GPU NUCLEAR

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

March 30, 2000
1940-00-20081

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 00-003: Manual Scram Following Multiple Reactor Recirculation Pump Trips

Enclosed is Licensee Event Report 00-003. 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 John Rogers, of my staff, at 609.971.4893.

Very truly yours,

for Sander Levin, Acting Site Director
Oyster Creek Nuclear Generating Station

SL/JJR

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

IE22

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

LICENSEE EVENT REPORT (LER)

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.

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Oyster Creek Unit 1	05000 - 219	1 of 6

TITLE (4)

Manual Scram following Multiple Reactor Recirculation Pump Trip

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
03	01	00	00	003	0	03	30	00		05000
									FACILITY NAME	DOCKET NUMBER
										05000

OPERATING MODE (9)	N
POWER LEVEL (10)	25%

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)	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)	X 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)
Thomas Corcoran, Plant Operations Engineer	609-971-4986

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
YES (If yes, complete EXPECTED SUBMISSION DATE).	X NO				

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

On March 1, 2000, control room operators manually scrammed the reactor in response to a trip of three reactor recirculation pumps. The pumps tripped due to a loss of 4160 Volt Bus 1A.

The root cause of this event has been determined to be inadequate procedural guidance, and a failure to meet expectations regarding procedural compliance. Main Breaker 1A tripped following its closure in response to a trip signal from the Main Generator Digital Protection Relay System (DPRS) (Turbine Steam Cutoff Trip). This trip signal was generated when the turbine generator was removed from service on February 29, 2000, in preparation of returning the M1A Main Transformer to service. When the stop valves were closed, the trip signal was activated. The plant was receiving power from the startup transformers at the time. When Main Breaker 1A was subsequently closed during this event, the trip signal was processed and the breaker tripped. The significance of the event was minimal. Plant power, and therefore decay heat, were low due to the restoration of the turbine generator to normal. All Safety Related devices responded as designed.

Immediate corrective actions were taken to respond to the recirculation pump trip and place the plant in a stable shutdown condition. A review of the involved procedures was completed to ensure proper control and usability. Required revisions were completed prior to plant restart.

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
	05000	YEAR	SEQUENTIAL NUMBER	REV	
Oyster Creek, Unit 1	-219	00	003	0	2 of 6

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

DATE OF OCCURRENCE

The event occurred at approximately 1057 hours on March 1, 2000.

IDENTIFICATION OF OCCURRENCE

On March 1, 2000, control room (EIIS-NA) operators manually scrammed the reactor (EIIS-AC) in response to a trip of three reactor recirculation (EIIS-AD) pumps. The pumps tripped due to a loss of 4160 Volt Bus 1A. This is reportable in accordance with 10 CFR 50.73(a)(2)(iv).

CONDITIONS PRIOR TO DISCOVERY

The plant was operating at 25% power with a generator load of 125 MWe. The operators were in the process of transferring plant loads from the startup transformers to the auxiliary transformer.

DESCRIPTION OF OCCURRENCE

On February 29, 2000, the plant was operating at 60% power with a generator load of 380 MWe. The plant was at reduced load due to the M1A main transformer being out of service. At approximately 0257 hours on March 1, 2000, the operators commenced reducing power in preparation for taking the turbine generator off line to allow restoring the M1A transformer to service. At 0614 hours, in house plant loads were transferred from the auxiliary transformers to the startup transformers, and at 0625 hours, the turbine generator was removed from service in accordance with plant procedures. The reactor continued to operate at approximately 25% power with pressure being maintained on the turbine bypass valves.

With the M1A transformer ready to be returned to service, preparations were commenced to startup the turbine generator. The operators placing the turbine generator in service were using the appropriate System Operating procedures. Following the completion of the turbine warm-up and startup, the main generator was placed in operation and synchronized to the grid. With generator load approximately 125 MWe, the operators prepared to shift in house plant loads from the startup transformers to the auxiliary transformer.

In accordance with plant procedure, the operator activated the synchronizing circuit and closed Main Breaker 1A. The breaker closed, the associated startup breaker (S1A) opened, and the operator released the control switch. Almost immediately, Main Breaker 1A tripped open. With no power available to the 1A Bus, the 1C Main Breaker opened and #1 Diesel Generator started and powered the 1C vital bus.

The loss of power to Bus 1A resulted in the trip of the A, C, and E reactor recirculation pumps. The operator in the area of panel 4F reported the multiple recirculation pump trip and the Control Room Supervisor directed a manual scram. The scram was completed and all control rods inserted to position 00.

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REV	
Oyster Creek, Unit 1	05000 -219	00	003	00	3 of 6

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

DESCRIPTION OF OCCURRENCE (Cont'd.)

Due to the loss of power, Reactor Protection System (RPS) 1 was de-energized. The operators attempted to restore power to RPS but were unable to access to the lower cable spreading room. Prior to restoring power to RPS, reactor pressure dropped below 850 psig. With pressure below 850 psig and the RPS 1 de-energized, the Main Steam Isolation Valve (MSIV) low pressure bypass was lost and as a result the MSIVs closed. An operator, with assistance from Plant Security, gained access to the room and repowered the RPS 1 shortly after the MSIVs closed.

Post scram level control was directed by the Control Room Group Operating Supervisor to be with the Feedwater System in a band of 138 – 175 in. TAF. The operator responsible to control level improperly secured the only operating feed pump shortly after the scram. Realizing this error, the pump was immediately restarted by the operator. Reactor Pressure Vessel level dropped below 138 in. TAF as expected, and the GOS entered the RPV Control EOP. Level was restored and required actions to control level were completed in accordance with plant procedures. Level control was complicated due to a trip of the Reactor Water Cleanup System (RWCU) and the unavailability of a letdown path. Level increased above 170 in. TAF and the operator secured the feed pump and the Control Rod Drive pump in accordance with plant procedures. RWCU System was subsequently unisolated and letdown was established.

Due to the low decay heat in the core, post scram pressure control was not required until later in the event. Due to the reactor isolation and RPV water level above 160 in. TAF, the Isolation Condensers could not be used. The Control Room GOS directed the use of the Electromatic Relief Valves (EMRVs). The "A" EMRV was subsequently used to control pressure. When the EMRV was closed, level dropped below the scram setpoint. The feedwater pump was subsequently started and level was restored. With level restored and maintained below 160 in. TAF, pressure control was transferred to the Isolation Condensers. Following the completion of troubleshooting and inspection of the 4160 Volt Bus 1A, with no abnormalities noted, the bus was returned to service at 1257 hours, No. 1 Diesel Generator was subsequently secured at 1330 hours. With plant electrical buses restored to their normal power supplies, a reactor cooldown was commenced using the Isolation Condensers. On March 2, 2000, at approximately 0210 hours, the MSIVs were opened at a reactor pressure of 42 psig in preparation for a reactor startup. The startup was commenced at 1614 hours on March 3, 2000. The plant was not been placed in the Cold Shutdown condition prior to restart.

APPARENT CAUSE OF OCCURRENCE

The root cause of this event has been determined to be inadequate procedural guidance, and a failure to meet expectations regarding procedural compliance. Main Breaker 1A tripped following its closure in response to a trip signal from the Main Generator Digital Protection Relay System (DPRS) (Turbine Steam Cutoff Trip). This trip signal was generated when the turbine generator was removed from service on February 29, 2000, in preparation of returning the M1A Main Transformer to service. When the stop valves were closed, the trip signal was activated. The plant was receiving power from the startup transformers at the time. When Main Breaker 1A was subsequently closed during this event, the trip signal was processed and the breaker tripped.

APPARENT CAUSE OF OCCURRENCE (Cont'd.)

At the time of the event, the operator was using Station Procedure 337, "4160 Volt Electrical System," to transfer the bus. The resetting of the DPRS System is not mentioned in this procedure or in the procedure for placing the main generator in service, Procedure 336.1, "24 KV Main Generator Electrical System." The requirement is stated in Procedure 201. 3, "Plant Startup from Hot Standby to Reactor Power." Although the operators were using this procedure, they were stopped at Step 5.12, which directs placing a second feedwater pump in service. Placing the turbine generator in service is directed at Step 5.13.

The guidance contained in Procedure 201.3 for placing the turbine generator in service basically covers milestones in placing the system in service and branches to the operating procedure for guidance. The operator performing the evolution at the panel was using the System Operating procedure and not the Plant Operating procedures. If the step for resetting the DPRS were in the System Operating procedure at the proper location, this event would not have occurred.

Although there was inadequate procedure guidance, the operators failed to meet expectations with regard to procedural compliance. With regard to the implementation of Procedure 201.3, the Lead Control Room Operator is responsible for coordinating the associated activities contained in the procedure. Although stopped at Step 5.12 awaiting the start of the feed pump, the step for placing the turbine generator in service (Step 5.13) was not referred to by the operating crew.

Contributing Causes:

1. The Turbine Steam Cutoff Trip associated with the Main Generator Digital Protection System was modified during the recent 17U1 outage. The operators interviewed by the Plant Trip Review Group were not fully aware of the basis for this modification or its effect on the turbine generator startup evolution. The pre-evolution brief completed by the Control Room GOS did not discuss this modification.

2. Procedure 336.1 is not structured in accordance with the Procedure Writer's Standard in that the prerequisites and precautions and limitations associated with placing the generator in service are not contained in the startup section of the procedure (Section 5.1). When the operators completed the turbine startup, the procedure directs them to place the generator in service in accordance with Procedure 336.1. When they entered the procedure, they went to Section 5.1 for startup and completed all actions. The procedure structure is such that it caused them to miss the prerequisites and precautions and limitations which were contained in Sections 3.0 and 4.0. Of particular note is prerequisite Step 3.12 which directs the operator to verify the Main Generator DPS is in service and exhibiting normal indications

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REV	
Oyster Creek, Unit 1	05000 -219	00	003	00	5 of 6

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

ANALYSIS OF OCCURRENCE AND SAFETY ASSESSMENT

The significance of the event was minimal. Plant power, and therefore decay heat, were low due to the restoration of the turbine generator to normal. All Safety Related devices responded as designed. The insertion of a manual scram in response to the multiple recirculation pump trip was prompt and in accordance with station procedure.

Due to the isolation of the MSIVs, and the RPV level above 160 in. TAF, the EMRVs were initially used for pressure control. Pressure was maintained below the high-pressure scram setpoint. Following the initial use of the "A" EMRV, RPV level was lowered below 160 in. TAF and a transition to the Isolation Condensers was appropriately directed. Pressure control with the Isolation Condensers was properly performed.

RPV level was maintained above the Lo-Lo level setpoint (nominal 86 in. TAF). In response to the scram, a CRO improperly secured the only operating feedwater pump ("C" Feedwater Pump). The pump was immediately restarted and this occurrence did not adversely affect the post scram level response. Level was restored and maintained in the designated post scram band but did exceed 175 in. TAF (upper band limit) prior to opening the "A" EMRV. The operator completed all required actions to control level, but due to level increasing and the inability to establish a letdown path from the RWCU System, level increased to approximately 179 in. TAF (GEMAC indication). Upon actuation of the EMRV, level swell caused the RPV level to momentarily increase above 180 in. TAF and then decreased. RPV level was above 180 in. TAF for a only short period of time. A second RPV Lo level scram was received due to level shrink when the "A" EMRV was closed. The operator restarted the "C" Feedwater Pump and restored level to its required band.

Due to the reactor being in an isolated condition, with RWCU letdown not available, the operating crew should have been more sensitive to maintaining RPV level below 160 in. TAF to ensure Isolation Condenser availability. The Isolation Condensers are the desired system for pressure control.

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REV	
Oyster Creek, Unit 1	05000 -219	00	003	00	6 of 6

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

CORRECTIVE ACTION

Immediate corrective actions were taken to respond to the recirculation pump trip and place the plant in a stable shutdown condition.

A review of the involved procedures was completed to ensure proper control and usability. Required revisions were completed prior to plant restart. Included in these revisions were revisions to the following operating procedures: 1) 315.1, Main Turbine Operations; 2) 336.1, 24 KV Main Generator Electrical System; and 3) 337, 4160 V Electrical System. Procedure place keeping techniques were implemented for Plant Operating procedures. Training was also provided on this event and the implemented changes to the affected operating crews prior to restart. The pre-evolution briefing for placing the turbine generator in service was revised to discuss the resetting of the DPRS.

The following long term corrective actions have also been assigned:

- Procedural guidance with regard to post scram level control will be reviewed and revised as required. This will be completed by September 30, 2000.
- The policy regarding the control of vital area access keys will be reviewed. This will be completed by August 31, 2000.
- Procedure 336.1 will be revised to ensure compliance with the Procedure Writer's Standard. This will be completed by August 31, 2000.
- Plant Operating procedures for plant startup and shutdown will be rewritten to ensure proper sequencing and branching. This will be completed by June 30, 2000.

SIMILAR EVENTS

None.