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DEPARTMENT OF THE AIR FORCE
MANNED ORBITING LABORATORY, SYSTEMS OFFICE (OSAF)
AF UNIT POST OFFICE, LOS ANGELES, CALIFORNIA 90045



MEMORANDUM FOR GEN STEWART

10 APR 1969

SUBJECT: MOL Monthly Management Report

Attached is the MOL Monthly Management Report for the period
26 February - 25 March 1969:

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Report

J. S. Bleymaier
J. S. BLEYMAIER
Major General, USAF
Deputy Director, MOL

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MOL Monthly Management Report
26 February - 25 March 1969

I. Program Management

A. Upgrade Activity - Systems Office personnel are preparing the General Electric contractual document and expect to distribute it by 30 April. McDonnell Douglas-Eastern Division is continuing the submission of its proposal on an incremental basis. Eighty of the expected 130 increments have been received, and the final increment remains scheduled for delivery by 15 April. The Western Division of McDonnell Douglas has submitted its proposal and the Systems Office evaluation is in progress. Completion of the evaluation is anticipated by 6 June with negotiations scheduled to begin on 9 June. Evaluation of the Aerojet General Corporation's proposal will be complete by 4 April, and negotiations with this contractor are scheduled to begin 14 April. Negotiations with both Martin Marietta Corporation and the United Technology Center have been rescheduled to begin on 19 May. A proposal was received from AC Electronics on 13 March and is being evaluated by Systems Office personnel. The Hamilton Standard and Eastman Kodak Corporation proposals are scheduled for delivery on 30 May and 20 June respectively.

B. MOL Independent Safety Review Board - The MOL Independent Safety Review Board conducted a follow-up safety review of the McDonnell Douglas-Eastern Division (MDAC-ED) Dual Gas Test Facility and test procedures in St. Louis on 24 and 25 March. Representatives of the Systems Office and Hamilton Standard, in addition to MDAC-ED and Board personnel, attended the review. As a result of this final review, the Board declared that proper safety provisions were incorporated in the test, that no hardware changes were required, and that MDAC-ED could proceed with the manned testing. Manned testing is scheduled to begin on 14 April. Colonel Swan, Board Chairman, did indicate that a recommendation of several minor improvements would be submitted to the Systems Office for possible incorporation in future testing.

C. Systems Effectiveness Audit - Systems Effectiveness Audits of McDonnell Douglas-Western Division (MDAC-WD), General Electric, and Hamilton Standard have now been completed by the Systems Office audit team. The final audit, at the Eastern Division of McDonnell Douglas, is scheduled for the first week in April. A report of the team's findings will be published by mid-April.

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D. NASA Fire Research Steering Committee - Systems Office personnel attended a meeting of the NASA Fire Research Steering Committee at NASA Headquarters on 26 March. The agenda included a review of existing fire detection and extinguishing systems, the latest methods of fire detection and suppression, hypergolic fire suppression, and the development of less flammable materials. The attendance of Systems Office personnel at this meeting provided valuable information for the MOL nonmetallic materials program.

E. Technical Signoff Meeting (TSOM) - TSOM #9 was held in late February and early March at the McDonnell Douglas-Western Division facility in Huntington Beach, California. During this six day meeting, 213 interface documents were signed by the appropriate contractor and Systems Office personnel. This was our most productive TSOM to date with all parties concerned contributing to its success.

F. NASA Procurement Support - Personnel at the NASA Manned Spacecraft Center (MSC) have consented to purchase Maurer and Hasselblad cameras for use by the MOL crew members during training and actual flight. MSC personnel will also procure survival kit radio beacons for the MOL Program by modifying the existing NASA contract with Cubic Corporation of San Diego. This is a new beacon which NASA will use to replace the model previously used on Gemini and Apollo missions. NASA assistance in procuring equipment of this type is advantageous to the Air Force in terms of both cost and schedule.

G. MOL/NASA Sharing of Aerospace Ground Equipment (AGE) - Representatives of the Systems Office, NASA, and McDonnell Douglas - Eastern Division met in early March to discuss schedule conflicts for several items of AGE that are to be shared by the MOL and Apollo Applications Airlock Programs. All but seven of the forty-three conflicts were resolved. Systems Office personnel are continuing to work with their NASA counterparts in an effort to resolve the remaining conflicts.

H. Gemini B Spacecraft Critical Design Review (CDR) - The first session of the Gemini B Spacecraft CDR was held by Systems Office personnel at the McDonnell Douglas-Eastern Division (MDAC-ED) facility during the week of 17-22 March. Representatives of MDAC's Western Division, Martin Marietta Corporation, TRW, and AC Electronics also attended. The most significant area that requires further analysis to insure adequacy of the present design is the spacecraft interface with the pressure suit assembly. A second, and final, session of the CDR is scheduled for late April.

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I. Feeding System Meeting - The first Government Agency Space Feeding System Working Group Meeting, which was co-chaired by the Systems Office and the NASA Manned Spacecraft Center, was held at the Army's Natick Laboratories on 11-12 March. A number of problems that are common to the MOL and NASA Apollo Feeding Systems were discussed. It was noted at the meeting that several MOL Feeding System Assembly improvements are being adopted for use on Apollo flights. For example, 10 rehydratable rations which will be served in one of the MOL Program's prototype spoon feeding packages will be included on the menu for the approaching Apollo 10 mission.

J. Vandenberg AFB Construction Status - On 25 March, construction of Package 2 of the launch complex facilities was 84.8% complete. The Mobile Service Tower, which paces the completion of this package, is now 57.8% complete and is scheduled for completion on 1 September 1969. Packages 3 & 4 of the launch complex have been completed, and the Air Force accepted these facilities on 27 March. Package 1 of the MOL Support Facilities at VAFB is approximately 77% complete, and the Corps of Engineers has issued a Notice to Proceed on Package 2 of these facilities. The estimated completion date for the latter work is 8 October 1969.

K. Funds and Manpower Status - Of the \$513.4M FY 69 funds released to the Systems Office, \$504.6M has been initiated.

Systems Office manpower status is as follows:

	<u>Authorized*</u>	<u>Assigned*</u>
Officers	184	156
Airmen	12	12
Civilians	106	98
High Grades	(33)	(32)
Clerical	(73)	(66)
TOTAL	<u>302</u>	<u>266</u>

*Includes Houston Field Office

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II. Technical Status

A. Image Velocity Sensor - General Electric Corporation has completed additional testing of the Hycon and Goodyear Image Velocity Sensor (IVS) systems. Since neither model has yet completely satisfied performance requirements, General Electric has extended the development contracts of both vendors to permit additional hardware modification and testing. In addition, GE personnel will evaluate the tester and make such modifications as may be required to provide a more realistic simulation of operational conditions. These actions will entail another delay in selection of the vendor for the IVS and it is now anticipated that the final selection can be made in late May.

B. Thermal Vacuum Testing - General Electric and Eastman Kodak Corporation personnel have completed a review of thermal vacuum testing as requested by the Systems Office. Both contractors agree that the Rochester facility cannot accommodate all 113T thermal vacuum testing due to schedule incompatibilities between the EKC thermal vacuum chamber availability date and the GE need date for thermal vacuum data. The Systems Office is continuing its study to identify other test requirements that can possibly be fulfilled at one contractor's facility in lieu of testing at two or more locations.

C. Advanced Data System Configuration - The redefinition of the Advanced Data System (ADS) with the Control Data Corporation 6600 computer has been completed and documented in the MOL Flight Support Plan (MFSP) with joint agreement by Systems Office and Satellite Control Facility personnel. The initial version of the MFSP, which was published on 21 March, emphasized the 6600 hardware and software required to support the MOL Program. The next version of the MFSP will be published by the end of April. Approval for the first 6600 has been received by the Satellite Control Facility from Assistant Secretary of Defense Moot. This unit will be installed in the Advanced Satellite Test Center in June 1969 and will be able to support MOL software development by July 1969.

D. LV Transporter Cover - A special MOL Change Control Board (CCB) meeting was called the week of 3 March to review a proposed change in the LV Transporter cover. The Board approved the McDonnell Douglas-Western Division (MDAC-WD) suggestion that the LV Transporter hard cover be changed to a soft cover. This action resulted in a savings of one million dollars.

E. Aerospace Vehicle Equipment (AVE) Timer Sequence - Representatives of the Systems Office, McDonnell Douglas-Western Division, and General Electric have held a series of meetings to discuss methods of preventing the AVE timers from sequencing events when the Aerospace Ground Equipment

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(AGE) has instituted a programmed hold. Presently, the AVE timers continue to count when the AGE goes into a hold condition. Two hardware changes which would enable the AVE timers to recognize a hold were tentatively agreed to by all of the attendees, but the two contractors are to submit a written assessment of required system changes for Systems Office evaluation prior to implementation.

F. Voice Communications Requirements - Systems Office personnel met recently with the Satellite Control Facility's (SCF's) MOL Field Test Force Director and SCF communications engineers to discuss MOL voice communications requirements at the Satellite Test Center. It was determined that current SCF voice communication capabilities will satisfy a majority of the MOL requirements but that one new system will be necessary to satisfy the requirements for the MOL Mission Control Center non-secure intercom.

G. Materials Testing for Toxicological Properties - In April, the Toxic Hazards Branch of the Aeromedical Research Laboratory (AMRL) will complete the initial phase of their study of the toxicological properties of MOL materials. This effort supplements the materials screening tests conducted by NASA in an effort to provide additional evaluation of potentially hazardous materials. By the end of the current testing, the AMRL will have completed an evaluation of 57 materials. Following the completion of this current program, the AMRL will continue to provide support to the MOL Program on an as-required basis.

H. Radiation Monitoring - Systems Office personnel have coordinated with their counterparts at the NASA Manned Spacecraft Center to establish a Joint MOL-MSC Ionizing Radiation Protection Working Group. The first meeting of this group will be held in April. Radiation guidelines that are presently used by NASA and copies of all minutes of the NASA Radiation Constraints Panel have been obtained for Systems Office use.

I. Heart Interval Monitoring System - Spacecraft, Incorporated, subcontractor to McDonnell Douglas-Western Division (MDAC-WD) for development of the Heart Interval Monitoring System (HIMS), held a preliminary design review of their unit on 5-6 March with Systems Office and MDAC-WD personnel in attendance. The contractor has developed an excellent design approach with a new concept for body-worn electrodes which appears to be more advanced than that used by NASA.

J. Mission Development Simulator - Software integration continued to delay the demonstration test of the Phase Zero Mission Development Simulator (MDS), and General Electric is now forecasting an operational

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start date of 28 April. General Electric has also stated that the MDS Phase 3 and Mission Module Simulation Equipment software exceed the core and time capacity of the simulator computer complex. The Systems Office is studying the contractor's recommendation to replace the IBM Model 360/44 computers, which are presently planned for use, with two IBM 360/65's.

K. Installation of MDAC-WD Components at Valley Forge - The Systems Office has released Contractor Action Requests (CAR's) directing that McDonnell Douglas-Western Division (MDAC-WD) components for Laboratory Module consoles 2 and 8 be delivered for installation and test at General Electric's Valley Forge Facility. This approach will enable GE personnel to perform system electrical interface checks and electromagnetic interference tests with the MDAC-WD equipment and will prevent possible invalidation of GE acceptance testing by hardware changes at the MDAC-WD facility.

L. Laboratory Module Adjacent Structure Substitutes - The Eastman Kodak Corporation (EKC) and McDonnell Douglas-Western Division (MDAC-WD) have resolved the delivery schedule for the second and third units of the Laboratory Module Adjacent Structure Substitute (Schedule Interface Log Numbers DE-15B and DE-15C). MDAC-WD has agreed to make the necessary modifications to DE-15B through retrofit and to modify DE-15C during production. This agreement was based on EKC's revised latest need dates of 23 May and 26 September 1969, respectively. The Systems Office has been assured by EKC that the new dates will not impact cost or schedule.

M. Fourth Load Cycle Impact - The effect of the fourth load cycle data on Eastman Kodak Corporation (EKC) hardware was reviewed at the EKC Technical Review which was held on 20 and 21 March at the Rochester facility. It appears that required modifications to all effected Aerospace Vehicle Equipment can be made without schedule impact with the possible exception of modifications to the Ross Barrel. This area is still under investigation with the subcontractor, but early indications are that the Ross Barrel can also be modified on schedule.

N. Redundancy and Backup Provisions for Eastman Kodak Equipment - At the recent Technical Review, Eastman Kodak personnel presented their recommendations for providing a backup to the Laboratory Module Control unit, a backup switch for the Mission Module environmental system, an Initiate Photographic Cycle (IPC) Command reject capability for the camera, an improved design for the launch locks, and a backup focus control electronics unit. It was determined that all of these modifications could be implemented with no schedule or interface impact with the exception of the backup focus control electronics and the launch locks redesign. A decision was made to proceed with the implementation of the three items that would not entail any impact. Work on the backup focus control electronics will also be implemented since the resulting interface impact

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is considered minor. The contractor was directed to proceed with the original design for the launch locks, however, because the new design presents a potentially serious schedule impact.

O. Advanced Planning - Systems Office personnel recently attended a briefing at Lockheed Corporation's Sunnyvale Facility to discuss the possibility of using their stage and a half lifting body space transportation system for an advanced MOL mission. Their "Starclipper" vehicle could lift the entire MOL Mission Module in its cargo section and support all crew activities in its spacecraft area. Lockheed personnel claim that total launch costs, including refurbishment, would be less than three million dollars with a little over three billion dollars in development costs. This concept looks interesting and Systems Office personnel will continue to study its feasibility for future applications.

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