



September 22, 2014

L-2014-167
10 CFR 50.73

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

Re: St. Lucie Units 1 and 2
Docket Nos. 50-335 and 50-389
Reportable Event: 2012-010
Date of Event: November 1, 2012
Degraded Manhole Conduit Seals Bypassed External Flood Protection

The attached revision 2 of Licensee Event Report 2012-010 is being submitted pursuant to the requirements of 10 CFR 50.73 to provide notification of the subject event.

Respectfully,

A handwritten signature in black ink, appearing to read "Joseph Jensen".
Joseph Jensen
Site Vice President
St. Lucie Plant

JJ/KWF

Attachment

IE22
NRR

LICENSEE EVENT REPORT (LER)

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 FOIA, Privacy and Information Collections Branch (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.

1. FACILITY NAME St. Lucie Unit 1		2. DOCKET NUMBER 05000335		3. PAGE 1 OF 3					
4. TITLE Degraded Manhole Conduit Seals Bypassed External Flood Protection									
5. EVENT DATE		6. LER NUMBER		7. REPORT DATE		8. OTHER FACILITIES INVOLVED			
MONTH	DAY	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME St. Lucie Unit 2	DOCKET NUMBER 05000389
11	02	2012	2012 - 010 - 02		09	22	2014	FACILITY NAME na	DOCKET NUMBER na
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)				
		<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)				
10. POWER LEVEL 100%		<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 checked="" 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 checked="" type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A				
12. LICENSEE CONTACT FOR THIS LER NAME Ken Frehafer - Licensing Engineer TELEPHONE NUMBER (Include Area Code) 772-467-7748									
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
na	na	na	na	NO					
14. SUPPLEMENTAL REPORT EXPECTED					15. EXPECTED SUBMISSION DATE		MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE)					<input checked="" type="checkbox"/> NO				
ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)									
<p>On November 1, 2012, St. Lucie Unit 1 was in Mode 1 at 100 percent reactor power when Engineering completed their review of the cumulative effects of the degraded and missing conduit seals in electrical manholes that provided a leakage path into the reactor auxiliary building (RAB). The evaluation concluded that the as-found condition was a reportable event because the postulated storm surge associated with a probable maximum hurricane (PMH) results in RAB flooding greater than the internal flooding analysis of record.</p> <p>The flooding analyses used in revision 0 of this LER were non-conservative with respect to site water hold up volumes that changed the units' response to flooding. Based on the latest flooding analyses, St. Lucie Unit 2 is also reportable as the resultant RAB flooding is greater than the internal flooding analysis of record.</p> <p>The reportability of Unit 2 was discovered during flooding design bases reconstitution efforts and was caused by legacy conduit seal installation deficiencies during original construction. Revision 2 adds additional reporting requirements.</p> <p>All degraded conduit seals were repaired per design requirements.</p>									

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
St. Lucie Unit 1	05000335	2012	- 010	- 02	Page 2 of 3

NARRATIVE**Description of the Event**

On November 1, 2012, St. Lucie Units 1 and 2 were in Mode 1 at 100 percent reactor power. Engineering completed their review of the cumulative effects of the degraded and missing conduit seals in electrical manholes that provided a leakage path into the reactor auxiliary building (RAB). These deficiencies were identified during the industry-developed and NRC endorsed flooding walkdown program developed as the result of Fukushima Operating Experience. The electrical manholes have either 4 inch gravity or 1-1/2 inch pumped drains to the site storm water system. In the event of an elevated storm water level, storm water may flood the manholes due to backflow through the drain lines or, after initial flooding, through conduits (unsealed) entering the RAB below grade. Engineering concluded that the as-found condition of the missing or degraded conduit seals was a reportable event because the probable maximum hurricane (PMH) storm surge would result in internal RAB flooding greater than the internal flooding analysis of record.

This did not result in any immediate structure, system, or component (SSC) inoperability as pre-planned contingency actions were in place during the flooding walkdown activities in order to mitigate the effects of any discovered manhole material condition deficiencies. The completed Fukushima flooding walkdown effort encompassed the extent of condition for identifying configurations that could bypass external flood protection features. All identified manhole degraded conduit seals have since been repaired.

Cause of the Event

This condition was caused by legacy initial construction defects. The storm water drainage system consists of a number of concrete catch basins interconnected by drainage piping. As designed, the site drainage system precludes flooding of safety related SSCs under PMH conditions. There are no lines from the equipment and floor drainage system that penetrate the reactor auxiliary building below the elevation associated with the maximum wave runup (+19.2 feet elevation). Due to maintenance considerations, manholes are constructed to minimize the infiltration of water. A gravity or pumped drainage system is provided. All underground electrical system components are located at least 8 ft above the normal ground water level. Underground electrical cables that run through the manholes into the RAB are required to have their conduits sealed to prevent water migration. During severe hurricanes, or excessive rain storms, flooding of the areas surrounding the plant island could result in backup of the storm water system which in turn could result water migrating through unsealed conduits. However, the required conduit seals would prevent water from backing up into RAB areas which would jeopardize the required function of a safety related system.

Analysis of the Event

This condition is reportable in accordance with; a) 10 CFR 50.73(a)(2)(ii)(B) as an event or condition that resulted in the nuclear power plant being in an unanalyzed condition that significantly degraded plant safety; and b) 10 CFR 50.73(a)(2)(v)(A)/(B)/(D) as any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to shut down the reactor, remove residual heat, or mitigate the consequences of an accident.

Design conditions do not identify a design basis external flooding rate as it is assumed that design features seal the RAB below the +19.5 feet elevation from water

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NARRATIVE

sources external to the RAB. The degraded conduit seal material condition invalidated this assumption. External flooding during a PMH event would have adversely affected safe shutdown diversity.

Analysis of Safety Significance

The degraded conduit flood seals in Units 1 and 2 were within electrical manholes located below the 17.2 feet elevation design basis flood. The analysis performed by Engineering concluded that RAB flooding resulting from a PMH event (due to the backflow of water through the flooded unsealed and degraded conduits seals) would exceed the internal flooding analysis of record. This may have resulted in the loss of St. Lucie Unit 1 redundant safe shutdown equipment on the -0.5 feet elevation (e.g., boric acid makeup and charging pumps), however the ECCS pumps would remain available with manual operator actions.

The flooding analyses performed for revision 0 of this LER were non-conservative. As part of the continuing flooding design bases reconstitution efforts, FPL determined that the UFSAR flooding curves did not consider site water hold up volumes that effectively increased the flooding duration. Based on this new understanding, St. Lucie Unit 2 would also have RAB flooding in excess of its internal flooding analysis of record.

FPL completed its assessment of this condition and concluded that the original reported safety significance for this condition underestimated the impact of the internal flooding. In the unlikely event a PMH event occurred, procedurally pre-planned and spontaneous damage control actions would mitigate the impact on internal flooding. Ultimately, decay heat removal via the steam and electric driven auxiliary feedwater system pumps would be unaffected by any postulated internal flooding.

Corrective Actions

The completed Fukushima flooding walkdown effort encompassed the extent of condition for identifying configurations that could bypass external flood protection features. All identified St. Lucie Unit 1 and 2 degraded conduit seals have been repaired.

Similar Events

None

Failed Components

None

Other Information

St. Lucie Unit 1 reported a flooding event that occurred on January 9, 2014 via LER 50-335/2014-001. During the investigation of that event FPL reconstituted the design bases for the site flooding response because the UFSAR flood curves failed to account for water hold after the flood waters receded. Applying this new flooding response to the as-found electrical manway penetration condition necessitated that this LER be revised to include the reportability for St. Lucie Unit 2.