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Department Of Defense Role In The Space Shuttle

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I am very pleased to appear before you for the purpose of presenting an overview of the role of the Department of Defense in the Space Shuttle development program. As stated many times, the DOD supports the development of the Space Shuttle. The Air Force, as executive agent for the Department of Defense, has been tasked to work with NASA in developing the Shuttle system. Simply stated, our job is to work with NASA in their development of a Space Shuttle which will have utility to the DOD and to provide the DOD with programmatic data for use as the basis for decisions as required. Before I discuss the Air Force role in detail, I first want to state why we are interested in the Shuttle.

Space has now become a competitive environment for military operations and is far more effective in such areas as communications and navigation. With the advent of a space transportation system, space may become even more attractive through potential reduction in payload and mission costs.

Perhaps equally as attractive as the comparatively low Satellite Program costs associated with Shuttle operations is the capability offered by the Shuttle to provide more flexibility and greater mission options in military space operations.

Utilizing the Shuttle as a test-bed will provide the capabilities to develop prototype systems and test them in an operational environment prior to committing vast expenditures to the development of a complete satellite system. In such a manner, not only the response time to counter technological surprise can be reduced, but development risk of the system can be minimized. Similarly, risks normally associated with the development test and operations of complex space systems can be reduced. Inoperative or malfunctioning satellites can be retrieved and returned for checkout and repair; and then redeployed to an operational status not only with high confidence in system performance, but also with assurance that generic failures will not continue to be built into subsequent satellites. Additionally, the Shuttle will have the capability to perform on-orbit satellite checkout prior to release, thereby reducing satellite infant mortality, providing on-orbit modular replacement of failed parts, and ground refurbishment of whole satellites. This capability can considerably extend the operational lifetime of satellite systems.

Now that I have expressed some of the reasons for Department of Defense interest in the Space Shuttle, let us turn to our role in the program. The initial task in meeting our responsibilities was to establish Department of Defense needs for incorporation into the Shuttle design. The first step in doing this was to predict the nature of the Department of Defense space program in the timeframe of the Space Shuttle operations, 1980 - 1990.

A mission model was prepared which is a projection of today's space programs to the 1980 time period, while incorporating those new systems which will meet new requirements, as well as make use of the new technology in meeting defense needs. Additionally, the mission model projects launch rates consistent with today's operations and certainly is not speculative in system ideas which might be required to improve our defense posture in that time period. From this mission model, mission requirements and payload interfaces required to be designed into the Shuttle system to fly DOD missions were identified and forwarded to NASA. Using this data, NASA is conducting design trades to find acceptable technical and cost solutions. The Air Force actively participates in the review of these solutions. At this time, the NASA design is proceeding in a manner that we believe will lead to a common vehicle meeting requirements of both NASA and the Department of Defense.

Along with this activity, the Air Force Shuttle program office is participating with Johnson Space Center in the preparation of a national operating plan for the Shuttle. This plan will provide the overall concept for joint usage of the Shuttle. It will also establish consistency in both NASA and Department of Defense planning, explore options on the degree of sharing of resources between NASA and the Department of Defense, and once approved, will provide the basis for formal agreements. The program plan will include the broad areas of operations, logistics, acquisition and management, and will address more specifically subjects such as: (1) common vehicle design; (2) operational launch and recovery facilities; (3) flight operations; and (4) personnel.

It has already been announced that operational launch and recovery facilities would be established by NASA at
Kennedy Space Center for low inclination missions of both agencies. Equivalent facilities at Vandenberg Air Force Base will be provided by the Department of Defense for high inclination missions. NASA will be responsible at Kennedy Space Center for ground maintenance and checkout functions and the Air Force will have similar responsibility at Vandenberg Air Force Base. We are currently coordinating with NASA to enhance the compatibility of the Kennedy Space Center support systems with those at Vandenberg Air Force Base. The concept is maximum integration of operations consistent with defense mission requirements and security objectives.

With respect to Space Shuttle facilities at Vandenberg Air Force Base, I would like to emphasize that several alternatives are still being explored. In addition to various facility alternatives, we are continuing to study alternative methods for assembling the Space Shuttle into a launch configuration. These latter alternatives include an on-pad buildup of the orbiter, booster, and tank versus an off-pad integration similar to that used for the Apollo program at Kennedy Space Center.

Air Force Shuttle flight operations will be controlled through the existing Air Force Satellite Control Facility modified as required. A key difference from present day operation will be in the autonomy of the Shuttle system which will permit austere flight support systems. Payload operations will be divorced from Shuttle flight operations and will be the responsibility of the respective users as is done under present payload operational control by the Air Force Satellite Control Facility.

Perhaps one of the most critical decisions confronting NASA and the Department of Defense in 1973 is the question as to which agency will develop the orbit-to-orbit stage or Space Tug and what configuration should be selected.

Over half of all Department of Defense payloads projected for the future will be deployed to a high orbit which will require an orbit-to-orbit stage, sometimes referred to as the Space Tug. In addition to the orbiter, a decision as to the agency that will develop the upper stage is expected this fall. To provide data for this decision and subsequently starting the upper stage development, the Air Force and NASA are jointly participating in contractor studies of two basic alternatives. These are: (1) use of existing expendable stages modified for the shuttle and (2) use of a recoverable upper stage using storable or cryogenic propellants.

Data from the contractor studies will enable NASA and the Air Force to select the upper stage configuration that provides the maximum operational, performance, and cost benefits to the country. This close coordination will result in a common upper stage development which will meet the operational requirements of both agencies just as we are doing for the Space Shuttle.

In addition to supporting NASA’s design efforts, the Air Force is conducting an assessment of the costs and utility of the Shuttle system, including potential payload savings. Alternative plans have been developed which provide for Department of Defense entry into the Shuttle program. These alternatives are primarily associated with varying combinations of operational launch dates at Vandenberg Air Force Base and Kennedy Space Center, coupled with development options for the upper stage.

The fiscal year 1974 program, in general, is a continuation of these activities with specific tasks carried over for completion. For example, efforts are being carried on in the study of new capabilities of the Space Shuttle and definition of the support requirements dictated by the evolving design.

To carry out the Air Force efforts on the shuttle program, Air Force Space and Missile Systems Organization maintains a Space Shuttle Program Office in Los Angeles with detachments at the respective NASA Shuttle development and operations centers. This office interfaces with the NASA Shuttle design team, participates in direction of jointly funded contractor studies, directs the activities of the Aerospace Corporation, and manages Air Force contracted studies with industry.

To augment planning in support of shuttle activities, a Department of Defense Space Shuttle User Committee has been established in the Pentagon. The committee will provide a focus for the broad user interest of the Department of Defense and will complement the efforts of the Air Force Shuttle Program Office. Membership includes representatives from the Office of the Secretary of Defense (DDR&E), the Office of the Joint Chiefs of Staff, and all the military departments as well as NASA representation. The committee is chaired by the Air Force and reports to the Assistant Secretary of the Air Force for Research and Development. You probably are aware that a joint DOD/NASA Space Transportation System Committee, chaired jointly by the NASA Associate Administrator for Manned Space Flight and the Assistant Secretary of the Air Force for Research and Development, is responsible for a continuing review of the Space Shuttle Program.

In summary, the Department of Defense continues to support the Shuttle development. We have been in close coordination and cooperation with NASA and intend to use the shuttle if it continues to meet its performance and economic goals. The shuttle has the potential to increase operational flexibility, reduce development risk of new payloads, lower life cycle costs, and provide an opportunity to capitalize on the military as well as civilian use of man-in-space. At the very minimum, it will provide a single modern launch system to replace our varied launch vehicles and their costly launch complexes. If a dramatic impact on space operations is to occur from the Shuttle, it will be because it stimulates new approaches to producing and operating space systems.