

TECHNICAL INFORMATION BULLETIN

MANNED SPACE  FLIGHT NETWORK

GODDARD SPACE FLIGHT CENTER, GREENBELT, MARYLAND

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April 5 1963

Tricks of the Trade

This new TIB column will tell the network about "tools" or methods that are being used by individual sites to get the most performance out of their equipment. Because this information might be helpful for all sites, this column has been started and will appear periodically.

The information given below has been recalled from memory, so it may be outdated or somewhat inaccurate. However, the listed items will illustrate what we intend to present in this column. Please note that these items are of the sort that cannot be properly covered by EM's or Local Mods.)

Let us know what your TRICKS OF THE TRADE are!

★★★★★

GYM tapes spare fuses to the fuse holders of all instrumentation. Replacements can be made quickly.

BDA reads the pointing data to a tape recorder. The recorder is started at H-0 and the antenna operators hear the pointing data at 30-second intervals. In case of a lost track situation, the operator merely places the antenna at the next bearing as he hears it. (Only applicable to BDA where a spare recorder is available.)

BDA prepares a local countdown. This countdown schedules time periods for every activity where a single piece of equipment is required by more than one subsystem, e.g., the antenna pedestal is required by both telemetry and Acq. Aid.

WOM's TLM section prepares and mounts checklists on each TLM rack to enable the operator to quickly check all switch positions for mission configuration.

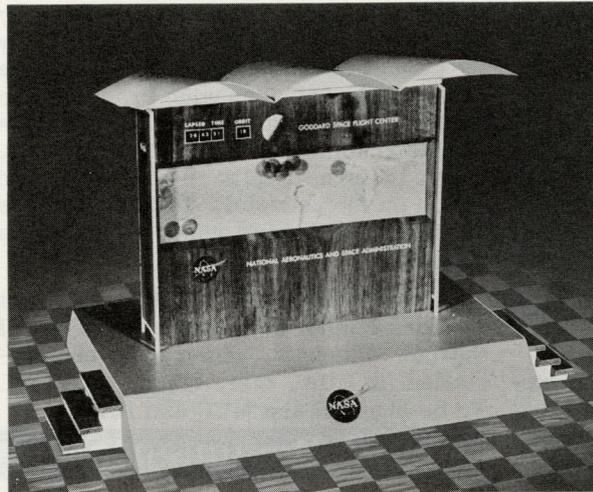
CAL, for TLM DST/BST-106 checks, sets the input attenuators on the Ampex recorder to maximum clockwise, patches all channel inputs to multiple jacks, connects a signal generator, applies one volt to all channels simultaneously, and then mechanically sets all meters to read 0 dbv exactly. This procedure gives the most accuracy at point of concern.

HAW's maintenance supervisor constructed a plastic rain-catcher for collecting water for use in the diesel radiators, air conditioners, and batteries. The heavy rainfall in the area makes this "trick" practical.

'News' Tracking Display Being Readied for MA-9

Keeping the public informed of the progress of the MA-9 will be an easier news-coverage job than was the case in the past, since a tracking exhibit is being provided that will display mission developments as they unfold. The exhibit, which is now being manufactured and will be checked out and erected as a news facility at Cape Canaveral prior to the

MA-9, will illustrate or demonstrate the following actions: orbital paths; spacecraft location along orbital path; tracking station locations and indication of acquisition of spacecraft signals; time frame in which the spacecraft is traveling (daylight or darkness); elapsed time of flight and orbit count; and prime recovery forces and their deployment.



Model of the tracking exhibit that will display mission progress information. The display panel will be about 8 feet high and 10 feet wide and suitable for pickup by television cameras. Overhead shelter will provide protection from inclement weather when the display is erected outside.

Radar Ships Added for MA-9

Two C-band radar-equipped ships—the Range Tracker and the Twin Falls Victory—will become part of the network for the MA-9.

The Twin Falls Victory, an Atlantic Missile Range ship equipped with an FPS-16 radar, SINS (Ships Inertial Navigation System), and other state-of-the-art electronic equipment, will be positioned between Bermuda and the down-range AMR stations. The ship is expected to provide additional orbital data.

The Range Tracker is being supplied by the Pacific Missile Range and will be positioned off Midway Island in the Pacific. The Range Tracker is equipped with telemetry, communications and other data gathering and processing equipment. The Range Tracker will provide orbital data and will be positioned to provide complete radar and telemetry coverage of the spacecraft reentry.

HF Vertical Antenna To Be Tested

An HF vertical ground plane dipole antenna will be used by a number of sites during MA-9 to receive special HF signals from the spacecraft. If such an antenna improves HF reception, a permanent antenna may be issued to the sites for future use.

The trial antennas will be fabricated from dipole elements previously used at the sites as part of an HF beam antenna. EI-574 is being processed to cover this installation.

MA-9 Briefing Scheduled

The Flight Control Operations Branch of the Manned Spacecraft Center recently announced that the MA-9 briefing will be held at Houston on April 16 and 17. A detailed flight control briefing will be given on the 16th, and a general mission briefing on the 17th.

Equipment Status-- RED or GREEN ?

To elaborate on the Network Operations Directive's definition of what constitutes a red or green status, some guidelines are given here. It should be understood that a RED condition might point out a need for support from GSFC, DOD, or other facilities, rather than equipment troubles. Not only electronic equipment, but also plant facilities, personnel, and documentation are involved. Some reasons why a site reports a RED status (other than obvious equipment malfunctions):

EI being performed.

Peculiar test equipment inoperative or out of calibration.

Pertinent documentation inadequate or lacking.

Critical spare parts not available.

DST/BST parameters not met.

Insufficient personnel to maintain or operate equipment because of illness, transfers, vacations, etc.

Putting it in positive terms, a GREEN subsystem means the equipment is in first-rate condition, the required documentation is up to date, the support criteria have been met, and qualified personnel are available.

Although status reports are an extremely important factor in determining the network status during simulation and mission periods, it is also important that accurate, meaningful status reports be continued in nonmission periods. A carefully considered status report will aid support elements in carrying out their tasks, whereas a continuous "all subsystems green" report only creates doubt concerning a site's understanding of a true subsystem status.

Gemini Progress Meeting Held at MSC

Goddard representatives presented an overall status report of the Gemini Network Implementation Program to the Manned Spacecraft Center, Houston, on March 26. Leading the presentation was N. R. Heller, chief of MSFSD, who introduced the following topics and speakers:

Engineering:

D. W. Call

Communications:

L. R. Stelter

Operations Support:

H. W. Wood

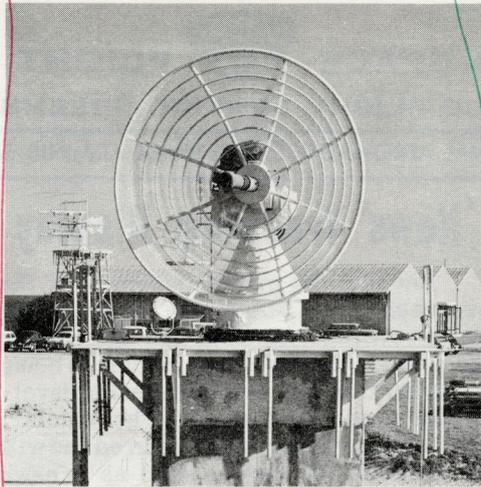
J. C. Jackson

W. G. Burton, Jr.

Readiness Verification:

W. G. Burton, Jr.

Verlort Antennas Being Replaced



Solid spun-metal type parabolic Verlort antennas are being replaced by expanded-metal type antennas built by the Canoga Corporation. The new antenna has considerable less wind drag than the solid type, and has negligible lift. This change results in a reduction of inertia, which in turn results in less wear and strain on the pedestal. Tracking errors resulting from wind gusts will also be reduced.

The photo of the Verlort tower at Coopers Island, Bermuda, shows one of the new antennas, which have been installed at BDA, CYI, GYM, and TFX. To be changed are MUC and HAW.

About Documentation

Mission Documentation

DST/BST's not yet received by sites should arrive soon after this issue of TIB. Digital data tests, formerly 101-4, are now designated 105 to make them agree with the standard subsystem numbering order. The arbitrary A, B, and C suffix of these tests has been changed to (S) to designate S-band, (C) to designate C-band, and (M) to designate MPQ-31. In other words, 101-A is now 105(S), 101-B is now 105(C), 101-C is now 105(M). Also, radar test 101-2 is now 101(C), and 101-1 will change to 101(S) with the next revision. (The present issue was printed before the new system was decided upon.)

Sample copies of Flight Controller's Confidence Checks are no longer bound into the DST/BST document. Advance copies of these checks will be forwarded to applicable sites early in April, and additional copies will be carried by the Flight Controllers. All issues dated prior to the new issue dated March 1, 1963 should be destroyed.

The Data Acquisition Plan and the Network Count will be ready for mailing about April 5. (Regarding the Data Acquisition Plan, pads of PLIM data sheets

for recording radar, acquisition, telemetry, A/G communications, and command events were shipped to all applicable sites on March 29. Instructions for using these forms are given in the Plan.)

Copies of the Flight Plan will be mailed to all sites the first week in April.

OPS, DIR. 61-1, Rev. 5, is expected to be ready for mailing about the middle of April. (It will include the new "Network Data Reduction Plan".)

OR-1905, Section C, Revision 29, and OR-1941, Revision 7, will be ready for mailing about April 5. Revision 30 to OR-1905 should be ready about one week later.

Manuals

The following new or reissued manuals were forwarded to applicable sites during February and March:

ME-1025 Slow-Scan TV Monitors (publication date, February 14).

ME-131 Voice and Telemetry Antenna System and Voice and Command System (reissue date, March 1).

ME-215 Pulse Coder, NS-30 (reissue date, March 20).

The following manuals were revised and shipped to applicable sites during February and March:

ME-140 Gates Sta-Level Amplifier (revision date, March 8).

ME-151 Volume Level Indicator (March 18).

ME-188 Signal Generator Type 225-A (March 6).

ME-189 High Frequency Signal Generator (March 6).

ME-201 AC-DC Preamplifier (Feb. 28).

ME-202 Cathode Ray Oscilloscope 535A/545 (March 6).

ME-346 CET/TORF Clock Display (March 22).

ME-350 Frequency Counter Model 1066A (March 6).

ME-364 Sweep Generator, Model HD-1A (March 8).

ME-701 Diversity Telegraph Terminal (March 4).

ME-1005 Single and Dual Bandwidth IFM Modules (February 15).

ME-1010 Subcarrier Discriminator TDA300 (April 1).

MS-104 Timing System (February 25).

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