



For Network Personnel Only

TECHNICAL INFORMATION BULLETIN

THE MANNED SPACE FLIGHT NETWORK

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Australian Stations Serve Space Program Since Project Mercury

For almost 10 years, Australia has played a large and important role in America's space program.

Since 1960, when the two governments agreed to cooperate in space flight programs, Australia has been an important part of America's space program. Outside the U.S., Australia has the largest number of NASA tracking and communications stations in the world. The first was built at Island Lagoon near Woomera. Major assignments for this station were concerned with deep space probes.

The Australian tracking facilities were constructed under an agreement between the Australian government and NASA. Local station management is the responsibility of the Australian Department of Supply, Weapons Research Establishment, American Projects Branch. NASA facilities included in this agreement are MSFN stations at Honeysuckle Creek and Carnarvon; Orroral Valley Stadan facility; DSN 42 at Tidbinbilla and DSN

41 at Island Lagoon; and the NASCOM Switching Center at Deakin. The stations are fully manned by Australian personnel.

The NASA senior scientific representative to Australia is W. H. Hunter. Stadir at Honeysuckle Creek is Tom Reid. His deputies are M. S. Dinn and Jan Grant. R. P. Jacobis Carnarvon Stadir and P. H. Oats is deputy. DSS-42 at Tidbinbilla Stadir is Don Gray and Bert Forsyth is deputy.

Carnarvon, in Western Australia, opened as a part of the Manned Space Flight Network in June, 1964. Since that time, stations have been opened at Tidbinbilla, Australian Capital Territory in March, 1965; at Orroral Valley, Australian Capital Territory in February, 1966; at Cooby Creek, near Toowoomba, Queensland in October, 1966; and at Honeysuckle Creek, Australian Capital Territory in March, 1967.

It was announced this month that

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Parkes Antenna Will Support AS-506 Mission

NASA and the Australian Department of Supply and Department of Education and Science announced that a 210-foot diameter radio-telescope at the National Radio Astronomy Observatory, Parkes, Australia, may be used to relay TV signals from the Moon to the U.S. during the first lunar landing, Apollo 11, now scheduled in July.

The Parkes Radio-Telescope antenna is operated by Australia's Commonwealth Scientific and Industrial Research Organization. It is located about 150 miles west of Sydney.

After they land on the Moon, the actions of the two astronauts will be followed by a television camera set up on the Moon. Under present plans, the first astronaut on the Moon will unstow a camera on the exterior of the lunar module and mount it on a tripod on the lunar surface and the second astronaut will descend.

One of the astronauts will erect a 10-foot diameter, high-gain antenna on the lunar surface if any problems occur while transmitting via the LM antenna. The 10-foot diameter antenna can transmit TV to 85-foot-diameter antennas at Goldstone, Honeysuckle Creek, and Madrid.

The signals from the two-foot-diameter antenna on the LM are not expected to be received clearly on Earth except by NASA's 210-foot antenna at Goldstone, Calif., or at Australia's Parkes site.

If there is a delay in the mission, the Moon may not be visible from Goldstone while television is scheduled. If this is the case, NASA would rely on the 210-station at Parkes to receive the TV.

A scan converter will be installed at Sydney or Parkes to convert Apollo's

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Monitor Implemented

The recent TIB article on the clock monitor implemented at Canary Islands for the AS-504 mission elicited a great deal of response.

According to C. G. Dudley of the Digital Data Systems branch of Manned Flight Engineering Division (Code 812.3), the clock monitor has been implemented at several other stations and is not unique to CYI.

He reports that Hawaii was first to design and implement the CTE and MET clock display. Their success has resulted in requirements from MCC to have GSFC provide a means at all stations to accomplish rapid readout of MET and CTE times. The requirement is being met through development of software for the 642B computers.



MSFN HONEYSUCKLE CREEK STATION

Australian Stations

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NASA will close the transportable station at Cooby Creek, near Toowoomba in Queensland after the August launch of ATS-E satellite.

Two stations were operated in Australia for Project Mercury - at Muchea, near Perth; and at Red Lake, Woomera. After Mercury, the Muchea station was discontinued and Carnarvon was built to support the Gemini Program. Carnarvon was considered geographically more suitable for tracking in Gemini Program, because the earth orbital paths of the Gemini spacecraft were nearer to the equator than was the case in Mercury.

The first tracking assignment for Carnarvon was in January, 1964, before the station was formally opened, when Ranger VI was plotted during the early part of its flight to the moon.

The station was situated about four miles from the city of Carnarvon. It is located on a range of low sand hills, named Brown Range, after an early settler.

Carnarvon is one of three installations around the world that are a part of the Solar Particle Alert Network (SPAN) for the detection of high radiation solar proton flares that may be emitted during periods of lunar exploration.

Honeysuckle Creek was formally dedicated on March 17, 1967 as one of three 85-foot Unified S-band antenna stations in the MSFN. The prime station and its wingsite, DSN 42 at Tidbinbilla has supported Apollo missions since 1967.

The Honeysuckle Creek Manned Space Flight Network Station is located in the Australian Capital Territory. The station is in the sheep and cattle grazing land about 25 miles from the Australian capital city of Canberra.

Canberra is in the center of the 900 square mile Australian Capital, an area designed by Chicago architect Walter Burley Griffin following a worldwide competition sponsored by the Commonwealth Government. Canberra has been the home of the Commonwealth Parliament since 1927 and has been gradually taking over other Commonwealth Government functions from Melbourne.

JUST FOR SPACE

The 32,000-pound lunar module is built solely for the vacuum and weightlessness of space. It is structurally too fragile to function under the atmospheric pressure and high gravity at ground level.

The lunar module contains some 1.1 million parts and 25 miles of wiring.



MSFN CARNARVON STATION

Documentation

MSFN operations documentation distributed recently includes:

Network Operations Plan for Pioneer Emission (launch scheduled June, 1969) --distributed June 5. (MSFN supporting stations: BDA, TAN, CRO, GWM, HAW, GYM, HSK, GSC/ETR, possibly an Apollo ship).

Network Operations Plan for Titan III-C, Vehicle 15 mission (launch scheduled 2nd quarter, 1969) --distributed May 7. (MSFN supporting stations: BDA and CRO).

Station Readiness Test for ALSEP--distributed May 5.

Jupiter Monitor Operations Plan--distributed May 5.

Revision 1 to Annex A of the NOD--distributed May 9.

Annex B to the NOD--distributed May 9.

MSFN Requirements Document--distributed May 9.

Documentation scheduled for distribution includes:

Change 4 to Revision 2 of the NOD. AS-506 Supplements to the NOD.

Annex C to the NOD, ALSEP operations.

Station Readiness Test for Class 6 Ships.

DBR for AS-506

DBR for ALSEP/EASEP

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Antenna

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slow-scan signal to the standard U. S. TV system, 525 lines, 30 frames-a-second. Location of the scan converter is dependent on outcome of engineering tests.

The signals will be transmitted to Sydney from Parkes by microwave. The converted picture would then be sent to NASA's Mission Control Center at Houston via the Intelsat III Pacific satellite for release to the U. S. networks. At the same time, any TV received via Australia and released in the U. S. will be available to Australian TV networks.

The 210-foot Parke's antenna is a zenith-elevation mount with a master equatorial instrument for servo control. It is focal plane feed. There is no auto-track. Its program track mode is designed for tracking celestial bodies in deepspace.

This antenna has a very narrow beam width of .13 degrees. The receive gain of the signal is 61 db. The maximum slew rate is .5 degree per second from zenith to 30 degrees.

The Parke antenna is unique in that the dish's height above ground level limits the antenna's lowest elevation to 30 degrees.

AS-506 Now On Pad

While Apollo 10 (AS-505) was on its way to the moon, the Apollo 11 (AS-506) was moved into place on pad 39A at Cape Kennedy in preparation for its lunar landing mission projected in July.

Apollo 11 left the vehicle assembly building at Cape Kennedy at 12:30 p. m. May 20 for its six-hour journey to the launch pad.