

TAN Station Provides Vital Network Support

This is another in a series of articles outlining the facilities of the Manned Space Flight Network. The series will run periodically and in time will include all of the MSFN tracking stations.

While Tananarive was originally designed as a STADAN facility, it has played a big role over the years in support of Manned Space Flight missions. This station will have vital support requirements on the three earth orbits during AS-505.

Tananarive station, in the Malagasy Republic, is located on the orbital path of the spacecraft, and provides tracking support between MSFN stations at Canary Islands and Carnarvon, Australia.

As a C-band radar tracking station, TAN supported manned Gemini and Apollo missions since October, 1964, when it was collocated at the STADAN site as a replacement for the Zanzibar station. When the Zanzibar station was closed, it was required that for earth-orbital Gemini support, a station be located in the latitude band of 30 degrees north to 30 degrees south. In particular, it was necessary for the station to provide critical coverage for the first, second, and third orbits of Gemini flights. Originally, the MSFN Tananarive facility was housed in two 30- by 8-foot trailer vans. Now, two buildings - a radar building and a T&C building - house MSFN facilities at the TAN station.

TAN is equipped with a CAPRI C-band radar and an 8417 Retrofit Acquisition Aid.

The station is located at Imerintsiatosika, about 22 miles southwest of Tananarive. It is on a fairly level plateau at an elevation of 4575 feet. The Airvonimamo International airport is about 7.5 miles from the site. The area of the station is about two-thirds of a mile by one and quarter miles in area. In addition to the main site, there is a transmitter site about a mile away.

The Island of Madagascar, the fourth largest island in the world, covers

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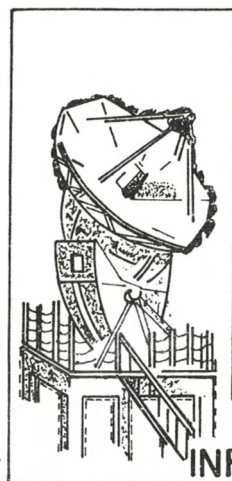
Achievement Award

At a special ceremony on March 18, the MSFN Bermuda station was presented with a group achievement award. The station was particularly cited for its support of the Apollo 8 mission.

Presenting the award was Dr. John F. Clark, director GSFC. Among the guests at the Kindley Air Force Base ceremony were U. S. Senators Clifford Case, New Jersey and Ted Stevens, Alaska.

Station director is Fred Healey. M&O supervisor is G. B. Gallup.

For Network Personnel Only



... AN OFFICIAL PUBLICATION OF ...

TECHNICAL INFORMATION BULLETIN

... THE MANNED SPACE FLIGHT NETWORK

Volume 6, Number 6 April 1, 1969
GODDARD SPACE FLIGHT CENTER

DCNs To Update Operational Tests

Beginning with the AS-505 mission, Documentation Change Notices (DCNs) will be used to update Manned Flight Operations Division operational tests.

As outlined in Paragraph 10.3.13 of Change 3 to Revision 2 of the NOD (distributed April 17) DCNs will be the only means, other than printed changes, used to update SSTs, ISTs, BSTs, and DSTs and will be permanent changes to the documents affected.

During nonmission periods all DCNs will be issued by GSFC Code 822.1; all technical questions concerning a DCN should be referred to Code 822.1 during this period. During premission and mission periods, DCNs will be concurred with by Network Operations Manager (NOM) and all questions should be directed to the NOM during this period.

DCNs will be numbered consecutively for each test and any single DCN will contain changes to one test only. All changes made by DCN will remain permanent until the test is reissued. At test reissue, the DCN numbers will be recycled to 000.

A master file of all operational tests and updates will be maintained by the Documentation Coordinator located at the MSFNOC. Information on the latest update of any test can be had upon request. A monthly summary of tests having DCNs issued against them will be mailed to the Network.

The DCN system, now used to update operational tests, is being evaluated for possible use with all MSFN operations documentation.

Prime Crew Named For Second Landing

Astronauts Charles Conrad, Jr., 38; Richard F. Gordon, Jr., 39; and Alan L. Bean, 37 were named as prime crewmen for the AS-507 (Apollo 12) mission.

Apollo 12 is a lunar landing mission similar to Apollo 11, scheduled as the initial manned landing on the moon. It will be flown four to six months after the July 1969, Apollo 11 mission.

Preliminary plans call for Apollo 12 to land at a site other than No. 2, for which Apollo 11 is targeted. Two periods of extravehicular activity on the lunar surface are tentatively scheduled for Apollo 12 totaling more than five hours. It is expected that the scientific package to be left on the moon will contain more experiments than are included in the Apollo 11 package.

Backup crewmen for Apollo 12 are Astronauts David R. Scott, 36; Alfred M. Worden, 37; and James B. Irwin, 39. A support team has not yet been named.

The Apollo 12 spacecraft--command and service modules 108 and lunar module 6--are already at the Kennedy Space Center.

Conrad, a Navy commander, heads the all-Navy prime crew. Gordon, also a commander, is command module pilot; and Bean, a lieutenant commander, is lunar module pilot. Conrad and Bean will explore the lunar surface while Gordon remains in lunar orbit in the command module.

The all-Air Force backup crew is commanded by Scott, a colonel. Command module pilot Worden is a major, and lunar module pilot Irwin is a lieutenant colonel.

The prime crew served as backup for Apollo 9. Conrad and Gordon are veterans of the Gemini program, in which Conrad flew twice--Gemini 5 and 11. Gordon flew with Conrad in Gemini 11. Apollo 12 will be Bean's first space flight.

Scott flew the Apollo 9 and Gemini 8 missions. Worden and Irwin have not flown in space, but both have been members of support teams for Apollo flight crews. Irwin commanded the test crew for the extensive thermal-vacuum testing of the lunar module.

New Station Director

Don Dunsmore, NASA representative on the USNS Huntsville has now taken over the post as station director at the MSFN Ascension Island station. He replaces R. J. Augenstein who has returned to GSFC as Head, Network Management Office.

Len Woodward is now the Station Director at the MSFN Corpus Christi, Texas facility.



The TAN station is located about 22 miles northwest of Tanarive, the capital of the Malagasy Republic.

TAN Station

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230,500 square miles, an area the size of Montana and Idaho combined. It is located in the Indian Ocean 250 miles off of the coast of Africa from which it is separated by the Mozambique Channel. The island is 995 miles long and 360 miles across at its widest part.

Ops Doc Status

The following operations documentation has been distributed:

Permission documentation change No. 9 (ARIA) to the AS-505 supplements to the NOD--distributed April 28.

Permission briefing report for the AS-505 mission--distributed May 1.

MSFN scientific mission requirements document--distributed April 9.

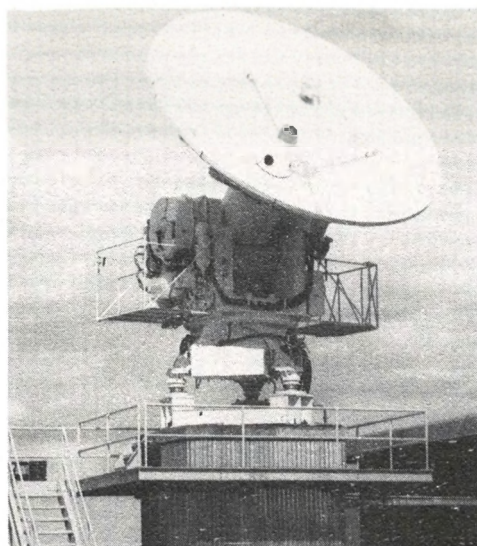
MSFN mission support commitment document--distributed April 10.

Change 3 to revision 2 of the NOD--distributed April 21.

Maintenance and operations memorandum No. 1--distributed April 18.

Change 1 to MSFN universal command and telemetry data processing reference manual--distributed April 17.

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This CAPRI radar at TAN gives precision tracking of space vehicles in both range and angle. TAN tracking of the Apollo spacecraft is vital during earth orbital periods.

TAN is operated and manned by the NASA Space Tracking and Data Acquisition Network. The station director is Chet Cunningham. The senior manager is P. A. Maloney. Other supervisory personnel at the station include R. H. Ekroth, technical operations manager; J. Day, technical support manager; C. Reed, communications supervisor; J. Lee, facilities supervisor; and H. Sielski, logistics supervisor.

MSFN Is Honored For Telemetry Work

The team that keeps the Apollo astronauts and their spacecraft "in touch with the world" was honored on April 23 for its telemetry achievements by the National Telemetry Conference of the Institute of Electrical and Electronic Engineers, Inc.

The award was presented during a featured luncheon at the Washington-Hilton hotel. As a team award, it was presented to the members of the team responsible for directing, planning, engineering, implementing, and operating the Manned Space Flight Network in support of the Apollo program.

Ozro M. Covington, Assistant Director for Manned Flight Support at GSFC, accepted the award on behalf of the team.

Presenting the award was John W. Thatcher, Chairman of the NTC Board of Directors.

The Manned Space Flight Network is designed to provide reliable instantaneous communications with the astronauts, launch vehicle, and spacecraft from liftoff to splashdown. The worldwide network employs up to 18 ground stations in the U.S. and six countries of the free world, four instrumented ships and eight instrumented aircraft.

Prefab Space Station Planned For Mid 70s

A large U.S. space station could be built 200 to 300 miles above the earth by assembling prefabricated modules launched separately into orbit. This concept for the mid-1970's was described to a congressional committee recently by Dr. George E. Mueller, Associate Administrator for Manned Space Flight of the National Aeronautics and Space Administration.

Types of modules now under consideration include: crew quarters for sleeping, cleanliness, personal hygiene, and human waste disposal; ward room for dining and food preparation plus facilities for crew off-duty activities; systems module to house the power distribution, environmental control, and life support systems; docking and cargo handling module, which would permit docking of resupply vehicles; crew interchange; unloading of food, materials, supplies, and expendables; and loading of equipment, materials, film, and other data for return to earth; laboratory modules with equipment installed on the ground for conducting specific laboratory experiments in such fields as astronomy, space physics, manufacturing, or other scientific and engineering disciplines; maintenance module consisting of machine shops and other facilities for the calibration, adjust-

ment, and updating of equipment; and storage module to serve as a warehouse for food, spare parts, and expendables.

Through selection, design, and arrangement of the various types of modules, the initial space station could be expanded for crew size, additional laboratory facilities, or other special purpose equipment. It could provide, for example, either "Zero G" or artificial gravity modes for certain experiments.

The space complex is planned for 10 years of continuous operation. This would be achieved by high reliability subsystems design plus provisions for maintenance, repair, refurbishment, replacement of parts, and replacement of expendables. The crew would be rotated at three-to six-month intervals and new experiment packages and modules brought up as they became available and could be accommodated by the station workload.

The station would be initially sized for a crew of 12 and 10,000 cubic feet of usable space. Electric power would come from solar panels or a small nuclear generator. Men and materials would be ferried between the station and earth by reusable shuttles that would be launched vertically, shed their fuel tanks in flight, and land horizontally.