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FEB 18 1967

MEMORANDUM FOR DR. FLAX

SUBJECT: MOL Priorities

The following is in response to your request for additional back-up data for the MOL Brick-bat .01/DX priorities nomination.

MOL CONTRACTS

MOL Engineering Development Phase contracts with Douglas, McDonnell, and General Electric were negotiated on the basis of DX industrial priority. In the existing circumstances, the Government cannot execute these contracts as negotiated. In order to avoid any further delay in definitizing the program, the contractual instruments now being processed will be amended to include the following special clause:

"It is understood that the terms and conditions of this contract have been negotiated on the basis that a DX rating A-2 certified under DMS regulation No. 1 would be assigned to this program. In the event such rating is not so assigned by March 15, 1967 and the terms and conditions are adversely affected by the lack of such rating, the contractor shall be entitled to an equitable adjustment pursuant to the 'changes' article."

It is clear that the terms and conditions of the contracts will be adversely affected by lack of the DX rating, and that the contractors will insist upon an appropriate adjustment. It should be understood that the negotiation of an "equitable adjustment" in the present circumstances will be difficult and tedious, and may well void a substantial part of the Contract Definition Phase effort that has recently been completed. I believe that we must recognize that, without DX rating authority, we may not be able to hold the line with Douglas and McDonnell on fixed-price incentive contracts, and that we may be forced into a cost-reimbursable type of contracting across the board.

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DOWNGRADED AT 3 YEAR INTERVALS;  
DECLASSIFIED AFTER 12 YEARS.,  
DOD DIR. 5200.10

### MOL LAUNCH FACILITIES

Appended as Tab A is a recent letter from the SSD Director of Civil Engineering which reiterates his previously-expressed concern that the priority presently assigned to MOL will not assure on-schedule completion of the MOL launch complex. The construction agency, the Los Angeles District Corps of Engineers, cites steel, copper, porcelain and plywood as major critical procurement items, the lead times for which jeopardize present project schedules. In the case of copper and porcelain, normal DO-rated procurement lead time approaches 24 months; the facility is scheduled to be complete in 17 months. The civil engineers urgently recommend that DX priority be made available for MOL construction.

### MOL SUBCONTRACTORS AND VENDORS

MOL contractors have been queried concerning the impact of a change from DX to DO priority as a basis for procurement of subsystems and components. The response received from McDonnell seems particularly significant, in that Gemini B hardware and suppliers are clearly defined, and MAC has had previous experience with most of the suppliers through the NASA Gemini program. A summary of the MAC study follows:

#### Impact of Change from DX to DO

<u>Vendor</u>	<u>Item</u>	<u>Schedule</u>	<u>Price</u>
Rocketdyne	Reentry Control System	/8 months	Substantial impact; figure not quoted
Airesearch	Environmental Control System	/16 weeks	/ \$200,000.00
Honeywell	Attitude Control System	/5 months	Substantial impact; figure not quoted
Central Technology	Pyrotechnic Devices	/2 months	Not quoted

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<u>Vendor</u>	<u>Item</u>	<u>Schedule</u>	<u>Price</u>
Engineering Magnetics	Power Supplies	78 months	/\$60,000.00
IBM	Spacecraft Computer	76 months	/\$245,000.00
Electromech Research	Data Transmission System	712 weeks	/\$190,000.00
Honeywell	Inertial Measuring Unit	73 months	/\$300,000.00
Lear Siegler	Displays and Indicators	Unable to quote	Unable to quote
Electrofilm	RCS Heaters	78 weeks	Not quoted
De Havilland	H.F. Antenna	No Effect	No Effect
Collins	Communications Equipment	74 weeks	Not quoted
Motorola	C-Band Transponder	75 weeks	Not quoted

McDonnell emphasizes that any cost and schedule impact on Gemini B hardware deliveries resulting from a change from DX to DO procurement will be compounded in that: (1) Major and costly revision to detailed MAC planning and schedules developed during Contract Definition will be necessary; and (2) The interrelationships between MAC schedules and those of other MOL associates will be seriously affected.

MOL CONTRACTS, GENERAL

The essence of the MOL priorities problem is the matter of procurement lead times for materials and vendor parts. Our experience is that lead times for DO-rated procurement of these critical items are, in large part, either: (1) Uncertain to a degree inconsistent with detailed program planning, or (2) so long as to be incompatible with known program need dates.

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Attached as Tab B is a recent Douglas report which illustrates the nature and scope of the problem and, incidentally, demonstrates the depth to which the MOL Program has been scheduled.

Douglas identifies in this report over 2,000 critical procurement items for which need dates have been established. These items are, for the most part, such simple but necessary things as valves, cables, solenoids, connectors, meters, etc. Of these 2,000 items, over 700 now show negative slack in automated schedule printouts; those items for which no slack entry is shown (in column 73-75) are so shown either because drawing release dates have not been scheduled, or because procurement lead time (column 53-54) is uncertain, or both.

The significance of this report, in my judgment, lies in the large number of individual rescheduling and special procurement actions which must be successfully accomplished in order to eliminate negative slack. Some of these problems can be resolved, and have been resolved, by contractor work-arounds, substitution of parts and materials, earlier engineering releases, etc. The special assistance provisions of the Defense Materials System will be useful in resolving other individual shortage problems. However, the basic problem throughout the MOL Program is so broad in scope, and the individual lead-time problems so numerous, that without DX industrial priority, contractor work-arounds and/or special assistance actions under the Defense Materials System do not offer any real hope for relief. It seems clear that assignment of DX rating to at least a portion of MOL procurements is essential if the program is to proceed along an orderly and predictable course.

#### DOLLAR-LIMITED DX RATING AUTHORITY

At your suggestion, we have explored the feasibility of conducting the program with limited DX rating authority, where DX industrial priority would be applied only to a relatively small fraction of total program dollars. I believe that this approach offers a satisfactory solution to most of the priorities problems that have been identified to date. There are no statutory or mechanical obstacles to proceeding along this line, nor are the methods used to police compliance with DX dollar restrictions likely to cause any serious complications.

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Inasmuch as the MOL priorities problem is basically a problem in assuring timely delivery of raw materials and purchased parts, we have asked the major associate contractors to provide estimates of the dollar value of this part of their individual programs. Specifically, these estimates include prime contractor raw materials; major subcontractor raw materials through second-tier subcontractors where identifiable; and purchased parts, instruments, special equipment and components. The results of this survey are tabulated below:

Materials and Purchased Parts (\$Millions)

	<u>FY 67</u>	<u>FY 68</u>	<u>FY 69</u>
Douglas	17.7	48.3	8.2
General Electric	5.0	15.0	10.0
McDonnell	9.3	7.4	0.8
Titan III	25.2	32.2	35.8
Mil Construction	9.9	6.2	0.0
Total	<u>67.1</u>	<u>110.1</u>	<u>54.8</u>

Authority to issue DX-rated procurements in the above amounts would materially improve the confidence with which the MOL Program can be planned and scheduled.

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

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a/s

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SCC - Read File

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DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS SPACE SYSTEMS DIVISION (AFSC)  
AF UNIT POST OFFICE, LOS ANGELES, CALIFORNIA 90045



REPLY TO  
ATTN OF: SSN

8 FEB 1967

SUBJECT: Priority Rating for Titan IIM Launch Complex Construction, Vandenberg  
AFB

TO: SAFSL-8 (Col Dietrich)

1. The award of our twenty million dollar construction contract on 25 January 1967 for the Titan IIM Launch Complex at Vandenberg AFB presents a problem in the procurement of materials with the present construction schedule and to meet a July 1968 completion date, with intermediate beneficial occupancy dates (BODs) for major elements of the project. This 17 months' construction time is extremely tight; and its attainment will require the maximum possible assistance of all concerned to assure that construction progress is not impeded. This headquarters and the Los Angeles District Engineer organization are well aware of the importance of meeting this construction schedule; and will strive to assure that the work is accomplished on-time, compatible with MOL program objectives.

2. The best efforts of SSD management and those of the Corps of Engineers and the construction contractor may, however, be thwarted by conditions beyond our control. We are highly concerned about the impact on construction progress of actual materials shortages caused by the SEA activities and other factors, when we examine the contractor's inability to obtain critical construction materials with the priority rating now assigned to this program. These are some examples of materials shortages which we believe may very likely delay construction progress without high priority rating assistance:

a. Steel. The Titan IIM Launch Complex project contains a gross amount of 10,000 tons of steel, both structural shapes and concrete reinforcement, which will be extremely critical to meeting scheduled BODs for such items as the launch pad, the umbilical tower, the mobile service tower, the launch control center, and the solid rocket motor buildings. Some of the steel in the mobile service tower is not normally or regularly rolled such as our jumbo beams @ 730# and 14' W.; heavy plates and exceptionally heavy overhead cranes. Recent developments in the steel industry are causing a serious backlog of steel orders, both in the mills and the fabricating shops, and unless we are in a position to

obtain these shapes when they are rolled serious consequences can develop. Our construction agency, the Los Angeles District Corps of Engineers, advises us that, with no more than the now existing DO priority assigned to this project, a high probability exists of delays in steel deliveries with resultant delays in meeting scheduled BODs and completion date for the Titan IIM Launch Complex construction.

b. Copper. The supply of copper wire for motor windings, transformers and electrical installations is rapidly becoming extremely critical. It would appear very likely that real property equipment for the Titan IIM Launch Complex could become, without high priority assistance, extremely long lead time items, possibly 24 months.

c. Porcelain (Power Line Insulators). The most recent items to appear on the critical list and included in the Titan IIM design is declared as an extremely long lead time item at 24 months to procure.

d. Plywood. A recent study has come to our attention that total available west coast supplies of plywood have been earmarked for construction activities in SEA. Since plywood is an essential element in concrete forming, a lack of capability to acquire this critical material could impact most unfavorably on early construction progress for the ILC, particularly in the placement of foundations for the launch pad and other major structures. This would delay construction operations all along the line; and high priority assistance is needed to assure availability of this material when needed.

3. The above information emphasizes our concern that the priority rating presently assigned to the MOL Program will not assure timely delivery of critical materials on schedules compatible with the very tight construction schedule for the Titan IIM Launch Complex, despite the best efforts of our construction agency and the construction contractor to obtain them. We have discussed this matter recently with the Corps of Engineers and they have given us their considered opinion that any priority rating short of a DX rating will, in all probability, jeopardize capability to meet presently scheduled BODs and project completion date for this launch complex.

4. Accordingly, we most urgently recommend that every possible effort be made to obtain a DX or better priority rating for the MOL Program and its related construction.

**SIGNED**

ROBERT J. ALEXANDER,  
Acting Director  
2Directorate of Civil Engineering

Cy to: AFWTR (WTF)  
Distr Engr, Los Angeles  
SAFSL-7 (Col Morgan)

*Cytl. Gen Evans*  
*OLS*

MSF	1	Coordination
AFRDS	2	Coordination
SAFRD	3	Coordination
SCGC	4	Process
SCG	5	Signature

13 February 1967

MSFE

Lt Col Fry/hcb 5629

**Approval Procedures for DOD Experiment Proposals for Manned Space Flight**

**PROBLEM:**

A formal procedure is needed to collect, select and approve experiment proposals for manned space flight.

**DISCUSSION:**

DOD experiments flown on Gemini and those DOD experiments proposed for NASA's Orbital Workshop evolved from ad hoc committees and were approved in a one-time process. We need a procedure that is continuous, provides equal opportunities for all DOD R&D activities to fly worthy experiments, and if possible, can be incorporated into an existing management procedure. The existing procedure for the DOD Space Experiments Support Program (SESP) managed by AFSC and DOD Aerospace Research Support Program (ARSP) managed by OAR for collecting proposed space experiments is adaptable to manned space flight experiments. The attached letter recommends the use of these ARSP and SESP procedures and suggests the USAF, OSAF, OSD and MSFEB experiment flow.

**RECOMMENDATION:**

Recommend that the attached letter be signed by you in your capacity of AF Member on the MSFEB and sent to your MSFEB associate, OSD Member, Mr. Daniel J. Fink.

**SIGNED**

**HARRY L. EVANS**  
Major General, USAF  
Vice Director MOL Program

1 Atch  
Proposed ltr to Mr. Fink, OSD  
Member, MSFEB.

cc: SAFSL, Maj General Evans

69-A



1 0 FEB 1967

Mr. Daniel J. Fink, OSD Member  
Manned Space Flight Experiments Board  
OSD (DDR&E)  
Wash DC 20330

Dear Dan

With the evolution of the national manned space flight program from the Mercury and Gemini programs to the concurrent programs of Apollo, MOL and Apollo Applications, we need a formalized procedure for collecting, selecting and approving the proposals for manned space flight experiments. Previously, we had an informal operation in which experiments were collected and selected by ad hoc committees and approved on a one-time basis. The procedure should be continuous and expeditious, provide equal opportunities for all DOD R&D activities to fly worthy experiments, and if possible, should be incorporated into an existing management procedure.

The existing procedures of the DOD Space Experiments Support Program (SESP) managed by AFSC and of the DOD Aerospace Research Support Program (ARSP) managed by OAR for collecting proposed space experiments is suited, with a few minor changes, to our needs for manned experiments. The MOL Program Office will generate and implement experiment ideas of its own outside of ARSP/SESP channels.

I recommend the following procedures for use within the Pentagon for approving an experiment suitable for manned space flight:

- a. The Director of Space, DCS/R&D, Headquarters USAF would receive experiments from OAR and AFSC collected through ARSP and SESP, respectively, and would coordinate them with the Air Staff and the MOL Program Office. Those experiments that the MOL Program Office considered to be desirable for MOL would be transferred to the MOL Program Office.

b. Experiments recommended for implementation would be submitted to you through the ASAF (R&D). As agreed to in the NASA/DOD Memorandum of Agreement on the MSFEB:

(1) Experiments of a scientific, technological, or non-military operational or applications nature will be carried as a secondary objective on a space-available basis on selected DOD flight missions, and as primary or secondary objectives on NASA flight programs.

(2) Those experiments which are peculiar to or primarily associated with the development of weapon systems, military operations, or the defense of the U. S. would normally be assigned to DOD programs.

c. Experiments approved by you other than those assigned to MOL, would be prepared for MSFEB action by the DOD Secretary for MSFEB matters. The Secretary would coordinate the experiment with his NASA counterparts, request the MSFEB Executive Secretary to have the experiment placed on the agenda of a future MSFEB meeting, and arrange to have the experiment presented at the Board meeting by the experimenter or by the MSFEB AF Technical Advisor. All DOD sponsored experiments would have been reviewed by the Director of MOL and by the MSFEB AF Technical Advisor prior to submittal.

d. Upon acceptance of an experiment by the MSFEB, a letter from you to the ASAF (R&D) would initiate the action to implement the experiment either through the Director of Space or the Director of MOL.

The full procedures for handling manned space flight experiments should be included in the manual for the DOD Space Experiments and Flight Support Program now being prepared by AFSC, OAR and Headquarters USAF.

Sincerely

SIGNED

JAMES FERGUSON, General, USAF  
Commander

1 Atch  
Experiment Flow Chart

2

Lt Col Wallace J. Fry/25 Jan 67/5629/hcb

# DOD MANNED SPACE FLIGHT EXPERIMENTS APPROVAL FLOW CHART

