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Christopher J. Wamser
Site Vice President

BVY 13-043

May 16, 2013

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

SUBJECT: Licensee Event Report 05000271/2013-001-00, 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), Entergy Nuclear Operations, Inc. is submitting the attached Licensee Event Report, LER 05000271/2013-001-00 for Vermont Yankee Nuclear Power Station.

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,

A handwritten signature in black ink, appearing to read "Chris Wamser".

[CJW/plc]

Attachment: LER 05000271/2013-001-00, Potential to Flood Switchgear Room Due to Missing
Conduit Flood Seal

cc list: (next page)

IE22
NRR

cc: Mr. William M. Dean
Region 1 Administrator
U.S. Nuclear Regulatory Commission
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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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Vernon, VT 05354

Mr. Christopher Recchia
Commissioner
VT Department of Public Service
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Montpelier, VT 05620-2601

NRC Form 366 (10-2010)		U.S. NUCLEAR REGULATORY COMMISSION			APPROVED BY OMB: NO. 3150-0104			EXPIRES 10/31/2013		
LICENSEE EVENT REPORT (LER)										
1. FACILITY NAME <p style="text-align:center;">Vermont Yankee Nuclear Power Station</p>					2. DOCKET NUMBER <p style="text-align:center;">05000271</p>			3. PAGE <p style="text-align:center;">1 of 4</p>		
4. TITLE <p style="text-align:center;">Potential to Flood Switchgear Rooms Due to Missing Conduit Flood Seal</p>										
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
03	19	2013	2013	001	00	05	16	2013	N/A	N/A
9. OPERATING MODE <p style="text-align:center;">N</p>			11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)							
10. POWER LEVEL <p style="text-align:center;">000</p>			<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)
			<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 checked="" 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)					
12. LICENSEE CONTACT FOR THIS LER										
FACILITY NAME <p style="text-align:center;">Vincent Fallacara, General Manager Plant Operations</p>								TELEPHONE NUMBER (Include Area Code) <p style="text-align:center;">(802) 258-5409</p>		
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
<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)										
<p>On March 19, 2013, with the plant in the cold shutdown condition during a refueling outage, Vermont Yankee discovered water from dredging operations inside two electrical manholes located in the Vital Switchgear Rooms. On March 23, 2013, it was identified that the water had entered the two manholes through a partially dislodged flood seal in an underground spare conduit that communicates with the Switchgear Room manholes. On March 27, 2013, during an extent of condition review, an additional water intrusion pathway into the Switchgear Rooms via an abandoned sump pump discharge line was discovered. The dislodged flood seal and sump pump discharge line compromised the interior flood design controls for the Switchgear Rooms. The causes of the dislodged flood seal were due to the seal not being conservatively sized or tested for the application it was used in and failure to take timely corrective actions following a similar event reported in LER 2012-001-01. The sump pump discharge line is a legacy issue. The conditions were corrected by installing a new flood seal of a different design and capping the sump pump discharge line, thus removing the potential flood paths. 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.</p>										

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

Description of Event

On March 19, 2013, with the plant in the cold shutdown condition during a refueling outage, Vermont Yankee (VY) discovered water in electrical manholes (MH) MH-P1 and MH-P2 located inside the west and east Vital Switchgear (EIS=EK) Rooms, respectively. The source of the water was determined to be from intake bay dredging activities on March 18, 2013 that resulted in water accumulating on top of MH-16. MH-16 communicates through a series of manholes and hand holes with MH-S1, MH-P1 and MH-P2. MH-S1 and MH-P1 are located within the west Switchgear Room and MH-P2 is located within the east Switchgear Room. On March 23, 2013, VY found a spare 4" conduit (EIS=CND) in MH-S2 with a partially dislodged flood seal. The seal was replaced with a new flood seal of a different design.

On March 27, 2013, while performing an extent of condition review, VY discovered two potential additional water intrusion paths into MH-S1 based on a review of plant drawings. The first path was through an abandoned sump pump discharge line that connects the manhole to an external storm drain. The second path was through a 2" conduit drain line. Field inspection of the sump pump discharge line revealed that the sump pump was not connected to the discharge line and that an isolation valve and a check valve were missing. This condition would have allowed water to backflow from the storm drain into MH-S1. The sump pump discharge line was not identified as a water intrusion path during Fukushima flooding walkdowns. The conduit drain was shown to not exist through field inspection. Therefore, only a single additional water intrusion path was identified during the extent of condition review.

VY determined that the partially dislodged conduit flood seal and additional water intrusion path from the sump pump discharge line resulted in a condition that had the potential to flood the Vital Switchgear (EIS=EK) Rooms should water enter the spare conduit or sump pump discharge line. 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.

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 causes of the partially dislodged flood seal were due to the seal not being conservatively sized or tested for the application it was used in and a failure to take timely corrective actions following a similar event reported in VY LER 2012-001-01, dated September 12, 2012. The abandoned sump pump discharge line is a legacy issue that was identified during extent of condition reviews associated with this event.

Analysis of Event

The entrances to the VY administration (EIS=MA) and Turbine Buildings (EIS=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

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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 dislodged flood seal created a potential flow path from an exterior manhole to the Switchgear Rooms via manhole MH-16, located north of the protected area near the low level radioactive waste storage site, and MH-S1, which is located in the west Switchgear Room. The sump pump discharge line from MH-S1 to the storm drain is not described in the UFSAR but was determined to present an additional potential flow path from the exterior storm drain system to the Switchgear Rooms.

Following the VY Individual Plant Examination External Events (IPEEE) 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 natural phenomena 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. The sump pump discharge line from MH-S1 to the storm drain was not part of the IPEEE review.

Should the postulated flooding event occur while the plant was at power, 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-16 or the storm drain, water would begin flowing through the unsealed conduit and sump pump line connecting these structures to the west Switchgear Room, with the water levels in the unsealed conduit and sump pump line matching the flood level. 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. Plant operators are trained to respond to external flooding events and the site natural phenomena procedure requires personnel to inspect the Switchgear Room manholes if a flood is expected to cause the Connecticut River elevation to exceed 230 feet. Personnel are then required to pump the water out of the manholes using sump pumps. VY has two sump pumps available for use and are rated at 100 gallons per minute each pumping capacity.

VY has a preventive maintenance task to perform inspections of manhole flood seals every 18 months. The conduit with the dislodged seal was previously inspected on July 19, 2012 and the flood seal was physically verified, by pull test, 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. 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

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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) The mechanical flood seal in the MH-S2 spare conduit was replaced with SYLGARD 170 silicone elastomer.
- 2) All remaining screw type flood seals in spare conduits communicating with the Switchgear Rooms were replaced with SYLGARD.
- 3) The abandoned sump pump discharge line from MH-S1 to the storm drain was capped.

Planned Actions

- 1) Evaluate and determine if Fukushima flooding walkdown report requires resubmittal based on identification of the sump pump discharge line as a water intrusion path.

Previous Similar Events

In 2012, VY reported the potential for water intrusion into the Vital Switchgear Rooms via an underground conduit during Maximum Postulated Flood Conditions due to a missing conduit seal that was found during inspection (LER 2012-001-01, dated September 12, 2012).