



PECO ENERGY

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10CFR 50.73

July 12, 1994  
Docket No. 50-352  
License No. NPF-39

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

SUBJECT: Licensee Event Report  
Limerick Generating Station - Unit 1

This LER concerns an actuation of the Primary Containment and Reactor Vessel Isolation Control System, an Engineered Safety Feature, after a Reactor Enclosure exhaust plenum radiation monitor inadvertently tripped. The radiation monitor tripped due to a radiation monitor alarm circuit card malfunction.

Reference:	Docket No. 50-352
Report Number:	1-94-009
Revision Number:	00
Event Date:	June 17, 1994
Report Date:	July 12, 1994
Facility:	Limerick Generating Station P.O. Box 2300, Sanatoga, PA 19464-2300

This LER is being submitted pursuant to the requirements of 10 CFR 50.73 (a)(2)(iv).

Very truly yours,

*Robert W. Boyce*

DBN:cah

cc: T. T. Martin, Administrator Region I, USNRC  
N. S. Perry, USNRC Senior Resident Inspector, LGS

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LICENSEE EVENT REPORT (LER)																													
FACILITY NAME (1) Washington Nuclear Plant - Unit 2															DOCKET NUMBER (2) 0 5 0 0 0 3 9 7					PAGE (3) 1 OF 5									
TITLE (4) TWO CONTROL RODS WERE WITHDRAWN WITH THEIR SCRAM ACCUMULATORS INOPERABLE																													
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 NUMBERS(S)				
0 5 2			4 9		3 9		3 9		0 2 2		0 1		0 7 1			4 9		4							0 5 0 0 0				
OPERATING MODE (9) 5					THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)																								
POWER LEVEL (10) 0 0 0					20.402(b)					20.405(c)					50.73(a)(2)(iv)					77.71(b)									
					20.405(a)(1)(i)					50.36(c)(1)					50.73(a)(2)(v)					73.73(c)									
					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)					X 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 C. D. Mackaman, Licensing Engineer															TELEPHONE NUMBER AREA CODE 5 0 9 3 7 7 - 4 4 5 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									
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO																													
ABSTRACT (16)																													
<p>On May 26, 1993, two control rod withdrawal events were identified as having violated Technical Specifications. Previously, on May 24 and 25, 1993, during the annual Maintenance and Refueling Outage, Control Rods "10-11" and "26-35," respectively, were withdrawn with their scram accumulators inoperable. The scram accumulators were inoperable because their associated water level switches had failed Surveillance Procedure PPM 7.4.1.3.5.2, "Scram Accumulator Pressure Detection CC/Level Detection - CFT/CC." Withdrawing a control rod with its scram accumulator inoperable is contrary to WNP-2 Technical Specification 3.1.3.5.</p> <p>Immediate corrective action by Plant Operators was to disarm Hydraulic Control Units (HCUs) "10-11" and "26-35" hydraulically.</p> <p>The root causes for this event were: (1) the Shift Managers failed to fully evaluate Technical Specification requirements and actions to assure compliance, and (2) the methods used to indicate the status of HCU and control rod maintenance and testing activities were not sufficiently effective to coordinate the concurrent activities.</p>																													

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							9   3	0   2   2	0   1	2   0   5	
TITLE (4) TWO CONTROL RODS WERE WITHDRAWN WITH THEIR SCRAM ACCUMULATORS INOPERABLE											

Further corrective actions include: (1) action by Operations management to emphasize the importance of a thorough review of Technical Specification requirements and actions to assure compliance, (2) implementation of a system to improve HCU and control rod status control, (3) action by Operations management to reinforce proper techniques for review of the Control Room Inoperable Equipment Log and strengthen Shift Manager turnovers, and (4) counseling of the Operations personnel involved in this event.

This event posed no threat to the health and safety of either the public or plant personnel.

#### Plant Conditions

Power Level - 0%  
Plant Mode - 5 (Refueling)

#### Event Description

On May 26, 1993, two control rod withdrawal events were identified as having violated Technical Specifications. Previously, on May 24 and 25, 1993, during the annual Maintenance and Refueling Outage, Control Rods "10-11" and "26-35," respectively, were withdrawn with their scram accumulators inoperable. The scram accumulators were inoperable because their associated water level switches had failed Surveillance Procedure PPM 7.4.1.3.5.2, "Scram Accumulator Pressure Detection CC/Level Detection - CFT/CC." Withdrawing a control rod with its scram accumulator inoperable is contrary to WNP-2 Technical Specification 3.1.3.5.

The Hydraulic Control Units (HCUs) for Control Rods "26-35" and "10-11" were declared inoperable on May 16 and 18, 1993, respectively, for the faulty scram accumulator level switches found during the performance of PPM 7.4.1.3.5.2. The HCUs were declared inoperable because the scram accumulators and level switches are HCU components required for unit operability. The level switches provide a trouble alarm and Full Core Display trouble indication of scram accumulator water leakage. The inoperable HCUs were listed in the Control Room Inoperable Equipment Log and Maintenance Work Requests (MWRs) were written for both faulty scram accumulator level switches.

On May 24, 1993, at 0244 hours, control rod timing testing commenced in accordance with Nuclear Performance Procedure PPM 9.3.8, "Control Rod Insert and Withdrawal Timing." At 0900 hours, control rod friction (dp) testing commenced in accordance with Maintenance Procedure PPM 10.24.17, "CRD Oscilloscope dp Testing." The faulty scram accumulator level switches were left in a condition that did not actuate the accumulator trouble alarm or the respective Full Core Display accumulator trouble light. Thus, Operations personnel were not alerted by the alarms of the faulty level switches and inadvertently withdrew Control Rods "10-11" and "26-35" for testing without their scram accumulator level switches having been repaired. The two control rods were each withdrawn twice, once for rod timing and once for friction testing.

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The Control Room Inoperable Equipment Log correctly identified the two control rod HCUs as inoperable; however, the rod status was not clearly discernable using the Log during the refueling outage conditions because of the large number of control rods (185) and the impact of concurrent control rod and HCU maintenance and testing activities. The Shift Managers on shift at the time were not aware that the HCUs were listed in the Inoperable Equipment Log, although they had reviewed the Log at shift turnover.

The two control rod withdrawal events were evaluated by the responsible System Engineer and Licensing. It was determined that the plant had violated Technical Specification 3.1.3.5. The failed scram accumulator level switches caused the associated scram accumulators to be inoperable. By Technical Specification Action Statement (TSAS) 3.1.3.5.b.1, the control rods with inoperable scram accumulators should have remained inserted. As a result, Problem Evaluation Request (PER) 293-0709 was initiated on May 26, 1993.

#### Immediate Corrective Actions

On May 25, 1993, at 2230 hours, Plant Operators disarmed HCUs "10-11" and "26-35" hydraulically in accordance with TSAS 3.1.3.5.b.1.b.

#### Further Evaluation and Corrective Action

##### A. Further Evaluation

1. This event is reportable pursuant to 10CFR50.73(a)(2)(i)(B) as "Any operation or condition prohibited by the plant's Technical Specifications. . . ."
2. HCUs are declared inoperable on a routine basis during refueling outages as a result of control rod surveillances and maintenance. Typically, a bank of 20 control rods are removed from service for maintenance activities. When the maintenance work is complete, the bank of 20 control rods is returned to service for timing and friction testing. Concurrent with this functional and operational testing, another bank of 20 control rods is removed from service for maintenance. In this case, a bank of 20 control rods was out of service to perform accumulator surveillance testing and several additional control rods were out of service for repairs, including the two control rods with faulty scram accumulator level switches. When the surveillance testing was completed, the faulty level switches had not yet been repaired and there was no visible indication of the problem. In addition, the methods for coordinating control rod maintenance and testing activities proved ineffective for indicating the level switch repair status. Consequently, the two control rods with faulty scram accumulator level switches were inadvertently returned to service with the bank of 20 control rods being returned to service for timing and friction testing following routine maintenance. If the Control Room Operators had been aware that the two faulty scram accumulator level switches had not been repaired, they would not have returned the associated control rods to service.

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3. As stated above, HCU's "10-11" and "26-35" were declared inoperable when their scram accumulators became technically inoperable because of faulty level switches. They were listed in the Control Room Inoperable Equipment Log, but were not disarmed. Control Room Operations personnel were aware that TSAS 3.1.3.5 applied, but did not interpret the Technical Specification such that they should enter Action b.1 and disarm the inoperable control rods. Since the control rods with inoperable scram accumulators were fully inserted, the action statement "With one withdrawn control rod with its associated scram accumulator inoperable . . ." was interpreted by Operations personnel such that the specified condition was not met. Consequently, the action statement was not entered and no action was taken to "disarm the associated directional control valves within one hour. . . ." Since this action was not taken, Clearance tags were not hung on the HCU directional control valves. The tags would have prohibited restoration of the HCU's to operable status until the Clearance initiating condition (faulty scram accumulator level switches) was corrected.

B. Root Cause

The root causes for this event were: (1) the Shift Managers failed to fully evaluate Technical Specification requirements and actions to assure compliance, and (2) the methods to indicate the status of HCU and control rod maintenance and testing activities were not sufficiently effective to coordinate the concurrent activities.

A contributing cause for this event was that, during the aggressive pace of plant outage conditions, the Shift Managers tend to focus only on changes to the Control Room Inoperable Equipment Log during shift turnover reviews.

C. Further Corrective Action

1. Operations management has emphasized the importance of a thorough review of Technical Specification requirements and actions to assure compliance.
2. A system to improve HCU and control rod status control has been implemented.
3. Operations management has reinforced proper techniques for review of the Control Room Inoperable Equipment Log and strengthened Shift Manager turnovers.
4. The Operations personnel involved in this event have been counseled on Operations Management expectations for : (1) status controls for inoperable control rods, (2) review of the Control Room Inoperable Equipment Log, and (3) shift turnover and communications.



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### Safety Significance

During this event, the plant was in the Refueling Mode with the Reactor Mode Switch in the "Refuel" position. In this condition, plant design limits control rod movement to one rod at a time. The withdrawal of one control rod will not reduce shutdown margin below the Technical Specification 3.1.1 limits. This ensures that a sufficient shutdown margin exists for the reactor to be maintained sufficiently subcritical to preclude inadvertent criticality in the shutdown condition. Since minimum shutdown margin was maintained, this event was determined to have had no safety significance, and posed no threat to the health and safety of either the public or plant personnel.

### Similar Events

LER 93-005 reported an event where inadequate documentation and pre-startup reviews resulted in plant operation with two Containment Purge Exhaust (CEP) Valves having leakage in excess of Technical Specification requirements. A root cause for the event included the failure to document in the Control Room Inoperable Equipment Log that repair of the CEP valves was a Technical Specification maintenance requirement and a plant startup restraint. Consequently, the pre-startup review of the Log did not identify the requirement. As a result, the plant was inadvertently started-up and operated in a Technical Specification noncompliance condition. The corrective actions for the event focused on improving documentation and strengthening pre-startup reviews. These corrective actions would not be expected to prevent the conditions described in this LER.

### EIIS Information

#### Text Reference

#### EIIS Reference

<u>System</u>	<u>Component</u>
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Control Rod Drive System	AA	---
Control Rod	AA	ROD
Scram Accumulator	AA	ACC
Scram Accumulator Level Switch	AA	LS
Hydraulic Control Unit (HCU)	AA	HCU