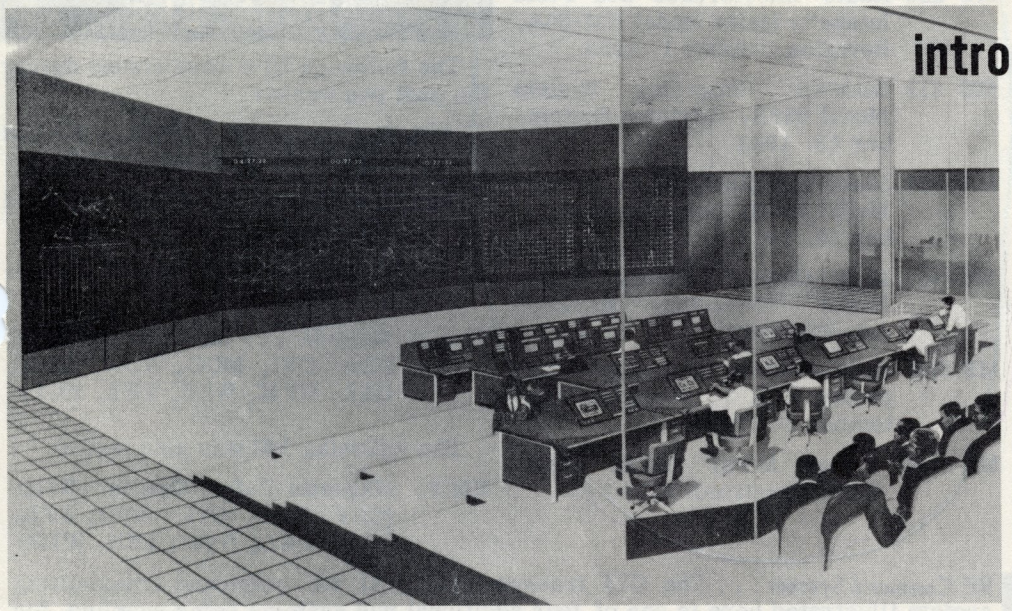
For Network Personnel Only

TECHNICAL INFORMATION BULLETIN

MANNED SPACE MSFN FLIGHT NETWORK

GODDARD SPACE FLIGHT CENTER, GREENBELT, MARYLAND

Vol. 1 No. 17 NATIONAL AERONAUTICS AND SPACE ADMINISTRATION October 18, 1963



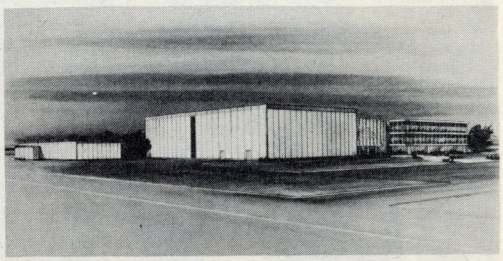
Artist's conception of IMCC mission operations control room

introducing . . . IMCC

IMCC—Integrated Mission Control Center—will soon become a household word just as "the Cape," "Atlas booster," and "Mercury" have become so in the past two years. We of the network who will be supporting the complex tasks of IMCC should become well acquainted with its purpose, concept of operation, layout, equipment, and its relationship to Goddard's manned space flight support mission. This, then, is the first in a series of articles describing the new control center and its many aspects.

About 25 miles southeast of Houston, Texas, the huge new Manned Spacecraft Center is rapidly being constructed at Clear Lake. One of the 57 buildings rising out of what was once a prairie is the IMCC. Constructed primarily to provide centralized mission control throughout an entire mission period, from prelaunch simulations and checkouts through the recovery phase of the operations, it will incorporate the areas of mission control and technical management including vehicle systems, flight dynamics, life systems, flight crew activities, recovery support, meteorological support, space environment, simulation and training, and network control.

Construction of the IMCC facility is progressing according to schedule with the Mission Operations area already completed. The entire facility is scheduled to be completed next spring and will have an approximate floor area of 244,600 square feet. It will be operational sometime next summer.



Artist's conception of IMCC complex. Main structure includes mission operations area (center) and support area (right). Small building to the far left is the power area.

Network To Support UK-2/S-52

During the last quarter of the current year, portions of the network will support the UK-2/S-52 scientific satellite launch.

A cooperative U. S.—United Kingdom effort, the UK-2/S-52 project is designed to study certain phenomena of the earth's atmosphere, the ionosphere, and beyond. The satellite will be launched from Wallops Station, Va., by a 4-stage Scout vehicle and will perform three main experiments for measuring (1) cosmic background noise level in the 0.75 MC to 3.0 MC frequency range, (2) vertical distribution of ozone in the earth's atmosphere, and (3) particle flux in terms of quantity and size.

Network support, necessary only during the launch and insertion phase, will be provided by BDA and the Goddard Computing and Communications centers. BDA will provide doppler and telemetry data, C-band radar track, and range safety support; Goddard computers will provide data reduction; and communications will provide voice capabilities between BDA, WLP, and GSFC, and high-speed data lines between GSFC and BDA.

Cable Replacing Radio Link

Voice and teletype circuits in the Hawaii-Sydney, Australia link of the COMPAC submarine cable now under construction will be leased by Goddard to replace the present HF radio link.

Use of the cable circuits will increase reliability, make transmission of higher speed data possible, and, since fading and other atmospheric interference will be appreciably reduced under normal operating conditions, the quality of voice communications will be increased. After the transfer to the cable circuits, the HF radio link will be used as a backup link.

The cable is a specially designed, lightweight, coaxial type which will eventually link Sydney to Vancouver Island, a total route distance of just over 8,000 nautical miles. When completed, the COMPAC system, which is being financed by Britain, Canada, New Zealand, and Australia, will be linked across Canada by high-grade microwave circuits to CANTAT, a transatlantic submarine cable linking the British Isles to Canada.

The Hawaii-Sydney link, which connects through Auckland, New Zealand, and Suva, Fiji Islands, has been completed and is now undergoing tests. The Hawaii-Vancouver link is expected to be completed late this year.

MP 228 Being Replaced

An improved preventive maintenance program that will replace the outmoded program outlined in MP 228 Master Maintenance Schedule is now being developed in cooperation with several stations. Designed to help establish an on-station administered preventive maintenance program, the PM program should be in use before next midyear.

Two basic aids will be used to control the program, check-list file cards and blank scheduling charts. Listed on the cards, on a system basis, will be the tests to be performed, when to run the tests, and what procedures are to be used. The scheduling charts will be used to facilitate scheduling procedures.

It has been estimated that better than 1 million feet of wire will be employed in each Gemini display system. Pity the weary technician looking for a short.

Tib Bits

About Documentation

The following documents were completed and distributed to the appropriate stations:

ME-225 Radio Interference-Field Intensity Measuring Equipment Model NM-20B, Revision August 26, 1963

ME-226 Radio Interference and Field Intensity Meter Model NM-30A, Revision October 1, 1963

ME-312 Sanborn Recording System Model 958B, Revision September 13, 1963

ME-354 Sanborn Recording System Model 956B, Revision September 13, 1963

ME-460 Eight-channel Power Supply Model 858-500C, Revision July 26, 1963

ME 566 Regenerative Telegraph Repeater RTR-1, Revision September 30, 1963

ME 1057 Power Meter Model 431B, Serial Prefixed: 233, New

The *Technical Information Bulletin* is published biweekly by the Manned Flight Operations Division for network personnel only. Since information contained herein may not have been released outside the project organization, it is to be considered privileged. Release of this information to others must be approved by the Public Information Office, GSFC. Address other communications to TIB Editor, NASA, Goddard Space Flight Center, Code 552, Greenbelt, Maryland 20771, or use the MSFN teletype facilities.

About EI's

The following EI's were issued during the past two weeks:

EI 622 Removal of FR-600 Recorder and 1455 TLM Receivers (MUC)

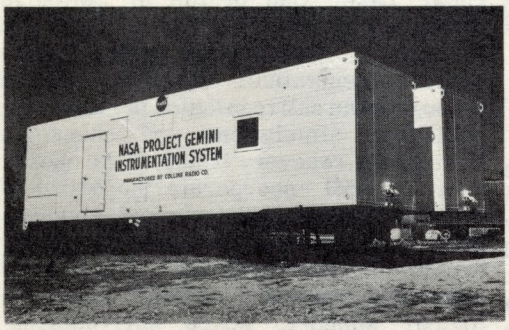
EI 623 Installation of Time Standard System (CRO)

EI 624 Relocation of Command Equipment (MUC)

EI 628 Milgo D/TTY Modification (CNV, BDA, CYI, MUC, WOM, HAW, CAL, GYM, WHS, TEX, EGL)

The following EM was also issued:

EM 35 Magnetic Pulse Counter Relay (CNV, BDA, CYI, KNO, ZZB, HAW, CAL, GYM, TEX, WLP)



RF Command System . . . The CYI transportable dual RF command transmitting system illustrated here is one of four additional van systems being supplied for the Gemini network. The other three will be installed at TEX, CRO, and WLP. With the exception of GYM, the remaining Gemini stations have existing fixed or transportable dual RF command capability. Each van houses a complete system which may be operated either in conjunction with or independently of the other, thus providing complete redundancy of operation.

Photos of the primary van below are, left to right: master control console, secondary control console, and the FRW-2A. An interesting feature is that the control panels are arranged in the form of the system block diagram as an aid for quick determination of system status.