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JAN 18 1967

MEMORANDUM FOR RECORD

SUBJECT: January 5, 1967 MOL Management Meeting

This memorandum provides an official record of the MOL Program Office and Systems Office understanding as regards the decisions and direction for each of the subjects which follow:

Program Funding

The Phase II development program will proceed against an FY 67 funding level of \$228.0 million NOA and a planning level of \$510.0 million for FY 68. FY 67 funds will be tracked very closely to conserve funds, where possible, to apply to FY 68.

We will proceed with an FY 68 program based on the "Blue Book" baseline requirement for \$587.0 million until such time as a departure from this baseline is dictated by FY 68 funding limitations or technical problems. We will also protect the option to pursue an FY 68 program funded to a level of \$480.0 million, and will make a decision during late FY 67/early FY 68 as to the level on which we can proceed.

I have assigned this as a joint Program/Systems Office action.

Negotiation of Undefinitized Program Requirements

The schedule for completing negotiations by June 1967 for the presently undefinitized program requirements was approved by Dr. Flax and the Director, MOL.

This is a Systems Office Action.

Special Contractual Procedures

The contract termination liability clause is to be excluded from MOL program black contracts. This clause is already excluded from the MOL white contracts.

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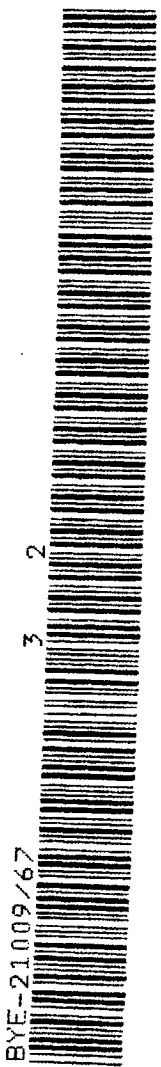
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This action will allow the Systems Office to place on contract only those funds which can actively be used for the attainment of program baseline efforts, and will avoid having some portion of contract funds set aside as a reserve for contract termination.

Approval is necessary for proceeding on an expenditure funding basis for all MOL contracts in lieu of the present commitment basis. The FY 67 "Blue Book" estimates are based on expenditure funding.

The MOL Program Office will pursue these actions in concert with CSAF-FM.

Saturn IVB Participation

We will continue to participate, along with other Air Force activities, in the NASA spent stage experiments program. The Systems Office, however, will re-examine the usefulness of including an active molecular sieve experiment. The Program Office will meet with NASA to definitize responsibility and establish firm costs for MOL experiments integration. We will continue to process, through normal channels, experiments which may be useful to MOL, but MOL astronauts will not participate in the SIVB program.

This is a MOL Program Office/Systems Office action.

Readout and Data Recovery

We will continue to include both systems in the MOL baseline program. As soon as possible, the Systems Office will provide the costs of protecting the readout system studies and associated integration effort. By 1 April the CBS and Douglas studies will be evaluated and presented to Dr. Flax with an assessment of the cost impacts and required decision dates for each of the systems. Prior to presentation to Dr. Flax, there will be a MOL internal review.

Colonel Battle, SAFSS and the Systems Office have this action.

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Thermal Doors

The engineering design of doors to minimize the thermal distortion problem will be re-examined in February when newly generated data and Cer-vit results will be available from GE/EK/DAC. In the interim, however, the GE proposed louvre and pitch mask design will continue.

This is a Systems Office action in concert with the Program Office.

Acoustic Testing

We will continue to protect the long lead time requirements for a low level segment test facility at EK, and protect the option for a higher level acoustic test facility. Dr. Flax concurred with the plan for low level acceptance testing of all system segments and vibration testing of the lab module.

Contractor cost estimates will be acquired for a laboratory module test program based on qualification and flight level testing.

Efforts will continue to determine the best combination of facility/location to satisfy MOL program requirements.

Expenditure of \$50K is authorized as a holding action.

Action is assigned to the Systems Office.

Support Module

The current 30 day baseline engineering design was approved and will provide the physical capacity for an up to 60 day capability.

Contingency Planning

A procurement plan is to be developed to cover the contingency of a failure of flight #1 or failure of one of the manned flights 3, 4, or 5. This plan will consider making flight 6 or 7 a manned flight and would be accomplished by parallel vehicle procurement.

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This would then leave the present flight 6 or 7 article available for later use. If this plan is approved, firm costs and decision dates will be developed for an additional equipped laboratory module, time phased for use as a back-up to flight 6, but intended for use with flight 8 or beyond. The availability of the laboratory module will enhance schedule flexibility.

At the earliest possible date the Systems Office will submit, to Dr. Flax and the Director, MOL, an analysis of the firm costs and required decision dates to provide an additional Gemini B in a time frame which would have it available to cover flight #5.

Action is assigned to Systems Office.

Acquisition and Tracking Scope

The selection of ITEK as the subcontractor to GE was concurred with by Dr. Flax and the Director, MOL. The ITEK contract and GE and DAC integration cost total of \$19.5 million is \$16.5 million less than had been budgeted for this task.

Extended Life

A paper for Dr. Foster on extended life time considerations is to be prepared for Dr. Flax's signature.

This is a Program Office Action.

Program Priority and Authority

The DX priority rating letter prepared for Dr. Brown's signature and transmittal to OSD is to be signed within the next few days.

The letter authority to proceed with MOL Phase II activities will be signed by OSAP shortly.

This is a Program Office action.

Simulation

Dr. Flax was concerned with two aspects of simulation. He desired to validate that a human operator

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could indeed distinguish ground scenes under conditions of actual scene lighting and actual scene contrast. Since it is very difficult to recreate actual conditions by ground simulations using scene photographs, Dr. Flax was of the opinion that an aggressive aircraft simulation program should be undertaken. It was agreed that the Systems Office would examine the situation and develop a simulation program.

Although a general consensus held that design of simulators, and simulation materials was a major problem, the Systems Office is to continue an active program to improve simulation fidelity, and adequacy of materials.

This is a Systems Office action.

SIGNED

HARRY L. EVANS
Major General, USAF
Vice Director, MCL Program

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March 14, 1967



MEMORANDUM FOR RECORD

SUBJECT: March 10 Meeting on MOL Revised Costs/Schedules

A meeting was convened at Headquarters Air Force Systems Command, Andrews Air Force Base, Maryland, on March 10, 1967 to review the analyses and conclusions reached as a result of the scheduling exercise directed upon all MOL associate contractors at the February 15 MOL Management Meeting. A copy of the material presented at the March 10 meeting is attached. Those in attendance included:

| | |
|---------------------------|--------------|
| General Ferguson | Director MOL |
| Dr. Flax | SAF-R&D |
| Brigadier General Berg | SAFSS |
| Brigadier General Hedrick | Hq AFSC |
| Dr. Yarymovych | SAFSL |
| Colonel Battle | SAFSS |
| Colonel Heran | SAFSL |
| Colonel Kester | SAFSL |
| Colonel Knolle | SAFSP |
| Colonel Randall | SAFSL |
| Colonel Sanders | SAFSL |
| Colonel Smith | SAFSP |
| Mr. Donovan | Aerospace |
| Dr. Leonard | Aerospace |
| Mr. Tennant | Aerospace |

DISCUSSION

During the period of February 16-27 a concerted and integrated effort was undertaken by the Systems Office/Aerospace and all MOL associate Contractors to rework all segment schedules on the basis of: (a) a 9-month program slip and (b) a 12-months program slip. These schedules were then incorporated into revised test plans with fiscal year and total program costs identified for each.

The Systems Office concluded from this exercise that a 9-months program extension was extremely tight on scheduling of exchange hardware between Eastman Kodak, General Electric, and Douglas. Although technically feasible it was felt that the high risk and excessive fiscal year cost associated with this schedule made it unacceptable.

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Conversely, the 12-month program extension to the baseline schedule, resulted in a test flow plan acceptable to all associate contractors. However, the ROM costs associated with this revised schedule (\$586 million for FY 68 and \$637 million for FY 69) exceeded the FY 68/69 guidelines of \$500/\$600 million laid down by Dr. Flax at the February 15 Executive Management Meeting. The presentation further contended that to impose fiscal year 68/69 ceilings of \$500/\$650 million would result in a minimum program slip of 15 months. Also, it was pointed out that the contractors' ROM costs were based on expenditure plus fee type funding. To go to normal commitment type funding would add additional cost requirements of approximately \$75.0 million in FY 67 and \$30.0 million in FY 68 with only slight reductions in FY 69.

In the discussions which ensued, the following decisions were made:

FY 68/69 BUDGET

Dr. Flax and General Ferguson agreed that they would attempt to see Dr. Brown and Dr. Foster on Saturday, March 11 to review with them the revised scheduling data and to obtain FY 68 and FY 69 funding levels which could be used by the Systems Office in negotiating revised baseline schedules. In no case did Dr. Flax envision that these levels would exceed \$500/\$650 million for FY 68/69.

DX PRIORITY

It was agreed that a DX industrial priority for the program is still required and Dr. Flax will continue his efforts with OSD to obtain a dollar limited DX priority. As an interim course of action Dr. Flax will support action to raise the Program DO industrial priority to a more favorable level. For the immediate period, the Systems Office will negotiate the revised program schedules on the assumption of a DO industrial priority with provisions for providing special assistance to the contractors for obtaining critical long lead items.

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TYPE FUNDING (EXPENDITURE VS COMMITMENT)

Dr. Flax directed that the MOL contracts be negotiated and funded on a commitment rather than an expenditure basis. He asked to be notified, as soon as possible, of the additional costs required in FY 67 to fund the MOL contracts on a commitment basis. If these costs, when identified, prove to exceed the FY 67 budget level, then the Secretary will initiate internal Air Force reprogramming action to correct the funds deficiency.

CONTRACTS

The Systems Office recommended and Dr. Flax agreed that fully structural incentive contracts, as previously negotiated, are still appropriate for the MOL Program, even in light of the schedule slip. The same type contracts as originally negotiated with each of the contractors prior to the program slip will be maintained in the renegotiations.

ACTIVE MOLECULAR SIEVE EXPERIMENT ON SATURN IVB

The MOL Program Office recommended that an active molecular sieve experiment be carried on the proposed Section IV Orbital Workshop flight scheduled for June 1968. Dr. Flax stated that before approving this experiment he wanted to talk to Gen ~~Nick~~ of NASA. No decision date or reason for this contact was indicated.

TITAN IIIM DEVELOPMENT COSTS

Dr. Flax indicated he would discuss with Dr. Foster the possible transfer of Titan IIIM development funds from the MOL to the Titan III line item. No specific date was given from this action.

NEXT MOL MANAGEMENT MEETING

Dr. Flax and General Ferguson both agreed that either April 6 or April 7 would be an appropriate and acceptable date for the next MOL Management Meeting on the West Coast. The meeting is tentatively scheduled for April 6.

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RICHARD C. RANDALL
Colonel, USAF
Chief, Program Control

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MEMORANDUM FOR RECORD

1967

SUBJECT: Minutes, April 14 MOL Management Meeting

The April meeting was held at HQ AFSC, Andrews Air Force Base.
The principals in attendance were:

- | | |
|-------------------------|--------------------|
| Dr. Flax | Brigadier Gen Berg |
| General Ferguson | Colonel Heran |
| Major General Stewart | Dr. Yarymovych |
| Major General Bleymaier | Dr. Leonard |
| Brigadier Gen Martin | |

A. TITAN III

The T-III SPO identified additional commitment funding requirements beyond the total \$80.8 million provided through mid-April. The additional requirements were presented as three options:

Option I

Called for an additional \$5.2 million of FY 67 funds for April 15 through June 30 on a commitment funding basis. This option would slip the T-IIIM 15-months from the baseline schedule and did not consider the effect on the Titan B, C and D program schedules.

Option II

Required an additional \$10.2 million of FY 67 funds for April 15 through June 30. This option also slipped the basic program approximately 15-months but did preserve the B, C and D schedules and minimized the overhead cost impact.

Option III

Required an additional \$9.3 million of FY 67 funds for April 15 through June 30. This option would have stopped work on the T-IIIM for 12 months and thus slipped the schedule 18 months, have a heavy cost impact on B, C and D, and result in the loss of experienced technical personnel.

Option II was approved. However, anything not required to achieve commonality of the T-IIIM with other vehicles in the T-III family, should

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be slipped as necessary to reduce near term and total fund requirements. Of the \$10.2 million of additional funds stated to be required to carry the T-III program from April 15 through June 30, 1967, \$7.3 million is for T-IIIM requirements and the balance for the B, C and D programs. \$2.5 million has already been released to carry the T-IIIM through April 30; the balance of \$4.8 million will be provided at a later date. The \$2.9 million requirement for the B, C and D is made up of \$1.7 million for computer hardware, \$0.9 million for 15:1 engine nozzle work, and \$0.3 million to maintain the Titan IIIB contract effort through FY 67. Dr. Flax requested [redacted] to work with the MOL Program Office in identifying a source for funds which relate to Titan B, C and D as well as Titan IIIM. This reallocation of cost was to reflect the rephrasing of needs of the using programs.

B. BASELINE SCHEDULE/FUNDING

Aerospace presented a briefing which identified a 15-month slip to the Blue Book baseline schedule of a first manned launch in December 1969. The 15-month slip was identified as being an optimum program from the standpoint of fund limitations, and eased development and integration problems (which would have slipped the baseline program 9-12 months in any event). On a commitment funding basis, the proposed program required FY 67/68 funds in an amount of \$287 million and \$518 million, respectively. The FY 68 requirement for \$518 million included development effort for readout and data recovery vehicles. These items are further discussed in paragraph D.

After discussing the costs and schedules for the 15-month slip Dr. Flax and General Ferguson agreed to provide more definitive schedule guidance by April 21. (Program Office action)

C. MTS

This briefing discussed the Aerospace MTS requirements for FY 67/68. Dr. Flax did not concur with the FY 68 requirement for increased numbers of Aerospace MTS and the associated costs to support this increase. He requested the rationale and justification for increasing the SE/TD support, when at the same time the program is being accomplished over a longer time-frame. (Systems Office action) A potential problem exists in that additional MOL MTS positions cannot be allocated out of context with the total Aerospace support of BSD, SSD, SAFSP, etc.

An additional \$406K is required to cover the MTS requirements for SAFSP for FY 67. There is a reduction of \$600K in the T-IIIM effort and a portion of this amount will be transferred to SAFSP to meet the added DORIAN requirement. (This is a MOL Program Office/NRO Comptroller action).

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D. DRV/READOUT

The presentation reviewed the DRV and Readout programs. Dr. Flax and General Ferguson directed that these no longer be identified as integral parts of the Blue Book baseline program. The Laboratory/Mission Module development effort should include a capability to carry the DRV and/or Readout, but this capability will be provided only in a gross sense, i.e., weight, power, and cube requirements sufficient to accommodate the capability.

The Systems Office is to provide more definitive information as to specific contractor effort, schedules and costs necessary to preserve the option to incorporate the Readout capability in the MDL vehicle based on other (e.g., aircraft) readout system developments.

The Blue Book technical baseline, cost estimates and weight requirements are to be adjusted to reflect the reduction in costs and scope resulting from the deletion of Readout and DRV, the attendant decrease in the weight requirements of 910 pounds, and the change in the orbital inclination from 80° to 90°. The contracts will be changed accordingly. (Systems Office action).

E. WEIGHT AND POWER

Aerospace reviewed the T-IIIIM weight capability and specifications. The current predicted weight of the orbiting vehicle is 29,914# (up 635# from the Design Requirements document). The contracts permit a maximum weight growth to 31,086#. In an inclination of 90° and orbital altitudes of 80/180 at 55° N. latitude the T-IIIIM capability is 31,130#. If the contractors used all of their weight allowance, a very marginal situation would result. The deletion of the weight allowance for the DRV and Readout hardware will relieve this problem, at least temporarily. (See paragraph D).

Dr. Flax directed that there be continuing attention to the weight budget to insure that the incentive structure is sufficient to encourage the contractor to exercise good weight control. (Systems Office action).

Power requirements were reviewed very briefly, and determined to be sufficient for current requirements -- both actual and anticipated.

F. TECHNICAL PROBLEMS/ACOUSTIC TESTING

This was an information briefing, but the following pertinent remarks were made.

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Both Dr. Flax and General Ferguson desire that the subject of flight safety be pursued very vigorously to preclude any unsafe system conditions. As one example of actions directed toward obtaining this objective, they suggested that the EKC and GE contracts should be adjusted to require that electrical equipment which is operated in a pressurized environment satisfy industry standards for operating in an explosive environment. However, this suggestion was not intended to constitute the scope of a renewed evaluation of the safety requirements which should be undertaken as soon as possible. It was recognized that the safety effort could involve a considerable expenditure of funds not provided for in the original system cost estimates. (Systems Office action).

He also asked that careful attention be applied to the acoustic qualification testing program to insure that there is proper feed-back of information, and that the program is effective. A suggestion was made that consideration be given to the establishment of a master criteria list for qualification testing. The study for the location of a new additional testing facility has not yet been completed, and therefore was not discussed at the meeting.

G. CONTRACTS

This was an information briefing which described the Systems Office/Contractor contract cost estimates for the 15-month slip program, and the projected schedule for negotiating the new contracts. There was also a brief discussion of the logic and reasons for management practices relating to the Phase IC extensions, and funding the contractor until negotiations were completed.

As part of some general observations, Dr. Flax stated that:

- Expenditure funding cannot be used as a basis for establishing FY requirements.
- It appears that we may be tending to accept contractor cost requirements which are probably inflated, at least for the scope of work as currently defined. He implied that the total program cost increase of some \$500 million, if correct, could be very detrimental to the future of the program.

H. CER-VIT

This was an information briefing which reported on the progress and future activities of the CER-VIT program. The report indicated that

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test results, to date, were up to expectations and that there was reasonable confidence in the future use of the ceramic vitreous material for the DORIAN optics.

I. MISCELLANEOUS

Two agenda items were not presented because of the lack of sufficient time - "Astronaut Training" and "Operational Recovery Plan". These items will be presented at a later meeting.

J. EXECUTIVE SESSION

This closed session included Dr. Flax, Generals Ferguson, Stewart, Blaymaier, Martin, Berg and Colonel Heran. Schedules, funds and management problems were discussed. No specific decisions were reached on the schedules or funds. Generals Ferguson, Stewart and Berg are working on the management subject for Dr. Flax.

H. OTHER

A copy of the briefing charts used at the meeting is on file with the Program Control Division, SAF-SLP.

JAMES T. STEWART
Major General, USAF
Vice Director, MOL Program

Col Kemp/SAF-SLP/27Apr67/5388)/ams

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