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24 October 1968

To: L. A. Skantze

Subject: PSPP update, Advance Plans, Section 17.

Transmitted with this memo is a draft update of the Advance Plans section of MOLP.S.P.P., as requested by Major H. Butler.

The four original charts have been altered in accordance with current guidance and cost estimates, and the text has been modified (as noted by margin marks) to reflect follow-on block designations.


C. L. Olson

Attachments:

PSPP update, Advance plans, Section 17

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17.2.1 Short and Long Term Planning Considerations

Since the advanced planning function is part of the MOL Program office, planning must concern itself with both short term and long term aspects. The fundamental objective is to evolve the MOL hardware in the most economic and effective manner. The short term factor is the consideration of how long one would continue to produce and fly the basic MOL system, with modest improvements, keeping in mind that the basic subsystems and hardware designs will be ten years old. The long term factor is the consideration of how the system can be evolved in a true growth step, providing substantial increases in mission duration and mission flexibility, yet at the same time evolving as economically as possible from the basic MOL system. A review of many options and trades between these two factors has led to the planning perspective and funding profile shown in Sections 17.3 and 17.4 which serve as the basic planning framework of the MOL follow-on systems. The remainder of the sections preceding these charts will discuss tasks and analyses related to these charts and the planning framework they reflect. The Advanced Planning Perspective Chart in section 17.3 reflects four vehicle blocks for purposes of identifying intermediate system evolution steps.

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17.2.1.1 Extension of the Baseline MOL System

The anticipated procurement of a limited number of basic MOL follow-on vehicles, shown in Sections 17.3 and 17.4 as Block II, will be considered in terms only modest improvements that can be reasonably incorporated into the system. The improvements fall into two categories: System modifications, and Mission Enhancements.

17.2.1.2. MOL Growth System

A considerable number of studies, both in-house and by contractor, have examined how a true MOL growth system could be evolved. Consistent with the objective outlined in Section 17.1.4, a reference system referred to as the "Long Duration Operations" (LDO) system has been evolved. It consists of an initial MOL vehicle containing the payload and laboratory which is lifted into orbit and remains there continuously for one year, and a resupply vehicle which is launched every 60 days to change crews and provide the necessary expendables to sustain continuous mission operations. This reference system is reflected in the prespective and profile charts of Sections 17.3 and 17.4 as Block III.

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17.2.1.2.3 Advanced Optical Payload

Preliminary feasibility studies of an advanced [REDACTED] [REDACTED] optical payload have been initiated and are being conducted in support of the MOL program as well as the unmanned satellite programs. Requirements peculiar to a manned MOL of the LDO type have been incorporated into the [REDACTED] optical system studies. Preliminary configurations of an optical payload of this size have been developed and the critical technology identified. A preliminary LDO configuration, incorporating the [REDACTED] optical payload has been developed and further studies of the LDO concept will be coordinated and updated in parallel with the [REDACTED] [REDACTED] optical systems studies. Based upon work to date, the bench mark for possible introduction of such a system is shown in Section 17.3 as Block IV.

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17.2.1.1.1 Subsystem Modification

Earth atmosphere dynamics for the 1973-1977 time period will permit reduction in orbit keeping propellant. This will allow addition of expendables for mission duration up to 45 days. Additional expendables and equipment can be adapted from the MOL development program. The extended duration capability can be attained with minor modifications to the basic MOL system design. Timely utilization of MOL Development Program experience can minimize development cost.

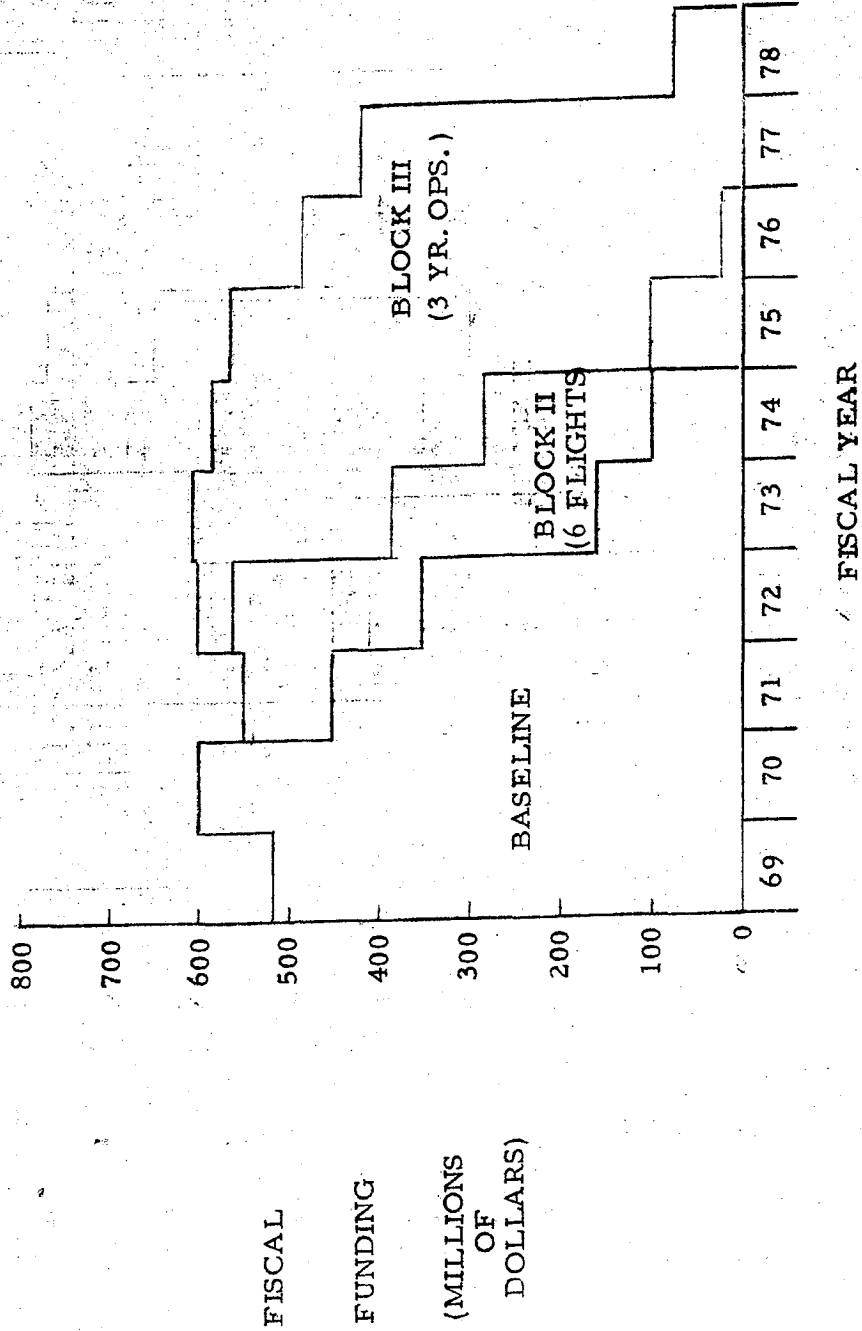
17.2.1.1.1.1 Program Benefits

Extension of MOL orbital duration capability permits an equivalent increase in product quantity per mission, with attendant improvements in mission economics. Alternatively, the added propellant required for extended duration could be used to improve mission product quality through intermittent low altitude flight, or expendables weight could be traded for mission payload improvements.

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ADVANCED PLANNING FUNDING PROFILE



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PROPOSED CONTRACTOR STUDIES

MILLIONS OF DOLLARS

FY 69

4.0

● ORBITING VEHICLE IMPROVEMENTS

✓ EXTENDED DURATION MOL (0.9)

✓ REDUNDANCY MIX OPTIMIZATION (0.4)

✓ RESUPPLY OPERATIONS (0.6)

✓ COMPACTED SYSTEMS TEST (0.3)

✓ MISSION PAYLOAD ENHANCEMENT (1.6)

✓ ON-ORBIT OPTICAL TESTING (0.2)

● ADDITIONAL SYSTEM APPLICATIONS

0.2

● ADDITIONAL DOD PAYLOADS/MISSIONS

0.5

● LAUNCH VEHICLE IMPROVEMENTS

0.3

TOTAL

5.0

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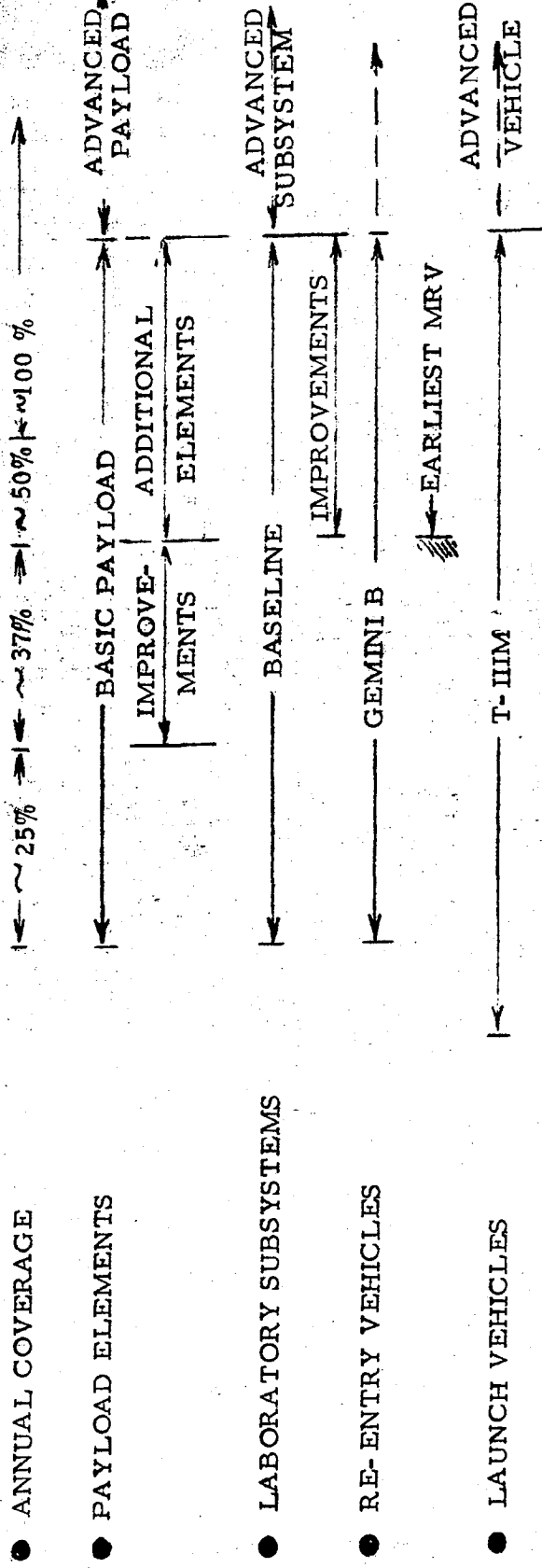
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ADVANCED PLANNING PERSPECTIVE

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
MOL DEVELOPMENT		x	x	x	x	x	x	x			
BLOCK II (EDMOL)					Δ Δ Δ Δ Δ Δ Δ						
BLOCK III (LDO/RESUPPLY)						Δ	Δ	Δ	Δ	Δ	
BLOCK IV (ADVANCED PAYLOAD)								Δ	Δ	Δ	Δ

- ANNUAL COVERAGE
- PAYLOAD ELEMENTS
- LABORATORY SUBSYSTEMS
- RE-ENTRY VEHICLES
- LAUNCH VEHICLES



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STUDIES FOR ADVANCED PLANNING BASE

(FY 1969)

I ORBITING VEHICLE IMPROVEMENTS

- INCREASED ORBITAL DURATION
- ✓ ORBITAL RESUPPLY OPERATIONS
- ✓ ADDITIONAL EXPENDABLE ARRANGEMENTS
- ✓ MAINTENANCE/REPAIR/REPLACE-
MENT/REDUNDANCY MIX
OPTIMIZATION

II ADDITIONAL SYSTEM APPLICATIONS

- EXTENDED BIO-TESTING
- EARTH SENSOR COMPLEX
- ASTRONOMY/SPACE PHYSICS
- OPERATIONS ALTERNATIVES

III ADDITIONAL DOD PAYLOADS

- REDACTED RESOLUTION OPTICAL PAYLOAD
TECHNOLOGY
- MISSION ALTERNATIVES
- PAYLOAD/LABORATORY
INTEGRATION

IV LAUNCH VEHICLE IMPROVEMENTS

- T-III LARGE DIAMETER CORE
CONFIGURATIONS
- LARGE SOLID ROCKET MOTOR
APPLICATIONS

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