[DNFSB LETTERHEAD]

December 19, 1991

The Honorable James D. Watkins
Secretary of Energy
Washington, D.C. 20585

Dear Mr. Secretary:

On December 19, 1991, the Defense Nuclear Facilities Safety Board, in accordance with 42 U.S.C. 2286a(5), approved Recommendation 91-5 which is enclosed for your consideration.

42 U.S.C. 2286d(a) requires the Board, after receipt by you, to promptly make this recommendation available to the public in the Department of Energy's regional public reading rooms. The Board believes the recommendation contains no information which is classified or otherwise restricted. To the extent this recommendation does not include information restricted by DOE under the Atomic Energy Act of 1954, 42 U.S.C. 2161-68, as amended, please arrange to have this recommendation promptly placed on file in your regional public reading rooms.

The Board intends to publish this recommendation in the Federal Register.

Sincerely,

John T. Conway
Chairman

Enclosure

RECOMMENDATION TO THE SECRETARY OF ENERGY
pursuant to Section 312(5) of the
Atomic Energy Act of 1954, as amended

Dated: December 19, 1991

The Defense Nuclear Facilities Safety Board (the Board) has been conducting an ongoing review of the bases and criteria for the operational plans for the K-reactor at the Savannah River Site. These plans currently include limitation of the power of the reactor to 30 percent of the historical full power, or to approximately 720 megawatts (MW). The information reviewed has been provided to the Board in numerous briefings and documents, including the Savannah River K Production Reactor Safety Analysis Report (WSRC-SA-10003).

The Board concluded on the basis of this information that operation of the K-reactor at a power level not exceeding 30 percent of the nominal historical maximum power would impose no undue risk to public health and safety assuming that all other improvement measures established as necessary for startup have been completed and effectively implemented. In this connection, the Board has been stationing members of its staff and some of its outside experts at the Savannah River Site during the period of restart to monitor the activities during restart and initial power ascension of the K-reactor with the initial reactor configuration.

Information in the K-14-1 Core Operations Report (September, 1991), and some of the Reactor Operations Management Plan (ROMP) closure packages implies that at a later time the Department of Energy may wish to increase the operating power level of the Kreactor above the 30 percent value. However, the Board is of the opinion that the existing information on the effectiveness of the engineered safety features, especially those that would be relied on in the event of a large loss-of-coolant accident, does not at present support operation at a power level much above the 30 percent value. The Board considers that justification of any increase in power would require further refinement of the thermal-hydraulic evidence on the cooling capability of the emergency cooling systems under accident conditions. Therefore, pursuant to 42 U.S.C. 2286b(d), DOE shall inform the Board well before any decision to increase the reactor's power level above 30 percent of the historical value of its maximum full power. Furthermore, if such an increase in operating power is to be contemplated by the DOE, the Board recommends that:

1. The DOE should conduct more definitive studies on the thermal-hydraulic methodology, criteria, and experimental test program used in analyzing performance of core cooling of the R-reactor during unusual conditions that could prevail during accidents. These studies should more fully reflect prototypical geometry and accident conditions (temperature, flow, pressure, and configuration).

2. Any proposal to operate the K-reactor at a level above the 30 percent value should be supported by accident analysis based on the thermal-hydraulic methodology revised in accordance with the above.

3. The evaluation model for analysis of postulated loss of coolant accidents should be

documented and controlled in accordance with the procedures described in 10 C.F.R. 50.46 (1991). Similar controls should be implemented for models used in analyzing non-LOCA accidents.

John T. Conway