

NUCLEAR REGULATORY COMMISSION

[Docket No. 50-333]

Power Authority of the State of New York, James A. Fitzpatrick 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. DPR-59, issued to Power Authority of the State of New York (the licensee), for operation of the James A. FitzPatrick Nuclear Power Plant (JAFNPP), located in Oswego County, New York.

Environmental Assessment

Identification of the Proposed Action: This Environmental Assessment has been prepared to address potential environmental issues related to the licensee's application to amend the JAFNPP operating license dated June 12, 1992, as supplemented by letters dated September 17, 1992, March 17, 1993, August 17, 1993, August 18, 1993, December 29, 1993, June 29, 1995, August 15, 1996, October 3, 1996, and October 23, 1996. The proposed amendment would increase the licensed core thermal power from 2436 MWt to 2536 MWt, which represents an approximate increase of 4.1% thermal power over the current licensed power level. This request is in accordance with the generic boiling water reactor (BWR) power uprate program established by the General Electric Company (GE) (Reference 1) and approved by the U.S. Nuclear Regulatory Commission (NRC) staff in a letter from W. Russell, NRC, to P. Marriotte, GE, dated September 30, 1991 (Reference 2). Implementation of the proposed power uprate at JAFNPP will result in a 4.8% increase in rated steam flow. New fuel designs are not needed for power uprate. New fuel designs may be used to provide additional operating flexibility and maintain fuel cycle length. The higher power level will be achieved by extending the power/flow map by increasing core flow along existing flow control lines. The maximum recirculation flow limit will not be increased. Uprated operation will involve a slightly higher reactor vessel dome pressure. Implementation of this proposed power uprate will require minor modifications, such as, resetting of the low set safety relief setpoints, as well as the calibration of plant instrumentation to reflect the uprated power. Plant operating, emergency, and other procedure changes will be made

where necessary to support uprated operation.

The proposed action involves NRC issuance of a license amendment to uprate the authorized power level by changing the operating license, including Appendix A of the license (Technical Specifications).

The Need for the Proposed Action

The proposed action is needed to allow the licensee to increase the potential electrical output of JAFNPP by approximately 32 megawatts-electric. The power uprate program at JAFNPP would provide additional electric power to service domestic and commercial areas of the licensee's grid. Environmental Impacts of the Proposed Action:

The "Final Environmental Statement (FES) related to operation of FitzPatrick Nuclear Power Plant" issued in March 1973 (Reference 4) assumed a maximum power level of 2550 MWt in its analyses. By letter dated June 12, 1992, the licensee submitted the proposed amendment to implement power uprate for JAFNPP, which is the subject of this environmental assessment the uprated power level would be 2536 MWt. The uprated power level would be within the bounding analysis of the FES. Section 11.3 of the JAFNPP power uprate licensing topical report (GE report NEDC-32016P, Revision 1,) which was submitted on August 18, 1993, provided an environmental assessment of the proposed power uprate. Some environmental effects will remain the same, while power uprate may nominally increase others. Actual effects are at worst proportional to the approximately 4.8% increase of original steam flow.

The licensee provided information regarding the nonradiological and radiological environmental effects of the proposed action in the licensee's application to amend the JAFNPP operating license dated June 12, 1992, as supplemented by letters dated September 17, 1992, March 17, 1993, August 17, 1993, August 18, 1993, December 29, 1993, June 29, 1995, August 15, 1996 October 3, 1996, and October 23, 1996.

The Commission has completed its evaluation of the proposed action and concludes that there are no significant radiological or non-radiological environmental impacts associated with the proposed amendment. A summary of the nonradiological and radiological effects on the environment that may result from the proposed amendments is provided below. Nonradiological Environmental Assessment:

Power uprate will not change the method of generating electricity nor the method of handling any influents from nor effluents to the environment. Therefore, no new or different types of environmental impacts are expected. The evaluation is based upon information provided by the licensee in an April 1993 GE licensing topical report supporting the JAFNPP power uprate.

The nonradiological environmental effects of the uprate will be controlled at the same levels as for the original analysis except for a small (<5%) heat addition to Lake Ontario. All other limits for the plant environmental releases, such as maximum lake return temperature, lake water maximum change in temperature, and plant vent radiological limits will not be increased or exceeded as a consequence of uprate. NYPA was notified by the New York State Department of Environmental Conservation, by letter dated December 1, 1995, that the State Pollutant Discharge Elimination System Permit for the facility was modified to allow a net heat addition of 6.00x10⁹ Btu/hr to Lake Ontario.

This change will eliminate the need to reduce power during uprate operations during periods of high lake temperature. The vast majority of the time FitzPatrick can be operated at full uprated power and remain within pre-uprate limits. Therefore, the environmental impact of power uprate is not significant.

Nonradiological effluent discharges from other systems were also considered. Nonradiological effluent limits for systems such as floor and equipment drains are established in SPDES permit. Discharges from these systems are not expected to change significantly, if at all, because operation at uprated power levels are governed by the limits in the SPDES permit. Thus, the staff finds that the impact on the environment from those systems as a result of operation at uprated power levels is not significant.

With regard to potential nonradiological impacts, the proposed action does involve features located entirely within the restricted area as defined in 10 CFR Part 20. It does not affect nonradiological plant effluents and has no other environmental impact. Accordingly, the Commission concludes that there are no significant nonradiological environmental impacts associated with the proposed action.

Radiological Environmental Assessment

The licensee evaluated the impact of the proposed power uprate amendment to show that the applicable regulatory

acceptance criteria relative to radiological environmental impacts will continue to be satisfied for the uprated power conditions. In conducting this evaluation, the licensee considered the effect of the higher power level on liquid radioactive wastes, gaseous radioactive wastes, and radiation levels both in the plant and offsite during both normal and post-accident conditions.

The liquid radwaste treatment systems receive inputs from a variety of sources (e.g. leakage from component cooling water system, reactor coolant system, condensate and feedwater system, turbine plant cooling water system, and auxiliary steam system). Leakages from these systems are not expected to increase significantly since the operating pressures of these systems are either being maintained constant or are being increased only slightly due to the proposed power uprate.

The largest single source of liquid radioactive waste is from the ultrasonic cleaning of the condensate demineralizers. These demineralizers remove activated corrosion products which are expected to increase proportionally to the proposed power uprate. However, the total volume of processed waste is not expected to increase significantly, since the only appreciable increase in processed waste will result in a slight decrease in the time interval between ultrasonic cleaning or regeneration of the condensate demineralizers. The reported time between ultrasonic cleaning or regeneration is 65 days and is not expected to decrease significantly at uprate. Based on a review of plant effluent reports and the slight increase expected due to the proposed power uprate, the NRC staff has concluded that the slight increase in the processing of liquid radioactive wastes will not have a significant increase in environmental impact and that the requirements of 10 CFR Part 20 and 10 CFR Part 50, Appendix I, will continue to be met.

Gaseous radioactive effluents are produced during both normal operation and abnormal operational occurrences. These effluents are collected, controlled, processed, stored, and disposed of by the gaseous radioactive waste management systems which include the various building ventilation systems, the offgas system, and the standby gas treatment system (SGTS). The concentration of radioactive gaseous effluents released through the building ventilation systems during normal operation is not expected to increase significantly due to the proposed power uprate since the amount of fission products released into the reactor coolant (and subsequently into the

building atmosphere) depends on the number and nature of fuel rod defects. The concentration of activation products contained in the reactor coolant is expected to remain unchanged, since the linear increase in the production of these activation products will be offset by the linear increase in steaming rate. Therefore, based on its review of the various building ventilation systems, the NRC staff has concluded that there will not be a significant adverse effect on airborne radioactive effluents as a result of the proposed power uprate.

Radiolysis of the reactor coolant causes the formation of hydrogen and oxygen, the quantities of which increase linearly with core power. These additional quantities of hydrogen and oxygen would increase the flow to the recombiners by 4.8% during uprated power conditions. The offgas system was originally designed for 105 percent of warranted steam flow which would not be exceeded during operation at the proposed uprated power level. Therefore, no changes will be required in the offgas system since the offgas system will be operated within the original evaluated design condition. There will be no environmental impact that was not previously evaluated.

The SGTS is designed to minimize offsite and control room radiation dose rates during venting and purging of both the primary and secondary containment atmosphere under accident or abnormal conditions. This is accomplished by maintaining the secondary containment at a slightly negative pressure (more negative than or equal to -0.25 inch water gauge) with respect to the outside atmosphere and discharging the secondary containment atmosphere through high-efficiency particulate air (HEPA) filters and charcoal absorbers. The capacity of the SGTS was selected to provide one secondary containment air volume change per day and thereby maintain the reactor building at a slight negative pressure. This capability is not affected by power uprate. The charcoal filter beds are unaffected by power uprate. The total post-LOCA iodine loading increases slightly at the uprated conditions, there are no radiological consequences because the increased loading remains within the design absorption capacity of the filter beds. Therefore, the staff finds there would be no significant increase in environmental impact.

The licensee has evaluated the effects of the power uprate on in-plant radiation levels in the JAFNPP facility during both normal operation and post-accident. The licensee has concluded that radiation levels during both normal

operation and post-accident may increase slightly (at most, proportional to the increase in power level). The slight increases in in-plant radiation levels expected due to the proposed power uprate are not expected to affect radiation zoning or shielding requirements. Individual worker occupational exposures will be maintained within acceptable limits by the existing Health Physics program which the licensee uses to control access to radiation areas.

Therefore, the NRC staff has concluded that the slightly increased in-plant radiation levels will not have a significant environmental impact. The offsite doses associated with normal operation are not significantly affected by operation at the proposed uprated power level and are expected to remain well within the limits of 10 CFR Part 20 and 10 CFR Part 50, Appendix I. These limits are imposed by Technical Specification which will not be changed by the proposed power uprate.

Therefore, the NRC staff has concluded that the offsite doses due to normal operation at the proposed uprate conditions will not result in a significant environmental impact.

The licensee considered the following design basis accidents in the reassessment of the radiological consequences at JAFNPP under power uprate conditions:

- (1) LOCA (drywell leakage and ESF component leakage pathways),
- (2) Main Steam Line Break (MSLB) outside containment,
- (3) Control Rod Drop Accident (CRDA), and
- (4) Refueling Accident (RA)

The basic data and assumptions in each of the four accident scenarios are consistent with the current licensing basis and the models in the Standard Review Plan (US NRC NUREG-0800) and applicable regulatory guides. The highest immersion dose to an offsite receptor is 11.2 rem, to the thyroid at the low population zone following a design basis LOCA. The worst case offsite dose with respect to the regulatory limits is the post-LOCA whole body dose at the site boundary, which amounts to 8.5% of the limit. For the control room, the worst case immersion dose is to the thyroid following a CRDA. It amounts to approximately 77% of the regulatory limit. The licensee's analyses indicate that the calculated offsite radiological consequences doses for all DBAs are within the dose acceptance criteria stated in the NRC's SRP and 10 CFR Part 100 and also comply with the dose acceptance criteria for control room operators given in General Design

Criteria (GDC) 19 of Appendix A to 10 CFR Part 50. The staff concludes that the offsite radiological consequences and control room operator doses for all DBAs at the uprated power level will continue to meet the acceptance criteria of the SRP, 10 CFR Part 100, and GDC 19.

The power uprate will not increase the probability or consequences of accidents, no changes are being made in the types of any effluents that may be released offsite, and there is no significant increase in the allowable individual or cumulative occupational radiation exposure. Accordingly, the Commission concludes that there are no significant radiological environmental impacts associated with the proposed action. Alternatives to the Proposed Action:

Since the Commission has concluded there is no measurable 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 James A. FitzPatrick Nuclear Power Plant.

Agencies and Persons Consulted

In accordance with its stated policy, on April 22, 1996, the staff consulted with the New York State official, F. William Valentino 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 June 12, 1992, as supplemented by letters dated September 17, 1992, March 17, 1993, August 17, 1993, August 18, 1993, December 29, 1993, and June 29, 1995, 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 Reference and Documents Department, Penfield Library, State University of New York, Oswego, New York 13126.

References

1. GE Nuclear Energy, "Generic Guidelines for General Electric Boiling Water Reactor Power Uprate," Licensing Topical Report NEDO-31897, Class 1 (non-proprietary), February 1992; and NEDC-31897P-A, Class III (proprietary), May 1992.

2. W.T. Russell, U.S. Nuclear Regulatory Commission, letter to P.W. Marriott, General Electric Company, "Staff Position Concerning General Electric Boiling Water Reactor Power Uprate Program," September 30, 1991.

3. Final Environmental Statement related to operation of James A. FitzPatrick Nuclear Power Plant, March 1973.

Dated at Rockville, Maryland, this 26th day of November 1996.

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