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JUL 20 1967

MEMORANDUM FOR GENERAL BLEYMAIER

SUBJECT: July 7, 1967 MOL Internal Management Meeting

Attached for your information is my memo for record of
the minutes of the July 7 meeting.

Request the Systems Office take necessary action for those
items so indicated.

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

1 Atch
a/s

cc: General Ferguson

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MEMORANDUM FOR RECORD

SUBJECT: Minutes, July 7 MOL Internal Management Meeting

The July meeting was held at the Systems Office in Los Angeles.
Principals in attendance were:

Major General Stewart	Colonel Heran
Major General Bleymaier	Colonel Norman
Major General Cooper	Dr. Walt Williams

Mission Operations

This subject was presented for review prior to its presentation to Vice President Humphrey on July 25.

The briefing presented the operations concept for the manned MOL DORIAN so as to maximize the capability of the high resolution optic system, airborne computers and mission displays and controls.

The briefing emphasized man's enhancement of the reconnaissance mission through his active participation in target selection and real time examination of targets for the presence of activity indicators; his ability to correct technical problems which would otherwise seriously degrade the mission - for example, his ability to bypass a malfunctioning image velocity sensor, and to track a target manually; and his ability to verify, analyze, repair and manually control certain aspects of system performance.

General Stewart recommended that the briefing first emphasize the importance of man in the alignment, focus and pointing of the main optics, then the mission improvement contributed by the flight crew as demonstrated during simulation, and the contribution of the flight crew to target selection. (Systems Office Action)

Recovery Security

This briefing considered the problem of preserving the security of film and optics by denial to foreign eyes in case of a mission abort.

The security of the film presents a particularly difficult problem since it is especially designed to be protected against all hazards. Of the methods of destruct available, i.e., explosive, chemical, radiation, light, etc., chemical destruct seems the most desirable at this time for the film.

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The briefing concludes that because of the extremely low probability of belligerent recovery during ascent abort, .00001, or recovery malfunction, .0005, security assurance should rely, in the main, on operational procedures.

Business Session

T-IIIM

The throw weight capability for the 80/186 NM perigee/apogee, 90° inclination at 55° N. latitude has been established at a minimum of 31090#, and a maximum of 31258#.

There is still a funding problem on the order of some \$9.0 million for FY 68. About \$6.0 million of this amount may be available from prior year fund requirements to the MOL program from the heat shield test, NASA participation and other program realignments.

Technical Review

Orbiting Vehicle Weight

The current predicted orbital weight is 29367#, which includes pending weight changes of *217#. The inclusion of a readout system or additional DRV's and film will still permit some reasonable margin for weight growth.

Electrical Power

Electrical power is already very critical. The average power requirement is 1.853 KW with 1.825 KW available; the peak power requirement is 4.336 KW, with 4.5 KW available. To resolve this problem consideration is being given to reducing requirements by the inhibition of power for certain heater functions and by ATS load management. In addition a Power Coordination Control Board has been established, and will institute electrical power reporting and control procedures.

General Stewart recommended that the Systems Office investigate the desirability of another Air Force R&D activity working on fuel cells using their own money.

Pitch and Roll Gimbal Bearings

There is a potential problem with these bearings in their ability to damp the vibration and noise of the tracking mirror drive, while retaining sufficient stiffness for the gimbal structure. The rate and stiffness requirements for these gimbals requires a significant advance in the state of the art.

The bearing tests are underway and are scheduled to be completed in May 1968. Analysis of the report is expected by October 1968.

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Cost and Schedule Analysis

The FY 67 and prior year carryover funds totaling \$292.586 million were all obligated by June 30 with the exception of \$101 thousand which will be carried into FY 68.

Contract Status

An updating was given of the current contract status and schedule for completion of negotiations for deferred and identified work which have an estimated total value of approximately \$741.0 million. With the exception of GE, the contractor proposals have been received and negotiations will be initiated shortly.

The Air Force was given cognizance of GE plants at Philadelphia, Radnor, Valley Forge and King of Prussia. The transfer arrangements from DCAS are to be completed by July 21.

Apollo and Brooks Findings

This presentation reviewed the Apollo 204 and Brooks chamber accident reports, compared MOL activities with the review board recommendations, and gave general background on MOL safety activities.

The most pertinent-to-MOL accident investigation results have to do with the Gemini B atmosphere on pad, and orbiting vehicle materials selection and control. In both these areas, as well as others, MOL is pursuing a vigorous program. A materials criteria, test requirements and control exhibit has been prepared and is under review. A rapid opening hatch for the Gemini B is being examined, and on pad operational and communications procedures are being very carefully reviewed. Spacecraft fire suppression methods, a rapid donning emergency oxygen mask and combustion detection equipment are being looked at. The launch atmosphere for LV is planned to be 80% He, 19% O₂ and 1% H₂O at 10.5 psi instead of 100% O₂. He and O₂ atmosphere at 7.0 psi is being evaluated.

The accelerated and expanded safety program is expected to have a cost and weight impact. These will be better identified o/a October 1.

Reincorporation of WBDL

There is general agreement among the MOL Program participants as to the desirability of Readout. The problem is one of funding and authority to proceed with system development in sufficient time to test and fly the system by December 1970. The system costs which were estimated at \$25.0 million in January 67 are now estimated at approximately \$53.0. The FY 68 estimate has risen from \$5.5 to \$10.1 million. Some portion of this increase can be attributed to program changes and stretchout. The schedule of development activities to have readout hardware available for installation in the first manned flight vehicle requires an early decision to proceed.

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General Stewart asked the Systems Office to provide at the MOL Program Review Council meeting in late July an estimate of the funds required to continue the WBDL effort the Systems Office believes is necessary through January 1968. He does not expect a full scale readout system decision until the end of the year. (Systems Office Action)

As part of this briefing, a comparison was made of requirements for the baseline processor vs. a "health check" processor, on the logic that elimination of R/O would obviate the need for a "Production" processor. The "health check" processor would be required to support the following checks:

- Optical alignment
- Smear tests (IVS)
- Initial focus
- Camera/Visual optics bore sighting
- Through focus check
- Camera operation and sequencing

The check equipment also modestly reduces the equipment size, weight and power requirements.

The conclusions were that the "health check" processor cannot be easily upgraded to the baseline processor capability and the cost savings are very minor.

This briefing will be a part of the July 27 Program Review Council meeting, but will include identification of the required decision date for changing from the baseline bimat processor to the health check processor.

Mission Planning and Evaluation Software

The object of this briefing was to solicit authority to proceed with software procurement, Software status, program interfaces and the proposal evaluation board were discussed. The point was made that contractor proposals run out on July 15, and that further slip would endanger the MOL software package.

General Stewart raised the question of commonality between the MOL and G-3 programs with respect to target selection. He pointed out that we must be prepared to answer the question "Do we need to have two sets of software or will the software which is capable of doing the more difficult job, do both, or is there some efficient or economical mix of both?"

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General Stewart will discuss this subject with Dr. Flax during the week of July 10 so as to permit a release on software contractor selection. (Program Office Action)

Aircraft Simulation

This agenda item was in response to Dr. Flax's January request that a study be made to determine if limited use could be made of aircraft to obtain quantitative validation of ground photographic simulations. The study concluded that the use of aircraft was not desirable, however other recommendations for the possible use of aircraft were offered.

The active indicator concept requires crew training using ground based facilities and realistic stimulus. This stimulus may well be provided by the use of aircraft.

Limitations in general simulation fidelity suggest that the use of aircraft can provide variation in haze with look angle, three dimensional targets, motion at target, photographic cues vs real scenes, cloud coverage predictions when looking forward, color.

The overall program concept for use of aircraft simulation is being further defined.

Alternate Recovery

This briefing described the considerations and basis for recommending the Wake/Midway rather than Hawaii as the Western fence. The Systems Office favors Wake/Midway on the basis of better weather on a yearly basis, lighter sea and air traffic and the design loiter capability of the Gemini B which is sufficient for both recovery areas, but less constraining at Wake/Midway.

No firm decision was made as to "fixing" the selection since there is a great deal of time remaining before such a decision must be made.

Mission Enhancement

This briefing describes the areas that were being studied [REDACTED]
[REDACTED] Planetary photography.

Executive Session

A review of the Systems Office implementing actions in response to the MOL management directive was given. It was agreed that SAFSP and the MOL Systems Office should attempt to handle manpower space adjustments locally.

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General Stewart indicated that a new 65-1 management directive was being drafted and the Systems Office would have an opportunity to review it before publication. General Stewart also agreed to investigate:

1. The need and/or desirability of a new systems number (other than 632A) for MOL.
2. The adequacy of the current AFSC Operations Order with regard to MOL.
3. The adequacy and propriety of the DDMS Charter.

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