



Exelon Generation®

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October 09, 2012
TMI-12-143

10 CFR 50.73

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555-0001

THREE MILE ISLAND NUCLEAR STATION, UNIT 1 (TMI-1)
RENEWED FACILITY OPERATING LICENSE NO. DPR-50
DOCKET NO. 50-289

SUBJECT: LICENSEE EVENT REPORT (LER) NO. 2012-002-00
"Missing Seals in Air Intake Tunnel Conduits"

This report is submitted in accordance with 10 CFR 50.73 (a)(2)(v)(B). For additional information regarding this LER contact Mike Fitzwater, Sr. Regulatory Engineer, TMI Unit 1 Regulatory Assurance at (717) 948-8228.

There are no regulatory commitments contained in this LER.

Sincerely,



10/9/12

Mark Newcomer
Plant Manager, Three Mile Island Unit 1
Exelon Generation Co., LLC

MN/mdf

cc: TMI Senior Resident Inspector
Administrator, Region I
TMI-1 Senior Project Manager

IEZZ
NRK

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 hours. 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.

1. FACILITY NAME Three Mile Island, Unit 1	2. DOCKET NUMBER 05000289	3. PAGE 1 OF 4
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4. TITLE: Missing Seals in Air Intake Tunnel Conduits

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
08	10	2012	2012	- 002 -	00	10	09	2012	N/A	05000
									FACILITY NAME	DOCKET NUMBER
									N/A	05000

9. OPERATING MODE N	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: <i>(Check all that apply)</i>									
10. POWER LEVEL 100	<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)						
	<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 checked="" 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 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 Michael Fitzwater, TMI Unit 1 Regulatory Assurance Engineer	TELEPHONE NUMBER (Include Area Code) (717) 948-8228
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13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED <input checked="" type="checkbox"/> YES <i>(If yes, complete 15. EXPECTED SUBMISSION DATE)</i> <input type="checkbox"/> NO	15. EXPECTED SUBMISSION DATE	MONTH 01	DAY 15	YEAR 13
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ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

On 08/10/12 a TMI-1 flood inspection walkdown discovered that conduits carrying cabling from yard electrical vaults through the Air Intake Tunnel (AIT) to the Auxiliary Building (AB) did not contain internal seals for flood protection. The conduit seals were never installed. The cause has been attributed to inadequate configuration management during original construction. Each conduit from the yard electrical vaults that is not sealed could potentially provide a leak path during flood conditions from the yard electrical vaults to the Auxiliary building. Flood water entering the Auxiliary Building could impact the decay heat removal function. Compensatory measures have been implemented. Corrective action includes modifying the design.

The submittal of this LER constitutes reporting to the NRC in accordance with 10 CFR 50.73 (a)(2)(v)(B).

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE	
Three Mile Island, Unit 1	05000289	YEAR	SEQUENTIAL NUMBER	REV NO.	2 of 4	
		2012	-- 002 --	00		

A. EVENT DESCRIPTION

Plant Conditions before the event:

Babcock & Wilcox – Pressurized Water Reactor – 2568 MWth Core Power
 Date/Time: August 10, 2012 / 12:30 hours
 Power Level: 100% steady state power
 Mode: Power Operations

There were no structures, systems, or components out of service that contributed to this event.

Event:

A flood protection walkdown (Post Fukushima response required by NRC 50.54f letter) in the air intake tunnel was required to conduct visual inspection of 43 conduit penetrations. The sealing of all penetrations into the air intake tunnel is required to satisfy a license commitment that the plant can be maintained in a safe shutdown condition during an external flood with river flows up to the Probable Maximum Flood (PMF) (1,625,000 CFS). On 08/02/12, inspection confirmed that an internal seal fitting (Crouse Hinds Model EYS) was installed at each penetration and that each conduit penetration through the wall was externally sealed. The inspection team also noted drain holes in the conduit fittings. Following that inspection, the team discussed a plan to inspect the internal seal. A second inspection was conducted on 08/10/12, and a borescope was inserted into the conduits where possible (i.e., cable configurations with respect to the holes limited the capability to view the internal configuration of all of the conduits). Six conduits were inspected and none contained the internal sealing compound material (Chico A).

Based on the apparent condition (i.e., none of the conduits had the internal seal installed in the EYS fitting), the NRC was notified of the existence of an "Event or Condition that could have prevented fulfillment of a Safety Function" as required by 10 CFR 50.72(b)(3)(v)(B) via EN # 48179 on 08/10/12.

B. CAUSE OF EVENT

The conduit internal seals were never installed. The cause has been attributed to inadequate configuration management during original construction. The design drawings for the Air Intake Tunnel conduit routing (215-162 & 215-163) show the Crouse Hinds EYS fittings, and the EYS fittings are installed. The Chico A sealant was never installed in the EYS fittings.

Additional inspections were conducted following the initial discovery on 08/10/12. There are three groups of conduits with EYS fittings within the AIT. Some inspections were completed in each bank. Inspections were performed in two other EYS installations outside the air intake tunnel. No internal seals have been found in any of the EYS fittings inspected. In addition, those inspections did not find any evidence of an internal sealant having previously been installed in those EYS fittings.

Design changes associated with these conduits were reviewed to attempt to identify any changes where a seal was removed or new circuits were pulled through these conduits. No such modifications were found. The conclusion that no modifications have been performed which replaced cables or added new cables in these conduits was vetted through discussions with six electrical engineers each with more than 25 years experience at TMI.

NRC FORM 366A (10-2010)		U.S. NUCLEAR REGULATORY COMMISSION				
LICENSEE EVENT REPORT (LER)						
1. FACILITY NAME		2. DOCKET	6. LER NUMBER			3. PAGE
Three Mile Island, Unit 1		05000289	YEAR	SEQUENTIAL NUMBER	REV NO.	3 of 4
			2012	-- 002 --	00	

Crouse Hinds indicated that damage to the EYS fitting is likely to have occurred, if there had been a past attempt to remove the Chico A material. The EYS fittings at TMI are cast iron with cast iron covers. Difficulties with removing those covers after initial installation led Crouse Hinds to modify the design in later years and to use aluminum for the cover. If such damage had occurred, then the only recourse would have been to install an EYS-R model fitting as a replacement. The EYS-R is a retrofit style fitting which can be installed without withdrawing the cables. There are no EYS-R fittings installed in the AIT. The lack of an EYS-R fitting is further evidence that the Chico A seal material was never removed from the EYS fittings.

C. ANALYSIS / SAFETY SIGNIFICANCE

This condition would not have affected site flood protection for an external flood event up to 22% greater than the flood of record for the Susquehanna River at TMI (Tropical Storm Agnes 1972) but would have affected mitigation of the licensing basis event which is 60% greater than the flood of record. The condition was reported to NRC via ENS as a "condition that could have prevented fulfillment of a Safety Function".

Compensatory measures have been implemented to ensure safe shutdown can be maintained in the event of a probable maximum flood (PMF). Procedure revision provides direction to minimize flood water intrusion into conduits in electrical vaults E-6, E-10 and E-11 that connect through the air intake tunnel into the auxiliary building. The revision adds a section to the flood barrier installation procedure to fill the affected vaults with sand in the event of a flood forecast. This provision does not adversely affect the function of the cabling in the affected vaults and ensures the capability to achieve and maintain a safe shutdown condition in the event of a PMF.

Assessment and evaluation of the conduit configuration is continuing. Each conduit that is a potential leak path is being evaluated to understand the available flow path area (i.e., number of cables in the conduit, fire seal in the conduit). Testing of typical conduit configuration is being conducted to determine the effectiveness of fire seals to limit the flow of flood waters through these conduits. The test results will be used to evaluate the effects of the condition had a PMF occurred in the past. Because the testing and evaluation of the information has not been completed within the 60 days of discovery, this LER will be supplemented by 01/15/13.

D. CORRECTIVE ACTIONS

- Provide industry notification of an original construction deficiency where internal conduit seal fittings were installed but the seals were not installed.
- Modify the design to provide the required flood protection for air intake tunnel conduits.

E. PREVIOUS OCCURENCES

Previous Events	Previous Event Review
MNCR 94-0023	In 1994, Design of BWST Tunnel to Auxiliary Building Conduit / cable flood protection was found to be inadequate.

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE	
Three Mile Island, Unit 1	05000289	YEAR	SEQUENTIAL NUMBER	REV NO.	4 of 4	
		2012	-- 002 --	00		

<p>BWST Tunnel to Auxiliary Building Conduit / cable flood protection.</p>	<p>In response a new seal configuration was installed in pull box P62/P61/P60 [T1-CCD-128184-261] and the general specification for the "Installation of Electrical Equipment" was modified to recognize the need to prevent flood water intrusion through conduits. The problem in the BWST tunnel was a design problem. No seal had been specified by design. The extent of condition reviews found that the EYS had been specified by design and were installed in the AIT.</p>
<p>RCE 1104245 Exterior Flood Barrier Design Deficiency in Air Intake Tunnel</p>	<p>In August 2010, flood protection design deficiencies were identified in the air intake tunnel drains system. The lack of adequate design documents describing the flood protection system was identified as the reason why this condition had not been recognized earlier. The corrective actions included the reconstitution of the flood protection design and, the development a design basis document and flood protection drawings. This effort recognized the function of the EYS fittings, verified the fittings were installed at all required locations, and documented this in SDBD-T1-122 and Flood Barrier System drawing 1E-122-01-1000. The problem with the AIT drains was a design problem. The design did not provide flood protection for the drain. This issue did not indicate problems with construction, and therefore corrective actions did not pursue construction related issues.</p>

* Energy Industry Identification System (EIS), System Identification (SI) and Component Function Identification (CFI) Codes are included in brackets, [SI/CFI] where applicable, as required by 10 CFR 50.73 (b)(2)(ii)(F).