

Dominion Nuclear Connecticut, Inc.  
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Waterford, CT 06385  
dom.com



DEC 18 2013

U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555


Serial No. 13-646  
MPS Lic/LES R0  
Docket No. 50-336  
License No. DPR-65

**DOMINION NUCLEAR CONNECTICUT, INC.**  
**MILLSTONE POWER STATION UNIT 2**  
**LICENSEE EVENT REPORT 2013-003-00**  
**POSTULATED DC AMMETER CIRCUIT HOT SHORTS**

This letter forwards Licensee Event Report (LER) 2013-003-00 documenting a condition discovered at Millstone Power Station Unit 2 on October 30, 2013. This LER is being submitted pursuant to 10 CFR 50.73(a)(2)(ii)(B).

If you have any questions or require additional information, please contact Mr. William D. Bartron at (860) 444-4301.

Sincerely,

  
Stephen E. Scace  
Site Vice President – Millstone

Attachments: 1

Commitments made in this letter: None

IEZZ  
NRR

cc: U.S. Nuclear Regulatory Commission  
Region I  
2100 Renaissance Blvd, Suite 100  
King of Prussia, PA 19406-2713

J. S. Kim  
Project Manager - Millstone Power Station  
U.S. Nuclear Regulatory Commission  
One White Flint North  
11555 Rockville Pike  
Mail Stop 08 C2A  
Rockville, MD 20852-2738

NRC Senior Resident Inspector  
Millstone Power Station

**ATTACHMENT**

**LICENSEE EVENT REPORT 2013-003-00**

**MILLSTONE POWER STATION UNIT 2  
DOMINION NUCLEAR CONNECTICUT, INC.**

<b>NRC FORM 366</b> <b>U.S. NUCLEAR REGULATORY COMMISSION</b> (10/2010)		<b>APPROVED BY OMB: NO. 3150-0104</b> <b>EXPIRES: 10/31/2016</b>																																					
<b>LICENSEE EVENT REPORT (LER)</b> (See reverse for required number of digits/characters for each block)																																							
<b>1. FACILITY NAME</b> Millstone Power Station - Unit 2		<b>2. DOCKET NUMBER</b> 05000336																																					
<b>3. PAGE</b> 1 OF 3																																							
<b>4. TITLE</b> Postulated DC Ammeter Circuit Hot Shorts																																							
<b>5. EVENT DATE</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 33%;">MONTH</th> <th style="width: 33%;">DAY</th> <th style="width: 33%;">YEAR</th> </tr> <tr> <td style="text-align: center;">10</td> <td style="text-align: center;">30</td> <td style="text-align: center;">2013</td> </tr> </table>		MONTH	DAY	YEAR	10	30	2013	<b>6. LER NUMBER</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 33%;">YEAR</th> <th style="width: 33%;">SEQUENTIAL NUMBER</th> <th style="width: 33%;">REV NO.</th> </tr> <tr> <td style="text-align: center;">2013</td> <td style="text-align: center;">003</td> <td style="text-align: center;">00</td> </tr> </table>		YEAR	SEQUENTIAL NUMBER	REV NO.	2013	003	00																								
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<b>9. OPERATING MODE</b> <div style="text-align: center; font-size: 24px; margin-top: 20px;">1</div>		<b>10. POWER LEVEL</b> <div style="text-align: center; font-size: 24px; margin-top: 20px;">100</div>																																					
<b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §:</b> (Check all that apply) <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;"><input type="checkbox"/> 20.2201(b)</td> <td style="width: 25%;"><input type="checkbox"/> 20.2203(a)(3)(i)</td> <td style="width: 25%;"><input type="checkbox"/> 50.73(a)(2)(i)(C)</td> <td style="width: 25%;"><input type="checkbox"/> 50.73(a)(2)(vii)</td> </tr> <tr> <td><input type="checkbox"/> 20.2201(d)</td> <td><input type="checkbox"/> 20.2203(a)(3)(ii)</td> <td><input type="checkbox"/> 50.73(a)(2)(ii)(A)</td> <td><input type="checkbox"/> 50.73(a)(2)(viii)(A)</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(1)</td> <td><input type="checkbox"/> 20.2203(a)(4)</td> <td><input checked="" type="checkbox"/> 50.73(a)(2)(ii)(B)</td> <td><input type="checkbox"/> 50.73(a)(2)(viii)(B)</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(2)(i)</td> <td><input type="checkbox"/> 50.36(c)(1)(i)(A)</td> <td><input type="checkbox"/> 50.73(a)(2)(iii)</td> <td><input type="checkbox"/> 50.73(a)(2)(ix)(A)</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(2)(ii)</td> <td><input type="checkbox"/> 50.36(c)(1)(ii)(A)</td> <td><input type="checkbox"/> 50.73(a)(2)(iv)(A)</td> <td><input type="checkbox"/> 50.73(a)(2)(x)</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(2)(iii)</td> <td><input type="checkbox"/> 50.36(c)(2)</td> <td><input type="checkbox"/> 50.73(a)(2)(v)(A)</td> <td><input type="checkbox"/> 73.71(a)(4)</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(2)(iv)</td> <td><input type="checkbox"/> 50.46(a)(3)(ii)</td> <td><input type="checkbox"/> 50.73(a)(2)(v)(B)</td> <td><input type="checkbox"/> 73.71(a)(5)</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(2)(v)</td> <td><input type="checkbox"/> 50.73(a)(2)(i)(A)</td> <td><input type="checkbox"/> 50.73(a)(2)(v)(C)</td> <td><input type="checkbox"/> OTHER</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(2)(vi)</td> <td><input type="checkbox"/> 50.73(a)(2)(i)(B)</td> <td><input type="checkbox"/> 50.73(a)(2)(v)(D)</td> <td>Specify in Abstract below or in NRC Form 366A</td> </tr> </table>				<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 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 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
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<b>12. LICENSEE CONTACT FOR THIS LER</b>																																							
<b>FACILITY NAME</b> William D. Bartron, Supervisor Nuclear Station Licensing		<b>TELEPHONE NUMBER (Include Area Code)</b> 860-444-4301																																					
<b>13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT</b>																																							
CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX																														
<b>14. SUPPLEMENTAL REPORT EXPECTED</b> <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO					<b>15. EXPECTED SUBMISSION DATE</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 33%;">MONTH</th> <th style="width: 33%;">DAY</th> <th style="width: 33%;">YEAR</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>					MONTH	DAY	YEAR																											
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<b>ABSTRACT</b> (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) <p>While Millstone Power Station Unit 2 (MPS2) was operating at 100 percent power in Mode 1 on October 30, 2013, operations determined that a concern identified by Engineering as a result of recent industry operating experience could result in an unanalyzed condition. Engineering's review of the impact of unfused direct current (DC) ammeter circuits in the Control Room determined the described condition to be applicable to MPS2. It is postulated that a fire could cause one of the DC ammeter wires to hot short to ground. Concurrently, the fire causes another DC wire from the opposite polarity on the same battery to also short to ground. This would cause a current path through the unfused ammeter cable. The original plant wiring design and associated circuitry analysis for the DC ampere indications do not include overcurrent protection features to limit the fault current in this scenario.</p> <p>This condition is reportable pursuant to 10 CFR 50.73(a)(2)(ii)(B) as an unanalyzed condition that significantly degraded plant safety. A prompt notification per EN49487 was submitted to the NRC on October 30, 2013.</p> <p>The cause of the condition was a latent design error that was made during plant construction. Compensatory measures, i.e., fire watches, have been implemented for affected areas of the plant. Plant modifications are planned that will protect or isolate the affected circuits leaving the initial fire area.</p>																																							

**LICENSEE EVENT REPORT (LER)  
CONTINUATION SHEET**

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Millstone Power Station - Unit 2	05000336	YEAR	SEQUENTIAL NUMBER	REV NO.	2 OF 3
		2013	-- 003 --	00	

**NARRATIVE**

**1. EVENT DESCRIPTION**

While Millstone Power Station Unit 2 (MPS2) was operating at 100 percent power in Mode 1 on October 30, 2013, operations determined that a concern identified by Engineering as a result of recent industry operating experience could result in an unanalyzed condition. Engineering's review of the impact of unfused direct current (DC) ammeter [II] circuits in the Control Room determined the described condition to be applicable to MPS2. It is postulated that a fire could cause one of the DC ammeter wires to hot short to ground. Concurrently, the fire causes another DC wire from the opposite polarity on the same battery to also short to ground. This would cause a current path through the unfused ammeter cable. The original plant wiring design and associated circuitry analysis for the batteries' control room ampere indications do not include overcurrent protection features to limit the fault current in this scenario.

The following MPS2 components have the vulnerability identified, i.e., DC current measuring circuits connected to a 125VDC power [EI] source without a protective device.

- Inverters #1 through #6
- DC1 "A" Battery Charger [BYC] to Battery Bus [BU] 201A
- DC2 "B" Battery Charger to Battery Bus 201B
- DC4 125 VOLT DC Turbine [MT] Battery Charger
- 201A DC Battery Bus 201A (D01)
- 201B DC Battery Bus 201B (D02)
- 201D Turbine Battery Bus (D03)

Fire areas affected because of the postulated hot shorts in DC circuits with ammeters are the battery rooms, the DC switchgear rooms, the turbine battery room located in the 31' 6" elevation of the turbine building, the 25' elevation cable vault, the old and new computer rooms, the plant equipment operator (PEO) meeting area, the west 480V switchgear room, and the control room.

This condition is reportable pursuant to 10 CFR 50.73(a)(2)(ii)(B) as an unanalyzed condition that significantly degraded plant safety. A prompt notification per EN49487 was submitted to the NRC on October 30, 2013.

**2. CAUSE**

The cause of the condition was a latent design error that was made during plant construction.

**3. ASSESSMENT OF SAFETY CONSEQUENCES**

Fire areas affected because of the postulated hot shorts in DC circuits with ammeters in the equipment listed above are the battery rooms, the DC switchgear rooms, the turbine battery room located in the 31' 6" elevation of the turbine building, the 25' elevation cable vault, the old and new computer rooms, the plant equipment operator (PEO) meeting area, the west 480V switchgear room, and the control room. The zones where the initial fire occurs that could lead to a secondary fire are the west 480V and DC switchgear rooms, the 31'6" elevation of the turbine building, and the PEO meeting area.

A reportable condition would only occur if a secondary fire occurs which affects the opposite train equipment. This could only occur if the secondary fire occurs in the control room or the 25' cable vault. In order for this low probability occurrence to result in a secondary fire, the opposite pole short must develop, and it must not be mitigated by other circuitry protection schemes, such as fuses present in the

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**NARRATIVE**

affected cables. Furthermore, if multiple faults were to occur, they would be limited in number, small in magnitude, and short in duration.

The majority of these fire areas have fire detection installed and several have reliable automatic fire suppression systems. The control room is constantly manned by personnel who are trained to extinguish fires. Therefore, any low energy secondary fire will be quickly detected and extinguished. On this basis, the safety consequences of these postulated secondary fires is considered low.

**4. CORRECTIVE ACTION**

Compensatory measures, i.e., fire watches, have been implemented for affected areas of the plant. Plant modifications are planned that will protect or isolate the affected circuits leaving the initial fire area. Additional corrective actions are being taken in accordance with the Station's corrective action program.

**5. PREVIOUS OCCURRENCES**

No previous similar occurrences.

Energy Industry Identification System (EIIIS) codes are identified in the text as [XX].