December 27, 2012

L-2012-443
10 CFR 50.73

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

Re: St. Lucie Unit 1
Docket No. 50-335
Reportable Event: 2012-010
Date of Event: November 2, 2012
Degraded Manhole Conduit Seals Bypassed External Flood Protection

The attached 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,

Joseph Jensen
Site Vice President
St. Lucie Plant

JJ/KWF

Attachment

IE22
NRR

NRC FORM 366 (10-2010) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2013

Estimated burden per response to comply with this mandatory collection request: 50 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.

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
St. Lucie Unit 1	05000335	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	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
									na	na
11	02	2012	2012	- 010 -	00	12	27	2012	FACILITY NAME: na	DOCKET NUMBER: na

9. OPERATING MODE
1

10. POWER LEVEL
100%

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: *(Check all that apply)*

- ☐ 20.2201(b)
- ☐ 20.2201(d)
- ☐ 20.2203(a)(1)
- ☐ 20.2203(a)(2)(i)
- ☐ 20.2203(a)(2)(ii)
- ☐ 20.2203(a)(2)(iii)
- ☐ 20.2203(a)(2)(iv)
- ☐ 20.2203(a)(2)(v)
- ☐ 20.2203(a)(2)(vi)
- ☐ 20.2203(a)(3)(i)
- ☐ 20.2203(a)(3)(ii)
- ☐ 20.2203(a)(4)
- ☐ 50.36(c)(1)(i)(A)
- ☐ 50.36(c)(1)(ii)(A)
- ☐ 50.36(c)(2)
- ☐ 50.46(a)(3)(ii)
- ☐ 50.73(a)(2)(i)(A)
- ☐ 50.73(a)(2)(i)(B)
- ☐ 50.73(a)(2)(i)(C)
- ☐ 50.73(a)(2)(ii)(A)
- ☒ 50.73(a)(2)(ii)(B)
- ☐ 50.73(a)(2)(iii)
- ☐ 50.73(a)(2)(iv)(A)
- ☐ 50.73(a)(2)(v)(A)
- ☐ 50.73(a)(2)(v)(B)
- ☐ 50.73(a)(2)(v)(C)
- ☐ 50.73(a)(2)(v)(D)
- ☐ 50.73(a)(2)(vii)
- ☐ 50.73(a)(2)(viii)(A)
- ☐ 50.73(a)(2)(viii)(B)
- ☐ 50.73(a)(2)(ix)(A)
- ☐ 50.73(a)(2)(x)
- ☐ 73.71(a)(4)
- ☐ 73.71(a)(5)
- ☐ OTHER

Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
Ken Frehafer - Licensing Engineer	772-467-7748

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
na	na	na	na	NO					

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

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

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.

This condition was caused by legacy conduit seal installation deficiencies during original construction.

All degraded conduit seals were repaired per design requirements. This condition was determined to have no significant impact on the health and safety of the public due to the low probability of a PMH and the availability of diverse methods to protect safe shutdown capability.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
St. Lucie Unit 1	05000335	2012	- 010	- 00	Page 2 of 3

NARRATIVE

Description of the Event

On November 1, 2012, St. Lucie Unit 1 was 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 Fukushima flooding walkdowns. 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 a legacy initial construction defect. 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 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. 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 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.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
St. Lucie Unit 1	05000335	2012	- 010	- 00	Page 3 of 3

NARRATIVE

Analysis of Safety Significance

The degraded conduit flood seals in Unit 1 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 redundant safe shutdown equipment on the -0.5 feet elevation (e.g., boric acid makeup pumps).

FPL completed its assessment of this condition and concluded that this condition did not have a significant impact on the health and safety of the public. The PMH is a very low probability event. In the unlikely event a PMH event occurred, procedurally pre-planned and spontaneous damage control actions would mitigate the impact on internal flooding, and diverse methods remained available and unaffected for maintaining safe shutdown conditions.

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 degraded conduit seals have been repaired.

Similar Events

None

Failed Components

None

Other Information

The Fukushima flood walkdowns performed at the St. Lucie site also identified missing and degraded conduit penetration seals on St. Lucie Unit 2. However, the Engineering analysis concluded that RAB flooding resulting from the PMH event was bounded by the internal flooding analysis of record. All identified St. Lucie Unit 2 degraded conduit seals have been repaired.