

Mark B. Bezilla  
Vice President440-280-5382  
Fax: 440-280-8029August 23, 2011  
L-11-268

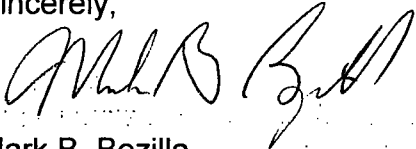
10 CFR 50.73(a)(2)(ii)(B), 10 CFR 21.2(c)

ATTN: Document Control Desk  
U. S. Nuclear Regulatory Commission  
Washington, DC 20555-0001SUBJECT:  
Perry Nuclear Power Plant, Unit 1  
Docket No. 50-440, License No. NPF-58  
Licensee Event Report Submittal

Enclosed is Licensee Event Report (LER) 2011-001, "Fire Protection Design Vulnerability Results in an Unanalyzed Condition." 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 2011-001cc: NRC Project Manager  
NRC Resident Inspector  
NRC Region IIITE22  
NRC

**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 FOIA/Privacy Section (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.resource@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.

<b>1. FACILITY NAME</b> Perry Nuclear Power Plant, Unit 1	<b>2. DOCKET NUMBER</b> 05000440	<b>3. PAGE</b> 1 OF 4
--	-------------------------------------	--------------------------

**4. TITLE**  
Fire Protection Design Vulnerability Results in an Unanalyzed Condition

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
07	05	2011	2011	- 001	- 00	08	23	2011	FACILITY NAME	DOCKET NUMBER

<b>9. OPERATING MODE</b>  1	<b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §:</b> (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)						
<b>10. POWER LEVEL</b>  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 checked="" 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 checked="" type="checkbox"/> OTHER							
<input type="checkbox"/> 20.2203(a)(2)(vi)	<input 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 Eric Blood, Compliance Engineer, Regulatory Compliance	TELEPHONE NUMBER (Include Area Code) (440) 280- 6358
---	---

**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

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

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

On July 5, 2011, during a review for applicability of a 10 CFR 21 (Reporting of Defects and Noncompliance) notification, an original plant design deficiency was discovered. The deficiency resulted in the plant being vulnerable to a hot short in the unlikely event of a postulated control room fire, which could result in a loss of the capability to safely shutdown the plant.

The identified deficiency was corrected utilizing temporary modifications to the plant that eliminated the potential for a control room fire to induce a hot short. The cause of the design deficiency was a latent design error that was made during plant construction and was not identified during the design review for 10 CFR 50 Appendix R Section III.G (Fire protection of safe shutdown capability). The corrective actions to address this condition include the design and implementation of a permanent plant modification to isolate the indication circuits in the unlikely event of a control room fire. A probabilistic risk assessment was performed for this condition and evaluated the condition to be of low safety significance.

This condition is being reported in accordance with 10 CFR 50.73(a)(2)(ii)(B) as a condition that resulted in the nuclear power plant being in an unanalyzed condition that significantly degraded plant safety. Additionally, this report also constitutes a 10 CFR Part 21 notification.

**LICENSEE EVENT REPORT (LER)  
CONTINUATION SHEET**

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Perry Nuclear Power Plant, Unit 1	05000-440	YEAR	SEQUENTIAL NUMBER	REV NO.	2 OF 4
		2011	-- 001 --	00	

**NARRATIVE**

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

**INTRODUCTION**

On July 5, 2011, during a review for applicability of a 10 CFR 21 notification made by WorleyParsons (formerly Gilbert/Commonwealth), an original plant design wiring deficiency was identified. The deficiency is in the design of two control room ammeter circuits and results in the plant being vulnerable to a hot short in the unlikely event of a postulated control room fire. The hot short could cause a loss of the capability of the Division 1 train to achieve and maintain safe shutdown of the plant (the site Safe Shutdown Analysis credits Division 1 to shutdown the plant in the event of a control room fire).

This condition is being reported in accordance with 10 CFR 50.73(a)(2)(ii)(B) as a condition that resulted in the nuclear power plant being in an unanalyzed condition that significantly degraded plant safety. Additionally, this report also constitutes a 10 CFR Part 21 notification.

**EVENT DESCRIPTION**

On July 5, 2011, at 1815 hours, with the plant operating in MODE 1 at 100 percent rated thermal power, it was determined that the original plant design contained a wiring deficiency that constituted a fire protection program concern. The wiring deficiency could adversely affect the ability to achieve and maintain safe shutdown of the plant in the unlikely event of a control room fire. The design deficiency was evaluated to be reportable in accordance with 10 CFR 50.72(b)(3)(ii)(B) and an Event Notification (ENF No. 47024) was made at 2035 hours. The two systems/components that were impacted by the deficiency were the Emergency Service Water (ESW)[BI] A pump [P] and the Control Complex Chilled Water (CCCW)[KM] chiller [CHU] A. As an interim action, two temporary plant modifications were prepared and implemented to remove the deficiency by lifting leads and installing jumpers. The temporary modifications eliminated the current path through the control room, which eliminated the potential for a control room fire hot short induced failure to occur. On July 8, 2011, at 0956 hours, the plant entered the applicable Limiting Conditions for Operation for each of the respective systems for installation of the temporary modifications and the systems were declared operable at 1822 hours on July 8, 2011, thereby, terminating the unanalyzed condition. The condition itself did not render any plant equipment inoperable.

**CAUSE OF EVENT**

The cause of the design deficiency was a latent design error that was made during plant construction and was not identified during the design review for 10 CFR 50 Appendix R Section III.G (Fire protection of safe shutdown capability). Control room isolation of the affected circuits was not originally considered as required by the fire protection regulations. Consequently, the circuits that could impact safe shutdown were misclassified and their impact not appropriately evaluated.

**LICENSEE EVENT REPORT (LER)  
CONTINUATION SHEET**

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Perry Nuclear Power Plant, Unit 1	05000-440	YEAR	SEQUENTIAL NUMBER	REV NO.	3 OF 4
		2011	-- 001 --	00	

**NARRATIVE**

**EVENT ANALYSIS**

The wiring deficiency is an original design condition involving two control room ammeter circuits. Some of the major components in the circuits include sensing current transformers [XCT], overcurrent protective relays [51] and a control room ammeter [II]. In the unlikely event of a postulated control room fire, the potential exists for a hot short to occur in the wiring associated with the control room ammeters, which could actuate the protective relays and trip the component breaker [52]. The actuation of the protective relays could result in either one or both breakers tripping to the open position. The breakers supply power to equipment that is analyzed to ensure the plant can safely shutdown in the unlikely event of a control room fire, which includes the ESW A pump and the CCCW Chiller A. These systems are required support systems for various safety-related systems that are required to safely shutdown the plant.

The site Safe Shutdown Capability Report credits the Division 1 train to safely shutdown and maintain the plant in a safe condition during a postulated control room fire. The design deficiency resulted in the plant not being able to meet a requirement of 10 CFR 50 Appendix R, in particular Section III.G.1, which states that "Fire protection features shall be provided for structures, systems, and components important to safe shutdown. These features shall be capable of limiting fire damage so that one train of systems necessary to achieve and maintain hot shutdown conditions from either the control room or emergency control station(s) is free of fire damage." Implementation of the temporary modifications on July 8, 2011, restored compliance with 10 CFR 50 Appendix R Section III.G.1.

A probabilistic risk assessment was performed to quantify the change in core damage frequency (CDF) associated with the identified condition. A postulated fire impacting the Division 1 components in the Control Room would result in a change in CDF of 2.88E-08. If it was postulated that a fire affected both Division 1 and Division 2 components, a change in CDF of 2.55E-07 was calculated. As the Large Early Release Frequency (LERF) is on an order of magnitude lower than the CDF, LERF would be on the order of 1.0E-08. Configurations with changes in CDF of less than 1.0E-06 and a change in LERF of less than 1.0E-07 are not considered to be significant risk events. Based on the probabilistic risk assessment results, this condition is considered to be of low safety significance.

**CORRECTIVE ACTIONS**

An extent of condition review was completed on other similar power circuits in Division 1, with no other deficiencies noted.

Interim corrective actions were performed to isolate the affected circuits via two temporary modifications. The modifications lifted leads and installed jumpers that removed the control room ammeters from the circuits, thereby eliminating the potential of a control room fire creating a hot short adversely affecting Division 1.

**LICENSEE EVENT REPORT (LER)  
CONTINUATION SHEET**

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Perry Nuclear Power Plant, Unit 1	05000-440	YEAR	SEQUENTIAL NUMBER	REV NO.	4 OF 4
		2011	-- 001 --	00	

**NARRATIVE**

Planned corrective actions include:

- 1) Design and implement a solution to isolate the ammeter circuits in the unlikely event of a control room fire.
  
- 2) Communicate the lessons learned from this LER to Engineering personnel with an emphasis that indication circuits can impact safe shutdown.
  
- 3) A sample of circuits not considered to impact safe shutdown in the site Safe Shutdown Report will be reviewed to ensure that categorization is correct.

**PREVIOUS SIMILAR EVENTS**

A search of License Event Reports and the corrective action program documents for the last three years at the Perry Nuclear Power Plant found that one similar event had been reported.

LER 2009-002 (Diesel Generator CO2 Fire Suppression Control Panel Miswiring Results in an Unanalyzed Condition) reported an unanalyzed condition involving a modification to the Fire Protection system. During the installation of a modification on the diesel generator carbon dioxide (CO2) fire protection system, a wiring error occurred which would have resulted in the Division 2 diesel generator ventilation supply fans isolating during a Division 3 diesel generator CO2 actuation. Additionally, in the event of a Division 2 diesel generator CO2 actuation, the Division 3 diesel generator ventilation supply fans would have isolated. The root cause of this event was determined to be an inadequate post modification test, with a contributing cause of less than adequate cable tag/wire mark configuration control process. The corrective actions for this event were focused on correcting the root and contributing causes and would not have been reasonably expected to have prevented the condition documented in LER 2011-001.

**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.