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

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20 DEC 1968

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MEMORANDUM FOR GEN STEWART

SUBJECT: MOL Monthly Management Report

Attached is the MOL Monthly Management Report for the period
26 October - 25 November 1968.

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Report

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

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MOL Monthly Progress Report
26 October - 25 November 1968

I. Program Management

1. Upgrade Activity - The Systems Office has issued unpriced supplemental agreements to both Eastern and Western Divisions of the McDonnell Douglas Astronautics Corporation. Proposals are expected from these contractors on 31 January 1969 and 18 February 1969 respectively. Government evaluation of the General Electric proposal is complete and negotiations with GE are expected to begin on 9 December. The issue of unpriced supplemental agreements to the Martin Marietta Corporation and AC Electronics contracts is anticipated by mid-December. The Aerojet General Corporation proposal has been received by the Systems Office, and the United Technology Corporation proposal is expected in mid-December. Systems Office and contractor personnel are preparing for a final review of the Eastman Kodak (EK) contract in early December with a goal of issuing the unpriced supplemental agreement by 11 December.
2. MOL Use of Apollo 7 Mission Data - NASA has agreed to make the following Apollo 7 mission data available for MOL use: real time voice tape transcripts, crew members' answers to prepared questions, transcripts of the systems debriefing, mission reports, and anomaly reports. In addition, arrangements have been made for MOL contractors to receive Apollo mission reports.
3. MOL Weight Review - Systems Office personnel have completed a weight review of the Eastman Kodak and McDonnell Douglas-Western Division portions of the system. A report on the current weight status of the MOL will be published in mid-December following a review of the McDonnell Douglas-Eastern Division's weights.
4. Life Line Program - The Deputy Director and two members of the flight crew participated in the kick-off meeting of General Electric's Life Line Program. This program of individual recognition for quality work was established to motivate GE employees in the performance of their MOL-related tasks.
5. MOL/NASA Sharing of Aerospace Ground Equipment (AGE) - McDonnell Douglas-Eastern Division (MDAC-ED) personnel have notified the Systems Office of schedule conflicts for several items of AGE that were to be shared by the MOL Program and the NASA Apollo Applications Airlock Program.

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Recent schedule adjustments on both programs have caused these conflicts which involve approximately \$200,000 worth of AGE. MDAC-ED has accepted an action item to identify the potential impact on the program and report to the Systems Office by 5 December. When additional details are known, the Systems Office plans to meet with appropriate NASA personnel to coordinate an equitable sharing of existing AGE in accordance with the NASA-MS/USAF-MOL SPO Agreement of 1966.

6. Standard Evaluation of Crew Members - All flight crew members successfully completed the Standard Evaluation examination which was administered during the week of 4 November. There were no failures.

7. Operational Training & Evaluation Facility/Satellite Test Center (OTEF/STC) Interface - The Satellite Control Facility (SCF) has been advised by their Washington office counterparts that FY 69 funds can be expected for communications engineering support for the definition of the OTEF/STC Interface. Based on this information, Systems Office personnel briefed representatives of the SCF and SCF contractor on the OTEF/STC interface and the type of support that the Systems Office expects from the SCF.

8. Users Handbook - A draft version of the Users Handbook, which will be used by the intelligence community in selecting and specifying targeting requirements for the MOL DORIAN system, has been completed. This draft is now undergoing internal coordination and review and should be ready for submission to the National Reconnaissance Office (NRO) in early December.

9. MOL Training Conference - On 13 and 14 November, Systems Office personnel participated in a MOL Training Conference with representatives of the Air Training Command (ATC), the Satellite Control Facility (SCF) and the Satellite Test Center (STC). The purpose of this conference was to establish the training requirements for the Mission Control Center operations personnel and the SCF/STC personnel who will support the MOL Program. The conference also afforded the ATC representatives an opportunity to present the curricula that they propose for the MOL training. The Systems Office representatives considered the conference to be highly successful.

10. Bioastronautics Briefing - Systems Office bioastronautics personnel briefed Lt General Pletcher, Surgeon General of the Air Force; Major General Roadman, Commander of the Aerospace Medical Division, AFSC; and Brig General Bolleurd, Deputy Chief of Staff for Bioastronautics and Medicine, AFSC, on the MOL Environmental Control/Life Support System, operational bioastronautics, and the medical aspects of mission operations. The visitors subsequently received a briefing at the McDonnell Douglas-Western Division (MDAC-WD) facility and were given a tour of the MOL mockup at MDAC-WD.

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11. MOL Wire Review Committee - A committee has been formed within the Systems Office to study the wiring standards and Quality Control practices of various non-MOL contractors and other Government agencies. The members of this committee have visited several of the selected contractors' facilities, as well as NASA's Manned Spacecraft Center and Kennedy Spacecraft Center. Of special interest was the committee's visit to the Los Angeles Division of North American Rockwell Corporation where the Minuteman guidance wire harnesses are being fabricated. The standards for these harnesses far exceed MOL requirements in many respects.

12. Space Launch Complex-6 (SLC-6) Recovery Facilities - The Systems Office has been notified by Headquarters USAF (APOCE) that the Air Staff concurs with the requirement for a recovery capability at Vandenberg Air Force Base but does not recognize the need for all of the facilities that have been requested. The staff has requested the Strategic Air Command to reevaluate existing facilities at Vandenberg for possible use by the recovery force and has advised that special requirements which cannot be satisfied in this manner should be constructed with Research, Development, Test and Engineering (RDT&E) funds under minor construction authority (less than \$25,000).

13. Vandenberg AFB Construction Status - On 25 November 1968, construction of Package 2 of the launch complex facilities was 78% complete. This package includes the major pad components and its completion is paced by the Mobile Service Tower which continues to be projected for completion on 1 April 1969. Packages 3 and 4 were 97.5% complete on 25 November. Of the items in these packages, only the power plant remains to be completed, and its completion is now expected in early January. Package 1 of the MOL Support Facilities at VAFB is approximately 30% complete. The design of the Titan IIIM Booster Inertial Guidance System Laboratory has been completed and is expected to be incorporated in Package 2 of the Support Facilities for advertising on 13 January 1969.

14. Funds and Manpower Status - Of the \$294.5M FY 69 funds released to the Systems Office, \$288.9M has been initiated.

Systems Office manpower status is as follows:

	<u>Authorized*</u>	<u>Assigned*</u>
Officers	184	155
Airmen	12	10
Civilians	106	94
High Grades	(33)	(31)
Clerical	(73)	(63)
TOTAL	302	259

*Includes Houston Field Office

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II. Technical Status

1. Launch Pad Hazardous Vapor Detection System (HVDS) - At a meeting in Denver on 6 November, Martin Marietta Corporation personnel presented the findings of their system safety analysis of the HVDS. An MMC proposal to relax the specification requirements on the HVDS was rejected by the Systems Office, and MMC will recommend several methods of providing an adequate HVDS upon completion of additional analysis. The Systems Office's study of existing commercial equipment has failed to locate any equipment that would be suitable for MOL use.

2. Acquisition Tracking System (ATS) Servo Performance - The Systems Office and the associate contractors involved are continuing their analysis of the proposed solution for providing adequate stiffness for proper ATS servo performance. Alternate approaches that would reduce the weight impact (estimated at 50-60 pounds) are also under study.

3. MOL Alignment Requirements - A tentative agreement has been reached with General Electric Corporation on the use of the flight alignment monitoring system (FAMS) to meet MOL alignment requirements. General Electric is working with Eastman Kodak Corporation on the interface of the alignment system. The current plan is to use reflecting surfaces (cubes and prisms) on the back of the mirror. This entire interface will be an item of discussion on 3 December at Technical Sign Off Meeting Number 8.

4. Mission Module Test Equipment Design - The Mission Module Test Equipment (MMTE) Design which was recommended by General Electric has been selected by the Systems Office. This design includes a modified Computer Integrated Test Equipment (CITE) version of the MMTE and will utilize the SDS 9300 computer. The Preliminary Design Review package is expected to be available in late January 1969.

5. Camera Optical Assembly Static Load Structure Problem - The Camera Optical Assembly (COA) Static Load Structure was recently tested to 100% of limit load. During the test, an essentially elastic deformation was observed in the hood area of the forward mount, but the majority of this deformation came back out when the load was released. This condition can be easily corrected by local reinforcement of the hood area. Corrective redesign of the COA has been accomplished by an internal fix rather than an external patch, and the Systems Office is now conducting a study to determine whether this redesign is sufficient to meet the Load Cycle 4, Stage I shutdown condition.

6. Stage II Combustion Chamber Material - Hastelloy has been selected as the best material for use in the combustion chamber coolant tubes based on tests conducted by the Systems Office and Aerojet General Corporation (AGC). The Systems Office has granted AGC authority to procure long lead time materials and to place a subcontract for the fabrication of these tubes.

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7. Stage II Thrust Chamber Assembly Test - A two-hundred-second test firing of a composite thrust chamber with Hastelloy X tubes was conducted at Aerojet General Corporation on 19 November as a part of Phase I testing of this chamber. A post-test inspection revealed tube erosion. The contractor will correct this problem by utilizing thicker tubing material in the area of the erosion and by increasing the film cooling capability. The effectiveness of these design changes will be determined during Phase II testing which will begin in January 1969.

8. Data Return Container Flotation Test - The Systems Office has determined that the Data Return Container (DRC) Flotation Test should be conducted in conjunction with the Flotation/Egress training for maximum cost and schedule effectiveness. This training is scheduled to take place in the Gulf of Mexico during the summer of 1970. The DRC's and production flotation devices will be available at that time, and NASA's vessel can be used to support both activities. The Systems Office is making a tentative agreement with NASA for the use of its vessel and will make a final agreement early next year.

9. Umbilical Retraction System - Systems Office personnel met recently with McDonnell Douglas-Western Division (MDAC-WD) and 6595th Aerospace Test Wing representatives to discuss a revised umbilical retraction system which has been proposed by MDAC-WD. All attendees agreed that this revised concept, which would employ a drop weight system, would be more reliable than the retraction motor concept proposed during the Preliminary Design Review. The revised concept is now being evaluated by the Systems Office to determine the impact it would have on the other associate contractors.

10. Dual Gas Systems Test - A review team composed of Air Force and Aerospace Corporation personnel has been formed to monitor preparations for the Dual Gas Systems Test which is scheduled for February 1969. This team has already been active in reviewing the McDonnell Douglas-Eastern Division (MDAC-ED) test facility, safety provisions, and test procedures. A follow-up review will be performed by the Systems Office review team in mid December to provide additional evaluation of the contractor's preparation for the test and to ascertain the contractor's compliance with actions defined at previous reviews.

11. Environmental Control/Life Support (EC/LS) System - The Systems Office has completed an analysis of the Laboratory Module two-gas control system and has determined that the crew reaction time in the event of a failure should be increased from the existing 15 minutes to 30-40 minutes. Such an increase in reaction time would eliminate the requirement for an automatic switchover to a 100% oxygen environment in event of system failure.

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The Systems Office is providing McDonnell Douglas-Western Division contractual direction to implement this change.

12. Mission Module Beryllium Frame Assembly - The first beryllium frame assembly, which is being produced by McDonnell Douglas-Western Division (MDAC-WD) for the Mission Module, has been scrapped because of cracks which developed during the riveting process. All attempts to save the assembly through rework failed. MDAC-WD personnel plan to use the second frame assembly to replace the first and will make the necessary changes in the manufacturing process to avoid the cracking problem on the second assembly. The contractor does not anticipate a schedule impact because of this failure.

13. Workshop on Waste Management for Manned Space Operations - Representatives of the Systems Office and McDonnell Douglas-Western Division (MDAC-WD) participated in a USAF/NASA sponsored workshop on Waste Management for Manned Space Operations at Battelle Memorial Institute in Columbus, Ohio. This workshop included presentations on existing waste management systems and discussions of systems that are presently in the design stage. The MOL participants were pleased to note that the MOL Waste Management System fulfills all of the design requirements which were stressed as important at the workshop.

14. Radiation Protection and Monitoring Program - Systems Office personnel presented a technical review of the MOL Radiation Protection and Monitoring Program to the USAF Scientific Advisory Board, Radiation Handbook Task Force, at the NASA Manned Spacecraft Center. This task force is accumulating information for publication of a handbook to be used by physicians as a guide for predicting physiological effects on crewmen from radiation exposure during space flight.

15. Mission Correlation Data Software - The Preliminary Design Review of the Mission Correlation Data (MCD) Software was held 29-31 October. Representatives of the National Reconnaissance Office and the intelligence community attended this review and indicated that this software will provide sufficient data for photographic exploitation. As a result of discussions at this review, the Systems Office has initiated a study to reassess the requirement for the MCD Software to provide quantitative/qualitative calculations for the evaluation of man's contribution to the accomplished photography. Calculations of this nature are not currently included in the software requirements.

16. Fuel Cell Vendor Selection - McDonnell Douglas-Western Division (MDAC-WD) has selected Allis Chalmers Corporation to produce the MOL electrical power fuel cells as a result of the recompetition of this procurement. All contractors involved in the competition have been notified of this decision. The advantages of the change from the Bacon-type cell, which is produced by Pratt & Whitney, to the Allis Chalmers

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Matrix-type cell are a decrease in weight and greater flexibility in the operation of the power source. The Systems Office is planning a mid-December meeting with NASA fuel cell personnel to assure a coordinated Air Force/NASA approach with respect to the work being done by Allis Chalmers.

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