Mr Hill

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10 JUL 1981

MEMORANDUM FOR THE DIRECTOR, NATIONAL RECONNAISSANCE OFFICE

SUBJECT: The National Reconnaissance Program's (NRP) Policy and Planning for the National Space Transportation System (Shuttle)

The attached report has been reviewed by the principal participating members of this advisory board. On their behalf, I am forwarding this report with the recommendation that you provide it to Dr. DeLauer, Admiral Inman, and to other parties which you deem appropriate. I would be pleased to discuss the findings and recommendations if you so desire.

Gene

Dr. Eugene Fubini
Chairman
NRO Advisory Board

1 Attachment
NRO Advisory Board Report

P.S. Dr. Mark, who was not a member of this Board, did feel that we were not enthusiastic enough.

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NRO ADVISORY BOARD REPORT
ON
THE NATIONAL RECONNAISSANCE PROGRAM'S (NRP)
POLICY AND PLANNING FOR THE
NATIONAL SPACE TRANSPORTATION SYSTEM (SHUTTLE)

I. Assignment:

At the request of the Director, National Reconnaissance Office (DNRO), the National Reconnaissance Office Advisory Board has examined the National Reconnaissance Office's (NRO) policy and plans for transitioning to the Space Shuttle. Specifically, the Board examined the following:

a. The current NRP policy for Shuttle transition.

b. Systems planned for exclusive commitment to the Shuttle.

c. Near-term commitments to the Shuttle and planned phase-out of expendable booster capabilities.

d. The degree to which the NRP is affected by the overall DOD planning for phase-out of expendable launch vehicles (ELV).

e. Planned commitments to spacecraft retrieval and refurbishment via the Space Shuttle.

The intent of this tasking was not to question the DOD or NRP need or commitment to a Shuttle program. Rather the intent is to assume that the current policy is correct and examine the practical effects associated with policy implementation. In that regard, the question becomes the use by NRP systems of ELVs or the Shuttle in both the short run and the long run.

II. Findings:

Based on this review, the Advisory Board has concluded:

a. The current NRP transition policy, established in 1978, encourages an increasing dependence on the Space Shuttle. It is an approach which, if unexpected delays in the Shuttle program occur, could impact our ability to safely maintain the national reconnaissance capability.

b. This policy has caused the [redacted] to be committed to the Space Shuttle. To reverse this commitment for the [redacted] program at this point is prohibitive, in terms of cost and schedule. Firm management decisions must be made now concerning Shuttle commitment of the [redacted]

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[redacted]

Additionally, unless action is taken to preserve spacecraft dual compatibility and to procure additional boosters, most NRP systems will be exclusively committed to the Shuttle within the next 12 to 18 months.

c. Decisions to maintain a satellite in a dual (Shuttle/ELV) design configuration should be made on a program-by-program basis. However, the overall question of maintaining a viable ELV production and launch capability must be addressed on a broader basis that includes both DOD and the NRP. Modifying the design approach to one of dual compatibility after the program is well underway is very difficult and expensive in terms of cost and schedule.

III. Background:

The last Administration recognized the need to reassess the current total commitment to the Space Shuttle and tasked the Defense Science Board (DSB) to examine the issue and the Secretary of the Air Force was also tasked to do a review of the Shuttle program by the Deputy Secretary of Defense. However, no explicit decisions or changes in policy have occurred as a result of these actions. In the absence of any definitive action or policy change, critical NRP and DOD programs are proceeding steadily toward exclusive Shuttle commitment.

Throughout the past three administrations, there has been a uniform policy regarding U.S. space launch vehicles. That policy has three major elements: (1) Develop the retrievable Space Shuttle as part of an overall unified Space Transportation System (STS) with the objective of minimizing the hardware expended during each launch, (2) maintain a mix of ELVs adequate to meet the military, commercial and scientific needs of the Nation, and (3) transition all U.S. launches to the new STS with prudent planning at the earliest possible date and phase out the expendable launch vehicles and facilities to avoid the cost of maintaining redundant capabilities. Concerning the last two points, no specific timetable or criteria to determine when or how these actions would occur has been developed. Current DOD policy is to:

a. Maintain an ELV production capability through Shuttle IOC (now Sep 82).

b. Maintain a backup capability for:

(1) ETR two years after IOC.

(2) WTR one year after IOC.

IV. Recommendation:

Due to the national strategic and tactical importance of many of the NRP and DOD satellite missions, the Advisory Board recommends that a more balanced Shuttle transition policy be pursued.

Despite the successful first flight test of the Shuttle, uncertainties remain in the program which the Board feels may require some modification to current NRO plans and policies with respect to transition of NRP payloads to the Shuttle. The objective should be

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A policy approach which the Board recommends is as follows:

a. The NRO policy for Shuttle transition must place the highest priority

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The NRO should use unique Shuttle capabilities, as sc as these capabilities are proven. The NRO should defer specific design commitments in its programs which rely on unproven Shuttle capabilities to meet operational program requirements. Specific capabilities which must be proven before spacecraft design release are:

(1) Performance including weightlifting capability into required orbits.

(2) Operational readiness including ground processing facilities and Orbiter turnaround times consistent with schedule commitments.

(3) Estimates of operational reliability substantiated by flight test data.

(4) Spacecraft retrieval, and

(5) Operational status for

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b. The DNRO should take two steps to assure an adequate basis for carrying out this policy. First, he should develop criteria for determining when adequate demonstration of Shuttle unique capabilities has been accomplished. This will allow informed and balanced risk taking in NRP programs. The NRO Advisory Board may be a useful resource in arriving at appropriate criteria.

Second, the DNRO should work with the Administrator of NASA to assure early demonstration of Shuttle capability is planned to meet NRO criteria for final design decisions in a timely manner. Support by the Secretary of Defense and Director, Central Intelligence will be vital to this effort.

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c. Consistent with this policy approach, the DOD and NRO should:

1. Rely on the Shuttle to launch:

(a)

(b)

(c)

The Shuttle should be able to support these high priority missions, even if unexpected difficulties arise on future test flights.

2. Assure adequate ELVs and dual compatibility for the remaining critical NRP and DOD satellite programs. These can be taken with only moderate cost and impact if decisions are made early in the program.

3. Further commitments to the Shuttle should be based on subsequent Shuttle flights and demonstrated capabilities.

d. Modify current NRP planning to accommodate short Shuttle groundings/outages, launch facility outages/refurbishments, and launch conflicts. A full range of options to accomplish this end should be examined. These options should include on-orbit active and/or dormant storage.

e. If a detailed analysis of the the first few Shuttle flights reveals problems that could jeopardize the missions the NRO intends to commit to exclusive Shuttle support, ELV options must be reexamined and possibly reversed. Other than all NRP and DOD spacecraft are either currently ELV compatible or can be reasonably made dual compatible if action is taken by early summer of 1981. In the case of a projected delay in Shuttle operational capability approaching 18 to 24 months would likely be required to justify the cost and schedule impact of modifying the spacecraft and acquiring the necessary ELV configuration.

As a final recommendation, the Advisory Board strongly urges the DNRO to request the Secretary of Defense to establish a review committee to address the overall question of Shuttle transition policy and planning on a continuing basis. This group should first address previous recommendations and suggest revision for a long-term ELV/Shuttle policy. This should include consideration of orbital transfer capability (i.e., synch-equitorial). The results of the first and subsequent Shuttle flights will obviously have a significant impact on the form of the recommendations, however, timing

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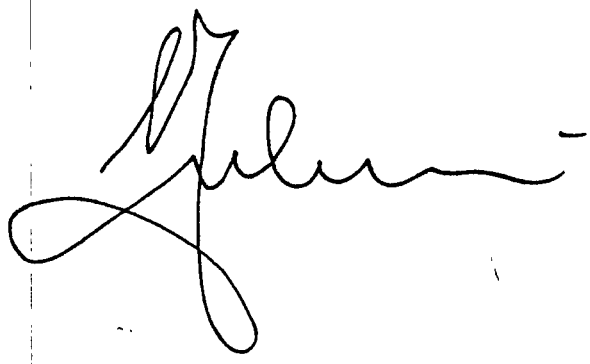
could be of the utmost importance. A number of critical NRP missions require short-term decisions in terms of Shuttle commitment. Should the Space Shuttle encounter any significant problems, some NRP missions will be in a day-for-day slip until definitive action is taken. It is therefore prudent that this DOD panel be in place and prepared to make timely assessment of the Shuttle performance as it impacts critical national defense missions and make recommendations accordingly.



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