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April 16, 2010
L-10-101

10 CFR 50.73(a)(2)(i)(B)

ATTN: Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT:
Perry Nuclear Power Plant
Docket No. 50-440, License No. NPF-58
Licensee Event Report Submittal

Enclosed is Licensee Event Report (LER) 2010-002, "Piping Leak Results in Condition Prohibited by Technical Specifications." There are no regulatory commitments contained in this submittal.

If there are any questions or if additional information is required, please contact Mr. Robert Coad, Manager – Regulatory Compliance, at (440) 280-5328.

Sincerely,



Mark B. Bezilla

Enclosure:
LER 2010-002

cc: NRC Project Manager
NRC Resident Inspector
NRC Region III

JE22
NRR

LICENSEE EVENT REPORT (LER)

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

Estimated burden per response to comply with this mandatory collection request: 80 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

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4. TITLE
Piping Leak Results in Condition Prohibited by Technical Specifications

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
02	16	2010	2010	- 002	- 00	04	16	2010	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE 1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)										
	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)							
10. POWER LEVEL 100	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(a)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)							
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)							
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)							
	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)							
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)							
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)							
<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER								
<input type="checkbox"/> 20.2203(a)(2)(vi)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A								

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME Perry Nuclear Power Plant, Lloyd Zerr, Compliance Engineer	TELEPHONE NUMBER (Include Area Code) (440) 280-5274
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13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED			15. EXPECTED SUBMISSION DATE		
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE). <input checked="" type="checkbox"/> NO			MONTH	DAY	YEAR

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

On February 15, 2010, at approximately 2130 hours, a leak was identified on a portion of Emergency Closed Cooling Water subsystem B (ECCW B), American Society of Mechanical Engineers (ASME) Class 3 piping. On February 16, 2010, at 1310 hours, operators determined that ECCW B was inoperable due to the leak. The leak had been identified approximately 15 hours and 40 minutes prior to the inoperability determination; therefore, the plant was in the associated Technical Specification (TS) Limiting Condition for Operation 3.7.10 "ECCW System," Condition B, for longer than the Required Action Completion Time of 12 hours. During this period, ECCW A and its associated supported systems were operable.

The cause of the event was that guidance for evaluating the operability impact of flaws in ASME piping was not adequately captured in plant procedures or training. For the leak itself, fatigue cracking was identified as the primary failure mechanism. The piping leak was repaired. The plant procedure for prompt operability determinations (POD) will be revised to direct consideration of reportability ramifications when establishing POD completion times. Procedure guidance will be developed to address through-wall piping leaks. Training courses will also be revised and Operations as well as other support personnel will be trained to lessons learned from this event.

The safety significance of this event is considered to be low. This event is reported in accordance with 10 CFR 50.73 (a)(2)(i)(B) as an operation or condition which was prohibited by the plant's TS.

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Energy Industry Identification System Codes are identified in the text as [XX].

INTRODUCTION

On February 15, 2010, at approximately 2130 hours, a leak was identified on a portion of Emergency Closed Cooling Water [CC] subsystem B (ECCW B), American Society of Mechanical Engineers (ASME) Class 3 piping. On February 16, 2010, at 1310 hours, operators determined that ECCW B was inoperable due to the leak. The leak had been identified approximately 15 hours and 40 minutes prior to the inoperability determination; therefore, the plant was in Technical Specification (TS) Limiting Condition for Operation (LCO) 3.7.10 "ECCW System," Condition B, for longer than the Required Action B.1 Completion Time of 12 hours. During this period, the plant was operating in MODE 1 (Power Operation) at 100 percent rated thermal power, with ECCW A and its associated supported systems operable. This event is being reported in accordance with 10 CFR 50.73(a)(2)(i)(B) as any operation or condition prohibited by the plant's TS.

EVENT DESCRIPTION

On February 15, 2010, at approximately 2130 hours, a non-licensed operator performing plant equipment rounds identified a leak in overhead ECCW B piping. The leak was estimated at two to three drops per minute. The leak was located on ASME Class 3, one-half-inch diameter instrument piping for ECCW B, flow instrumentation monitoring ECCW flow through the Control Complex Chilled Water [KM] subsystem B (CCCW B) Chiller. The leak appeared to be at a weld where the piping attached to a 10 inch diameter flow element flange. The leak was reported to the control room.

The Shift Manager, a Senior Reactor Operator (SRO), inspected the leak in the field and reviewed available documentation to evaluate the leak. The Shift Manager completed an Immediate Operability Determination and declared ECCW B "operable but degraded," based on the leakage being minor and that it did not present a challenge to the system's seven day mission time.

On February 16, 2010, at 0515 hours, the Shift Manager requested a Prompt Operability Determination (POD) from engineering personnel, and assigned a completion time of 24 hours. Additionally, planning of activities to repair the leak was initiated. Between 0730 and 0815 hours, engineering Nondestructive Examination (NDE) personnel inspected the leak site. A crack was seen in the toe of the weld (pipe side) approximately one-third the pipe circumference in length. Liquid penetrant, magnetic particle, and ultrasonic testing (UT) could not be performed because the piping was leaking water and there was limited access for a UT transducer at the crack site; therefore, the flaw could not be characterized. As a result, engineering personnel met with the Shift Manager and informed him that they could not support a determination of operability for ECCW B.

On February 16, 2010, at 1252 hours, the operators entered TS LCO 3.7.4, "Control Room Heating, Ventilation, and Air Conditioning (HVAC)" Condition A (One control room HVAC [VI] subsystem inoperable), when CCCW B was declared inoperable to support isolation and repair activities associated with the ECCW B piping leak.

At 1310 hours, plant operators declared the ECCW B inoperable, and entered TS LCO 3.7.10,

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Condition A (i.e., one ECCW subsystem inoperable). TS LCO 3.7.10, Required Action A.1 was performed to immediately declare associated systems and components inoperable. The equipment declared inoperable included the following:

- Residual Heat Removal (RHR) [BO] subsystems B and C in Low Pressure Coolant Injection mode (TS LCO 3.5.1)
- RHR Containment Spray [BO] subsystem B (TS LCO 3.6.1.7)
- RHR Suppression Pool Cooling [BO] subsystem B (TS LCO 3.6.2.3)
- Combustible Gas Mixing [BB] subsystem B (TS LCO 3.6.3.3)
- Control Room HVAC subsystem B (TS LCO 3.7.4 previously inoperable to support isolation and repair activities).

The leak was isolated in accordance with plant procedures and at 1415 hours, TS LCO 3.7.10 CONDITION A was exited when the ECCW B was declared operable. Additionally, TS LCOs 3.5.1, 3.6.1.7, 3.6.2.3, and 3.6.3.3 were exited.

The associated ECCW B instrument piping was replaced and the leak repaired. On February 18, 2010, at 0457 hours, TS LCO 3.7.4 was exited when Control Room HVAC subsystem B was declared operable.

CAUSE OF EVENT

The cause of the operation prohibited by TS was that guidance for evaluating the operability impact of flaws in ASME piping was not adequately captured in plant procedures or training. The POD process does not consider reportability ramifications when assigning a completion time. Consequently, the Shift Manager assigned a completion time without considering the impact if the POD could not support system operability.

For the leak itself, fatigue cracking was identified as the primary failure mechanism. After the crack developed a corrosion component was also involved. During the causal investigation, it was identified that a missing tubing support (i.e., Stauff clamp) downstream of the cracked weld was identified and corrected in 2006. This support piece was most likely missing since plant construction exposing the section of pipe to years of high-cycle, low stress fatigue.

EVENT ANALYSIS

The ECCW system provides a heat sink for the removal of process and operating heat from safety-related components during a design basis accident or transient. The ECCW system consists of two independent and redundant closed loop subsystems (A and B). Each subsystem consists of a motor driven pump, heat exchanger, surge tank, and associated piping and valves. The ECCW heat exchangers transfer heat to the Emergency Service Water system. The isolation of ECCW to other components or systems may render those components or systems inoperable, but does not affect the operability of the ECCW system. During the period of ECCW B inoperability, (i.e., from February 15, 2010, at 2130 hours, until February 16, 2010, at 1415 hours), ECCW A and its associated supported systems were operable.

On February 15, 2010, at 2130 hours, the plant entered TS LCO 3.7.10, Condition A (One ECCW subsystem inoperable) with a Required Action A.1 to declare associated system(s) or component(s)

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inoperable immediately. The subsystem B inoperability was not recognized, and so the plant entered TS LCO 3.7.10, Condition B (Required Action and Completion Time of Condition A not met) with Required Actions B.1, be in MODE 3 (Hot Shutdown) in 12 hours, and B.2, be in MODE 4 (Cold Shutdown) in 36 hours. On February 16, 2010, at 0930 hours, TS LCO 3.7.10 Required Action B.1 Completion Time was not met, and a subsequent reportability review determined that this condition was prohibited by the plant's TS and reportable in accordance with 10 CFR 50.73(a)(2)(i)(B). TS LCO 3.7.10 Required Action A.1 was met on February 16, 2010, at 1310 hours, 15 hours and 40 minutes after the plant entered Condition A.

The completion times of the additional TS LCOs (i.e., for TS LCOs 3.5.1, 3.6.1.7, 3.6.2.3, 3.6.3.3, and 3.7.4) that were entered due to the ECCW B inoperability, were not challenged. TS LCO 3.5.1 Condition C (i.e., two Emergency Core Cooling System injection subsystems inoperable) has the most limiting Completion Time for Required Action C.1, to restore one injection subsystem to operable status within 72 hours. TS LCO 3.7.4, for the Control Room HVAC subsystem B (that remained inoperable for the piping repair) Condition A (i.e., one subsystem inoperable) has a Completion Time for Required Action A.1 to restore the subsystem to operable status within 30 days. The actual inoperability time for Control Room HVAC subsystem B due to ECCW B inoperability was approximately two days, seven-and-a-half hours.

The Probabilistic Risk Assessment (PRA) evaluation determined this event to be administrative in nature as a result of noncompliance with TS requirements. The respective function was available. On this basis, this issue is viewed to be negligible from the PRA perspective.

If a "bounding" evaluation were to be postulated to account for a condition of the piping structural integrity being "indeterminate" from an engineering perspective, and ECCW B was postulated to be unavailable from the time of the leak discovery to the time of isolation, an incremental Conditional Core Damage Probability (ICCDP) of 2.64E-8 was calculated. The results indicate that ICCDP is below 1.0E-6, which is below the guidance threshold for being risk significant. Based on the PRA assessment, this event is considered to be of low safety significance.

CORRECTIVE ACTIONS

The plant procedure for PODs will be revised to direct consideration of reportability ramifications when establishing POD completion times. Additionally, procedure guidance will be developed to address through-wall piping leaks. Training courses will also be revised and Operations and other support personnel trained to the lessons learned from this event. In the interim, written guidance has been provided to the operators.

PREVIOUS SIMILAR EVENTS

The corrective action program database was reviewed for previous similar events occurring in the past three years. LER 2008-002, "Inoperable Emergency Closed Cooling System Results in Condition Prohibited by Technical Specifications" documents that ECCW B was inoperable due to insufficient minimum flow for approximately 52 hours prior to required actions being taken to declare the associated systems and components inoperable. Identified causes included inadequacies in system operation and clearance procedures. The procedure changes that were developed could not reasonably be expected to prevent the occurrence of this event.

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COMMITMENTS

There are no regulatory commitments contained in this report. Actions described in this document represent intended or planned actions, are described for the NRC's information, and are not regulatory commitments.