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DEPARTMENT OF THE AIR FORCE
WASHINGTON 20330

[redacted]

OFFICE OF THE SECRETARY

NOTED BY THE
SECRETARY OF
THE AIR FORCE

December 6, 1968

~~MEMORANDUM FOR THE SECRETARY OF THE AIR FORCE~~

SUBJECT: Manned Orbiting Laboratory Monthly Status Report

The attached Status Report on the Manned Orbiting Laboratory (MOL) Program covers activities through November 30, 1968 and is submitted in accordance with the November 17, 1968 memorandum from the Office of the Secretary.

JAMES FERGUSON
General, USAF
Director, MOL Program

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a/s

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I. PROBLEM

Schedule and Funding Problem Associated with Acquisition of Secure Communication Hardware for MOL

As explained in the October report, the Air Staff has agreed to fund the $250K needed to initiate the engineering design work for the Operations and Training Evaluation Center (OTEF) and MOL Mission Control Center (MCC) secure communications. Approval of the FY 1970 budget request for OTEF requirements, by the OSD, is expected early in December and the Air Staff will then make available the funds for the engineering design work.

II. CHANGE PAST MONTH

A. Approval of MOL Request for Support by the SAB Aeromedical-Biosciences Panel

The Aeromedical-Biosciences Panel of the USAF Scientific Advisory Board (SAB) has been requested to provide expert consultant support to the MOL Bioastronautics Team. The work requested from the panel includes the technical critique and advice on the proposed MOL ground-based and flight study program designed to gain insight into the crew adaptive processes which will be active during a 30-day mission. The studies must define the changes in the crewman's body system, establish the significance of the changes as related to their impact upon the capacity of the men to complete the mission and to maintain vigorous performance throughout the 30 days. Finally, assuming some supportive measures must be provided to keep the crewman within acceptable limits for safe and efficient MOL operations, the studies will be used to define the control measures and to validate their use during flight.

The request was reviewed and approved by the SAB Staff Review Group and Steering Committee during their November meeting.

B. SLC-6 Facilities Modification

The FY 1970 $2.6 million Military Construction Program (MCP), included a request for the early release of $1.145 million, to accomplish the modification required prior to the initiation of Aerospace Ground Equipment Installation scheduled for October 1969. These funds ($1.145M) have been reprogrammed from prior year funds. These modifications are scheduled to start approximately April 1, 1969.

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III. CURRENT STATUS

A. Funds

There was no change in the funding status during November. A memorandum has been prepared to the Director, Defense Research and Engineering requesting the release of the remaining FY 1969 MOL funds. Funds on contract will be exhausted during the last week of December and early January depending on the individual contract. Therefore, the release of funds is required by December 18, 1968 to accomplish timely funding of the contracts.

B. MOL Development Concept Paper

The MOL Program Office has assisted Mr. I. Nevin Palley (ODDR&E Space Technology) in the preparation of the new Development Concept Paper for the MOL Program. While the DCP is primarily a DDR&E document the Program Office has participated in the preparation of the document in the form of technical and justification information. The Program Office has also worked closely with DIA representatives in the formulation of statements concerning the value of MOL photography. As of the end of November 1968 changes were still being made in the DCP to reflect the desires of Dr. Foster. ODDR&E anticipates presenting the DCP to Mr. Nitze early in December.

C. DDR&E Ad Hoc Group

A DDR&E Ad Hoc Evaluation Group was formed in August 1968 to evaluate the need for very high resolution photography. The study group was comprised of representatives from ODDR&E, DIA, the NRO and the MOL Program Office. The group has functioned somewhat continuously in an effort to provide more definitive and analytical information on the value of MOL-type photography. This information is needed to further justify the need for the MOL Program. The group is in the final stages of preparing its report which should be released early in December.

D. Congressional Activities

Senator Howard W. Cannon (D-Nevada), member of the Armed Services and Aeronautical and Space Sciences Committees, was given a comprehensive MOL Program briefing on November 14 by General Bleymaier and Major Macleay, MOL crew member. The Senator showed special interest in a read-out system and the area coverage capability of the system.

In response to a question about the future of the program, General Bleymaier told the Senator that we had no technical or state of the art problems pacing the program and that we could meet our schedule if adequate funding is provided.

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E. MOL System Safety Review

A System Safety Review was convened at MDAC(WD) on November 26, 1968. The review consisted of a detailed presentation and discussion of the design, malfunction detection, and emergency systems and procedures for the MOL mission profile from T-120 minutes to on-orbit. Presentations were made by Martin for the T-IIIM, MDAC(ED) for the Gemini B, MDAC(WD) for the Lab Module, and Hamilton Standard for the Pressure Suit Assembly. Air Force presentations reviewed Recovery Operations, Radiation Hazards and Effects, and Employee Motivational Programs.

The meeting was instructive and useful. The identification of known and potential hazards seemed complete and the solutions to insure crew safety were based, where such information existed, on prior experience with similar hardware, i.e., T-III and Gemini. Where the hardware had no direct antecedent, i.e., the LM and PSA, the design approach for safety appears to be well conceived and adequate. Generally, the safety devices take the form of sensors, panel displays and indicator lights.

A formal meeting report together with the briefing materials will be available shortly. As part of the continuing intensive attention to MOL crew safety, there will be further meetings of this type as the development program proceeds.

F. Fuel Cell Competition

In August of 1968 the decision to recompete the MOL fuel cell development was made for a capillary fuel cell system development. This resulted from a determination that the Pratt & Whitney Fuel Cell System, then under contract, would become increasingly marginal in its ability to meet MOL electrical requirements. The recompetition received responses from both Pratt & Whitney and Allis-Chalmers.

On November 12, 1968 the Assistant Secretary of the Air Force for Research and Development concurred with the findings and recommendations of the McDonnell Douglas Fuel Cell Source Selection Board. As a consequence a subcontract for delivery of the fuel cell for the MOL Program was awarded by McDonnell Douglas to the Allis-Chalmers Company on November 15, 1968.

The net cost to the program of making the change to the improved capillary matrix fuel cell system appears to be no greater than $1.5 million dollars. This may be reduced or eliminated by certain system modifications and use of modified instead of new AGE.

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The source selection concluded that both Pratt & Whitney and Allis-Chalmers were capable of producing a satisfactory capillary matrix fuel cell power system for the MOL. Principal factors resulting in selection of Allis-Chalmers derived from lower cost to the government and improved schedule posture. These items in turn result from a rather extensive capillary matrix fuel cell development program carried out by Allis-Chalmers under contract to NASA.

G. Mission Data Adapter Unit (MDAU)

The first unit (Brass Board) with 34 space Data Boards was delivered by Honeywell Incorporated November 15, 1968. This unit has been incorporated into the command subsystem test now in progress at General Electric.

To date no major problems have occurred. The next delivery scheduled for March 19, 1969 will be an engineering unit packaged in a flight configuration and a factory test equipment package.

The General Electric Professional Recognition Subcontractor Award is to be presented to Honeywell Inc., December 6 for the outstanding performance on the MDAU contract.

H. Eastman Kodak Future Studies

Eastman Kodak presented the final briefing of the result of the Phase I DORIAN Systems Improvement Study. As previously reported these results show possible improvements in Nadir Average Resolution to [redacted] at 80n miles and [redacted] at 70n miles altitude. These potential improvements are based on studies of optical formula and manufacturing improvements, increased aperture, and longer focal lengths obtained by an insertable relay lens and camera system. A final report and a proposal for the implementation (Phase II) of these improvements is to be submitted by January 1, 1969. Evaluation of this proposal is required in early CY 69 in order to include the desired improvements in the Flight Vehicles No. 8 (CY 74) and subsequent.

IV. FORECAST FOR FUTURE

DOD Joint Medical Research Conference

A MOL briefing on Ground Based Medical Studies will be given to the DOD Joint Medical Research Conference on December 12, 1968.

V. DUE DATE OF NEXT STATUS REPORT

The next Monthly MOL Program Progress Report will be submitted January 10, 1969.