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DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING
WASHINGTON 25, D. C.

DORIAN GAMBIT

7 July 1965

MEMORANDUM FOR THE EXECUTIVE SECRETARY, NATIONAL AERONAUTICS AND SPACE COUNCIL

Enclosed is a copy of a draft memorandum to the President, which will be the basis of Secretary McNamara's discussion at the Space Council Meeting of July 9. You will note the special and sensitive classification.

In order to allow full discussion, it will be necessary that those present at the meeting carry the special security clearances noted on the memorandum.

Harold Brown
HAROLD BROWN

Enclosure

cc: The Vice President
Secretary of State
Director, Bureau of the Budget
Administrator, NASA
Chairman, Atomic Energy Commission
President's Special Ass't for Sci. & Tech. (for Mr. Keeny)
Director, Central Intelligence Agency

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DRAFT

GAMBIT DORIAN

MEMORANDUM FOR THE PRESIDENT

SUBJECT: Manned Orbital Laboratory

During the budget discussions last fall, you decided to put $150 million in the DoD FY '66 budget for the proposed Manned Orbital Laboratory but asked that release of the funds be deferred until completion of studies then underway. These studies have ~~not~~ now been completed. Based on their conclusions I recommend release of the FY '66 funds and the initiation of our MOL development program which will extend over five years and cost an estimated $1.6 billion. The President's Special Assistant for Science and Technology concurs in my recommendation. The Director of the Bureau of the Budget questions it. It is the purpose of this memorandum to outline the project and our respective views concerning it.

The proposed MOL program would build and flight test a full scale prototype of a manned high resolution photographic satellite. Based on the recently completed studies, I conclude that:

a. The proposed program is technically sound in concept. That is to say, its general technical feasibility, and the general time and cost ranges, are reasonably likely of accomplishment.

b. The TITAN III C-GEMINI combination, rather than

some SATURN-APOLLO unit, appears to be by far the least expensive booster and recovery vehicle combination for use with the MOL.

c. A series of 5 semi-operational flights can be completed in the 1969-70 period.

d. This semi-operational capability is likely to provide [redacted] photographic resolution over a large fraction of its field of view (current U-2 provides [redacted] current reconnaissance satellites 3 feet, programmed unmanned satellites are expected to give [redacted] If one desires capability at [redacted] resolution, proceeding with a manned rather than an unmanned system offers much greater certainty of success. A manned system of later vintage, probably using a very much larger booster (for example, SATURN V) is the only presently conceived way to get materially better resolution, perhaps [redacted] The MOL appears to be a necessary step, if we want some day to get resolutions in the neighborhood of [redacted] resolution as as good as we will ever desire, then unmanned systems can probably provide that peak resolution capability almost as well as manned capability, at perhaps half the development cost (although at a later date), using about the same size booster.

The ability of a man to pick out a target through

broken clouds, and to photograph it if there appears to be something new about it, or to select very high resolution images (photo or electro-optical) for prompt radio relay to earth, are subsidiary values difficult to assess. It is clear that manned operation will permit nearer optimum resolution over a broader field of view by point, adjustment, and reducing smear. Each of these effects will degrade the unmanned system below the design goal at oblique angles, where the most important technical intelligence is obtained. This will tend to cut down the number of missions required in the manned case relative to the unmanned, thus reducing the extra cost of manned operation, even if nothing [redacted] resolution is desired.

e. I incline to the belief that there is a continuously increasing value to better resolution, at least down to values beyond the range under consideration here. Though it is not possible to give a quantitative estimate of the value of better resolution, and perhaps no general statement can be made, large numbers of examples can be adduced of characteristics which are much more likely to be found, or more convincingly interpreted, as resolution improves. These include, for the case of [redacted] technical intelligence matters which can have a very profound effect on our military force structure and our operational plans such as thickness of a silo wall, frequency and

feeds of an ABM or other radar, the nature of the guidance system of a ballistic missile, whether a ballistic missile is solid or liquid propelled, et cetera. I think it likely, though studies of this have been very preliminary, that frequent surveillance of such activities as operations of a nuclear plant will tell us substantially more about nature and level of plant operations if we have [redacted] than if we have [redacted] resolution. Indeed, a host of possible applications in arms control, both with respect to strategic forces and the movement of tactical forces, are likely to be more reliably monitored with satellite observation at a high resolution.

In all of these general categories, it is difficult to make a precise statement about the over-all effect of the difference between [redacted] resolution and [redacted] resolution. However, I have enough examples where higher resolution is demonstrably more valuable with respect to quite specific information, to conclude that the difference between manned and unmanned operation may well produce an important difference in capabilities. This cannot be verified for certain without demonstration.

f. It will be possible, on the basis of the MOL design, to switch to an unmanned capability part way through the development period should the conclusion be reached that the poorer resolution

and lesser capability of an unmanned system will meet our requirements. The cost of such a false start would approximate $200 million.

g. A number of other potential military uses of the MOL, such as SIGINT collection, ocean surveillance, high resolution radar, infra-red observation, et cetera, have been looked at in very much less detail. Demonstrations of some of these subsidiary spplications will be provided for in the program.

As a result of these considerations I believe the MOL will produce an improvement in military reconnaissance so great as to justify the $1.6 billion cost.

The proposed MOL program has been reviewed with the President's Special Assistant for Science and Technology and the Director of the Bureau of the Budget.

Dr. Hornig has recommended that we proceed with the program. He suggests that we proceed in parallel with development of a backup system, unmanned but fitting the same spacecraft design, with a performance goal of [redacted] resolution. This we concur in. He also recommends that careful consideration be given to the following problems:

a. The extent to which the public should be informed about MOL and the methods by which the program is introduced so

that we establish from the beginning a public view of the MOL which will give it the best chance of acceptance by the international community.

b. The contingencies that might arise if the flights are not accepted.

Mr. Schultze has serious doubts whether the value of the manned system over an alternative unmanned system is worth the very substantial increase in development costs (from .6 or .8 billion to 1.6 billion) and in operating costs (from about $35 million to $70 million per launch). He suggests that consideration be given to an alternative of proceeding for the next year or 18 months with the unmanned system and of conducting, during this period, an intensive further review of the need for and value of the improved reconnaissance capabilities of the manned system. Depending on the results of these studies a decision could then be made at a later date to proceed with either an unmanned or manned system.

Dr. Hornig and I believe we should proceed with the program as I have outlined it above. I am planning to discuss this program with the Space Council and I shall ask that it provide its recommendations to you.

Robert S. McNamara