



UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D. C. 20555

February 14, 1978

Honorable Joseph M. Hendrie
Chairman
U. S. Nuclear Regulatory Commission
Washington, DC 20555

SUBJECT: REPORT ON QUALIFICATION OF THE PLUTONIUM AIR TRANSPORTABLE
PACKAGE: MODEL NO. PAT-1

Dear Dr. Hendrie:

At its 214th meeting, February 9-11, 1978, the Advisory Committee on Reactor Safeguards completed its review of the tests made on the Model No. PAT-1 package to qualify it for use in the transportation of plutonium by air. This matter was considered by a Working Group of the ACRS at a meeting in Albuquerque, New Mexico on January 17, 1978. In connection with this meeting, members of the Working Group inspected several packages that had been tested at the Sandia Laboratories. During this review, the Working Group and the ACRS had the benefit of discussions with representatives of the Nuclear Regulatory Commission (NRC) Staff and of Sandia Laboratories. The Committee also had the benefit of the documents listed.

The Committee had previously reviewed the qualification criteria developed by the NRC Staff for certification of a package for the transportation of plutonium by air. A report approving these criteria was submitted to the Commission on November 18, 1976. Subsequent to that review and report by the ACRS, and as a result of the review by a committee of the Assembly of Engineering of the National Research Council, one additional test and two additional operational controls were added to the qualification criteria. The additional test subjects the package to a ripping and tearing action that decreases the ability of the package to withstand the ensuing fire test. The additional operational controls (1) prohibit the transportation of certain "hazardous material" aboard an aircraft carrying a plutonium package, and (2) require stowage of the package on the main cargo deck of the aircraft.

The Committee has reviewed these additional criteria and has determined that they do not change the conclusion expressed in the Committee's report of November 18, 1976. The modified criteria are embodied in the NRC Staff's report: NUREG-0360, "Qualification Criteria to Certify a Package for Air Transport of Plutonium."

A package, designated Model No. PAT-1, has been developed and tested by the Sandia Laboratories under contract to the NRC. Five PAT-1 specimen packages were subjected to the sequential test series prescribed in NUREG-0360 for air transport. The results of these tests, and of the analyses made to demonstrate compliance with certain of the criteria, are presented in NUREG-0361, "Safety Analysis Report for the Plutonium Air Transportable Package Model No. PAT-1."

The criterion for acceptance of a package, in terms of its ability to prevent leakage of the contained plutonium following the sequential tests simulating conditions in an aircraft crash, is a loss of plutonium not to exceed an A_2 quantity in a period of one week, as defined by the International Atomic Energy Agency. All of the packages tested met the acceptance criteria with adequate margins.

The Committee concludes that the tests and analyses reported in NUREG-0361 have demonstrated that the PAT-1 package described in that document has met the qualification criteria prescribed in NUREG-0360. The Committee believes, therefore, that the PAT-1 package, properly assembled and transported in accord with the prescribed operational controls, can be used for the air transport of plutonium in oxide form with reasonable assurance that it can survive the crash of an aircraft without undue risk to the health and safety of the public.

Sincerely yours,



Stephen Lawroski
Chairman

REFERENCES

1. U. S. Nuclear Regulatory Commission: "Qualification Criteria to Certify A Package for Air Transport of Plutonium," Draft NUREG-0360, January 1978.
2. U. S. Nuclear Regulatory Commission: "Safety Analysis Report for the Plutonium Air Transportable Package Model No. PAT-1," Draft NUREG-0361, February 1978.
3. Letters from A. E. Bryson, National Research Council, to C. V. Smith, Nuclear Regulatory Commission, concerning views and opinions on the proposed plutonium package qualification criteria, dated October 6, 1977 and August 11, 1977.
4. Letter from C. V. Smith, Nuclear Regulatory Commission, to A. E. Bryson, National Research Council, concerning action taken on comments, dated August 30, 1977.