

UNITED STATES NUCLEAR REGULATORY COMMISSIONDUKE POWER COMPANYDOCKETS NOS. 50-269, 50-270 AND 50-287ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT

The U.S. Nuclear Regulatory Commission (the Commission or staff) is considering approval of the design and operation of a low-level radioactive waste incinerator by Duke Power Company (the licensee) for the Oconee Nuclear Station, Units 1, 2 and 3, located in Oconee County, South Carolina.

ENVIRONMENTAL ASSESSMENT

Identification of the Proposed Action: The proposed action by the Commission would approve the design and operation of a low-level radioactive waste incinerator at the Oconee Nuclear Station, Units 1, 2 and 3. The proposed action is in accordance with the licensee's June 10, 1985 letter, as supplemented on October 9, December 13, 1985, May 9, August 18 and September 11, 1986.

In their June 10, 1985 letter to the Commission, the licensee, in accordance with 10 CFR Part 20, Section 20.305, requested pursuant to 10 CFR Part 20, Section 20.302, specific approval to operate a low-level radioactive waste incinerator at the Oconee Nuclear Station.

10 CFR Part 20, Section 20.305, provides that no licensee shall treat or dispose of licensed material by incineration except as specifically approved by the Commission pursuant to Section 20.302. 10 CFR Part 20, Section 20.302, provides that any licensee may apply to the Commission for approval of proposed procedures to dispose of licensed material in a manner not otherwise authorized

by the regulations. The proposed action is the issuance of the requested approval to incinerate low-level radioactive waste in the Volume Reduction Subsystem (VRS) at the Oconee Nuclear Station. The incinerator is a major integral component of the fluid bed incinerator/fluid bed dryer VRS. In their submittal, the licensee referred to the Aerojet Energy Conversion Company (AECC) Topical Report No. AECC-3-P(NP) for a detailed description of the VRS to be used at Oconee.

Need for the Proposed Action: The primary purpose of the incinerator, and the VRS, is to reduce the volume of certain low-level radioactive wastes before shipment offsite for licensed disposal. This is consistent with the NRC policy published in the FEDERAL REGISTER on October 16, 1981 (Vol. 46, No. 200, pp. 51100-51101). The policy statement encourages the use of volume reduction techniques to conserve existing burial space and to decrease radioactive waste shipments. Operation of the incinerator also eliminates problems caused by restrictions on the disposal of mixed waste which contains non-radiological hazards and radioactive materials.

Environmental Impacts of the Proposed Action: The environmental impact (both adverse and beneficial effects) of plant operation without operation of the VRS was estimated in the "Final Environmental Statement Related to Operation of Oconee Nuclear Station, Units 1, 2 and 3," U.S. Atomic Energy Commission, March 1972, issued before commercial operation of the plant. The environmental impact of the no action alternative (base case of operation without the VRS) would be as stated in the above Final Environmental Statement (FES), except as updated by data obtained during operation of the plant.

The change in environmental impact from the operation of the Station with the VRS compared to the environmental impact of Station operation without use of the VRS is caused by the following:

- (1) the change in worker radiation exposure;
- (2) the lesser volume of the waste transported to and disposed of at the licensed burial grounds; and
- (3) the larger quantities of radioactive and non-radioactive materials discharged in airborne effluents to the environment.

The volume reduction of low-level wastes will result in higher concentrations of radioactivity and higher radiation levels in the packaged product. To compensate for this, the radwaste building and equipment design minimizes personnel interaction with equipment and vessels that will contain the solid waste product. Consequently, radiation exposures for personnel performing the processing, packaging and disposal functions are not expected to increase over base case levels.

Since the volume of solid waste requiring offsite disposal will decrease, the number of shipments will decrease. Even though the solid waste will contain higher concentrations of radioactive materials, the exposure rate should not be significantly changed since all shipments must meet the U.S. Department of Transportation limits for radiation levels. Therefore, the decrease in the shipments with the operation of the VRS reduces the radiation dose to the general population from the transport of waste to the licensed burial grounds for disposal.

The annual quantity of each radionuclide requiring licensed off-site disposal is expected to be essentially the same for operation with the VRS as with the base case. The main difference with operation of the VRS will be the higher concentration of the radionuclides in a smaller volume. In the base case and with the VRS operation, the solid product will be packaged so that the minimum requirements and stability requirements of 10 CFR Part 61 are met and are appropriate to the classification of the waste as determined by the concentration of radionuclides in accordance with 10 CFR Part 61. The environmental impact of the base case, in compliance with 10 CFR Part 61, is expected to involve a small population dose relative to background. Likewise, in the case of the disposal of the solid waste product from the operation of the VRS, in compliance with 10 CFR Part 61, the environmental impact is expected to involve a small population dose relative to background. Therefore, the impact of VRS operation on population doses from the disposal is expected to be insignificant.

The use of the VRS will only be allowed under operating conditions which will limit releases of radioactive materials to the environment. These releases will be controlled by Technical Specification limits on the release of radioactive materials in gaseous and liquid effluents from the station. There are estimated to be no significant increases in the releases of radioactive materials in liquid effluents from the operation of the VRS.

There will be an increase in the radioactive materials discharged in gaseous effluents from the operation of the VRS. The staff estimates that the annual external dose from gaseous effluents to any individual in unrestricted areas will be negligible; and that the annual doses from radioactive iodine and

radioactive material in particulate form to the total body (critical organ) and thyroid of the maximally exposed individual in unrestricted areas will be 12.4 millirem (mrem, mr) and 8.2 mrem, respectively, caused by airborne effluents from operation of the VRS. Based on this, the FES, and data obtained during operation of the station, it is calculated that for all airborne releases from operation of the Oconee Nuclear Station with the VRS, the annual dose from radioactive iodine and radioactive material in particulate form will be 12.4 mrem to the total body and 12.7 mrem to the thyroid (critical organ) of the maximally exposed individual in unrestricted areas. These annual dose estimates are less than the ALARA guidelines for design objectives set forth in Appendix I to 10 CFR Part 50 (45 mrem for the three reactor Oconee Nuclear Station). The calculated annual doses are also less than the standards of 40 CFR Part 190 (25 mrem to the whole body, 75 mrem to the thyroid, and 25 mrem to any other organ). The annual total body dose to the population within 50 miles of the Oconee Nuclear Station from the exposure to radioactive material in effluents from the VRS is estimated by the staff to be 18 person-rem to the total body (critical organ) and 1 person-rem to the thyroid. Based on this and the FES, the population dose from all radioactive releases from the Oconee Nuclear Station is calculated to be 28 person-rem. It was determined by a cost-benefit analysis that additional radwaste systems and equipment would not, for a favorable cost-benefit ratio, reduce the calculated population doses from the operation of the VRS. The values of \$1000 per total body person-rem and \$1000 per total body person-thyroid-rem were used in this cost-benefit analysis. The estimated annual dose to the maximally exposed individual and the estimated annual population dose are small fractions of

the annual doses from natural background radiation (144 mrems for the general areas of the site and 73,000 person-rems within 50 miles of the station, respectively). Consequently, the radiological releases from the station including those from the proposed use of the VRS will be so small that the staff concludes that there are no significant radiological impacts associated with the use of the VRS.

With regard to potential non-radiological impacts, the licensee submitted information on the potential non-radiological emissions from the VRS. The emissions are based on the results of numerous stack tests performed on the incinerator burning different types and amounts of the materials which would be potentially burned. The resulting emissions will be far less than the 250 tons per year for any U.S. Environmental Protection Agency (EPA) criteria pollutant. These emissions are also below those specified by the EPA and the State of South Carolina requirements for a Prevention of Significant Deterioration (PSD) permit. The South Carolina Department of Health and Environmental Control concurs with this conclusion. Therefore, the staff concludes that there are no significant non-radiological impacts associated with the VRS use.

Alternatives to the Proposed Action: Various types of low-level radioactive waste incinerators and other volume reduction technologies are described and evaluated in some detail in the NRC report "Volume Reduction Techniques in Low-Level Radioactive Waste Management," NUREG/CR-2206, dated September 1981. The above report addresses pretreatment, compaction, and combustion of general trash, and also discusses numerous types of combustion technologies, flocculation,

filtration, centrifugation, ion exchange, membrane separation, and evaporation technologies for wet wastes. The AECC fluid bed incinerator/fluid bed dryer was among the alternatives addressed. Also addressed were multiple-purpose technologies which combine volume reduction with solidification, e.g., bituminization systems.

The various available volume reduction technologies applicable to wet waste streams were determined by the licensee to promise similar advantages for processing these streams, and incinerators were determined to have the advantage of reducing the volume of various organic waste liquids as well as for dry active wastes (trash). The product from the fluid bed incinerator/fluid bed dryer system was determined to result in the most homogeneous and easily mixed material. Because of the product characteristics and waste stream flexibility, the fluid bed systems seemed the most likely to meet regulatory requirements.

The licensee has the option of a no action alternative, and rather than using the VRS, they may send the radioactive waste to a low-level waste burial ground without processing with the VRS. The environmental impact of the no action alternative is discussed in the section "Environmental Impacts of the Proposed Action." Since, as noted in that section, the proposed action would not result in significant environmental impacts, choice of the no action alternative would not result in significantly lower environmental impacts, but would preclude achieving the economic and public policy objectives of volume reduction.

The licensee determined that the flexibility of accepting a relatively wide range of feed streams enables the incineration of oils, decontamination wastes and certain laboratory wastes which would otherwise be difficult to dispose of because of restrictions on mixed wastes. The licensee also stated

that in addition to representing a commitment to the philosophy of minimizing the environmental impact of nuclear power by reducing station waste volumes, the volume reduction system gives some control over the external impact on economics by controlling waste volumes.

Alternative Use of Resources: The principal action involving use of resources not previously considered in connection with the Final Environmental Statement for operation of Oconee Nuclear Station, Units 1, 2 and 3, is a minor change in land use. As further noted above, the change also involves a minor addition to the operational radiological monitoring and recordkeeping program during plant operation.

Agencies and Persons Consulted: The U.S. Environmental Protection Agency, Division of Radiation Programs, and the State of South Carolina, Department of Health and Environmental Control were consulted by the Commission.

FINDING OF NO SIGNIFICANT IMPACT

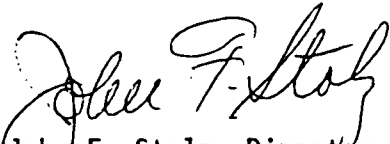
The Commission has determined not to prepare an environmental impact statement for the proposed action. Based upon this environmental assessment, the Commission concludes that the proposed action will not have a significant effect on the quality of the human environment.

For further details with respect to this action, refer to the licensee's letters dated June 10, October 9, December 13, 1985 and May 9 and August 18 and September 11, 1986. These letters are available for public inspection at

the Commission's Public Document Room, 1717 H Street, N.W. Washington, D.C.,
and the Oconee County Library, 501 West Southbroad Street, Walhalla, South
Carolina.

Dated at Bethesda, Maryland this 24th day of October, 1986.

FOR THE NUCLEAR REGULATORY COMMISSION



John F. Stolz, Director
PWR Project Directorate #6
Division of PWR Licensing-B