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Vermont Yankee
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Tel 802 257 7711

Christopher J. Wamser
Site Vice President

BVY 12-063

September 12, 2012

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

SUBJECT: Licensee Event Report 05000271/2012-001-01, Potential to Flood Switchgear Room Due to Missing Conduit Flood Seal
Vermont Yankee Nuclear Power Station
Docket No. 50-271
License No. DPR-28

Dear Sir or Madam:

As defined by 10CFR50.73.(a)(2)(ii)(B) and 10CFR50.73(a)(2)(v)(A - D) we are submitting the attached supplemental Licensee Event Report, LER 05000271/2012-001-01.

There are no new regulatory commitments contained within this correspondence.

Should you have any questions concerning this letter, please contact Mr. Robert J. Wanczyk at (802) 451-3166.

Sincerely,

[CJW/plc]

Attachment: LER 05000271/2012-001-01, Potential to Flood Switchgear Room Due to Missing Conduit Flood Seal

cc list: (next page)

cc: Mr. William M. Dean
Region 1 Administrator
U.S. Nuclear Regulatory Commission
2100 Renaissance Blvd, Suite 100
King of Prussia, PA 19406-2713

Mr. Richard V. Guzman, Project Manager
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Office of Nuclear Reactor Regulation
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USNRC Resident Inspector
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Ms. Elizabeth Miller
Commissioner
VT Department of Public Service
112 State Street, Drawer 20
Montpelier, VT 05620-2601

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: 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 F55), 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)

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4. TITLE

Potential to Flood Switchgear Rooms Due to Missing Conduit Flood Seal

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
									N/A	
05	24	2012	2012	-- 001 --	01	09	12	2012	FACILITY NAME N/A	DOCKET NUMBER

9. OPERATING MODE

N

10. POWER LEVEL

100

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

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

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER (Include Area Code)
Michael Gosekamp, General Manager Plant Operations	(802) 257-7711

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	MONTH	DAY	YEAR
☐ YES (If Yes, complete EXPECTED SUBMISSION DATE). ☒ NO				

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

On May 24, 2012, with the plant at 100 percent power, Vermont Yankee (VY) discovered the potential for water intrusion into the Vital Switchgear Rooms via an underground spare conduit that was found to be missing its flood seal. The missing flood seal compromised the interior flood design controls for the Switchgear Rooms. Were flooding of the Switchgear Rooms to occur, the operability of switchgear providing electrical power to Division I and II Engineered Safety Feature systems and Emergency Core Cooling Systems could be affected. This could threaten the capability to shut down the reactor and maintain it in a safe shutdown condition. The causal analysis determined that the flood seal used in this spare conduit did not provide an adequate seal to prevent the flood seal from becoming dislodged. The condition was corrected by installing a new flood seal of a different design, thus removing the potential flood path. Plant procedure requires inspection of the Switchgear Rooms during a flood event and includes actions that would have mitigated any flooding; therefore this event did not pose a threat to public health and safety.

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17. NARRATIVE *(If more space is required, use additional copies of NRC Form (366A)*

Description of Event

On May 16, 2012, with the plant at 100 percent power, while performing periodic manhole flood seal inspections, Vermont Yankee (VY) found a spare 4" conduit (EIIS=CND) in manhole MH-P3 that was missing a flood seal. A new seal was installed on the same day. On May 24, 2012, with the plant at 100 percent power, VY determined that the missing conduit flood seal resulted in a condition that had the potential to flood the Vital Switchgear (EIIS=EK) Rooms should water enter the manhole and conduit. Flooding could affect the operability of safety class switchgear located in this room. The electrical switchgear and distribution equipment located in the rooms power both Division I and Division II Engineered Safety Feature systems and Emergency Core Cooling Systems. During subsequent examination, the missing flood seal was found in the bottom of manhole MH-P3.

This event is reported in accordance with 10CFR50.73.(a)(2)(ii)(B) as an event or condition that resulted in the plant being in an unanalyzed condition that significantly degraded plant safety and 10CFR50.73(a)(2)(v)(A-D) as an event or condition that could have prevented the fulfillment of a safety function.

Cause of Event

The causal analysis determined that the flood seal used in this spare conduit did not provide an adequate seal to prevent the flood seal from becoming dislodged. When the flood seal is fully expanded by tightening a compression screw, the outside diameter measurement of the seal expands to 4.25", leaving a relatively small surface area on the inside of the conduit to make the seal (approximately 0.25"). The end of this spare conduit where the seal was installed was measured in the field at 4.125".

Analysis of Event

The entrances to the VY administration (EIIS=MA) and Turbine Buildings (EIIS=NM) are located at the 252.5 feet elevation. VY Updated Final Safety Analysis Report (UFSAR) Table 2.4-9 shows that the maximum VY flood level expected would reach a maximum elevation of 252.5 feet, at a time of 96 hours into the flood. VY UFSAR Section 2.4.3.4 states, "Since the entrances to all of these structures are at elevation 252.5 feet MSL, they are at maximum flood stage and thus, are protected against the maximum probable flood." However, UFSAR Section 2.4.3.4 also states, "A potential avenue of water intrusion into the Switchgear Rooms, Elevation 248.5 feet MSL exists through underground conduits routed from manholes and handholes to the Switchgear Room floor. Should water enter these manholes, the underground conduits could provide a path for water to enter the Switchgear Room manholes. If the water level gets high enough, flooding in the Switchgear Rooms and lower levels of the administration and Turbine Building could occur. This flooding could affect the operability of safety class switchgear." The spare conduit with the missing flood seal created a potential flow path from an exterior manhole to the Switchgear Rooms via manhole MH-P3, located in the yard adjacent to the station startup transformers, and manhole MH-P2, located in the Switchgear Rooms.

Following the VY Individual Plant Examination External Events review all conduits running into the Switchgear Room manholes connected to yard manholes were sealed to limit any leakage into the room during site flooding conditions. In conjunction with the conduit sealing, sufficient portable pumping capacity was provided on-site to remove any water which may enter the Switchgear Room manholes. Additionally, the site flood procedure was revised to direct plant personnel to remove this water in the event of flooding and to open Switchgear Room doors to provide a flow path for water out of the room if ponding cannot be prevented.

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Should the postulated flooding event occur, the plant would be shutdown when the flood level reaches the 237 foot elevation, which is approximately 72 hours into the event. This shutdown is required before the intake structure becomes submerged by the flood water. As the level continues to rise and enter manhole MH-P3, water would begin flowing through the unsealed conduit connecting these structures to the west Switchgear Room, with the water levels in the unsealed conduit matching the flood level. The cover on manhole MH-P3 would act to restrict the flow of flood water into the manhole from above. Per UFSAR Table 2.4-9, the water level reaches elevation 247.2 feet 84 hours into the event, and remains above this level for approximately 24 hours.

During the 24 hour period in which the flood water level is above elevation 247.2 feet, the Switchgear Room water level would seek external flood level. Unabated, the water level could reach a level of 4 feet within the room. However, by procedure, water would be pumped out of manhole MH-P2 with up to two sump pumps rated at 100 gallons per minute each and would flow out of the Switchgear Room doors and into the lower levels of the Turbine Building. The Turbine Building contains no safety system equipment which would be jeopardized by this water intrusion; therefore this drain path would lessen the severity of the maximum postulated flood upon Switchgear Room water introduction.

VY has a preventive maintenance task to perform visual inspections of manhole flood seals every 18 months. The conduit with the missing seal was previously inspected on November 2, 2010 and the flood seal was found to be in place.

Safety Significance

Plant procedure requires a plant shutdown be initiated if water levels indicate an imminent flooding condition which may cause river level to exceed 230 feet, which is 18.5 feet below the level of the Switchgear Rooms. Plant shutdown would have to be complete by the time the flood stage reaches 237 feet due to inundation of the circulating water pump motors. The procedure also requires that additional actions be implemented if a flood occurs, including using a sump pump to remove water from switchgear manholes should in-leakage occur and opening Switchgear Room doors to provide a path for water to flow out of the room if ponding cannot be prevented. To date the maximum river level that has occurred at the site was elevation 231.4 feet. Because the probability of a maximum flood is extremely low, the highest level achieved during a previous high water condition was 17.1 feet below the elevation of concern and the prescribed procedural actions in the event of flooding, this event is not considered to have resulted in an increased threat to public health and safety.

Corrective Actions

Completed Actions

1) Initial repairs were made by procuring and installing a new flood seal. Subsequently, the mechanical flood seal was replaced with SYLGARD 170 silicone elastomer.
2) The flood seal integrity for all the spare conduits that interface with the Switchgear Rooms was checked and found acceptable.

Planned Actions

1) Replace all screw type flood seals in spare conduits communicating with the Switchgear Rooms with SYLGARD 170 silicone elastomer.

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Previous Similar Events

In 1997, VY reported the potential for water intrusion into the Vital Switchgear Rooms via underground conduits during Maximum Postulated Flood Conditions due to a design vulnerability that resulted in conduit seals not being installed (LER 97-002-01, dated 05/29/1997).

No previous similar events have been reported in the last 5 years.