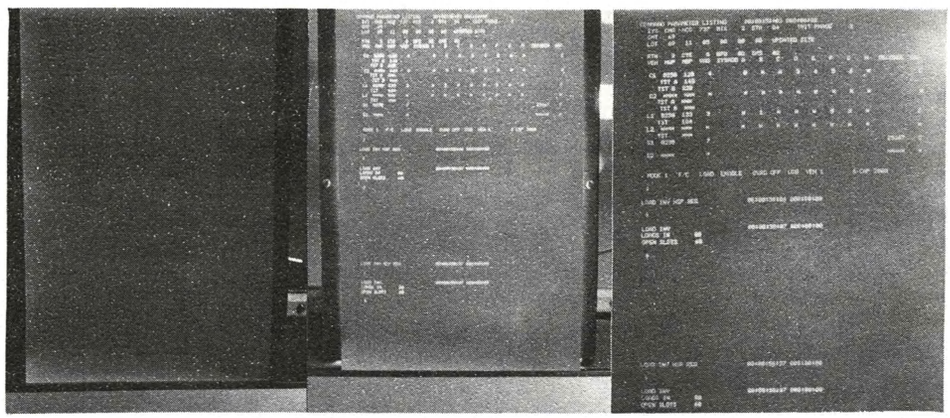

These photos by personnel at the Canary Islands MSFN station clearly show how the problem of reading the high-speed console printout was solved. The photo on the left is the console printout before the solution. The center photo shows the same printout with backlighting. On the right is a closeup of the same printout, clear and easily read.

TETR Celebrates

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Bermuda also participated in the most passes of TETR-2 with 69.

Pass totals of other MSFN stations for the year are:

Merritt Island, 55: USNS Vanguard, 54; Canary Islands; 45; Texas, 45; Hawaii, 44; Antigua, 43; Madrid, 37; Grand Bahama, 36; Guaymas, 33; Carnarvon, 30; USNS Huntsville, 29; USNS Redstone, 26; Ascension, 27; Honeysuckle Creek, 20; Guam, 18; Goldstone, 16; Engineering Training Center, 14; USNS Mercury, 13; Madrid Wing Site, 12; and Instrumented Aircraft, 1.

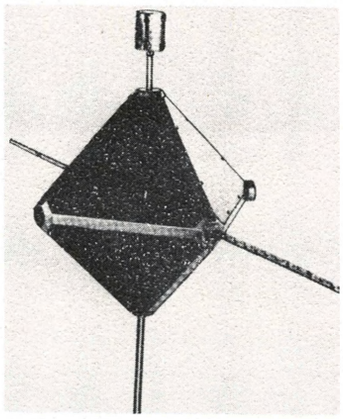
MSFN stations--Bermuda, Canary Islands, and Guam--have recorded 1,505 minutes of real-time data during the year. STADAN stations have accumulated 22,127 minutes of real-time data.

Using the orbiting TETR-2 as a target, MSFN personnel operating USB systems receive training in the following areas:

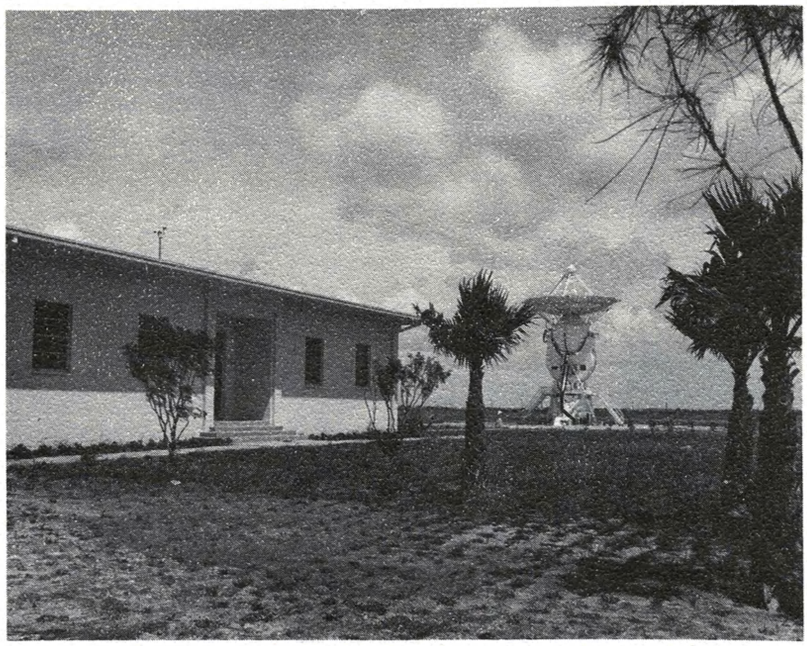
1. Premission checkout of USB systems at MSFN stations
2. Mission simulation
3. Development and verification of acquisitions and handover procedures, and
4. Development and verification of orbits determination programs.

In addition, TETR-2 is used in performing MSFN engineering and operational tests to aid in defining and/or correcting possible USB systems problem areas.

The TETR-2 spacecraft contains an S-band transponder which is compatible with the USB systems of the MSFN. The transponder provides a means of exercising the USB systems by turning around an uplinked composite signal of PCM telemetry (1.6, 51.2 or 72 kbps), voice, angle tracking, ranging, and biomed information. These signals are used singularly or simultaneously.



The TETR-2 celebrated its first anniversary and is doing its job of giving the MSFN an active target for tracking exercises.



The Corpus Christi, Texas MSFN station has supported America's space program through Projects Mercury, Gemini and Apollo.

Texas Station

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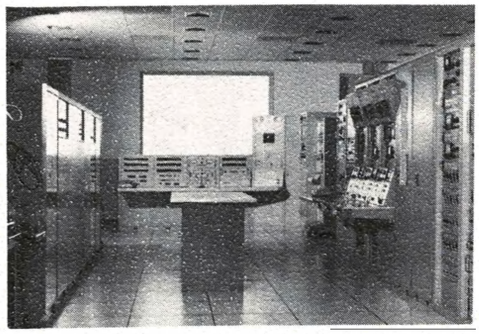
The city of Corpus Christi, and the MSFN station is located in a semi-tropical tourist industrial center on the Gulf of Mexico about 200 miles southwest of Houston.

Lynn E. Woodward is the NASA station director at Corpus Christi. D. Stewart is the maintenance and operations supervisor and E. Tyree is assistant M&O. Operations supervisor is B. Richardson with J. Benning as administrative assistant.

Other supervisory personnel at the station include J. Benavides, logistics supervisor; W. Denton, communications system supervisor; C. Bryant, data systems supervisor; J. MacDonald, USB systems supervisor; and C. Hensley, facilities supervisor.



The 30-foot USB antenna can be seen through the window at the Texas MSFN station.

ALSEP, IMP

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If there is any magnetic field at all--none has been detected so far--it would deflect a certain number of electrons and protons that come from the Sun. If there are fewer particles striking the surface than the spacecraft, it would indicate a magnetic field exists.

After Apollo 11, the first lunar landing, it was found that the surface of the Moon held great quantities of solar particles.

The seven instruments aboard the lunar-anchored IMP include a magnetometer and several detectors to measure the solar wind.

Canary Island

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paper which makes a backlighting system ideal for improving the contrast of the print on the paper.

Canary Islands personnel then designed and built a backlighting system for the station operators console high-speed printer. (CRR-CYI-11A-01). Using this system, high-speed printouts can be read from up to five feet away.

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