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



17 JUN 1968

SAFSL-4

MEMORANDUM FOR GENERAL STEWART

SUBJECT: MOL Monthly Management Report, 25 April - 25 May 1968

Attached is the monthly report of significant events, 25 April -
25 May 1968.

1 Atch
Report

J. S. Blymaier
J. S. BUEYMAIER, Maj Gen, USAF
Deputy Director, MOL

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MONTHLY REPORT
OF SIGNIFICANT EVENTS
25 APRIL - 25 MAY 1968

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A. Technical Progress

1. EK's Engineering Model for development testing of the Mission Module Design was released to manufacturing on 26 April 1968. This is a key milestone in the development program.
2. The checkout test of Chamber II Optics was successful. The test validated the installation and alignment of an [REDACTED] spherical reference mirror which will be used to determine the quality of the plano surface of tracking mirrors in a soft vacuum environment.
3. The ULE tracking mirror blank which was received by EKC from Corning during March has reached the finish polishing stage. To date there have been no in-process problems encountered which are uncommon to EKC experience in processing fused silica tracking mirror blanks.
4. The Systems Office presently plans to delete the hardware requirement for the angular accelerometer. Preliminary analysis by both Aerospace and GE indicates that the angular accelerometer will not be required to meet tracking mirror drive performance specifications.
5. Representatives of DuPont Company were here to brief SPO/Aerospace on the flammability characteristics of shielded Kapton wire. They recommended that a coating of Teflon be put over the shield beneath the Kapton insulation. This would lessen the severity of burning; however, there are obvious weight penalties associated with this recommendation.
6. The decisions to use the ITEK slide changer in the main optics for the Mission Development Simulator (MDS) and to incorporate complete reversibility were made on 26 April.
7. The compliance specifications for the Mission Development Simulator (MDS) and the Mission Module Simulation Equipment (MMSE) have been reviewed. Although there are some technical areas still unresolved, the review of the MDS Specifications and MMSE Systems CEI is essentially complete.
8. The requirement for waterproofing the Data Return Containers (DRC) is being investigated by the Systems Office. This requirement was eliminated previously. Analysis of DRC retrieval techniques is being evaluated to determine the probability of water immersion. This will enable us to establish a position in the near future as to the validity of the requirement.

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9. H53 helicopter/Gemini B retrieval tests are now scheduled for the period 16-26 August 1968. All preliminary design work for the boilerplate spacecraft and suspension slings is complete. SMAMA has agreed to refurbish and build most of the equipment required. Arrangements have been made to borrow all of the other necessary equipment from NASA MSC. The primary objective of this test series will be to demonstrate the capability of the HCL30P to refuel the H53 helicopter with the Gemini B in tow.

10. General Stewart's 4 April mission enhancement questions were answered via TWX on 8 May. [REDACTED]

11. During on-orbit operations MCC personnel will project crew dose for any radiation events occurring during the mission utilizing the Laboratory Module Mission Control Computer Program (LMCP) subsystem. During the week of 29 April the SPO authorized DAC to perform tasks which will result in radiation models and methods for using them in conjunction with vehicle telemetered data, external data and vehicle shielding. These tasks will assure meaningful radiation data handling in the LMCP.

12. Four members of the Flight Crew participated in simulation studies on the R-38 at GE/Valley Forge. All participants unanimously agreed that the simulation was appropriate, typical of the MOL mission, and was conducted on schedule in a professional manner.

13. Martin Marietta Corporation (MMC) is proceeding with configuration definition and proposal development to cover the 1st flight Orbiting Vehicle. Essentially, the O/V will be a monocoque alloy cylinder terminating in a series of conical shapes which approximate the Gemini B outline. Ballast will be added to simulate the weight and c.g. necessary to provide a proper ascent trajectory. MMC's proposal is due approximately 2 August 1968.

14. The bids for construction of Package 1 of the MOL Support Facilities were opened on 24 May 1968. The government estimate for the package was \$4,700,292. The MM Sundt Company was the low bidder with a bid of \$3,885,525. The Corps of Engineers planned to have the contract awarded by 29 May 1968.

15. The Zero G "Test of Principle" for the MOL Waste Management System waste collection device initiated during November 1967 was completed on 1 May 1968 by Fairchild Hiller. Preliminary test results of the waste collection device indicates that the collection methods are satisfactory in principle, however some design modifications are necessary.

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16. An underwater Zero-G simulation test was conducted by GE at Buck Island, Virgin Islands during 29 April through 3 May 1968 with Majors Lawyer and Overmyer participating as test subjects. This simulation was done in G4C pressure suits modified so that they are pressurized with water instead of air, except for the breathing gas supplied by a special mouthpiece. Intravehicular transfers were performed in an unpressurized mode and extravehicular transfers were performed in a completely water pressurized mode. Emergency procedures were well planned and rehearsed. All personnel in attendance felt that these simulations were very beneficial and that the experience gained will be extremely helpful to future efforts in this area.

17. A current review of the requirement and the technique for routine and/or contingency measurement of the crewmembers blood pressure while on orbit has led to the decision to eliminate this requirement from the baseline.

18. Col Karstens prepared a statement on the biomedical and physiological implications of the inert gas selection for the MOL two-gas atmosphere for inclusion in the MOL Systems Office response to Dr. Robert R. Gilruth's query regarding the MOL rationale for use of helium. It is to be emphasized that there is no technical disagreement between the MOL position and the NASA position with respect to the helium versus nitrogen position.

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B. Program Management

1. The second review of the technical baseline was conducted at Huntington Beach the week of 20-25 May. The stated purpose of this session was to arrive at a firm integrated technical baseline. Attention was focused on Systems Performance/Design Requirements (SP/DR) and lower tiered supporting plans and SAFSL Exhibits. At the close of the SP/DR meeting only one deviation was requested -- EK would not accept the requirement for off-axis resolution. With very few exceptions, a mutually acceptable understanding of the requirements defined in the documents was achieved.

2. During the week of 20 May 1968, the Gemini B spacecraft CEI Specification (CP58A010A) was completely reviewed by SPO and McDonnell personnel. Prior to the detailed paragraph by paragraph review, several ground rules were established as follows:

(a) The contract statement of work is to be amended to clearly state precedence of documents and interrelationship of CEI Specifications, Statement of Work, SP/DR and SAFSL Exhibits.

(b) Only CP58A010A would be updated. The contractor was requested to make the associated changes to CP58A011A (GBQ) specification in order to make it compatible.

(c) The SPO would draft an introductory paragraph to Section 2 which is required to eliminate the possibility of deviation to SAFSL exhibits with the body of the CEI Specifications.

A complete review was then accomplished with the objective of updating the specification to the latest configuration. Wherever a question arose concerning the intent, clarity of requirement, an action item was levied either on the contract or SPO. This review served to clarify the program office's intent to update and amend the CEI Specifications to reflect the most current requirements and configuration. The results of this review will serve as a basis for the contractor's specification update and associated cost proposal.

3. A total of 5 CCN's valued at approximately \$10 million dollars were the subject of a negotiation with EK from 14 through 17 May. These changes were necessitated by directed changes in requirements and responsibility. These changes included the addition of a requirement for a modal survey of the Camera Optical Assembly, the addition of responsibility for power switching and requirement for matrix commands, and the requirement for reconfiguration of the COA to allow for sliding mask and tracking mirror clearances. The procurement documents required to definitize these changes have been mailed to the contractor for signature.

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4. Based upon the authority to proceed with the addition of 20,000 square feet of floor space, EK has been notified of our intent to add storage space to Building 101. Negotiations with EK are scheduled for the first week of June 1968.

5. A formal SPO review of GE's Electronic Development Compatibility Test Unit (EDCTU) test objectives has been requested by GE to determine if these objectives can be reduced or modified. The current DAC schedule allocates only 1 1/2 months for GE to test the Development Subsystem-1 (DSS-1) after it is incorporated into the EDCTU. GE states that they need at least 3 1/2 months for their testing. Because this testing cannot be done under the existing schedule, GE and DAC are going to revise GE's test objectives for this portion of the EDCTU test to comply with the 1 1/2 month allocation. This new set of objectives, along with its impact, is planned to be presented to the SPO at the next Interface Signoff meeting.

6. A technical interchange meeting was held at General Electric on 30 April and 1 May 1968 with DAC, GE, and EK concerning the Flights 6 and 7 effort. Existing misunderstandings as to the roles and responsibilities of the contractors were cleared up and the interface schedule was readjusted so that it was more meaningful.

7. Another Flight 6 and 7 technical interchange meeting was held at Douglas on 15, 16, and 17 May 1968. Ground rules for the System Design Review were presented to the contractors for comments. This review will be the key review during phase 1.

8. The MOL CCB processed 40 ECPs; 16 were approved; 3 were disapproved and 21 were deferred for further evaluation. Contractor-estimated costs of the major cost-bearing ECPs approved by CCB action totalled \$413,000. Sixteen new MOL ECPs were received during this reporting period.

9. The T-111M CCB processed 48 ECPs; 15 were approved; 2 were disapproved and 31 were deferred for further evaluation. The contractor-estimated costs of the major cost-bearing ECPs approved by CCB action totalled \$51,000. Twenty-one new T-111M ECPs were received during this reporting period.

10. The coordination process has been completed on 24 Contractual Action Requests, all of which were approved. The major cost-bearing CARs will cost approximately \$13,828,000. Four CARs account for the major portion of this cost; they are:

- MAC 026 - Non-metallic Materials Document, SAFSL Exhibit 10010, \$4,250,000
- GE 030 - Non-metallic Materials Document, SAFSL Exhibit 10010, \$3,500,000
- GE 019 - Assessment of Non-metallic Materials Used in OV, \$1,400,000
- HS 011 - Non-metallic Materials Document, SAFSL Exhibit

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10010, \$2,000,000.

11. No significant schedule problems have been identified in the program; however, because of the delay in establishing a definitive technical baseline with the Program Managers, a revision to Unpriced Supplemental Agreement Milestones is anticipated.

12. The financial statement for this reporting period is as follows:

Of the 430.0 million FY 68 funds released to the Systems Office, 430.0 million has been initiated.

13. MOL Manpower Status:

	AUTHORIZED	ASSIGNED
*OFFICERS	136	151
AIRMEN	9	8
CIVILIANS	102	99
HIGHGRADES	(34)	(32)
CLERICAL	(68)	(67)
	<u>247</u>	<u>258</u>

*MOL Flight Crew Included. Six attached officers (3 Navy/Marine Flight Crew, 1 SAC & 1 MAC are not included).

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