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Docket No. 50-219
LS05-82-07-018

Mr. P. B. Fiedler
Vice President & Director - Oyster Creek
Oyster Creek Nuclear Generating Station
Post Office Box 388
Forked River, New Jersey 08731

Dear Mr. Fiedler:

SUBJECT: LIMITING SER POINTS FOR FIVE ELECTROMATIC RELIEF VALVES - OYSTER CREEK

The Commission has issued the enclose Amendment No. 62 to Provisional Operating License No. DPR-16 for the Oyster Creek Nuclear Generating Station. This amendment consists of changes to the Technical Specifications in response to your application dated August 27, 1981.

This amendment authorizes changes to the limiting set points for five electromatic relief valves for the Reactor Coolant System.

Sincerely,

/S/ by Paul W. O'Connor for DMC

Dennis M. Crutchfield, Chief
Operating Reactors Branch #5
Division of Licensing

Enclosures:
1. Amendment No. 62 to License No. DPR-16
2. Safety Evaluation
3. Notice of Issuance

cc w/enclosures:
See next page

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F.R. NOTICE & AMENDMENT 7/12/82

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DATE	7/1/82	7/1/82	7/12/82	7/9/82	7/9/82		

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Mr. P. B. Fiedler

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

GPU NUCLEAR CORPORATION

AND

JERSEY CENTRAL POWER & LIGHT COMPANY

DOCKET NO. 50-219

OYSTER CREEK NUCLEAR GENERATING STATION

AMENDMENT TO AMENDED PROVISIONAL OPERATING LICENSE

Amendment No. 62
License No. DPR-16

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by GPU Nuclear Corporation and Jersey Central Power and Light Company (the licensees) dated August 27, 1981, complies with the standards and requirements of the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 50 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and Paragraph 2.C(2) of Provisional Operating License No. DPR-16 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 62 are hereby incorporated in the license. GPU Nuclear Corporation shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Paul W. O'Connor for D.M.C.

Dennis M. Crutchfield, Chief
Operating Reactors Branch #5
Division of Licensing

Attachment:
Changes to the Technical
Specifications

Date of Issuance: July 12, 1982

For operation in the startup mode while the reactor is at low pressure, the IRM scram setting of 15% of rated power provides 22% thermal margin between the maximum power and the safety limit, 18.3% of rated. The margin is adequate to accommodate anticipated maneuvers associated with power plant startup. There are a few possible sources of rapid reactivity input to the system in the low power low flow condition. Effects of increasing pressure at zero or low void content are minor, cold water from sources available during startup is not much colder than that already in the system, temperature coefficients are small, and control rod patterns are constrained to be uniform by operating procedures backed up by the rod worth minimizer. Worth of individual rods is very low in a uniform rod pattern. Thus, of all possible sources of reactivity input, uniform control rod withdrawal is the most probable cause of significant power rise. Because the flux distribution associated with uniform rod withdrawals does not involve high local peaks, and because several rods must be moved to change power by a significant percentage of rated, the rate of power rise is very slow. Generally the heat flux is in near equilibrium with the fission rate. In an assumed uniform rod withdrawal approach to the scram level, the rate of power rise is no more than five percent of rated per minute, and the IRM system would be more than adequate to assure a scram before the power could exceed the safety limit. The IRM scram remains active until the mode switch is placed in the run position at which time the trip becomes a coincident IRM upscale, APRM downscale scram. The Reactor Protection System is designed such that reactor pressure must be above 825 psig to successfully transfer into the RUN mode, thus assuring protection for the fuel cladding safety limit.

The settings on the reactor high pressure scram, anticipatory scrams, reactor coolant system relief valves and isolation condenser have been established to assure never reaching the reactor coolant system pressure safety limit as well as assuring the system pressure does not exceed the range of the fuel cladding integrity safety limit. In addition, the APRM neutron flux scram and the turbine bypass system also provide protection for these safety limits, e.g., turbine trip and loss of electrical load transients (8). In addition to preventing power operation above 1060 psig, the pressure scram backs up the other scrams for these transients and other seam line isolation type transients. With the addition of the anticipatory scrams, the transient analysis for operation at 1930 MWt shows that the turbine trip with failure of the bypass system transient is the worst case transient with respect to peak pressure. Analysis of this transient shows that the relief valves limit the peak pressure well below the 1250 psig range of applicability of the fuel cladding integrity safety limit and the 1375 psig reactor coolant system pressure safety limit. Actuation of the isolation condenser during these transients removes the reactor decay heat without further loss of reactor coolant thus protecting the reactor water level safety limit.

ATTACHMENT TO LICENSE AMENDMENT NO. 62

PROVISIONAL OPERATING LICENSE NO. DPR-16

DOCKET NO. 50-219

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages. The revised pages are identified by captioned amendment number and contain vertical lines indicating the area of change.

PAGES

2.3-5

2.3-2

2.2-1

FUNCTION	LIMITING SAFETY SYSTEM SETTINGS
2) Neutron Flux, Control Rod Block a)	For recirculation flow, $W \leq 61 \times 10^6$ lb/hr: $\leq ([1.34 \times 10^{-6}] W + 24.3)$ percent of rated neutron flux when total peaking factors in all fuel types are less than or equal to those in Specification 2.1.A.1, or The lowest value of: $\leq ([1.34 \times 10^{-6}] W + 24.3 \left[\frac{PF_o}{PF}\right]$ percent of rated neutron flux from among those calculated for each fuel type with total peaking factors, $PF > PF_o$, where PF_o = peaking factor in Specification 2.1.A.1 For recirculation flow, $W > 61 \times 10^6$ lb/hr: ≤ 106 percent of rated neutron flux when total peaking factors in all fuel types are less than or equal to those in Specification 2.1.A.1, or The lowest value of $\leq 106 \left[\frac{PFo}{PF}\right]$ percent of rated neutron flux from among those calculated for each fuel type with total peaking factors, $PF > PF_o$, where PF_o = peaking factor in Specification 2.1.A.1
3) Reactor High Pressure, Scram	$\leq$ 1060 psig.
4) Reactor High Pressure, Relief Valves Initiation	2 valves $\leq$ 1070 psig 3 valves $\leq$ 1090 psig
5) Reactor High Pressure, Isolation Condenser Initiation	$\leq$ 1060 psig with time delay $\leq$ 15 seconds.
6) Reactor High Pressure, Safety Valve Initiation	4 @ 1212 psig 4 @ 1221 psig 4 @ 1230 psig 4 @ 1239 psig $\pm$ 12 psi

2.2. SAFETY LIMIT - REACTOR COOLANT SYSTEM PRESSURE

Applicability: Applies to the limit on reactor coolant system pressure.

Objective: Preserve the integrity of the reactor coolant system.

Specification: The reactor coolant system pressure shall not exceed 1375 psig whenever irradiated fuel is in the reactor vessel.

Bases: The reactor coolant system[1] represents an important barrier in the prevention of the uncontrolled release of fission products. It is essential that the integrity of this system be protected by establishing a pressure limit to be observed whenever there is irradiated fuel in the reactor vessel.

The pressure safety limit of 1375 psig was derived from the design pressures of the reactor pressure vessel, coolant piping, and isolation condenser. The respective design pressures are 1250 psig at 575°F, 1200 psig at 570°F and 1250 psig at 575°F. The pressure safety limit was chosen as the lower of the pressure transients permitted by the applicable design codes: ASME Boiler and Pressure Vessel Code Section I for the pressure vessel, ASME Boiler and Pressure Vessel Code Section III for the isolation condenser and the ASA Piping Code Section B31.1 for the reactor coolant system piping. The ASME Code permits pressure transients up to 10% over the design pressure (110% x 1250 = 1375 psig) and the ASA Code permits pressure transients up to 15% over the design pressure (115% x 1200 = 1380 psig).

The design basis for the reactor pressure vessel makes evident the substantial margin of protection against failure at the safety pressure limit of 1375 psig. The vessel has been designed for a general membrane stress no greater than 20,000 psi at an internal pressure of 1250 psig and temperature of 575°F; this is more than a factor of 2 below the yield strength of 42,300 psi at this temperature. At the pressure limit of 1375 psig, the general membrane stress increases to 22,000 psi, still almost a factor of 2 below the yield strength.

The reactor coolant system piping provides a comparable margin of protection at the established pressure safety limit.

The normal operating pressure of the reactor coolant system is 1020 psig. An over-pressurization analysis[2] is performed each cycle to assure the pressure safety limit is not exceeded. The reactor fuel cladding can withstand pressures up to the safety limit, 1375 psig, without collapsing(3). Finally, reactor system pressure is continuously monitored in the control room during reactor operation on the 1600 psi full scale pressure recorder with an error of $< 1\%$ and a recorder time response of one second.

REFERENCES

(1) FDSAR, Volume I, Section IV.
(2) License Application Amendment 76.
(3) FDSAR, Volume I, Section III-2.3.3

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

FOR OYSTER CREEK NUCLEAR GENERATING STATION

SUPPORTING AMENDMENT NO. 62 TO PROVISIONAL OPERATING LICENSE NO. DPR-16

GPU NUCLEAR CORPORATION AND

JERSEY CENTRAL POWER & LIGHT COMPANY

DOCKET NO. 50-219

1.0 INTRODUCTION

By letter dated August 27, 1981 GPU Nuclear Corporation and Jersey Central Power & Light Company (the licensees) requested an amendment to Provisional Operating License No. DPR-16 for the Oyster Creek Nuclear Generating Station. This amendment would authorize changes to the limiting set points for five electromatic relief valves for the Reactor Coolant System.

2.0 DISCUSSION AND EVALUATION

Current Oyster Creek Technical Specifications (T/S) require the electromagnetic relief valve (ERV) opening setpoints to be less than or equal to 1085 psia.

A previous study to evaluate the structural response of the torus to the vent clearing effects during ERV discharge recommended lowering the opening setpoint of one ERV in each of two discharge lines to 1065 psia. This limited the number of initial valve lifts into a common discharge header to one valve, thus clearing the non-condensible gases from the pipe at a slower rate which reduces stresses on the torus. The remaining ERV's in each header would discharge into a pipe in which steam is flowing and would therefore cause lower stresses. Based upon the maximum pressurization rate which occurs during the limiting transient, a 20 psi margin was required between the two ERV opening septoints to ensure sufficient time difference between ERV openings to clear non-condensibles from the discharge pipe during blowdown.

A requirement from the TMI-2 lessons learned was to investigate methods to reduce the number of challenges to relief valves. One method to reduce relief valve challenges is to increase the opening setpoints. The licensee performed an analyses to determine if the Oyster Creek ERV opening setpoint could be raised to provide margin (operating pressure to opening setpoint pressure) similar to that which existed prior to lowering the setpoints on two of the ERV's; and in addition maintain a 20 psi opening setpoint separation to reduce torus stresses. The results show that the two lower opening setpoints could be increased from 1065 psia to 1085 psia and also that the three higher opening setpoints could be increased to 1105 psia.

Pressurization transients which result in relief valve actuation were reanalyzed with the revised setpoints and evaluated against the design criteria specified in the Technical Specifications. The design criteria used for accepting the results of a pressurization transient are: (1) a peak pressure of less than the lowest safety valve (SV) setpoint for normal transients and 110% of reactor coolant pressure boundary design pressure for the limiting abnormal operational transient; and (2) a change in critical power ratio (ΔCPR) of less than 0.15, the ΔCPR for the previously calculated limiting transient (rod withdrawal error) for Oyster Creek.

The following pressurization transients were analyzed by the licensee: turbine trip, main steamline isolation valve closure, loss of electrical load, loss of auxiliary power and loss of main condenser vacuum. The limiting pressurization transients are turbine trip and main steamline isolation valve closure. For the turbine trip transient the peak pressure was 1120 psia. The peak pressure for the main steamline isolation valve closure transient was 1135 psia. Both the peak pressures from these transients are below the safety valve opening setpoint. The ΔCPR did not change for these transients.

The limiting abnormal pressurization transient is the turbine trip without bypass. The resultant peak pressure was 1201 psia with a ΔCPR of .025. The results of the transient analysis are acceptable since the design criteria specified above are not exceeded.

The limiting LOCA analysis for Oyster Creek is a large break which does not result in ERV actuation. Therefore, and ERV opening setpoint change has no effect on a large LOCA. The limiting break size that results in ERV actuation is 1.0 sq. ft. The increased ERV opening setpoints increases the calculated peak cladding temperature about 3^{o}F. The licensee states that this will not change the limiting break size or location nor result in exceeding the 2200^{o}F limit for clad temperature. We therefore, find the ERV opening setpoint increase effect on LOCA transients acceptable.

The licensee also performed an analysis to evaluate the affect of the proposed ERV opening setpoint change on the hydrodynamic load along the header relief valve discharge pipes. The results show that the maximum hydrodynamic load increased by 0.81% during the blowdown transient. This small increase will have a negligible impact on the torus structure, and is less than the original design with all ERV's opening at the same setpoint.

The overpressure analysis to determine compliance with the ASME Code (110% of design pressure) is not affected by this ERV setpoint change. As discussed in the FSAR, the overpressure analyses takes no credit for reactor scram or ERV opening in verifying the design adequacy of the safety valves.

Based on our evaluation, we conclude that the proposed changes to the technical specification, Section 2.2, Safety Limit-Reactor Coolant System Pressure are acceptable.

3.0 ENVIRONMENTAL CONSIDERATION

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR §51.5(d)(4) that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

4.0 CONCLUSION

We also conclude, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously considered, does not involve a significant decrease in a safety margin, and does not create the possibility of an accident of a type different from any evaluated previously, the amendment does not involve a significant hazards consideration; (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner; and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or the health and safety of the public.

5.0 ACKNOWLEDGMENTS

The following NRC personnel contributed to this evaluation:

R. Frahm

Date: July 12, 1982

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-219

GPU NUCLEAR CORPORATION AND

JERSEY CENTRAL POWER & LIGHT COMPANY

NOTICE OF ISSUANCE OF AMENDMENT TO PROVISIONAL OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 62 to Provisional Operating License No. DPR-16, issued to GPU Nuclear Corporation and Jersey Central Power & Light Company (the licensees), which revised the Technical Specifications for operation of the Oyster Creek Nuclear Generating Station (the facility) located in Ocean County, New Jersey. The amendment is effective as of its date of issuance.

The amendment authorizes changes to the limiting setpoints for five electramatic relief valves for the Reactor Coolant System.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice of this amendment was not required since the amendment does not involve a significant hazards consideration.

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of this amendment.

For further details with respect to this action, see (1) the application for amendment dated August 27, 1981, (2) Amendment No. 62 to License No. DPR-16, and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H. Street, N.W., Washington D. C., and the Local Public Document Room, 101 Washington Street, Toms River, New Jersey 08753. A single copy of items (2) and (3) mey be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Licensing.

Dated at Bethesda, Maryland, this 12 day of July, 1982.

FOR THE NUCLEAR REGULATORY COMMISSION

Paul W. O'Connor

Paul W. O'Connor, Acting Chief
Operating Reactors Branch #5
Division of Licensing