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Department of Energy Washington, D.C. 20545

JUL 2 5 1984

Mr. Richard E. Cunningham, Director Division of Fuel Cycle and Material Safety U.S. Nuclear Regulatory Commission Silver Spring, MD

Dear Mr. Cunningham:

As agreed in our July 10, 1984, meeting regarding the Nuclear Regulatory Commission's (NRC) licensing of the cesium 137 Waste Encapsulation and Storage Facility (WESF) capsule in irradiators, please find enclosed the June 1984 report PNL-5170, "A Review of Safety Issues That Pertain to the Use of WESF Cesium Chloride Capsules in an Irradiator," which this office is submitting in support of our licensing request.

As discussed, the Department of Energy (DOE) believes that the test data collected to date, especially that from the 6 years operating experience with the Sandia Irradiator for Dry Sewage Solids, should furnish ample evidence that an NRC license for similar irradiators utilizing wet load, dry storage, and dry operation design concept is warranted.

With respect to wet load and storage and dry operation irradiators, we believe that considerable technical information exists from 10 years operation of WESF that are applicable to the licensing process. In addition, we have begun an accelerated thermal cycling tests of two WESF capsules. This evaluation should be completed in 6 months. DOE recommends that NRC license the first wet/dry facility on the basis that:

(1) a capsule would be removed annually from one of each type of irradiator and subjected to destructive evaluation to confirm that operation of these facilities does not result in conditions beyond those that have previously demonstrated a high degree of integrity of the thick-walled, doubly-encapsulated WESF cesium capsules;

(2) irradiator operating limits be established well within demonstrated integrity limits, e.g.,

wet load, dry storage, dry operation irradiator

wet load, wet storage, dry operation irradiator operating/storage temperature limit: 23000C

operating surface temperature limit: z300°C

thermal cycle limit: 12,000 cycles air to water 200°C maximum delta T

8504240242 850408 NMSS LIC30 04-19644-01 PDR I appreciate the opportunity that we had on July 10, 1984, to discuss with you and your staff the safety issues and related data. If you have any questions, please contact me accordingly.

Sincerely,

OR

John J. Jicha, Jr., Director R&D and Byproducts Division Office of Defense Waste and Byproducts Management

Enclosure

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