



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

June 20, 1984

Docket No. 50-219  
LS05-84-06-033

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

Dear Mr. Fiedler:

SUBJECT: SCRAM DISCHARGE VOLUME (SDV)

Re: Oyster Creek Nuclear Generating Station

The Commission has issued the enclosed Amendment No. 73 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 December 21, 1983, which supersedes application dated July 13, 1983, as supplemented by letter dated May 15, 1984 and clarified by letter dated March 23, 1984.

The amendment authorizes changes to the Appendix A Technical Specifications concerning long term scram system reliability.

Note that the Technical Specification changes are to become effective upon completion of the modifications prior to restart from the current cycle 10 refueling outage.

A Notice of Consideration of Issuance of Amendment to License and Proposed No Significant Hazards Consideration Determination and Opportunity for Hearing related to the requested action was published in the Federal Register on March 22, 1984 (49 FR 10735). No request for hearing and no comments were received.

In your letter dated December 21, 1983 you stated that you would provide the Scram Discharge Volume (SDV) water level final trip settings upon completion of system testing. The supplemental information submitted by letter dated May 15, 1984 provided the final setpoint values and ensures that even considering the maximum design scram valve leakage, sufficient scram discharge volume will be available to permit 137 control rods to scram, if required. Since there is sufficient free volume remaining in the scram header piping to accommodate a scram with the setpoints established, the Significant Safety Hazards Analysis, provided by your December 21, 1983 submittal, is not altered.

Add: R. GOEL  
O. PAU  
T. BARNHART (4)  
L. HARMON (2)

DSU USE CODE SE-01  
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C. CONSTANTINO (4)  
11

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In addition, line No. 5, page 3.1-7 of Table 3.1.1 which was forwarded by your July 13, 1983 letter accounted for both new scram discharge volumes (SDV). As such, the number in the column headed "Minimum Number of Instrument Channels Per Operable Trip System" was four. Line No. 5 was modified in the December 21, 1983 submittal when each SDV was accounted for separately. Consequently, the number in the above referenced column has been changed to two for each SDIV.

The information submitted by letter dated March 23, 1984 provided clarification of the December 21, 1983 submittal. In a previous amendment the "greater than or equal to" as well as the "less than or equal to" notations in the trip setting column on page 3.1-11 had been inadvertently omitted. This change request provided an opportunity to correct this error, and the notation as it had originally existed has been inserted. Thus, the supplemental information provided in letters dated March 23, and May 15, 1984 did not change the scope of the staff's notice for opportunity for hearing.

A copy of our related Safety Evaluation is also enclosed. A notice of issuance pertaining to this action will appear in the Commission's next monthly notice publication in the Federal Register.

Sincerely,  
Original signed by  
Thomas V. Wambach for/

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

Enclosures:

- 1. Amendment No. 73 to License No. DPR-16
- 2. Safety Evaluation

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Mr. P. B. Fiedler

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A copy of our related Safety Evaluation is also enclosed. A notice of issuance pertaining to this action will appear in the Commission's next monthly notice publication in the Federal Register.

Sincerely,

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

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**ODP**  
DL: ASB  
OParr  
5/21/84

Mr. P. B. Fiedler

- 3 -

June 20, 1984

cc

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Licensing Supervisor  
Oyster Creek Nuclear Generating Station  
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Forked River, New Jersey 08731



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

GPU NUCLEAR CORPORATION

AND

JERSEY CENTRAL POWER & LIGHT COMPANY

OYSTER CREEK NUCLEAR GENERATING STATION

AMENDMENT TO PROVISIONAL OPERATING LICENSE

Amendment No. 73  
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 December 21, 1983, which supersedes application dated July 13, 1983, as supplemented by letter dated May 15, 1984 and clarified by letter dated March 13, 1984, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and 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 51 of the Commission's regulations and all applicable requirements have been satisfied.

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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. 73, 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. However, the Technical Specification changes approved by this amendment are to be implemented upon completion of the modification prior to restart from the current cycle 10 refueling outage.

FOR THE NUCLEAR REGULATORY COMMISSION

*for* *Thomas V. Wambach*  
Dennis M. Crutchfield, Chief  
Operating Reactors Branch #5  
Division of Licensing

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: June 20, 1984

ATTACHMENT TO LICENSE AMENDMENT NO. 73

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 the captioned amendment number and contain vertical lines indicating the area of change.

PAGES

3.1-4

3.1-7

3.1-7a

3.1-11

3.1-11a

4.2-1a

isolation, initiate automatic depressurization in conjunction with low-low-low-reactor water level, initiate the standby gas treatment system and isolate the reactor building. The scram function shuts the core down during the loss-of-coolant accidents. A steam leak of about 15 gpm and a liquid leak of about 35 gpm from the primary system will cause drywell pressure to reach the scram point; and, therefore, the scram provides protection for breaks greater than the above.

High drywell pressure provides a second means of initiating the core spray to mitigate the consequences of a loss-of-coolant accident. Its set point of 2 psig initiates the core spray in time to provide adequate core cooling. The break-size coverage of high drywell pressure was discussed above. Low-low water level and high drywell pressure in addition to initiating core spray also causes isolation valve closure. These settings are adequate to cause isolation to minimize the offsite dose within required limits.

It is permissible to make the drywell pressure instrument channels inoperable during performance of the integrated primary containment leakage rate test provided the reactor is in the cold shutdown condition. The reason for this is that the Engineered Safety Features, which are effective in case of a LOCA under these conditions, will still be effective because they will be activated by low-low reactor water level.

The scram discharge volume has two separate instrument volumes utilized to detect water accumulation. The high water level is based on the design that the water in the SDIV's, as detected by either set of level instruments, shall not be allowed to exceed 29.0 gallons; thereby, permitting 137 control rods to scram. To provide further margin, an accumulation of not more than 14.0 gallons of water, as detected by either instrument volume, will result in a rod block and an alarm. The accumulation of not more than 7.0 gallons of water, as detected in either instrument volume will result in an alarm.

Detailed analyses of transients have shown that sufficient protection is provided by other scrams below 45% power to permit bypassing of the turbine trip and generator load rejection scrams. However, for operational convenience, 40% of rated power has been chosen as the setpoint below which these trips are bypassed. This setpoint is coincident with bypass valve capacity.

A low condenser vacuum scram trip of 23" Hg has been provided to protect the main condenser in the event that vacuum is lost. A loss of condenser vacuum would cause the turbine stop valves to close, resulting in a turbine trip transient. The low condenser vacuum trip anticipates this transient and scrams the reactor. The condenser is capable of receiving bypass steam until 7" Hg vacuum thereby mitigating the transient and providing a margin.



TABLE 3.1.1 PROTECTIVE INSTRUMENTATION REQUIREMENTS

Function	Trip Setting	Reactor Modes in which Function Must Be Operable				Min. No. of Operable or Operating [tripped] Trip systems	Min. No. of Instrument Channels Per Operable Trip Systems	Action Required*
		Shutdown	Refuel	Startup	Run			
A. <u>Scram</u>								Insert control rods
1. Manual Scram		X	X	X	X	2	1	
2. High Reactor Pressure	**		X(s)	X	X	2	2	
3. High Drywell Pressure	≤ 2 psig		X(u)	X(u)	X	2	2	
4. Low Reactor Water Level	**		X	X	X	2	2	
5. a. High Water Level in Scram Discharge Volume North Side	≤ 29 gal.		X(a)	X(z)	X(z)	2	2	
b. High Water Level in Scram Discharge Volume South Side	≤ 29 gal.		X(a)	X(z)	X(z)	2	2	
6. Low Condenser Vacuum	≥ 23" hg.		X(b)	X(b)	X	2	2	

Function	Trip Setting	Reactor Modes in which Function Must Be Operable				Min. No. of Operable or Operating [tripped] Trip systems	Min. No. of Instrument Channels Per Operable Trip Systems	Action Required*
		Shutdown	Refuel	Startup	Run			
7. High Radiation in Main Steam Line Tunnel	< 10 x normal Background		X(s)	X	X	2	2	Insert control rods
8. Average Power Range Monitor (APRM)	**		X(c,s)	X(c)	X(c)	2	3	
9. Intermediate Range Monitor (IRM)	**		X(d)	X(d)		2	3	
10. Main Steamline Isolation Valve Closure	**		X(b,s)	X(b)	X	2	4	
11. Turbine Trip Scram	**				X(j)	2	4	
12. Generator Load Rejection Scram	**				X(j)	2	2	

Function	Trip Setting	Reactor Modes in which Function Must Be Operable				Min. No. of Operable or Operating [tripped] Trip systems	Min. No. of Instrument Channels Per Operable Trip Systems	Action Required*
		Shutdown	Refuel	Startup	Run			
<b>K. Rod Block</b>								
1.	SRM Upscale $\leq 5 \times 10^5$ cps		X	X(1)		1	3(y)	No control rod with- drawals per- mitted
2.	SRM Downscale $\geq 100$ cps(f)		X	X(1)		1	3(y)	
3.	IRM Downscale $\geq 5/125$ fullscale(g)		X	X		2	3	
4.	APRM Upscale **		X(s)	X	X	2	3(c)	
5.	APRM Downscale $\geq 2/150$ fullscale				X	2	3(c)	
6.	IRM Upscale $\leq 108/125$ fullscale		X	X		2	3	
7.	a) water level $\leq 14$ gallons high scram discharge volume North		X(z)	X(z)	X(z)	1	1 per instrum. volume	
	b) water level $\leq 14$ gallons high scram discharge volume South		X(z)	X(z)	X(z)	1	1 per instrum. volume.	
<b>L. Condenser Vacuum Pump Isolation</b>								
1.	High Radia- ation in Main Steam Tunnel	$\leq 10$ x Normal background		During Startup and Run when vacuum pump 1 operating		2	2	Insert Control Rods

Function	Trip Setting	Reactor Modes in which Function Must Be Operable				Min. No. of Operable or Operating [tripped] Trip systems	Min. No. of Instrument Channels Per Operable Trip Systems	Action Required*
		Shutdown	Refuel	Startup	Run			
M. <u>Diesel Generator Load Sequence Timers</u>	Time delay after energization of relay							Consider containment spray loop inoperable and comply with Spec. 3.4.C (See note q.).
1. Containment Spray Pump	40 sec $\pm$ 15%	X	X	X	X	2(m)	1(n)	
2. CRD pump	60 sec $\pm$ 15%	X	X	X	X	2(m)	1(n)	Consider the pump inoperable and comply with Spec. 3.4.D (See Note q)
3. Emerg. Service Water Pump (r)	45 sec. $\pm$ 15%	X	X	X	X	2(m)	1(n)	Consider the loop inoperable and comply with Spec. 3.4.C
4. Service Water Pump (aa)	120 sec. $\pm$ 15% 10 sec. $\pm$ 15%	(SK1A) X (SK2A) (SK7A) (SK8A)	X	X	X	2(o)	(See Note q) 2(p)	Consider the pump inoperable and comply within 7 days (See Note q)
5. Closed Cooling Water Pump (bb)	166 Sec. $\pm$ 15%	X	X	X	X	2(m)	1(n)	Consider the pump inoperable and comply within 7 days (See Note q)

- F. At specific power operation conditions, the actual control rod configuration will be compared with the expected configuration based upon appropriately corrected past data. This comparison shall be made every equivalent full power month. The initial rod inventory measurement performed when equilibrium conditions are established after a refueling or major core alteration will be used as base data for reactivity monitoring during subsequent power operation throughout the fuel cycle.
- G. At power operating conditions, the actual control rod density will be compared with the 3.5 percent control rod density included in Specification 3.2.B.6. This comparison shall be made every equivalent full power month.
- H. The scram discharge volume drain and vent valves shall be verified open at least once per 31 days, except in shutdown mode\*, and shall be cycled at least one complete cycle of full travel at least quarterly.
- I. All withdrawn control rods shall be determined OPERABLE by demonstrating the scram discharge volume drain and vent valves OPERABLE. This will be done at least once per refueling cycle by placing the mode switch in shutdown and by verifying that:
- a. The drain and vent valves close within 30 seconds after receipt of a signal for control rods to scram, and
  - b. The scram signal can be reset and the drain and vent valves open when the scram discharge volume trip is bypassed.

Basis: The core reactivity limitation (Specification 3.2.A) requires that core reactivity be limited such that the core could be made subcritical at any time during the operating cycle, with the strongest operable control rod fully withdrawn and all other operable rods fully inserted. Compliance with this requirement can be demonstrated conveniently only at the time of refueling. Therefore, the demonstration must be such that it will apply to the entire subsequent fuel cycle. The demonstration is performed with the reactor in the cold, xenon-free condition and will show that the reactor is sub-critical at that time by at least  $R + 0.25\% \Delta k$  with the highest worth operable control rod fully withdrawn.

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\* These valves may be closed intermittently for testing under administrative control.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
SUPPORTING AMENDMENT NO. 73 TO PROVISIONAL OPERATING LICENSE NO. DPR-16

GPU NUCLEAR CORPORATION AND  
JERSEY CENTRAL POWER & LIGHT COMPANY  
OYSTER CREEK NUCLEAR GENERATING STATION

DOCKET NO. 50-219

1.0 INTRODUCTION

By letter dated December 21, 1983, which supersedes the application dated July 13, 1983, and clarified by letter dated March 23, 1984, GPU Nuclear Corporation (GPU) (the licensee) requested an amendment to Provisional Operating License No. DPR-16 for the Oyster Creek Nuclear Generating Station. This amendment would authorize changes to the Scram Discharge Volume (SDV) in Section 3.1, Protective Instrumentation and in Section 4.2, Reactivity Control.

A Notice of Consideration of Issuance of Amendment and Proposed No Significant Hazards Consideration Determination and Opportunity for Hearing related to the requested action was published in the Federal Register on March 22, 1984 (49 FR 10735). No request for hearing or public comments were received.

In a letter dated December 21, 1983 the licensee stated that it would provide the Scram Discharge Volume (SDV) water level final trip settings upon completion of system testing. The supplemental information submitted by letter dated May 15, 1984 provided the final setpoint values and ensures that, even considering the maximum design scram valve leakage, sufficient scram discharge volume will be available to permit 137 control rods to scram, if required. Since there is sufficient free volume remaining in the scram header piping to accommodate a scram with the setpoints established, the Significant Safety Hazards Analysis, provided by the December 21, 1983 submittal, is not altered.

In addition, line No. 5, page 3.1-7 of Table 3.1.1 which was forwarded by the July 13, 1983 letter accounted for both new scram discharge volumes (SDV). As such, the number in the column headed "Minimum Number of Instrument Channels Per Operable Trip System" was four. Line No. 5 was modified in the December 21, 1983 submittal when each SDV was accounted for separately. Consequently, the number in the above referenced column has been changed to two for each SDV.

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The information submitted by letter dated March 23, 1984 provided clarification of the December 21, 1983 submittal. The supplemental information provided in letters dated March 23, and May 15, 1984 did not change the scope of the staff's notice for opportunity for hearing. In a previous amendment the "greater than or equal to" as well as the "less than or equal to" notations in the trip setting column on page 3.1-11 had been inadvertently omitted. This change request provided an opportunity to correct this error, and the notation as it had originally existed has been inserted.

## 2.0 DISCUSSION AND EVALUATION

On June 28, 1980, during a routine shutdown of the Browns Ferry Unit 3 reactor, a manual scram from approximately 36% power failed to insert about 40% of the control rods. Two additional manual scrams followed by an automatic scram were required before all control rods were fully inserted. The total time that elapsed from the initial scram until all rods were inserted was approximately 15 minutes.

Subsequent investigations by the licensee, General Electric Company, and the NRC staff narrowed the cause of the problem to an accumulation of water in the SDV header at the time of the first scram. It is believed that water accumulated because the SDV system venting and/or draining were obstructed. Furthermore, the accumulation of water was not detected by SDV level instruments which provided input to the reactor protection system. It was believed that the SDV level instrumentation was designed to scram the reactor before water accumulated in the scram discharge volume that could hinder scram. In order to improve the overall design of the SDV system an NRR task force has been working with a subgroup of the BWR Owners Group to develop revised scram discharge system design and safety criteria. The NRC has endorsed the criteria developed by the BWR Owners Group. The requested change in the Technical Specifications, Section 3.1, would revise the BWR SDV high water level settings for scram and rod block. Scram Discharge Volume modifications are being performed at the Oyster Creek Nuclear Power Plant in accordance with the BWR Owners Group recommendations in response to IE Bulletin 80-17 and its supplements. As a result of providing two SDV instrument volumes, the high water level scram and rod block set points are to be changed. The scram discharge volume drain and vent valves closure times, Section 4.2, Technical Specification, are to be changed to be in agreement with the BWR Owners Group recommendations.

The high water level setting for scram is requested to be changed from 37 gallons to 18.36 gallons (59 inches) of water, which will permit the 137 control rods to scram by either set of level instruments. The high water level setting for rod block is requested to be changed from 18 gallons to 9 gallons (29 inches) of water which results in a rod block and an alarm at either instrument volume. The drain and vent valves closure times are requested to be changed from 60 seconds to 30 seconds.

The proposed changes are consistent with the staff guidelines as stated in the December 1, 1980 BWR Scram Discharge System Safety Evaluation, and do not represent a reduction in the ability of the system to perform the safety function. Thus, the staff concludes that the proposed changes to Section 3.1 and 4.2 of the Technical Specifications are acceptable.

The proposed Technical Specification changes would become effective upon completion of the modification prior to restart from the current cycle 10 refueling outage.

### 3.0 ENVIRONMENTAL CONSIDERATION

This amendment involves a change in the installation or use of a facility component located within the restricted area. The staff has determined that the amendment involves no significant increase in the amounts of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupation radiation exposure. The Commission has previously issued a proposed finding that this amendment involves no significant hazards consideration and there has been no public comment on such finding. Accordingly, this amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR Section 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.

### 4.0 CONCLUSION

The staff has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner; and (2) 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 to the health and safety of the public.

### 5.0 ACKNOWLEDGEMENT

This evaluation was prepared by R. Goel.

Dated: June 20, 1984