

Dominion Nuclear Connecticut, Inc.  
Millstone Power Station  
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Waterford, CT 06385



**Dominion™**

**JUN 16 2005**

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

Serial No. 05-353  
NSS&L/DF R0  
Docket No. 50-423  
License No. NPF-49

**DOMINION NUCLEAR CONNECTICUT, INC.**  
**MILLSTONE POWER STATION, UNIT 3**  
**LICENSEE EVENT REPORT 2005-002-00**  
**INADVERTENT REACTOR TRIP AND SAFETY INJECTION**

This letter forwards Licensee Event Report (LER) 2005-002-00 documenting an event at Millstone Power Station, Unit 3 that occurred on April 17, 2005. This LER is being submitted pursuant to 10 CFR 50.73(a)(2)(iv)(A) as an event that resulted in manual or automatic actuation of the reactor protection system, multiple main steam isolation valves, emergency core cooling systems, and auxiliary feedwater system.

If you have any questions or require additional information, please contact Mr. David W. Dodson at (860) 447-1791, extension 2346.

Very truly yours,



S. E. Scace

Director – Nuclear Station Safety and Licensing

Attachments: (1)

Commitments made in this letter: None.

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Serial No. 05-353  
LER 2005-002-00

**ATTACHMENT**

**LICENSEE EVENT REPORT 2005-002-00**  
**INADVERTENT REACTOR TRIP AND SAFETY INJECTION**

**MILLSTONE POWER STATION UNIT 3**  
**DOMINION NUCLEAR CONNECTICUT, INC.**

<b>NRC FORM 366</b> (7-2001)	<b>U.S. NUCLEAR REGULATORY COMMISSION</b>	<b>APPROVED BY OMB NO. 3150-0104 EXPIRES 7-31-2004</b> Estimated burden per response to comply with this mandatory information 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 Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@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 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.
<b>LICENSEE EVENT REPORT (LER)</b> (See reverse for required number of digits/characters for each block)		

<b>FACILITY NAME (1)</b> Millstone Power Station - Unit 3	<b>DOCKET NUMBER (2)</b> 05000423	<b>PAGE (3)</b> 1 OF 4
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**TITLE (4)**  
 Inadvertent Reactor Trip and Safety Injection

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV. NO.	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
04	17	2005	2005-002-00			06	16	2005	FACILITY NAME	DOCKET NUMBER 05000
									FACILITY NAME	DOCKET NUMBER 05000

<b>OPERATING MODE (9)</b>	1	<b>THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply) (11)</b>								
		20.2201(b)		20.2203(a)(3)(ii)		50.73(a)(2)(ii)(B)		50.73(a)(2)(ix)(A)		
<b>POWER LEVEL (10)</b>	100	20.2201(d)		20.2203(a)(4)		50.73(a)(2)(iii)		50.73(a)(2)(x)		
		20.2203(a)(1)		50.36(c)(1)(i)(A)		X 50.73(a)(2)(iv)(A)		73.71(a)(4)		
		20.2203(a)(2)(i)		50.36(c)(1)(ii)(A)		50.73(a)(2)(v)(A)		73.71(a)(5)		
		20.2203(a)(2)(ii)		50.36(c)(2)		50.73(a)(2)(v)(B)		X OTHER		
		20.2203(a)(2)(iii)		50.46(a)(3)(ii)		50.73(a)(2)(v)(C)		Specify in Abstract below or in NRC Form 366A		
		20.2203(a)(2)(iv)		50.73(a)(2)(i)(A)		50.73(a)(2)(v)(D)				
		20.2203(a)(2)(v)		50.73(a)(2)(i)(B)		50.73(a)(2)(vii)				
		20.2203(a)(2)(vi)		50.73(a)(2)(i)(C)		50.73(a)(2)(viii)(A)				
		20.2203(a)(3)(i)		50.73(a)(2)(ii)(A)		50.73(a)(2)(viii)(B)				

**LICENSEE CONTACT FOR THIS LER (12)**

<b>NAME</b> David W. Dodson, Supervisor Nuclear Station Licensing	<b>TELEPHONE NUMBER (Include Area Code)</b> 860-447-1791
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**COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)**

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
B	JC	DEC	Westinghs	Y					

<b>SUPPLEMENTAL REPORT EXPECTED (14)</b>				<b>EXPECTED SUBMISSION DATE (15)</b>			
<input type="checkbox"/>	YES (If yes, complete EXPECTED SUBMISSION DATE).			<input checked="" type="checkbox"/>	NO		
					MONTH	DAY	YEAR

**ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)**

On April 17, 2005 at 0829, during normal 100% power operating conditions the solid state protection system (SSPS) generated an "A" Train SSPS Steam Line Pressure Low SI/MSI signal that tripped the reactor, closed the main steam isolation valves, and started one train of the emergency core cooling system (ECCS). Following the trip, all control rods inserted and the auxiliary feedwater system actuated automatically as expected, however the turbine driven auxiliary feedwater pump tripped on startup. One of the "B" steam generator safety valves lifted.

Control room operators entered the emergency operating procedure network, manually initiated "B" safety injection (SI) actuation so as to have a two-train SI condition, and continued to place the plant in a stable condition. Based on plant indications during the event an NRC emergency classification of Alert was declared (Event No. 41607). Within one hour of event initiation, plant parameters were stabilized and ECCS systems were stopped and placed in a standby condition.

The root cause of the event was that diode leads on a universal logic card in the SSPS were coated with a material susceptible to whisker growth that eventually shorted the card output and produced an inadvertent SI signal. Corrective actions included replacing the affected card and inspecting, cleaning and replacing additional cards in the SSPS.

This event is being reported pursuant to 10CFR50.73(a)(2)(iv)(A). In addition, this report satisfies the Technical Specification 3.5.2 special reporting requirement and satisfies the 10 CFR 21 evaluation, notification and reporting obligation.

**LICENSEE EVENT REPORT (LER)**

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
Millstone Power Station - Unit 3	05000423	YEAR	SEQUENTIAL NI IMRFR	REVISION NI IMRFR	2 OF 4
		2005	-- 002 --	00	

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

1. Event Description

On April 17, 2005 at 0829, during normal 100% power operating conditions the solid state protection system (SSPS) [JC] generated an "A" Train SSPS Steam Line Pressure Low SI/MSI signal that tripped the reactor, closed the main steam isolation valves (MSIVs), and started the "A" train of the emergency core cooling system (ECCS) [BQ]. Following the trip, all control rods inserted and the auxiliary feedwater system [BA] actuated automatically as expected, however the turbine driven auxiliary feedwater (TDAFW) pump tripped on startup. Immediately following the trip, control room operators entered the emergency operating procedure network, manually initiated "B" safety injection (SI) actuation so as to have a two-train SI actuation, and continued to place the plant in a stable condition. Later into the event at 0844, operators also manually initiated "B" main steam isolation (MSI) actuation.

At 0840, reactor coolant system (RCS) pressure reached 2350 psia and both pressurizer power operated relief valves (PORVs) began cycling as designed. The pressurizer safety valves remained closed throughout the event. Safety injection was terminated at 0913. After performing their safety function, both PORVs leaked, however the leakage did not exceed the 10 gpm Technical Specification limit. Leakage was conservatively estimated to be 5.3 gpm with the plant at 2250 psia. Additionally, a field observation at 0858 reported RCS leakage from two charging system valves (3CHS\*V661 and 3CHS\*MV8511B) into the auxiliary building. Valve 3CHS\*MV8511B leakage was terminated when the valve was closed at 0905 and valve 3CHS\*V661 was isolated at 1032. The leakage was determined to have commenced at 0830 and initial leakage was estimated to be approximately 60 gpm.

Regarding secondary side plant response, following the reactor trip, approximately 8 seconds after the TDAFW pump began feeding the steam generators (SGs), the TDAFW pump trip throttle valve closed. This resulted in isolating steam to the pump turbine which then began to coast down. Subsequent manual restart of the TDAFW pump occurred at 1019. The two motor driven AFW pumps provided flow to the SGs throughout the event.

Within one hour of event initiation, plant parameters were stabilized and ECCS systems were stopped and placed in a standby condition. The event was terminated at 1905.

This event is being reported pursuant to 10CFR50.73(a)(2)(iv)(A) as an event that resulted in manual or automatic actuation of the reactor protection system, multiple main steam isolation valves, emergency core cooling systems, and auxiliary feedwater system. In addition, this report satisfies the Technical Specification 3.5.2 special reporting requirement (refer to Section 6) and satisfies the 10 CFR 21 evaluation, notification and reporting obligation for reporting of defects.

2. Event Classification

During the initial event, all SG pressures were above normal due to the automatic closing of all MSIVs and two of the four atmospheric steam dump valves (normal system response for a single train MSI). One of the "B" SG safety valves lifted when the "B" SG pressure reached approximately 1185 psig. The operations shift manager, based on past training on system response and interpretation of actual plant annunciator and other indications, diagnosed that the "B" SG safety valve did not reseal. Based on this evaluation, an Alert was declared at 0842 and the emergency response organization was activated. It was later determined that the "B" SG safety valve did in fact reseal (0850) as the RCS temperature decreased. Just-In-Time operator training was conducted prior to restart of the unit to address plant response associated with this event.

An NRC notification was made via the emergency notification system on April 17, 2005, at 0923 with appropriate updates (Event No. 41607).

**LICENSEE EVENT REPORT (LER)**

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
Millstone Power Station - Unit 3	05000423	YEAR	SEQUENTIAL NUMRFR	REVISION NUMRFR	3 OF 4
		2005	-- 002 --	00	

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

3. Cause

The root cause of this event was determined to be:

Root Cause No. 1: Diode leads on Universal Logic Board A213 were coated with a material susceptible to whisker growth that eventually shorted the card output.

Root Cause No. 2: No plan, process, or procedure exists for identifying, monitoring or addressing whisker growth on SSPS cards.

The failed component was Universal Logic Board 6056D21G01 (Serial No. 6076) located in slot A213 in "A" Logic Cabinet, local identification No. 3RSP\*AA213.

4. Assessment of Safety Consequences

The risk significance of this event was determined to be no greater than that of a reactor trip with inadvertent safety injection. Regarding the initial failure of the TDAFW pump, the results of a root cause investigation determined the most probable cause of the overspeed trip was stem binding of the associated control valve that occurred at the time of the event. However, this failure did not prevent manual restart. Therefore, the TDAFW pump was considered available for mitigation. Additionally, the motor driven AFW pumps were supplying adequate flow to the SGs and no loss of safety function occurred. Also, the charging pumps were able to deliver significant flow despite the valve packing leaks. For these reasons, this event is considered to be of low safety significance.

5. Corrective Action

On April 18, 2005 at approximately 1200, troubleshooting of the SSPS indicated that an inadvertent "A" Train SSPS Steam Line Pressure Low SIMSI signal was generated when a metallic thread or whisker from the anode (hard wired to ground) of a diode caused a false tripped indication. The circuit card was a Westinghouse Universal Logic Board. Additional inspection was performed on installed and spare SSPS boards and additional evidence of whiskering was observed. Based on observation, the whiskering was limited to diodes on the cards. Universal Logic Boards with identified whiskering were replaced to the extent possible based on spare card availability. Other cards that were not replaced were cleaned and returned to service. Inspection of the Millstone Power Station Unit 2 emergency safeguards actuation system (15 boards inspected) was performed and indicated no evidence of whiskers.

A root cause investigation was conducted and appropriate corrective actions are being addressed in accordance with the Millstone Power Station Corrective Action Program.

The corrective actions to prevent recurrence of this event were determined and are summarized as follows:

- Independent lab testing was performed on suspect diodes and lab verbally confirmed diode lead material is susceptible to whiskering and that tin whiskering occurred. (Completed)
- Three separate corrective actions were established to review measures executed by Westinghouse relative to SSPS to assure 1) nonconforming materials, parts and services are controlled in order to prevent their inadvertent use, 2) conditions adverse to quality are promptly identified and corrected, and 3) purchased equipment and services conform to the procurement documents.
- A corrective action was established to develop and implement a preventive maintenance program for SSPS cards.

**LICENSEE EVENT REPORT (LER)**

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
Millstone Power Station - Unit 3	05000423	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	4 OF 4
		2005	- 002	- 00	

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

6. Special Reporting

Pursuant to Technical Specification 3.5.2, ACTION b, the following additional information is being reported:

Millstone Power Station Unit 3 has accumulated six SI actuations to date while in Modes 1, 2, or 3. The prior five actuations occurred in 1986 as documented in LERS 86-001-00, 003-00, 019-00, 021-00, and 027-00. The total accumulated usage factor for the SI nozzles resulting from the six SI actuations is less than 0.70.

This Licensee Event Report satisfies the Technical Specification requirement for a 90-day Special Report on the safety injection actuation.

7. Previous Occurrences

No previous similar events were identified related to tin whiskers.

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