GPU Nuclear

GPU Nuclear Corporation
Post Office Box 388
Route 9 South
Forked River, New Jersey 08731-0388
609 971-4000
Writer's Direct Dial Number:

C321-94-2036
May 3, 1994

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 94-003

Enclosed is Licensee Event Report 94-003.

If there are any questions please contact George Busch, Manager OC Licensing at 609-971-4643.

Very truly yours,

for John J. Barton
Vice President and Director
Oyster Creek

JJB/GWB/jc
Enclosure
cc: Administrator, Region I
Senior Resident Inspector
Oyster Creek NRC Project Manager

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NRC FORM 366N
(5-92)

LICENSEE EVENT REPORT (LER)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED BY OMB NO. 3150-0104
EXPIRES 5/31/95

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Oyster Creek, Unit 1	05000219	1 OF 4

TITLE (4) Turbine Trip/Reactor Scram on High RPV Water Level Due to Erroneous Main Steam Flow

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
04	05	94	94	003	0	05	03	94	FACILITY NAME	DOCKET NUMBER

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

OPERATING MODE (9)	N		20.402(b)	20.405(c)	X	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10)	100		20.405(a)(1)(i)	50.36(c)(1)		50.73(a)(2)(v)	73.71(c)
			20.405(a)(1)(ii)	50.36(c)(2)		50.73(a)(2)(vii)	OTHER
			20.405(a)(1)(iii)	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)	Specify in Abstract below and in Text, NRC Form 366A)
			20.405(a)(1)(iv)	50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)	
			20.405(a)(1)(v)	50.73(a)(2)(iii)		50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
A. U. Sinyak, Engineer Sr. I	609-971-4348

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
B	S J	IMOD	G080	N					

SUPPLEMENTAL REPORT EXPECTED (14)			EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO				

ABSTRACT (16)

On 04/05/94 at 1550 hours a turbine trip and reactor scram occurred due to high reactor water level. Cause of the event was the failure of a proportional amplifier which provides a density correction signal to both A & B steam flow signals. This resulted in a false high steam flow signal which resulted in the feedwater control system increasing feedwater flow to the reactor which caused reactor water level to increase. When water level reached the high level turbine trip setpoint of 175", the turbine tripped and a reactor scram occurred as designed. The faulty electronic module was replaced and the feedwater flow control system was returned to operational status.

DATE OF OCCURRENCE

The event occurred on April 5, 1994 at 1550 hours.

IDENTIFICATION OF OCCURRENCE

On April 5, 1994, at 1550 hours the reactor automatically scrammed due to a turbine trip on a reactor high water level signal from the Reactor Protection System (EIIS JC). Reactor water level reached the high (175" TAF) setpoint and initiated a Main Turbine Trip followed by a reactor scram, as designed.

This event is reportable under 10 CFR 50.73(a)(2)(IV).

CONDITIONS PRIOR TO OCCURRENCE

The Reactor was in the RUN mode, at 1928 MWTH (99.9% of full power).

DESCRIPTION OF THE OCCURRENCE

The initiating event was failure of a proportional amplifier module (IMOD) in the Reactor Feedwater Control System (EIIS SJ) which caused the total steam flow signal to fail upscale high. The Feedwater Control System was in "three element" control mode and correctly responded by increasing the feedwater flow. All three (3) Main Feedwater Flow Regulating Valves (MFRV-FCV) opened to the extent that the feedwater pump runout protection flow limit was reached and the runout protection flow controllers took over the function of controlling the MFRVs. This caused the Runout Protection Indicating Lights on Panel 5F/6F to illuminate, which alerted the operators of a transient condition.

Indicated reactor thermal power increased, therefore, operators reduced reactor recirculation flow to reduce power. Reactor water level continued to increase. The reactor high level turbine trip setpoint was reached and the main turbine stop valves tripped closed. Stop valve closure initiated a reactor scram.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6) YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	PAGE (3)
Oyster Creek, Unit 1	05000219	94	003	0	3 OF 4

DESCRIPTION OF OCCURRENCE (CONT'D.)

Reactor power was at 85% and reactor pressure was 1002.3 psig at the time of scram. As a result of the turbine trip, the rapid closure of the turbine stop valves caused reactor pressure to increase to 1049 psig. This was not high enough to lift the Electromatic Relief Valves (RV) - setpoint 1060+/-2.5 psig, but sufficient to actuate the Reactor Recirculation Pump trip logic (ATWS) - setpoint 1050+/-3.0 psig. The duration of this pressure peak was insufficient to actuate the Isolation Condensers (EIIS BL) - time delay 1.5/-1.0 seconds. Although one channel of the Isolation Condenser initiation logic did time out, the automatic actuation of the Isolation Condensers requires signals from both logic channels.

The Reactor Water Level peaked at approximately 185" TAF. The operators completed the scram follow-up actions, reset the scram, and established a letdown flow path to reduce Reactor Water Level. As reactor water level decreased, the operators restarted the CRD pump, reduced the letdown flow, and restarted one feedwater string. However, the restart of the feedwater pump was not accomplished early enough to prevent a Lo Reactor Water Level scram signal at 137 in. TAF. Subsequently, the normal water level was established, the plant conditions stabilized, and the reactor cooldown was initiated in accordance with approved plant procedures. The transient caused actuation of the following engineered safety features, as designed: - reactor recirculation pump trips (EIIS JE) and diesel generator idle start (EIIS EK).

APPARENT CAUSE OF OCCURRENCE

The root cause of this event was determined to be a capacitor failure in a proportional amplifier that provides steam flow density compensation to the feedwater control system. When the proportional amplifier failed it caused a false high steam flow signal which caused an increase in feedwater flow and subsequent level increase.

ANALYSIS OF OCCURRENCE AND SAFETY ASSESSMENT

The HI reactor water level turbine trip is set at 175" TAF, to protect the main turbine from water damage.

This level transient was rapid and did not allow the operators sufficient time to assess the plant condition and to take actions to prevent the trip. A Post Transient Review Group was convened to review the scram event. From review of logs, charts, and computer data, in addition to interviews of personnel involved in the event, the plant response was considered normal.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6) YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	PAGE (3)
Oyster Creek, Unit 1	05000219	94	003	0	4 OF 4

ANALYSIS OF OCCURRENCE AND SAFETY ASSESSMENT- Cont'd

During this event all engineered safety features operated as designed, which maintained sufficient water level to ensure adequate margin to the fuel cladding integrity safety limit. Based upon the above discussion, the safety significance of the scram event is considered to be minimal.

CORRECTIVE ACTION

The short term corrective actions were taken to troubleshoot and repair the faulty hardware, test it, and return it to the operable status. The long term corrective action is to replace the original feedwater flow control system with a digital flow control system. This plant modification has been developed and is scheduled for installation in September of 1994 (15R refueling outage)

FAILURE DATA

Tag No.	ID-23J
Component:	Proportional Amplifier
Model:	GE/MAX 50-563022CAAC1
Manufacturer:	General Electric

SIMILAR EVENTS

LER 92-009 Reactor Scram on Low Water Level due to Feedwater Flow Control Component Failure.

LER 91-005 Automatic Reactor Scram due to Loss of Feedwater Flow Caused by a Grounded Condensate Pump Motor.

LER 85-006 Reactor Scram Due to Low Reactor Water Level.