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UNITED STATES NUCLEAR REGULATORY COMMISSION

ROCHESTER GAS AND ELECTRIC CORPORATION

DOCKET NO. 50-244

R. E. GINNA NUCLEAR POWER PLANT

ENVIRONMENTAL ASSESSMENT AND FINDING OF

NO SIGNIFICANT IMPACT

The U.S. Nuclear Regulatory Commission (the Commission) is considering issuance of an amendment to Facility Operating License No. DRP-18, issued to Rochester Gas and Electric Corporation (the licensee), for operation of the R. E. Ginna Nuclear Power Plant, located in Wayne County, New, York.

Identification of the Proposed Action:

The proposed action would modify the spent fuel pool (SFP) by replacing the three Region 1 rack modules with seven new borated stainless steel rack modules scheduled for implementation in 1998. Six new peripheral modules would be added at some future date. Two of the seven new modules planned to be installed in 1998 would be designated as part of Region 2, effectively increasing the Region 2 area. The other five new modules would compose Region 1, resulting in a total of 294 storage positions in Region 1. Region 2, with 1075 storage positions, would consist of three rack types, Type 1, Type 2, and Type 4. Type 1 cells are the Boraflex cells that form Region 2 for the existing license. Two racks of Type 2 cells, containing borated stainless steel (BSS) absorber plates, would be added to increase the storage capacity of Region 2. In addition, the capacity of Region 2 could be increased in the future by the addition of Type 4 racks, which also contain BSS absorber plates. The amendment would also increase the boron concentration from 300 ppm to 2300 ppm.

The proposed action is in accordance with the licensee's application for amendment dated March 31, 1997, as supplemented June 18, 1997, October 10, 1997, November 11, 1997, December 22, 1997, January 15, 1998, January 27, 1998, March 20, 1998, April 23, 1998, April 27, 1998, and May 8, 1998.

The Need for the Proposed Action:

The proposed action would modify the spent fuel pool to accommodate storage of spent fuel until the expiration of the Ginna Station license in 2009. The current configuration of the Ginna spent fuel storage pool consists of two regions. Region 1 consists of stainless steel racks with 176 storage locations in a checker board pattern. Region 2 consists of stainless steel racks with boraflex and with 840 storage locations. This provides a total of 1016 storage locations. The proposed amendment would replace the Region 1 racks with borated stainless steel racks. Two locations are proposed in Region 1, one with borated stainless steel that would accommodate 187 storage locations and one with borated stainless steel in a checker board pattern that would accommodate 292 storage locations. This would provide a total of 1319 storage locations which would provide enough storage locations for storage of spent fuel beyond the expiration of the license in 2009.

Environmental Impacts of the Proposed Action:

Radioactive Waste Treatment

The Ginna Nuclear Power Plant uses waste treatment systems designed to collect and process gaseous, liquid, and solid waste that might contain radioactive material. These radioactive waste treatment systems are evaluated in the Final Environmental Statement (FES) dated December 1973. The proposed rerack will not involve any change in the waste treatment systems described in the FES.

Gaseous Radioactive Wastes

The only radioactive gas of significance that could be attributable to storing additional spent fuel assemblies for a longer period of time would be the noble gas radionuclide Krypton-85 (Kr-85). Experience has demonstrated that after spent fuel has decayed 4 to 6 months, there is no longer a significant release of fission products, including Kr-85, from stored spent fuel containing cladding defects. The licensee has stated that the Kr-85 noble gases are not normally released from the Auxiliary Building on a continuous basis and enlarging the storage capacity of the SFP will have no effect on the average annual quantities of Kr-85 released to the atmosphere.

Iodine-131 released from spent fuel assemblies to the SFP water will not be significantly increased due to the expansion of the fuel storage capacity since the Iodine-131 inventory in the fuel will decay to negligible levels between refuelings.

The amount of tritium in the SFP water will not be affected by the proposed changes. Most of the tritium in the SFP water results from activation of boron and lithium in the primary coolant. A relatively small amount of tritium is produced during reactor operation by the fission process within the reactor fuel. The subsequent diffusion of the tritium through the fuel and cladding represents a small contribution to the total amount of tritium in the SFP water. Tritium releases from the fuel assemblies occur mainly during reactor operation and, to a limited extent, shortly after shutdown. Thus, expanding the SFP capacity will not increase the tritium activity in the SFP.

Most airborne releases of tritium and iodine from nuclear power plants result during refuelings from evaporation of reactor coolant, which contains tritium and iodine in higher concentrations than in the SFP. The storage of additional spent fuel assemblies in the SFP is not expected to increase the SFP bulk water temperature above the 150 ^{0}F used in the design analysis and, therefore, evaporation rates from the SFP are not expected to increase.

Consequently, it is not expected that there will be any significant change in the annual release of tritium or iodine as a result of the proposed modifications from that previously evaluated in the FES.

Solid Radioactive Wastes

Spent resins are generated by the spent fuel pool purification system. These spent resins are replaced every 2 to 3 years and are disposed of as solid radioactive waste. The licensee will clean the floor of the SFP using a vacuum system before any work is done and after each of the old Region I fuel rack modules is removed. The licensee also plans on vacuuming the old Region I fuel rack modules before removal from the SFP. The licensee will do this in order to remove as much of the source term as possible (to minimize personnel dose), to minimize the generation of spent resins, and to ensure visual clarity in the SFP to facilitate diving operations and SFP rack change out. On the basis of experience gained following the 1984-1985 SFP modification, the licensee concludes that the additional fuel storage made possible by the increased storage capacity will not result in a significant change in the generation of solid radwaste (in the form of spent resins).

Prior to removal from the SFP, the three Region I fuel rack modules will be vacuumed and hydrolazed to remove any loose crud from the modules. The fuel rack modules will then be decontaminated to less than 200 mrem/hr and will be either shipped offsite intact or will be cut up and shipped offsite. If shipped intact, the modules will be dried and bagged first. Otherwise, the modules will be cut up into small enough pieces to fit into "low specific activity" radwaste boxes. The licensee has stated that the shipping containers and procedures will conform to all applicable regulations set forth by the U.S. Department of Transportation (DOT) as well as the requirements of any State DOT office through which the shipment may pass and the requirements of the American Association of State Highway and Transportation Officials.

Liquid Radioactive Wastes

It is not expected that there will be a significant increase in the liquid release of radionuclides from the plant as a result of the modifications. The SFP cooling and purification system operates as a closed system. The SFP demineralizer resin removes soluble radioactive materials from the SFP water. A small increase in activity on the filters and demineralizers may occur during the installation of the new racks, due to the more frequent fuel shuffling and underwater hydrolazing of the old racks during removal. However, the amount of radioactivity released to the environment as a result of the proposed reracking is expected to be negligible.

Occupational Dose Consideration

Operating experience has shown that area dose rates in the vicinity of the SFP are 1.0 to 2.0 mrem/hr, regardless of the quantity of fuel stored in the SFP. These dose rates may increase slightly during refueling operations due to crud deposits spalling from spent fuel assemblies and to activities carried into the pool from the primary system, resulting in slightly higher concentrations of radionuclides in the SFP. However, licensee experience to date has not indicated a major increase in dose rates as a consequence of refueling. The licensee has calculated the expected dose rates at locations of interest outside the concrete SFP walls to determine how the increase in fuel capacity will affect the adjacent area dose rates. The licensee has determined that the resulting dose rates are well within the Radiation Zone II limits (2.5 mrem/hr) for all passageways adjacent to the SFP which can be accessed by personnel.

The total collective occupational dose to plant workers as a result of the reracking operation is estimated to be between 8 and 12 person-rem. When the licensee performed an SFP rerack in 1984-1985, the resulting total collective occupational dose received was 14 person-rem. The licensee plans on incorporating the lessons learned from this earlier reracking operation to reduce overall doses during the upcoming reracking operation. The upcoming reracking operation will follow detailed procedures prepared with full consideration of

as low as is reasonably achievable (ALARA) principles. On the basis of its review of the Ginna proposal, the staff concludes that the Ginna SFP rack modification can be performed in a manner that will ensure that doses to workers will be maintained ALARA.

Accident Considerations

In its application, the licensee evaluated the possible consequences of six hypothetical accidents involving fuel in the SFP. Because the licensee uses single failure proof cranes for the lifting of heavy loads in the vicinity of the SFP, four of these accidents are deemed not plausible. The licensee evaluated the other two hypothetical accidents–the fuel handling accident and the tornado missile accident-to determine the thyroid and whole-body doses at the Exclusion Area Boundary, Low Population Zone (LPZ), and Control Room. The proposed reracking of the Ginna SFP will not affect any of the assumptions or inputs used in evaluating the dose consequences of either of these hypothetical accidents.

The NRC staff reviewed the licensee's analysis and performed confirmatory calculations to check the acceptability of the licensee's doses. The staff's calculations confirmed that the thyroid doses at the EAB, LPZ, and Control Room from either a fuel handling accident or a tornado missile accident meet the acceptance criteria and that the licensee's calculations are acceptable. The results of the staff's calculations are presented in the Safety Evaluation to be issued with the license amendment.

In summary, the proposed action will not increase the probability or consequences of accidents, no changes are being made to radioactive waste treatment systems or in the types of any radioactive effluents that may be released offsite, and the proposed action will not result in a significant increase in occupational or offsite radiation exposure. Accordingly, the Commission concludes that there are no significant radiological environmental impacts associated with the proposed action.

With regard to potential nonradiological impacts, the proposed action does not affect nonradiological plant effluents and has no other nonradiological environmental impact.

Accordingly, the Commission concludes that there are no significant environmental impacts associated with the proposed action.

Alternatives to the Proposed Action:

Since the Commission has concluded there is no significant environmental impact associated with the proposed action, any alternatives with equal or greater environmental impact need not be evaluated. As an alternative to the proposed action, the staff considered denial of the proposed action. Denial of the application would result in no change in current environmental impacts. The environmental impacts of the proposed action and the alternative action are similar.

Alternative Use of Resources:

This action does not involve the use of any resources not previously considered in the Final Environmental Statement for the R. E. Ginna Nuclear Power Plant dated December 1973.

Agencies and Persons Consulted:

In accordance with its stated policy, on May 19, 1998, the staff consulted with Hal Brotie of the New York State Energy Research and Development Authority, regarding the environmental impact of the proposed action. The State official had no comments.

Finding of No Significant Impact

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

For further details with respect to the proposed action, see the licensee's letter dated March 31, 1997, as supplemented by letters dated June 18, 1997, October 10, 1997,

November 11, 1997, December 22, 1997, January 15, 1998, January 27, 1998, March 20, 1998, April 23, 1998, April 27, 1998, May 8, and May 22, 1998, which are available for public inspection at the Commission's Public Document Room, The Gelman Building, 2120 L Street, NW., Washington, DC, and at the local public document room located at the Rochester Public Library, 115 South Avenue, Rochester, New York 14610.

Dated at Rockville, Maryland, this 16th day of July 1998.

FOR THE NUCLEAR REGULATORY COMMISSION

S. Singh Bajwa, Director
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation