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27 AUG 1968

MEMORANDUM FOR MR. PALLEY

SUBJECT: MOL Development Costs

Reference is made to my conversation with you and Mr. Barfield on the subject of funding certain selected elements of the MOL system out of the Missile Procurement Appropriations.

I would very much appreciate your review of the attached drafts and any comments which you might have on this proposal.

*101*  
RALPH J. FORD  
Colonel, USAF  
Chief, Program and Policies  
Div, SAFSL

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MEMORANDUM FOR MR. NITZE

SUBJECT: MOL Development Costs

The purpose of this memorandum is to recommend that MOL development costs be separated into two categories, namely, RDT&E and Missile Procurement.

There are two reasons for this recommendation, first, the rising MOL budget, by fiscal year, is now consuming almost 1/5 (17%) of the Air Force RDT&E budget and will continue to do so for the next several years if a follow-on operational program is initiated. For the long term, we believe this may limit the approval of some other very important and desirable Air Force R&D programs. Second, Gemini B and Titan IIIM are not, by definition, RDT&E but are in fact military procurements. Gemini has flown 12 times on the NASA program and will be qualified after the first MOL flight; Titan III has a long and successful flight history and will be man rated after the first two flights.

It seems to me therefore, that no later than FY 1970, when production of tooling, AGE, and flight vehicle support start, we identify Gemini B, T-IIIM, launch and on-orbit support services, MOL pressure suits and miscellaneous other costs for funding under the Missile Procurement Appropriation.

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This will partially relieve the funding pressures on MOL and the RDT&E appropriation, yet remain consistent with precedent and previous interpretation of financial directives. I have attached a paper which describes my proposal in detail to include the problem, possible solution, precedent for the action, and possible benefits.

This proposal has been informally discussed with Dr. Foster's people and they concur.

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DRAFT

MOL DEVELOPMENT COSTS

PROBLEM:

The increasing maturity of the MOL program has required a steadily increasing yearly budget until it is now the largest single item in the RDT&E appropriations. During the same interval the total RDT&E appropriation has remained relatively constant and it is reasonable to anticipate that this situation will continue. The growth of MOL fund requirements along with other increased demands on the RDT&E appropriation from other quarters produces a two-fold problem. First, there is increasing difficulty in meeting MOL fund requirements (in FY 68 and FY 69 MOL has been funded \$80 million and \$85 million below requirements.) These reductions in MOL fund requirements have resulted in significant schedule slips and program adjustments. The second and related problem is that each yearly increase in the MOL funding has to be provided from a relatively fixed RDT&E appropriation at the expense of other desirous and pressing R&D programs. The approved MOL Program is presently structured so that FY-70 is a peak funding year with requirements tapering off slightly in FY 71 and decreasing thereafter. Under the present arrangement the approved MOL Program will

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continue to require significant RDT&E funds over the next several years. Should a follow-on MOL Program be approved the demands on the RDT&E appropriation will continue to be very high for an indefinite period unless an acceptable alternative funding concept is applied.

DISCUSSION:

The financial pressures caused by the MOL Program in the RDT&E appropriation can be partially alleviated if the costs of selected "standard" segments of the MOL Program can be assigned to the missile procurement appropriation, and the concept adopted that as other segments of the program mature they also be assigned to the appropriation. Assignment of certain elements of the program to the procurement appropriation is consistent with the transfer of the MOL Program in December 1967 from Program Structure Code 6 to Program Structure Code 3 and its designation as an operational system development. The rationale for this transfer is enclosed as Attachment A. It appears both timely and logical to initiate this transfer to the procurement appropriation with the FY 1970 budget. The elements of the MOL system proposed for transfer to the Missile Procurement Appropriation include the following items: the Gemini B spacecraft; the Titan IIIM

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booster; associated Gemini B/Titan III AGE; launch support services, on-orbit operations services; production versions of the astronauts space suits; astronaut food; and related miscellaneous items.

The Gemini B and Titan IIIM are obvious choices for the procurement appropriations. The Gemini was qualified and flown successfully 12 times in the NASA Program. The changes incorporated into the vehicle for use in the MOL Program were relatively minor except for two major items. One of these changes was cutting a hatch in the heat shield so that the MOL astronauts can egress and ingress the Gemini to and from the laboratory vehicle. In September 1966 this change was successfully tested and qualified on a heat shield sub-orbital flight which duplicated actual reentry conditions. The second change was that modification made to the Gemini vehicle to allow it to remain in a quiescent condition for 30 days in-orbit during the mission and then to successfully return the astronauts to earth. The qualification of this change to the Gemini will be accomplished by ground tests. The first flight of the Gemini B will take place on the second unmanned qualification launch of the MOL system. However, the principal test objective of this flight is to test the structural integrity

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of the complete MOL prior to the first manned flight. As the flight is sub-orbital, only certain functions of the Gemini B will be verified and it is not intended to requalify the Gemini B for space use.

Similarly the Titan III has had a long and successful flight history in its various versions and the Titan IIIM will be qualified as a man rated booster after the first two MOL qualification launches. The T-IIIM booster core is essentially the same core that has been used for a variety of unmanned space programs, except for certain minor structural changes and added safety of flight items. The seven segment solid rocket motors are considered to be only extensions and experiments and technology from the T-IIIC and T-IIID experiments. The improved liquid rocket engine, which increases the engine nozzle ratio to 15 to 1 will have been flown repeatedly on other programs before the first flight of MOL. Therefore, it seems reasonable and justifiable to conclude that these segments of the MOL Program can be considered to be operational elements of the system.

A similar rationale can be applied to the astronauts space suits in that the production version of the space suits will represent the evolutionary development of the X-15 suit

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to the Mercury Suit, to the Gemini Suit, to the Apollo Suit and finally the suit modified for MOL application. In each of these steps advances in technology and improvements in performance have been incorporated. We intend that, once the design of the MOL suit has been frozen, it will become standard for MOL missions.

In the case of the costs of launch support services and on-orbit operations services as well as the foregoing items, a precedent can be cited for the assignment of these costs to the procurement appropriations in the same fashion that like items of NRO programs are presently being funded from this appropriation (NRO items include boosters, spacecraft hardware, payload hardware, launch support services, etc). Additional supporting authority can be found in DODI 7220.5 which permits the Navy to fund a ship of conventional design in a procurement appropriation and assigns the cost of modifications required for R&D mission to the RDT&E appropriations. Conceptually, this is what is being suggested for the Gemini B, the Titan IIIM and the related AGE. It is also consistent with one of the principal elements of the rationale for the movement of MOL from Package 6 to Package 3 in which the MOL vehicle is described as constituting an operational test bed to develop

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and test advanced experimental military hardware for both manned and unmanned space operations.

The transfer of selected MOL hardware and services funding requirements into the Procurement Appropriation can be accomplished in one of two ways. The simplest method would be to transfer the funding requirements for those items designated as "operational" into the procurement accounts with the FY-1970 budget. The second approach would be to segregate the costs of those specific items on a scheduled acquisition basis and make the transfer based on the segregated dollar amount. In the first instance, the rationale would be that the non-recurring costs associated with these hardware items have been paid and the costs subsequent to FY 69 are for either recurring costs or services pertinent to launch support and on-orbit operations. In the second case, the costs segregation approach sounds more precise, but it is considerably more difficult and would probably add to the overall program costs. This is because the present contracts have all been written on a total program cost basis. The effort involved in working out the details of cost segregation, materials purchase, and the detailed scheduling of production items would undoubtedly result in additional charges for accounting services and result in unproductive

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management complexity. It would, therefore, seem to be to the advantage of the Government to pick a specific point in time such as the beginning of the fiscal year to make the transfer.

Through FY 69 cumulative Phase II RDT&E funding for the Titan IIIM will total approximately \$168 million and \$119 million will have been funded for the Gemini B. Since we anticipate the Titan IIIM effort will total approximately \$445 million and the Gemini B effort will total approximately \$300 million, it will mean assigning \$458 million to the Missile Procurement Appropriation commencing with FY 70. These vehicle costs added to the funding requirements associated with launch support, on-orbit operations and other miscellaneous costs, spread over four fiscal years, will transfer in excess of \$100 million per year beginning with FY 70 from RDT&E to the procurement appropriation. This amount will be larger if a MOL follow-on program is approved.

A separate and related action required if this concept is approved, will be the granting of a waiver to the full program funding rule normally used in the Procurement Appropriations. The transfer of MOL items out of the RDT&E appropriation will relieve demands on that appropriation by about \$100 million per year on an incremental funding basis.

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However, the increase in the Missile Procurement Appropriation on the basis of full program funding would be several hundred million dollars the first year. Therefore, this proposal would be unattractive from an overall DOD budget standpoint without a waiver for MOL to incrementally fund from the Missile Procurement Appropriation to avoid a large initial impact. The waiver may only be necessary for FY 1970 and an attempt could be made to establish full funding in the Missile Procurement Appropriation in FY 1971.

One other item which must be considered is the security aspect of placing some of the MOL fund requirements into the Missile Procurement Appropriation. A transfer to the Procurement Appropriation would mean removal of 20%-25% of the funds for each fiscal year from the current MOL Program Element and establishing a "MOL Vehicle Systems" program element in the Procurement Appropriation. The funds for covert contracts represent approximately 30% of the present fund requirements. After the transfer recommended, the funds for covert contracts would represent 37%-40% of the amount remaining in the RDT&E appropriation. It appears the amount of funds remaining is adequate to shield the covert effort and the threat of exposure is not appreciably greater than at present.

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SUMMARY:

In summary, we are proposing a funding technique which could partially relieve the funding pressures on MOL and the RDT&E appropriation yet remain consistent with precedent and previous interpretation of financial directives. The principal advantages of this proposal may be summarized as follows:

1. Significant amounts of MOL fund requirements will be removed from the RDT&E category, thus freeing funds for other essential and desirable pure RDT&E tasks.
2. MOL Program costs will be more correctly categorized.
3. Pressures on MOL budget requests may be decreased.
4. Further schedule slips may be minimized if RDT&E funding cuts are lessened.

Disadvantages may be summarized as follows:

1. NRO involvement, the covert mission of MOL, and the other highly sensitive security facts surrounding the program will have to be extended to those key personnel who are responsible for the Missile Procurement budget.
2. Component funding flexibility is reduced as funding is distributed among more appropriations.

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RECOMMENDATIONS:

Recommend that you:

o approve the transfer of budgeting and funding for the MOL program items, identified above, from the RDT&E to the Procurement Appropriation.

o grant authority to incrementally fund in the Missile Procurement Appropriation for these items, at least for FY 1970.

Contingent upon your approval, a detailed plan will be prepared for your review prior to its implementation.

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29 January 1968

RATIONALE

MOL FROM PACKAGE 6 TO PACKAGE 3

The DoD Program Structure Code assigned to the Manned Orbiting Laboratory (MOL) Project has been changed to reflect its potential and significance in the Department of Defense. In the early phases of the project, MOL was assigned to the Advanced Development portion of Program Structure Code 6 (Research and Development). As of July 1, 1968, the MOL will be transferred to the Other Activities portion of Program Structure Code 3 (Intelligence and Communications). Package 3 includes not only intelligence, security, and communications items, but also command and control systems, and specialized missions such as weather service, aerospace rescue and recovery, air traffic control, satellite control, the Titan III, oceanography, and various other activities. Program Structure Code 3 consists of missions and activities directly related to the Strategic and General Purpose Forces on which independent decisions can be made; and it includes resources for primarily national or centrally-directed DoD objectives. The MOL meets those criteria.

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The principal objective of the MOL Program is to obtain [REDACTED] resolution photography of significant targets in denied areas for technical, strategic, and tactical intelligence purposes in response to national needs. This objective will be reached through the development of the necessary high resolution optical technology and space vehicles for either manned or unmanned use.

One of the attractive features of space system developments, as contrasted with many air, sea, and ground R&D efforts, is the achievement of useful operational functions on a first flight -- barring early payload failure.

Some examples are the VELA nuclear detonation detection satellites, the Initial Defense Communications Satellite Program (IDCSP) and the various unmanned photographic and SIGINT reconnaissance satellites of the NRO. While this latter group of spacecraft/payload combinations have characteristically shown marked improvement with time, they have consistently provided an important and highly useful intelligence collection source from the very beginning.

The manned version of the MOL system is being developed and will be flown first because this gives the highest

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assurance of meeting the resolution goal at the earliest reasonable date; will insure a useful reconnaissance product at the outset; and will contribute to the maturing of the unmanned system at a much earlier date than probably otherwise would occur. An unmanned version of the MOL is also being developed to insure a national capability to acquire very high resolution photography in denied areas should international objections, foreign threats, or some now unknown man-in-space physiological limitation preclude extended manned operations.

The MOL system is being developed as an operational reconnaissance system. Most of the components are standard items or modifications thereof (for example: the Gemini, Titan-III, space suits; environmental control system; fuel cells, etc.). Only the camera system and related systems which serve pointing functions constitute state of the art advances. A limited production base capability is necessary to support the presently-approved 7-launch program. The MOL will be operated from the outset in response to target coverage requirements of the United States Intelligence Board in conjunction with unmanned National Reconnaissance Program satellites.

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From the above, it is quite clear that the MOL  
program is properly located in Program Structure Code 3.  
It has been placed in the Other Activities sub-category  
rather than the Intelligence portion to avoid direct and  
open confirmation by the Defense Department that MOL is in  
fact an intelligence collection system.

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