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UNITED STATES GENERAL ACCOUNTING OFFICE
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ENERGY AND MINERALS
DIVISION

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The Honorable Harold Brown
The Secretary of Defense

The Honorable James R. Schlesinger
The Secretary of Energy

We recently examined the Department of Energy's and Department of Defense's procedures for protecting nuclear weapons while in transit as a part of our review which resulted in our May 7, 1979, report to the Congress entitled "Federal Actions Are Needed to Improve Safety and Security of Nuclear Materials Transportation." The need to protect nuclear weapons is self-evident. Their political and military importance, their destructive power, and the consequences of an unauthorized or accidental detonation--whether a nuclear detonation or merely the detonation of the weapon's high explosives--dictate that nuclear weapons not fall into unauthorized hands.

Nuclear weapons are perhaps most vulnerable while in transit; therefore, the security measures taken to protect weapons outside of their storage locations must be sufficient to dissuade persons planning sabotage or theft, and to withstand an attack. The Department of Energy ships nuclear weapons from its weapons assembly plant to various Department of Defense facilities. The Department of Defense transports nuclear weapons among its facilities, back to the Department of Energy's assembly plant, and also frequently picks up and ships nuclear weapons from the Department of Energy's weapons assembly plant. Each Department's transportation security procedures are based on different transportation mode preferences. The Department of Energy prefers overland shipments in special trailers while the Department of Defense prefers shipping by military aircraft. As a result, nuclear weapons shipments between some shipping and receiving locations are sometimes made by special trailers and at other times made by military aircraft.

The procedures of the two departments for protecting nuclear weapons in transit appear adequate; however, to our knowledge neither Department has ever compared and balanced

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the security, public safety, and cost advantages and disadvantages of the two transportation modes to determine if one is, on balance, better than the other. We believe such a determination should be made, particularly for those cases in which weapons are sometimes shipped to one location from another by special trailer, and at other times shipped to and from the same location by military aircraft.

A major security-related advantage of the Department of Energy's special trailer system is its capability to transport a weapon from one storage location to another without any intermediate transfer. On the other hand, the relatively long transit times and reliance on local law enforcement agencies for emergency response capabilities add to security risks. Shipping weapons by air minimizes the total time weapons are in transit and accessible to sabotage or theft attempts; but for some shipments the Department of Defense must convoy weapons from storage locations to off-base airfields, transfer them to aircraft, and reverse these procedures at the destination.

From a public safety standpoint, the probability of a special trailer accident is much greater than that of an aircraft accident but the potential consequences of the latter are more severe. At our request, Sandia Laboratories estimated the average probability of a release of nuclear materials for a special trailer, C-130 aircraft, and C-141 aircraft accident. The results--which are not firm, and should only be used as an indication, not as a basis for a decision--showed that a release of nuclear material to the environment will occur every

--192,000 years using special trailers,

--3,000 years using C-141 aircraft, and

--2,000 years using C-130 aircraft.

Costs should also be considered in determining the best transportation mode. Our limited transportation cost comparison for a selected route showed that it costs about $20,000 to ship by air and $38,640--almost twice as much--to ship by special truck. Of course, comparative costs would differ with different shipping and receiving locations.

As shown above, each basic transportation mode has apparent security, safety, and cost advantages and disadvantages. There are probably other advantages and disadvantages which should also be considered in selecting the best mode for shipping nuclear weapons. Because of the

importance of protecting nuclear weapons in transit, we believe that the Departments of Energy and Defense should jointly compare the advantages and disadvantages of shipping by special trailer and by military aircraft to determine which mode overall provides the highest levels of security and public safety necessary at the least cost. We recognize that it may not be practical to only use one or the other transportation mode for all shipments between all shipping and receiving locations. We believe, however, that a joint determination of shipping mode preference should be made and followed for those cases in which weapons are shipped to one location from another sometimes by special trailer and other times by military aircraft.

RECOMMENDATIONS TO THE SECRETARIES OF DEFENSE AND ENERGY

We recommend that the Secretaries of Defense and Energy

--jointly compare the advantages and disadvantages of the overland special trailer and military aircraft nuclear weapon transportation modes to determine which mode overall provides the highest levels of security and public safety necessary at the least cost; and

--establish joint criteria consistent with the above determination to be used in deciding whether a particular shipment should be moved overland or by air.

The issues and recommendations discussed above raise a more fundamental question in need of review. The transporting of assembled nuclear weapons seems to be integrally related to the Department of Defense's basic mission and programs. In view of this, we recommend that the Secretaries of Defense and Energy review the question of why the Department of Energy is involved at all in transporting assembled nuclear weapons.

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As you know, section 236 of the Legislative Reorganization Act of 1970 requires the head of a Federal agency to submit a written statement on actions taken on our recommendations to the House Committee on Government Operations and the Senate Committee on Governmental Affairs not later than 60 days after the date of the report and to the House and Senate Committees on Appropriations with the agency's first

request for appropriations made more than 60 days after the date of the report.

Copies of this report are being sent to the Director, Office of Management and Budget; the Chairmen, House Committees on Appropriations and Government Operations, the Senate Committee on Governmental Affairs, and oversight committees for the Departments of Defense and Energy.

We appreciate the courtesy and cooperation extended to our staff during the review.

J. Dexter Peach
Director