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



SAFSL-4

81 MAR 1968

MEMORANDUM FOR GENERAL STEWART

SUBJECT: MDL Monthly Management Report, 25 Jan-25 Feb 1968

Attached is the monthly report of significant events,
25 Jan-25 Feb 1968.

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Report

J. S. Bleyman
J. S. BLEYMAN, Maj Gen, USAF
Deputy Director, MDL

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MONTHLY REPORT
OF SIGNIFICANT EVENTS

25 JANUARY - 25 FEBRUARY 1968

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1. Major effort has continued throughout this reporting period to fulfill the objectives of Project Upgrade. As an intimate part of these activities, the preparation of the MOL System Package Program (SPP) is progressing toward a finalized document. It is anticipated the document will be submitted to the Director, MOL for approval in April.

So thick, I will review in detail for you
(S)

2. A detailed analysis of the MOL System Integrated Schedules has been completed. All contractor inputs are compatible with the current baseline.

3. Members of the Advanced Planning Division met with representatives of North American Rockwell to discuss their interest in studying a rendezvous-resupply vehicle. Their interest is predicated on an advanced Apollo-CSM vehicle to mate with the MOL Long Duration Operations (LDO) Vehicle.

4. As a result of the guidance received from General Stewart after a briefing on Advanced Planning activities, plans have been made to present a similar briefing at the next meeting of the Program Review Council.

5. The Berthiez grinder was accepted at EKC and training of EKC personnel in the use of the grinder began on 10 Feb 1968.

Key item on schedule
(S)

6. The fused silica Tracking Mirror blank for flight model 4 (FV-6) was received on 2 Feb 1968. All Primary Mirror blanks have been received.

7. The weight and center of gravity test on the Structural Development Model (SDM #1) was conducted 16 Feb 1968. Results were satisfactory.

8. Unpriced Supplemental Agreement No. 27 was sent to EKC. This supplemental agreement included all additional work in the 8 Dec 1967 baseline which could be defined, but had not been negotiated.

Will do this summer
(S)

9. The current approach on low coefficient materials as briefed on 20 Feb 1968 has been accepted by the Program Review Council. The EKC contract is being modified by supplemental agreement to incorporate the following approach for Primary, Tracking, and Folding Mirrors.

a. Primary Mirrors: The program requirement calls for ULE on Flights 5, 6 and 7. A program objective is to use ULE on Flights 3 and 4. EKC has been authorized to begin procurement of ULE Primary Mirror blanks, but will use the present fused silica if ULE proves unacceptable.

b. Tracking Mirror: The program requirement is to use a low coefficient material on all flights. The decision between Cer-Vit and ULE is to be made no later than Aug 1968.

c. Folding Mirror: ULE is to be used on all flights.

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10. Systems Office representatives attended a progress review meeting on the DORIAN Target Model at FTD, Wright-Patterson AFB on 1-2 Feb 1968. FTD has analyzed and assigned technical intelligence collection requirements to approximately 359 of 1771 aiming points in the "608 Model." FTD personnel expect completion of this work by approximately 15 Mar 1968. SAC is currently reworking the procedure for expansion of the Model into the analysis deck, with completion scheduled prior to delivery of the aiming point data by FTD. The expanded analysis deck should be available for Systems Office use by 15 Apr 1968.

11. The abort simulation program at LTV was completed on 13 Feb 1968. Preliminary results indicate a highly successful program, in terms of both engineering data and flight crew training. Further data evaluation is in process. The contractors will submit reports to the Systems Office on 21 Mar 1968.

12. Flight Vehicle Timeline (FVTL) meetings were held with DAC, GE and EKC during the month to answer questions on a recent target study with the 90° orbit. The associates were directed to use the reference orbit ephemeris prepared by DAC. To support in-house contractor studies relating to mission operations, the Systems Office agreed to provide sun angle data, target locations to the nearest degree, target altitude, and other target summary data.

13. Mission Correlation Data (MCD) meetings were held during the month to review and validate current design requirements for the photographic frame correlation data to be placed on the film and on the PCM recorder. Presentations covered current film data block design by EKC, on-board data computation by GE, and MCD ground software functions by TRW. The collection, calculation and use of the data for mission payload system segment, crew performance evaluation, and exploitation of the photographic payload was discussed. Review of MCD requirements is underway with each of the contractors involved. Definition of the exact reporting requirements will be sought from the intelligence community.

14. On 26 Jan 1968 the AFSCF announced the opening of bids for construction of the Advanced Satellite Test Center building at Sunnyvale, Calif. The Systems Office provided the AFSCF with a letter summarizing the MOL MCC availability dates which must be met to satisfy integration, simulation, and readiness activities before MOL operations. A request was made for immediate flagging of potential inability to meet any of the key dates.

15. At a recent Systems Office/GE "Drive A" working group meeting, information on the Angular Accelerometer was exchanged and GE presented analytical test results indicating some improvement in the "Drive A" loop when the Angular Accelerometer mirror loop is used. The Systems Office presented arguments to question the

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validity of the GE data and identified this area as a topic of discussion at the Interface Signoff meetings scheduled for 26 through 29 Feb. GE will continue with a parallel design approach pending further investigation by their organization and the Systems Office.

16. During this reporting period, discussions were conducted with EKC, GE and Aerospace on the Image Velocity Sensor (IVS). EKC was briefed by Aerospace on the general approaches of the three IVS subcontractors. In addition, GE and EKC discussed (1) the possibility of obtaining more light for the IVS, (2) the Flight Alignment Monitoring System, and (3) the IVS tester program. EKC estimates that the amount of light which will be delivered to the IVS will be less than previous estimates. However, EKC stated the possibility of taking off the anti-reflectance coating on the pellicle, which would increase the light level. On Flight Alignment, it was determined the best approach would be to place the source in the Ross Barrel and place the sensor on the tripod. Discussions on the IVS tester were included to update all attendees on the general test program.

17. A meeting was held at GE, Radnor, on 28 Feb to determine whether a firm requirement exists for GE to have an airconditioned AGE room on level 12 of the Mobile Service Tower. By the conclusion of the meeting, Systems Office representatives were reasonably convinced that a valid requirement does exist. This conclusion was reached after a thorough investigation of signal levels which would cause interference in the ground AGE room. The Systems Office is evaluating the impact of this requirement.

18. Systems Office simulation personnel met at GE during the month to review the quantitative requirements matrix, all GE and Air Force action items, and the engineering design trade studies and costs. The outcome of these meetings resulted in a determination of the simulation program content.

19. Technical agreement was reached with GE on the Unpriced Supplemental Agreements No. 20 (Contract C-0018) and No. 8 (Contract AF-2955), implementing the 8 Dec schedule changes. Technical negotiations with GE took place on 14-15 Feb with Aerospace participation.

20. The Systems Office, supported by the 6595th Aerospace Test Wing, Aerospace Corporation, Douglas Missile Division, and NAVPLANTREPO conducted a PDR for the Gemini B to Laboratory Vehicle Electrical Interface Substitute at McDonnell, St Louis, Missouri on 13 Feb 1968. The meeting was completed successfully with McDonnell accepting action items in three minor areas.

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21. A follow-up review of the blastshield was conducted at McDonnell, St Louis, Missouri on 7 Feb 1968 to establish that McDonnell had completed the open items to the previously held PDR and could proceed with the blastshield design. The open items have been satisfied and the PDR is now considered complete.

22. Joint T-III/T-IIIM Program Reviews were held with all booster contractors (Martin Co, United Technology Corp, Aerojet General, AC Electronics, and Spacecraft Incorporated) during the week ending 16 Feb 1968. No major problems were identified during the reviews.

23. Modification P111 (Unpriced Supplemental Agreement) to Contract [REDACTED] with Douglas, was distributed on 20 Feb 1968. This bilateral agreement places on contract the baseline program described in summary terms to Dr. Flax on 8 Dec 1967. Work is proceeding, in coordination with Project Upgrade, in defining this baseline program to the degree essential to pricing the required effort. Milestones are contained in the supplemental agreement which provide for positive and visible tracking of progress toward this goal. The first three, (1) provision to the contractor of program and flight objectives, (2) provision to the contractor of program test flow, and (3) provision by the contractor of recommendations for reductions in contract data submittals, were met and reported to the Assistant Director, MOL (Procurement).

24. A Program Management Review with Douglas was conducted by the Systems Office on 6 Feb 1968. A detailed analysis of actual expenditures to date and expected expenditures was conducted, with particular attention paid to predicted situations at end FY 68 and FY 69. To support this analysis, the financial status and projected status of major subcontractors and critical major component suppliers were also reviewed.

25. A major Laboratory Vehicle Technical Review was conducted by a Systems Office team at Douglas on 7 and 8 Feb 1968. Considerable technical progress has been made since the last review. The majority of the technical problems which were isolated at the review could be, and were, resolved during the course of the meeting. Specific action items and completion dates were assigned for the following problem areas of particular interest which could not be resolved in the meeting.

a. T-III/OV Separation: If Stage II of the Titan IIIM does not occur during nominal limits, another means other than Stage II SECO must be provided for triggering Laboratory Vehicle Ascent events. Action to be completed 4 March 1968.

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b. Lab Vehicle Bay 1 Cooling: Detailed thermal characteristics of EKC equipment have not yet been defined. Douglas is required to maintain cooling conditions in Bay 1 which will maintain film temperature at specification values. Douglas recommends, with EKC concurrence, that DAC-EKC thermal interface be moved from the film to the outside of the film handling equipment. This action was completed on 19 Feb 1968 upon approval by the MDL Systems Office with the movement of the interface as recommended.

c. Bay 5 Cooling for Unexposed Secondary Film Storage: Bay 5 contains gyro packages which are major heat sources. Bay 5 temperatures are also affected by adjacent Bays 4 and 6 activity, and all are directly related to operational timelines. Douglas will conduct a detailed time-temperature analysis for Bay 5 to determine expected conditions and develop a design concept to satisfy cooling requirements. Action to be completed 20 Mar 1968.

d. Pressure Suit Cooling: Pressure suits, which are cooled by oxygen flow, may require additional flow to handle increased heat produced by suited crewmen under certain operational conditions. The MSO will examine operational timelines in detail and establish firm suit flow requirements. Some modification to the EC/IS Subsystem may be involved. Action to be completed 18 Mar 1968.

26. An internal laboratory lighting configuration has been selected which utilized a combination of both electroluminescent panels and ambient sources. This hybrid configuration is very satisfactory from the crew operations standpoint, and was also found to require less electrical power than other configurations studied.

27. As a result of concern expressed by Dr. Flax at the Program Review Council on 20 Feb 1968, a summary analysis of Laboratory Module acoustical qualification testing of the LMQTV is being prepared. This analysis will be submitted by mid-March to the Vice Director for subsequent transmittal to Dr. Flax.

28. The third Interface Technical Signoff meeting was convened at GE, Radnor, 27 Feb through 1 Mar. This meeting was even more successful than previous meetings. This method for arriving at technical interface agreements has resulted in shortening the cycle of interface approvals by at least six weeks, and in some instances by months. The next Technical Signoff meeting will convene on 16 Apr to work off interfaces scheduled for April resolution, and to hear reports on problems isolated, and action items assigned at the February meeting. Completion of interface signoffs is now beyond the 50 per cent point.

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29. Douglas R. Lord, Deputy Director Advanced Manned Missions Program, Office of Manned Space Flight, Hq NASA, was given a comprehensive MDL briefing at the DORIAN level at Douglas MSSD, Huntington Beach, Calif on 22 Feb. Mr. Lord expressed considerable interest in the MDL Long Duration Operations study, and in the utilization of the MDL camera for planetary photography.

30. The Preliminary Design Review (PDR) of the Laboratory Module was conducted 19 to 23 Feb 1968 at the Douglas Facility, Huntington Beach, Calif. This review tied together the previous PDR's which were conducted at the subsystem level. For example, the Communications Subsystem PDR was conducted in Feb 1967. The Command Subsystem and the Data Requisition Subsystem have not had PDR's to date and were not included in the Laboratory Module PDR. The Laboratory Module PDR included a review of all Laboratory Module interfaces, electromagnetic compatibility, electroexplosive devices, reliability, safety, maintainability, weight, space and power utilization, and general design features. There were approximately twenty action items assigned as a result of the PDR. The PDR was conducted in a thorough fashion and the design approach appears to be acceptable. No major design inconsistencies were noted.

31. Secure Voice Communication System: The capability to communicate by voice in a secure mode between the flight crew on orbit and the flight controller in the MCC is under detailed review by the Systems Office and affected contractors in order to complete technical definition by 1 Jun. The system is contractually complex as well as being technically complex due to the large number of contractors and agencies involved in the system. At this time, top level system and interface requirements have been established, detailed roles and responsibilities assigned, and a plan of action established which will permit system and system element definition by 1 Jun. The major technical considerations were in specifying the system intelligibility requirements and in developing a test program that will permit early demonstration of the system. Early analyses indicate that the currently conceived system is capable of providing in excess of 80% intelligibility on individual words and over 95% intelligibility on sentences or word groups. This is considered adequate. A test approach has been formulated which appears to satisfy the objective of early system demonstration.

32. The first increment of the Laboratory Module Simulation Equipment (LMSE) Critical Design Review was conducted during the week of 26 Feb 1968. This review was limited to the computer complex and its associated peripheral and signal conversion equipment. The Instructor Operator Station, Simulated Laboratory Module and interface equipment will be reviewed at a future date. In general, it was determined that the Douglas design is in accordance with the performance and design requirements established in the SP/DR and the LMSE CEI. Concurrence with this first incremental CDR is expected within the next few weeks.

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33. The MDL CCB processed 37 ECP's; 19 were approved, 10 were disapproved and 8 were deferred for further evaluation. The cost credit ECP's approved by CCB action totalled approximately \$236,000 based upon non-negotiated contractor estimates.

34. The MDL CCB also processed 17 SAFSL Exhibit changes; 9 were approved, 4 were disapproved and 4 were deferred for further evaluation. The approved Exhibit changes resulted in a credit of approximately \$53,000.

35. The T-IIIM CCB processed 52 ECP's; 18 were approved, one (1) was disapproved and 33 were deferred for further evaluation. The major cost bearing ECP's approved by CCB action totalled approximately \$333,000.

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

Of the \$349.9 million FY 68 funds released to the Systems Office, \$346.0 million has been initiated.

37. MDL Manpower Status:

	AUTHORIZED	ASSIGNED	DIFFERENCE
*OFFICERS	125	146	+21
AIRMEN	9	8	- 1
CIVILIANS	100	92	- 8
HIGHGRADES	(34)	(30)	(- 4)
CLERICAL	(66)	(62)	(- 4)
	<u>234</u>	<u>246</u>	<u>+12</u>

* MDL Flight Crew included. Six attached officers (4 Navy/Marine Flight Crew, 1 SAC & 1 MAC are not included).

T-IIIM Military not shown

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