NRC FORM 366 (5-92) U.S. NUCLEAR REGULATORY COMMISSION

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ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), 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)

(See reverse for required number of digits/characters for each block)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Perry Nuclear Power Plant, Unit 1	05000 440	1 OF 4

TITLE (4)
Improper Feedwater Pump Transfer Results in Reactor Scram

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
09	02	95	95	-- 007 --	00	10	02	95	FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9)	1
POWER LEVEL (10)	15

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

	20.402(b)		20.405(c)	X	50.73(a)(2)(iv)		73.71(b)
	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)	X	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)
Keith R. Jury, Supervisor - Compliance	**(216) 280-5594**

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 15 single-spaced typewritten lines) (16)

On September 2, 1995, at 1735 hours, the Perry Nuclear Power Plant was at 15 percent rated thermal power when the reactor automatically scrammed due to low reactor pressure vessel (RPV) water level. The reactor scram occurred as operators were preparing to transfer feedwater flow from the motor driven feedwater pump (MFP) to the "A" turbine driven feedwater pump (i.e., reactor feedwater pump turbine (RFPT)). Feedwater control was lost, resulting in a reactor pressure vessel water level decrease and ultimately, a low RPV level 3 scram. Level was restored by manually initiating the High Pressure Core Spray (HPCS) system and by using the "A" RFPT. The plant was stabilized in Operational Condition 3 (Hot Shutdown). This event had minimal safety significance; the scenario was bounded by accident analyses, and plant systems and components functioned as designed.

The cause of this event was operator error. The "A" RFPT had been started with its flow controller in AUTO rather than in the procedurally required MANUAL position, resulting in a loss of feedwater control to the operating MFP. Corrective actions include training, personnel counseling, and a reemphasis of management's expectations with respect to self-checking. This report is submitted in accordance with 10 CFR 50.73(a)(2)(iv), for an event which resulted in an automatic Reactor Protection system actuation and a manual Engineered Safety Feature actuation (i.e., HPCS initiation). This report is also being submitted to fulfill the requirements of Technical Specification 3.5.1, Action h.

I. Introduction

On September 2, 1995, at 1735 hours, the Perry Nuclear Power Plant was at 15 percent rated thermal power when the reactor automatically scrammed due to low reactor pressure vessel (RPV) water level 3 (178 inches above top of active fuel). The reactor scram occurred as operators were preparing to transfer feedwater flow from the motor driven feedwater pump (MFP) to the "A" turbine driven feedwater pump (i.e., reactor feedwater pump turbine (RFPT)). The level decrease was halted above the low RPV level 2 trip setpoint (130 inches above top of active fuel) by manually initiating the High Pressure Core Spray (HPCS) system. Level was restored and the plant was stabilized in Operational Condition 3. Notification was made to the NRC via the Emergency Notification System at 1823 hours on September 2, 1995, in accordance with 10 CFR 50.72(b)(1)(iv), for an Emergency Core Cooling system (ECCS) discharge to the Reactor Coolant system (RCS); in accordance with 10 CFR 50.72(b)(2)(ii), for an event that resulted in a Reactor Protection system (RPS) actuation; and in accordance with 10 CFR 50.72(b)(2)(vi), for an event for which a news release was planned. This condition is being reported in accordance with 10 CFR 50.73(a)(2)(iv), for an event which resulted in a Reactor Protection system (RPS) actuation and a manual Engineered Safety Feature (ESF) system actuation (i.e., HPCS initiation).

Submittal of this report also satisfies the requirements of Technical Specification 3.5.1, Action h, which requires a Special Report following any ECCS actuation and injection into the RCS. This was the ninth HPCS injection cycle to date. The injection nozzle usage factor remains less than 0.70, as specified in Technical Specifications; therefore, no additional reporting is required.

II. Description of Event

The plant was in Operational Condition 1, at approximately 15 percent rated thermal power following startup from a previous reactor scram (discussed in Licensee Event Report 95-005). Feedwater was being supplied by the MFP, with the Startup Level Controller (SLC) in AUTO and the MFP flow controller in MANUAL as specified by procedure. In this configuration, the SLC regulates MFP flow automatically, and the manual flow controller is overridden. At this point, the feedwater demand signal sensed by the SLC, and the corresponding feedwater flow supplied by the MFP, was 53 percent.

The "A" RFPT had been started and was idling at 1100 revolutions per minute; however, it was not supplying feedwater to the reactor. The "A" RFPT flow controller was in AUTO. The procedure for starting the RFPT requires the RFPT flow controller to be placed in MANUAL and set at "minimum" prior to opening the discharge valve.

The next step in the procedure for placing the "A" RFPT in service is to open the "A" RFPT discharge valve. When the discharge valve reached the indicated full open position, level control automatically transferred from the SLC to the Master Level Controller (MLC). Level control would not have automatically transferred to the MLC had the RFPT "A" flow controller been in MANUAL prior to opening the discharge valve.

The MLC and the SLC cannot control feedwater flow simultaneously. The MLC takes precedence over the SLC when both are in AUTO. With the MFP flow controller in MANUAL, control of the MFP would not automatically transfer to the MLC. With the SLC no longer controlling MFP flow, the MFP actuator demand ramped from the previous SLC demand setting of 53 percent to the MFP flow controller manual setting of 40 percent. As the actuator demand decreased, the MFP flow control valves closed, decreasing flow to the vessel and causing water level to decrease.

The "A" RFPT could not respond to the MLC because its governor mode switch was still in MANUAL. With steam flow greater than feed flow, and with no feedwater pumps able to respond, reactor vessel level continued to decrease until the low RPV level 3 setpoint was reached and an automatic reactor scram occurred. The operator who opened the discharge valve, believing that the MFP was still being controlled by the SLC, had momentarily turned his attention to other matters. When the low level alarm was received, a second operator responded; however, time was not available to diagnose the problem and to regain control of the MFP to prevent the reactor scram.

Subsequent to the reactor scram, the operators manually initiated the HPCS system to prevent a further level decrease and were successful in preventing reactor vessel water level from reaching the low RPV level 2 setpoint. The minimum reactor vessel water level reached during this event was 143 inches (wide range). Level was restored to above the high RPV level 8 setpoint (219.5 inches above top of active fuel) using HPCS and the "A" RFPT. The HPCS pump and the "A" RFPT were allowed to trip automatically at high RPV level 8. The plant was stabilized in Operational Condition 3 (Hot Shutdown). Plant systems and components functioned as designed during this event.

III. Cause of Event

The cause of this event was operator error; failure to follow procedure. System Operating Instruction SOI-N27, "Reactor Feed Pump A(B) Startup to 1100 RPM," requires the RFPT flow controller to be placed in MANUAL and set at "minimum" prior to opening the discharge valve. This step was not performed as required. The flow controller was allowed to remain in AUTO, with the operators not recognizing this improper configuration prior to performing the procedural steps which led to the reactor scram.

IV. Safety Analysis

This event is bounded by the "Loss of Feedwater Flow" analysis described in the Updated Safety Analysis Report (USAR), section 15.2.7, which assumes a total loss of feedwater flow at high power (100 percent) with no HPCS or Reactor Core Isolation Cooling (RCIC) flow prior to reaching the low RPV level 2 setpoint. This event occurred at a low power level (15 percent), with HPCS being manually initiated prior to reaching the low RPV level 2 setpoint. Additionally, the operators were able to regain control of the "A" RFPT to help restore and maintain reactor vessel level following the initial transient.

The impact of the HPCS initiation and injection, inclusive of fatigue, is enveloped by the design analyses for the reactor, reactor internals, and HPCS piping. Therefore, this event is considered to have minimal safety significance.

V. Similar Events

There have been eight previous loss of feedwater transients which have led to low RPV level 3 scrams. Plant response to this transient was similar to the previous events. There have been only two plant scrams caused by loss of feedwater since 1990, as discussed in LERs 90-001 and 92-017. Neither of these scrams was caused by personnel failing to transfer feedwater control in accordance with procedures. Corrective actions taken for LERs 90-001 and 92-017 would not have been expected to prevent this event.

VI. Corrective Actions

A Human Performance Enhancement System (HPES) evaluation of this event was conducted to determine the root cause and to identify corrective actions to minimize the potential for recurrence. Based upon this evaluation, the following actions either have been, or will be taken:

1. The operators involved in this event were removed from licensed duties and have been counseled with respect to their improper actions. They are receiving remedial training prior to being returned to licensed duties.

2. A videotape depicting the errors and the system response was made using the plant simulator immediately following this event. This videotape was presented to each oncoming shift crew with emphasis on Management's expectations with respect to self-checking.

3. Licensed operators will review this event during continuing training to ensure that the procedure for transferring feedwater pumps is clearly understood.

Energy Industry Identification System (EIIS) codes are identified in the text as [XX].