GPU NUCLEAR

GPU Nuclear, Inc.
U.S. Route #9 South
Post Office Box 388
Forked River, NJ 08731-0388
Tel 609-971-4000

March 9, 2000
1940-00-20057

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington DC 20555

Dear Sir:

Subject: Oyster Creek Nuclear Generating Station
Docket No. 50-219
Licensee Event Report 00-002: Unanalyzed Condition with Backup Pressure Regulator Inoperable between 25% and 90% Power

Enclosed is Licensee Event Report 00-002. This event did not affect the health and safety of the public or plant personnel.

If any additional information or assistance is required, please contact Mr. Paul Czaya of my staff at 609-971-4139.

Very truly yours,

Sander Levin, Acting Site Director
Oyster Creek Nuclear Generating Station

SL/PFC/JD

cc: Administrator, Region I
NRC Project Manager
Senior Resident Inspector

IE22

NRC FORM 366 (4-95) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 04/30/98

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Oyster Creek Unit 1	05000 - 219	1 of 4

TITLE (4)

Unanalyzed Condition With Backup Pressure Regulator Inoperable Between 25% and 90 % Power

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
										05000
02	8	00	00	002	0	03	09	00	FACILITY NAME	DOCKET NUMBER
										05000

OPERATING MODE (9)	N
POWER LEVEL (10)	60%

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR □: (Check one or more) (11)

20.2201(b)	20.2203(a)(2)(v)	50.73(a)(2)(i)	50.73(a)(2)(viii)
20.2203(a)(1)	20.2203(a)(3)(i)	X 50.73(a)(2)(ii)	50.73(a)(2)(x)
20.2203(a)(2)(i)	20.2203(a)(3)(ii)	50.73(a)(2)(iii)	73.71
20.2203(a)(2)(ii)	20.2203(a)(4)	50.73(a)(2)(iv)	OTHER
20.2203(a)(2)(iii)	50.36(c)(1)	50.73(a)(2)(v)	
20.2203(a)(2)(iv)	50.36(c)(2)	50.73(a)(2)(vii)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
John Dougher, Manager, Shift Engineering	609-971-2130

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION	MONTH	DAY	YEAR
X YES (If yes, complete EXPECTED SUBMISSION DATE).	NO		05	01	00

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

Power operation with the electric pressure regulator or the mechanical pressure regulator out of service is not described in the Final Safety Analysis Report. General Electric Service Information Letter (SIL) 614 warns that during operation without a backup pressure regulator, a downscale failure of the primary pressure regulator could cause closure of the turbine control valves (TCV) without opening the bypass valves or actuation of the anticipatory reactor scram associated with TCV fast closure. Consequently, a scram would occur on either high neutron flux or high reactor pressure, depending on valve closure speed and initial reactor power. The SIL also states that, at less than 90% power for a downscale pressure regulator failure without backup, the margin to thermal limits would be less than previously analyzed.

A review of the Oyster Creek operating history has determined there have been periods of power operation at less than 90% power when the backup pressure regulator was out of service.

Administrative controls have been implemented to restrict plant operation when the backup pressure regulator is out of service. Additionally, plant specific analysis is being performed to confirm that sufficient margin to thermal limits exists while operating at greater than or equal to 90% rated thermal power.

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
	05000	YEAR	SEQUENTIAL NUMBER	REV	
Oyster Creek, Unit 1	-219	00	002	0	2 of 4

TEXT *(If more space is required, use additional copies of NRC Form 366A)* (17)

DATE OF OCCURRENCE

The condition described in this report was determined to be reportable on February 8, 2000.

IDENTIFICATION OF OCCURRENCE

As a follow up action to a corrective action report associated with General Electric (GE) SIL 614, a review of the operating history for the electric pressure regulator (EPR) (EIIC-RG) and the mechanical pressure regulator (MPR) determined there have been periods during power operation when the backup pressure regulator was out of service with power level less than 90%. This condition is reportable pursuant to 10 CFR 50.73 (a)(2)(ii) as a condition that resulted in the plant being in an unanalyzed condition that significantly compromises plant safety.

CONDITIONS PRIOR TO DISCOVERY

The plant was operating at approximately 60% power at the time of the discovery with load limited by the out-of-service main transformer (EIIC-XFMR) M1A. However, the plant had been operating at many different power levels with this condition since initial startup. The backup pressure regulator remains in service.

DESCRIPTION OF OCCURRENCE

GE SIL 614 alerted owners of GE boiling water reactors (BWR) that operating without a backup pressure regulator may be an unanalyzed condition and reemphasized the correct setting of the backup pressure regulator. During normal plant operation, both pressure regulators are in service. The purpose of the backup pressure regulator is to take over reactor (EIIC-RCT) pressure control if the controlling pressure regulator fails downscale. Should the controlling pressure regulator experience a downscale failure during plant operation its output signal will begin to close the turbine (EIIC-TRB) control valves (EIIC-PCV) and reactor pressure will increase. The backup pressure regulator is designed to take over pressure control and stabilize pressure at a slightly higher value resulting in a relatively mild transient.

The transient analysis in the Final Safety Analysis Report (FSAR), Section 15.2.1 (Steam Pressure Regulator Failure), assumes that the failure of the primary pressure regulator results in operation of the backup regulator to limit the resulting pressure rise. GE SIL 614 states that a downscale pressure regulator failure transient at reduced power (less than 90%) without a backup regulator will result in fuel thermal margins being less than previously analyzed. If the failure occurs during power operation between 25% and 90% and under minimum allowable fuel thermal margin conditions, the resulting transient will fall outside the licensing basis.

A review of the operating history for the EPR and the MPR determined that there have been periods during power operation when the backup pressure regulator was out of service with power level greater than 25% and less than 90%.

APPARENT CAUSE OF OCCURRENCE

The NSSS vendor for the Oyster Creek Plant discovered a previously unanalyzed transient that is more limiting than the current Licensing Basis transient analysis.

ANALYSIS OF OCCURRENCE AND SAFETY ASSESSMENT

The Turbine Pressure Control System (EIIS-JI and JJ) which is part of the non-safety-related Turbine System (EIIS-TA) affects reactor pressure. Reactor pressure is controlled by the position of the main turbine control valves and bypass valves (EIIC-PCV). The pressure regulator controls the position of these valves. The MPR has a setpoint range of 112 to 1084 psig and the EPR has a setpoint range of 890 to 1010 psig. The pressure regulators compare pressure sensed at the common 30-inch steam header (upstream of the control valves and stop valves) with the setpoint, and adjust valve position accordingly. Prior to exceeding 25% power, the EPR is put into service by lowering its setpoint to a pressure just below the MPR setpoint. The turbine is then synchronized and loaded. From then on the bypass valves are held closed and the EPR adjusts the turbine control valve position to maintain pressure. The MPR acts as a backup. If the EPR were to fail, the MPR would take over and control pressure at its setpoint. The design basis of the pressure control system is that the two pressure regulators are to operate in this manner at reactor power greater than 25%.

A review of the operating history of the plant has identified instances when the EPR was taken out of service for maintenance. During these periods, the MPR served as the primary pressure regulator without a backup. However, failure of the MPR did not occur and these situations did not result in conditions outside the design basis of the plant.

The safety significance of this event is that if a failure of the primary pressure regulator were to occur with the backup pressure regulator out of service, then the resulting transient would be more severe than the turbine trip without bypass transient currently analyzed in the FSAR. Although this event is expected to remain bounded by other limiting transients when initiated at full power, the resulting impact on fuel thermal margins may not remain bounded when initiated at partial power under minimum allowable fuel thermal margin conditions. The severity of this event is dependent on the turbine control valve stroke time in that longer stroke times decrease the effect on the fuel limits. In the power range of 25% to 90%, a failure of the pressure regulator without a backup pressure regulator would result in exceeding the fuel thermal limits. However, there was no safety consequence as a result of this event, as a pressure regulator transient did not occur during the periods when the backup regulator was out of service.

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REV	
Oyster Creek, Unit 1	05000 -219	00	002	00	4 of 4

TEXT *(If more space is required, use additional copies of NRC Form 366A)* (17)

CORRECTIVE ACTION

Appropriate plant administrative controls have been implemented to restrict plant operation when the backup pressure regulator is out of service. Operation above 90% power or below 25% will be allowed for a period not to exceed 30 days without a backup regulator. If one of the two regulators becomes inoperable while operating between 25% and 90%, the pressure regulator will be repaired within the next two hours. If the pressure regulator cannot be repaired within two hours, power will be increased above 90% or decreased below 25% within the following 8 hours.

Additionally, a plant specific analysis is being performed to confirm sufficient margin to thermal limits exists while operating greater than or equal to 90% power. Preliminary results indicate that sufficient margin does exist provided the stroke time on the turbine control valves is not less than 3 seconds. The results of this analysis will be provided in a supplemental LER to be submitted by May 1, 2000.

SIMILAR EVENTS

None