NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
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TITLE (4)
Group Isolations and Loss of Shutdown Cooling Due to Inadvertent 4160 VAC Breaker 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 NAMES	DOCKET NUMBER(S)
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0 3	0 6	9 3	9 3	—	0 0 3	—	0 0	0 4	0 2	9 3		0 5 0 0 0

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)											
N			20.402(b)		20.405(c)	X	50.73(a)(2)(iv)		73.71(b)				
POWER LEVEL (10)			20.405(a)(1)(i)		50.36(c)(1)		50.73(a)(2)(v)		73.71(c)				
0 1 0			20.405(a)(1)(ii)		50.36(c)(2)		50.73(a)(2)(vii)		OTHER (Specify in Abstract below and in Text, NRC Form 366A)				
			20.405(a)(1)(iii)		50.73(a)(2)(i)		50.73(a)(2)(viii)(A)						
			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
	AREA CODE
John R. Myers	4 0 2 8 2 5 - 3 8 1 1

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

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

On March 6, 1993, at 3:27 am, while attempting to rack out the 4160 VAC circuit breaker for the A Core Spray pump, the feeder breaker to the 480 VAC Critical Bus 1F, located one compartment to the left, was inadvertently tripped. This caused a loss of power to the safety related Division I Motor Control Centers, resulting in a half scram, half Group 1 Isolation, half Group 2 Isolation, Group 3 Isolation, Group 6 Isolation, and half Group 7 Isolation. The half Group 2 Isolation resulted in a loss of Shutdown Cooling. Shutdown Cooling was restored in approximately 33 minutes, during which time Reactor Coolant temperature increased from 170 degrees to 190 degrees Fahrenheit. The Group 3 Isolation caused a loss of Reactor Water Cleanup flow, the Group 6 Isolation isolated Secondary Containment and started one Standby Gas Treatment System train, and the half Group 7 Isolation isolated the Reactor Recirculation Sampling System.

The cause of this event was personnel error by a non-licensed operator due to inadequate self-checking.

Meetings were held to communicate management expectations for personnel performance. The responsible operator presented a training session on the lessons learned from this event to on shift operations personnel. Procedure changes to provide additional guidance for the breaker rackout process have also been initiated. Self-checking training will be enhanced, and additional labeling and visual identification aids are being evaluated.

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TEXT (If more space is required, use additional NRC Form 366A's) (17)

A. Event Description

On March 6, 1993, a non-licensed Station Operator was assigned to hang Clearance Order 93-165, to allow performance of Local Leak Rate Testing on the Core Spray system valves. The control switch for the A Core Spray pump in the Control Room was first tagged, with the switch in the off position. The operator then proceeded to the Division I Critical Switchgear Room and located the A Core Spray pump breaker, verified the breaker number and nomenclature, and observed the green light and red flag indicating the breaker was tripped. He then proceeded to the north wall near the entry door and retrieved the racking tool. Returning to perform the operation, he positioned himself instead in front of the feeder breaker to the 480 VAC Critical Bus 1F, located one compartment to the left of the A Core Spray pump breaker. He then attempted to open the slide covering the drive socket for the racking mechanism, however, it did not open as expected. He actuated the manual trip pushbutton for the 480 VAC Critical Bus 1F feeder breaker, which caused the breaker to trip. As a result of the loss of 480 VAC power, the associated 480 VAC breakers with undervoltage protection tripped. Since the 480 VAC breakers were behind him, the operator realized the wrong breaker had been tripped and immediately notified the Control Room of the error.

The loss of power to the safety related Division I Motor Control Centers resulted in a half scram, half Group 1 Isolation, half Group 2 Isolation, Group 3 Isolation, Group 6 Isolation, and half Group 7 Isolation. The half Group 2 Isolation resulted in a loss of Shutdown Cooling. The Group 3 Isolation caused a loss of Reactor Water Cleanup flow, the Group 6 Isolation isolated Secondary Containment and started one Standby Gas Treatment System train, and the half Group 7 Isolation isolated the Reactor Recirculation Sampling System.

Of immediate concern to both the Shift Supervisor and the Refueling Outage Director was Reactor Coolant temperature, which was at 170 degrees Fahrenheit. The indication was considered very reliable as the B Reactor Recirculation Pump continued to operate, providing mixing and flow of the coolant. Additionally, Reactor vessel metal temperatures were being monitored during the plant cooldown. Plant procedures also provide information on the time to boiling if Shutdown Cooling is lost. It was decided that power should be restored using the normal power source to the Reactor Protection System (RPS) rather than alternate power. Restoring on alternate power would require a second power loss to the RPS and the associated power panels (with the attendant group isolations) to transfer back to normal power, and, since the plant was operating on Shutdown Cooling, a second isolation of Shutdown Cooling would occur.

To ensure that the restoration of power occurred smoothly and without problems, the Shift Supervisor directed the crew to proceed in a deliberate manner to restore power to the buses in accordance with the appropriate procedures. Shutdown Cooling was restored at 4:00 am. Reactor coolant temperature at time of restoration was approximately 190 degrees Fahrenheit, a rise of 20 degrees.

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B. Plant Status

The plant was in cold shutdown, beginning the 1993 Refueling Outage. The Reactor was vented, with a Reactor coolant temperature of 170 degrees Fahrenheit. Primary Containment was being maintained.

C. Basis for Report

Actuation of Shutdown Cooling, Reactor Water Cleanup, and Reactor Water Sampling isolation valves, part of the primary containment isolation, and actuation of Standby Gas Treatment and Secondary Containment isolation valves. This event is being reported in accordance with the criteria prescribed by 10CFR50.73(a)(2)(iv).

D. Cause

Personnel error. In performing the operation to rack out the breaker, adequate self-checking was not used. It was also noted that the procedure for racking out 4160 breakers has the racking tool retrieved prior to locating the breaker. Upon interrupting the process to obtain the tool, verification of the breaker identification should have been re-performed, as required by the procedure. The interruption of the process would have had little effect had appropriate self-checking been performed.

E. Safety Significance

During a loss of Shutdown Cooling, flow in the Reactor Recirculation system allows accurate temperature monitoring. Since temperature indication was maintained, operating personnel were aware of the temperature of the Reactor coolant, and were prepared to respond in accordance with plant procedures should the temperature have approached boiling. Recovery of Shutdown Cooling was accomplished without approaching the 212 degrees at which compensatory actions are required. The time to boiling curves in plant procedures provide a time frame for restoration of Shutdown Cooling. Additionally, Primary Containment integrity was being maintained.

Loss of Reactor Water Cleanup and Reactor Water Sampling has no short term effect on plant operations.

F. Safety Implications

The loss of Shutdown Cooling, occurring 13 hours after the shutdown and shortly after going on Shutdown Cooling, was the most significant condition for shutdown operations.

Similar ESF actuations during normal power operation would not result in a significant effect on Reactor operation, since the half scram and half Group 1 Isolation (Main Steam Line) generated would not cause a Reactor scram, and the plant is designed to continue to operate normally should the other isolations occur.

F. Safety Implications - (continued)

Upon a Group 6 Isolation, ventilation to the Reactor Recirculation Pump Motor Generator (RRMG) Sets is lost. If ventilation is not restored within a short time frame during hot weather with the plant at full power, the RRMG Sets will trip due to high winding temperatures, resulting in loss of the Reactor Recirculation Pumps. Upon loss of the Reactor Recirculation Pumps with power greater than one percent, the Reactor would be manually scrammed.

G. Corrective Action

As noted above, the cause of the event was identified, power was restored to the de-energized buses, the isolations were reset (securing Standby Gas Treatment and re-aligning Secondary Containment), and Shutdown Cooling, Reactor Water Cleanup, and Reactor Coolant Sampling were restored to operation.

As a temporary measure to aid in breaker identification, the floor in front of each 4160 VAC circuit breaker was labeled.

Interim corrective actions for this event were assigned by the Plant Manager. These included:

1. A presentation was to be developed for operations personnel concerning the sequence of events and the circumstances where self-checking was and was not used for this incident. This material has been presented to on shift operations personnel.
2. Labeling enhancements for critical and non-critical switchgear breakers were to be reviewed.
3. Self-checking training lesson plans were to be evaluated.

The Plant Manager also conducted discussions with operating crews and outage supervision personnel to emphasize the need to self check and pay proper attention to job details, to eliminate the occurrence of similar incidents.

Due to the concern over the loss of Shutdown Cooling, a Corrective Action Review Board was formed to investigate the cause of the event, evaluate the assigned corrective actions, and recommend further corrective actions to prevent recurrence.

H. Similar Events

Nonconformance Report 91-065 discusses an event where the A Service Water Booster Pump breaker was racked out, instead of the A Service Water Pump breaker. This event was caused by confusion of the nomenclature for the 4160 VAC breakers, and resulted in the breakers being relabeled.

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H. Similar Events - (continued)

LER 87-009 discusses a Reactor scram which occurred when a non-licensed operator, dispatched to conduct the local trip test of a Reactor Feedwater pump prior to its start, tripped the operating Feedwater pump instead. This event was caused by personnel error and the lack of human factors in component equipment labeling. Corrective action was to discuss the event with operations personnel and improve labeling.

There have been other LERs for ESF actuations caused by personnel error. These have involved personnel other than station operators or a sequence of events which did not involve locating an incorrect component.