

THE SECRETARY OF DEFENSE  
WASHINGTON D C 20301

11 NOV 1977

MEMORANDUM FOR THE PRESIDENT

SUBJECT: Budget Decision on Space Shuttle

I understand that OMB is preparing for your consideration and decision two Space Shuttle Program options:

1. Option 1. Do not build the Shuttle launch and landing facility at Vandenberg AFB. Operate the Shuttle out of Kennedy Space Center with only three orbiters.

Under this option the DoD would need to maintain conventional boosters at Vandenberg for launch of its polar orbiting heavy payloads, while using the Shuttle at Kennedy. Maintaining this dual capability would be inefficient and we could not justify DoD participation. With only three orbiters, neither DoD nor NASA would be able to exploit space to its full potential.

2. Option 2. Provide for two site operations but provide only four instead of five orbiters in the Shuttle fleet.

If an orbiter is lost, two site operations are unlikely to be effectively sustained with the remaining three orbiters. The risk of losing one orbiter would therefore make it difficult for DoD to place full reliance on the Shuttle. Hedging against the loss of an orbiter would require maintaining a backup conventional launch capability for an extended period.

There is an extensive and on-going program to transition all DoD payloads from current expendable space boosters to the Shuttle. If either of the above options is adopted, the DoD would have to proceed with plans and actions to maintain, into the indefinite future, production and facilities for use of present launch vehicles.

In that case, we would probably opt to drop out as users of the Shuttle program for intelligence, communications, and other military payloads. This would probably leave inadequate user demand to continue the program at all.

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I would prefer that you consider the following two options:

1. Option 3. Provide for two site operations and five orbiters in the Shuttle fleet.

This option provides for the minimum acceptable transition program.

2. Option 4. Discontinue the program.

The Department of Defense strongly supports Option 3.

The national traffic projections are probably quite a bit higher than will actually prove to be the case through 1990. However, I believe that by that time new capabilities will create new demand for uses that will be cost effective for the customer -- military and civilian. As a result, the Shuttle program's remaining cost would ultimately pay for itself at a reasonable discount rate -- though perhaps not at the discount rate of 50 percent per annum that sometimes appears to prevail toward the close of the budget preparation process.

*Harold Brown*

Attachment  
DoD Space Shuttle Utilization

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DEPARTMENT OF DEFENSE  
SPACE SHUTTLE UTILIZATION

Present plans are to transition all DoD payloads from launch on current expendable space boosters to Shuttle launch after the Shuttle becomes operational in 1980. The Air Force is developing an Interim Upper Stage which will be operational by mid-1980 for use on both the Shuttle and the Titan III booster during the transition period. The Air Force is also developing the Shuttle launch and landing capability at Vandenberg AFB, which will be operational in June 1983. Some Titan III boosters will be procured as a backup for our critical launches in the event that the Shuttle encounters delays during development or early operational use. When the Shuttle is fully operational, expendable boosters will be phased out of the inventory. Current DoD planning is predicated on the timely availability of an adequate orbiter fleet, assumed to be 5 orbiters based on NASA's national traffic projections for Shuttle use.

The Space Shuttle can support the launch of all projected DoD space systems in the foreseeable future. The Shuttle provides significant new technological opportunities which can lead to more effective and flexible military space operations. Compared to our largest current space booster, the Shuttle can deliver twice the payload weight and three times the payload volume to orbit. We can use this increased capability to incorporate redundancy in critical subsystems, thereby improving the life of our spacecraft on orbit. We can also improve the capability of our spacecraft by prudently adding sensors and communications links. We can improve the survivability of our space systems, in a natural or hostile space environment, by selecting from a number of Shuttle-related options. These survivability options include placing spare spacecraft on orbit, carrying additional on-board propellants for spacecraft maneuvering, or perhaps placing on orbit more spacecraft of a simpler, lower cost design. The Shuttle capabilities offer the opportunity to achieve greater spacecraft modularization and standardization of subsystems while avoiding costly weight reduction programs. The reliability of placing a satellite in its desired orbit projected for the Shuttle (.995) is higher than we are experiencing today on our current expendable boosters (.88 to .98). The benefits of this improved reliability include greater mission success and timely replenishment of priority DoD space systems. We anticipate that the Shuttle can be used routinely as a development test bed for various sensors and subsystems thereby reducing the development time for new space systems and enhancing our capability to respond rapidly to changing needs.

Initially, we will use the Shuttle as we would a larger replacement launch vehicle. However, should the Shuttle arrive on-orbit with a payload that did not check out properly, most payloads could be returned to earth for adjustment or modification. In the future, we can design our payloads so that the Shuttle can retrieve them from low orbit when the mission is complete, and return them to earth for refurbishment and reuse, diagnostic purposes, or technological update. Another option which might be equally attractive in the Shuttle era is on-orbit servicing of payloads. Spacecraft designed for automated subsystem replacement could be serviced while in low orbit depending on mission requirements. In the long term, the Shuttle will open the way for many new technical advances in the military use of space.

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