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8 June 1969

MOL PROGRAM BACKGROUND

The concept of a military Manned Orbiting Laboratory - spacecraft consisting of a Gemini, pressurized laboratory, and unpressurized experiments compartment; to be launched via a Titan III booster -- was announced by the Secretary of Defense in December 1963. At that time many military-oriented as well as scientific experiments were under consideration. Studies of various possible program objectives and spacecraft configurations were conducted over the ensuing eighteen months and during this period, the current objectives of MOL were evolved. Starting in January 1965, attention was focused on MOL as it is fundamentally known today. (1)

In August 1965, with the concurrence of the Vice President, the Secretary of State, the Administrator of NASA, the Director of the Bureau of the Budget, the Special Assistant to the President for Science and Technology, and other appropriate Government officials, (2) the Secretary of Defense recommended to the President that the MOL Program be approved. On August 25, 1965, the President publicly announced approval of the MOL Program stating that

Footnotes:

(1), (2) - See Classified Atch.

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the purpose was to: 1. acquire new knowledge of what man is able to do in space; 2. relate that ability to the defense of America; 3. develop new technology and equipment for manned and unmanned space flight; and 4. perform new and rewarding experiments with that technology and equipment.

This statement was a generalization of the MOL objectives in layman terms.⁽³⁾ To accomplish these objectives, a six flight program was approved consisting of one unmanned qualification flight, one manned qualification flight, and four fully-equipped manned flights.⁽⁴⁾ The rough, in-house cost estimate of such a program was \$1.5 billion.

During the twelve months subsequent to program approval by the President, MOL activities focused on detailed program definition, the selection of major subcontractors, and contract negotiations. In the Spring/Summer of 1966, the technical scope of the program was broadened to provide greater flexibility in accomplishing the MOL mission. As a result, the flight schedule was increased to seven launches that included two unmanned vehicle qualification flights, a manned experimental prototype flight, and four fully-equipped development flights.⁽⁵⁾ The first manned flight was scheduled for late calendar year 1969 at this time.

Footnotes:

(3), (4), (5) - See Classified Atch.

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Phase II (Engineering Development of the total system) began in September 1966 toward a seven flight program, with a reasonably-refined total program cost estimate of approximately \$1.98 billion. Unfortunately, contractor negotiations were still underway at the time the FY 68 Budget Estimate was being compiled and the FY 68 dollar needs were not well defined and could not be adequately justified. The Air Force submitted a requirement to OSD for \$510 million; this was subsequently reduced first to \$480 million, and then to \$430 million in the DoD FY 1968 Budget Estimate submitted to Congress.

By the Spring of CY 1967, it was obvious that maintaining a development pace toward a December 1969 first manned launch might require as much as \$150 million more than the \$430 million then being considered by the Congress. To reduce FY 68 funding needs, a decision was made to incorporate a more advanced experiment in the first manned spacecraft and to proceed at a somewhat more deliberate development pace.⁽⁶⁾ The first manned launch was therefore rescheduled to December 1970, and FY 68 MOL development activity began with the Air Force planning to provide MOL up to \$480 million in FY 1968.

Footnote:

(6) - See Classified Atch.

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By the Fall of CY 1967, it was quite clear that: 1. the program was expending funds at an annual rate above \$480 million NOA; 2. the Air Force could not reprogram any additional money into MOL beyond the \$430 million appropriated by Congress; and 3. certain critical developments were going to take even longer than anticipated.⁽⁷⁾ Meanwhile, estimated FY 69 fund requirements for MOL had increased to \$680 million at one point but, by September 1967, were reflected in the Five Year Defense Plan (FYDP) at \$640 million for FY 69.

In December 1967, both because of the FY 68 fund shortage and the longer-than-planned development phase, the first manned launch was rescheduled to August 1971. Following a Secretary of Defense level review of program and funding alternatives, \$600 million was included for MOL in the FY 69 Budget Estimate submitted to Congress; and a like amount was reflected in the FYDP for FY 70.

MOL development activity proceeded along in the last half of FY 68 toward an August 1971 first manned launch, with work and expenditures predicated on \$600 million NOA in FY 69. Late in FY 68, because of the impending Congressional \$6 billion

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reduction in Federal FY 69 expenditures, it was apparent that DoD could not fund MOL at the \$600 million level. In June, USAF/OSD decided to reduce MOL FY 69 NOA to \$515 million, and the first manned flight was rescheduled to December 1971. \$600 million NOA for FY 70 was planned at that time.

In the preparation of the FY 70 Budget Estimate in December 1968, the NOA level for MOL was reduced to \$576 million from the previously planned \$600 million. At the same time, it was obvious to MOL management that at least \$635-640 million would be needed in FY 70 (contractor estimates were considerably higher) to continue the on-going development pace toward a December 1971 first manned launch. It was understood in the Air Force and OSD that \$576 million NOA in FY 70 would result in some additional development stretchout and another increase in total program cost.

With the impending change in Administration, it was assumed that a reappraisal of MOL was in the offing; therefore, because of uncertainty of the level at which MOL might be supported and because of the sizable effort and cost involved in a major re-scheduling exercise, action was not initiated immediately to replan the MOL Program on the basis of \$576 million NOA in FY 70. Development activity continued toward a December 1971 first manned launch

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with the understanding that required rescheduling would be accomplished before the end of FY 69.

In early March 1969, the flight schedule was reduced to six launches,⁽⁸⁾ and the FY 1970 fund requirement was reduced from \$576 million to \$556 million to reflect this reduction in program scope. Near the end of March 1969, the FY 1970 fund request was further reduced to \$525 million. When the program was adjusted to accommodate the FY 1970 funding level, the first manned launch had to be delayed again to approximately mid-CY 1972, and the total program cost since the start of engineering development was tentatively estimated at approximately \$2.925 billion.

This decision was followed by a series of replanning meetings between the MOL Project Office and the Associate Contractors. During these meetings, program future years fund requirements and total costs were further refined and indicated that FY 1971 and FY 1972 fund requirements would be about \$600 million and \$515 million, respectively, with a total program cost of approximately \$3.1 billion.

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In summary, the MOL Program was underfunded by more than \$100 million in Fiscal Years 1968 and 1969, and would have been underfunded about that much in FY 1970.

Since the start of engineering development in September 1966, the estimated total cost had increased from about two to three billion dollars and the development phase had been extended almost 2½ years; at least half of the stretchout and cost increase was attributable solely to underfunding.

Two Atchs:

1. Manned Orbiting Laboratory (MOL)
System Description
2. Classified Footnotes

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MANNED ORBITING LABORATORY (MOL) SYSTEM DESCRIPTION

The major elements of the 30,000 pound MOL Spacecraft consisted of the Gemini B ascent re-entry vehicle, a Laboratory Module consisting of both a pressurized compartment and an unpressurized service section housing oxygen, helium, hydrogen, fuel cells, attitude control and auxiliary propulsion systems; and an unpressurized Mission Module to house experimental equipment.

The Gemini B, Laboratory Module, and Mission Module were to be launched as an integral unit by a Titan IIIM booster into an 80 x 186 nm elliptical orbit. Sufficient expendables were to be carried for at least 30 days of on-orbit "shirt-sleeve" operations by the two-man MOL crews.

The Titan IIIM would have been a modified version of the standard Titan IIIC booster. The number of segments in each 120-inch diameter strap-on solid rocket motor were being increased from five to seven; the Transtage would have been removed for increased low altitude performance, and higher expansion ratio nozzles were planned for the first stage of the core for better performance.

A single pad facility, the SLC-6 at Vandenberg AFB, to permit safe launches into polar orbits, is partially completed.

On-orbit command and control was to be exercised through existing facilities of the Air Force Satellite Control Facility (SCF). Only minor modifications would have been necessary to accommodate MOL -- primarily, increased computer capacity; and the addition of voice communications. Gemini recovery in the Pacific or Atlantic would have been accomplished by a portion of the DoD air and sea forces also used for the Apollo Program.

Fourteen Air Force, Navy, and Marine graduates of the Air Force Aerospace Research Pilot School were engaged in a preliminary MOL flight crew training program and were participating as project officers on various components and subsystems in the engineering development phase. The basic training was similar to that accorded NASA astronauts, plus specialized training in the equipment installed in the MOL spacecraft.

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FOOTNOTES

- (1) Refers to the very high resolution photographic reconnaissance mission.
- (2) Director, CIA.
- (3) Specific objectives being [REDACTED] resolution photography of significant targets; development of the necessary camera technology and systems for manned or unmanned use; to determine the extent of man's utility in space for military purposes; and to provide a space facility for possible other military applications.
- (4) Cameras.
- (5) Two unmanned qualification flights; one manned flight with a qualification test model of the camera aboard (would not have provided [REDACTED] resolution); two all-up manned flights with production cameras; and two all-up unmanned flights with production cameras. The unmanned flights were strongly supported by Dr. Hornig and Dr. Land's PSAC Panel.
- (6) A "production" camera in the first-manned flight to achieve [REDACTED] resolution at the outset.
- (7) Camera system.
- (8) Actually, the two flights of the unmanned version of MOL were deferred and a fourth manned launch was added to the program.

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