



Northeast  
Nuclear Energy

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The Northeast Utilities System  
Donald B. Miller Jr.,  
Senior Vice President - Millstone

Re: 10CFR50.73(a)(2)(i)

October 3, 1994  
MP-94-569

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

Reference: Facility Operating License No. DPR-65  
Docket No. 50-336  
Licensee Event Report 94-027-00

This letter forwards Licensee Event Report 94-027-00 required to be submitted within thirty (30) days pursuant to 10CFR50.73(a)(2)(i).

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

Donald B. Miller, Jr.  
Senior Vice President - Millstone Station

DBM/DC:ljjs

Attachment: LER 94-027-00

cc: T. T. Martin, Region I Administrator  
P. D. Swetland, Senior Resident Inspector, Millstone Unit Nos. 1, 2, and 3  
G. S. Vissing, NRC Project Manager, Millstone Unit No. 2

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ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION  
COLLECTION REQUEST 50.0 HRS. FORWARD COMMENTS REGARDING  
BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT  
BRANCH (MNNB 7714). U.S. NUCLEAR REGULATORY COMMISSION,  
WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION  
PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET,  
WASHINGTON, DC 20503.

## \* (See reverse for required number of digits/characters for each block)

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

This event is being reported pursuant to requirements of paragraph 50.73(a)(2)(i), any operation prohibited by the plant's Technical Specifications, because Channel "B" was declared operable prior to entering Mode 1, and then subsequently found to be inoperable.

EXPIRES: 5/31/95

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

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Millstone Nuclear Power Station Unit 2	05000336	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	02 OF 03
		94	— 027 —	00	

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

**I. Description of Event**

On September 3, 1994, at 0426, with the plant in mode 1 at approximately 5% power, it was determined that the Channel "B" Linear Range Nuclear Instrument was inoperable when the plant changed operating modes from Mode 2 to Mode 1. During the previous shift's performance of the Reactor Protection System channel check, Linear Range NI Power Channels A, B, C & D read 1.88%, -0.1%, 1.8%, and 1.9% respectively. These values met the channel check acceptance criteria (deviation between channels less than 5% during Mode 1 or Mode 2 operations), allowing transition to operating mode 1 on backshift.

After shift turnover the power ascension to Mode 1 (> 5% Thermal power) continued. Channel "B" did not track consistently with the other three channels. The plant entered Mode 1 at 0425 on September 3. At 0426 the Control Room received a "Channel Deviation" alarm on Channel "B." When Operators checked the Plant Process Computer (PPC) in response to the alarm, indication for Channel "B" was -0.11%, which differed more than 5% from the other channels. Technical Specifications Action Statement 3.3.1.1 was entered, and Channel "B" was declared inoperable. No automatic or manual safety responses occurred.

Instrument technicians called in to investigate found High Voltage Connector J6 disconnected from its jack on the back of Channel "B" Drawer. (If J6 is not connected, the High Voltage supply to the ion chambers is interrupted and the drawer output will fail low.)

**II. Cause of Event**

When the Channel "B" Linear Range NI drawer was opened by I&C personnel, technicians found connector J6 disconnected from its jack. The J6 connector for each Model NP-6 Dual Linear Power Drawer energizes two B-10 ion chambers which then indicate neutron flux in the Linear (Power) Range. If J6 is not properly connected, the High Voltage supply to the ion chambers is interrupted and drawer output will fail low. The suspected Root Cause of this event is a combination of personnel error and equipment configuration, in that HV Connector J6 on the Linear Range NI Power Drawer may not have been properly reconnected following maintenances, and subsequent repeated opening and closing of the drawer apparently caused the connector to loosen.

The J6 connector for each drawer is removed and reinstalled twice in each of two separate I&C test procedures. The last time either of these procedures was performed prior to the event was July 21, 1994. I&C personnel reinstalling the connector after maintenance or testing cannot confirm visually that the connection is correctly made up. After monthly testing in Mode 1, I&C technicians confirm proper system restoration by comparing Linear Range NI Power Drawer indication with other channels before testing on a second drawer is started. Below Mode 1, this comparison is not meaningful because neutron flux levels are off-scale low for the Linear Range NIs. The Unit experienced no deviation alarms on channel "B" between July 21 and July 27, when the unit came off line for upgrade of the Reactor Coolant Pump (RCP) Oil Collection System. Because no deviation alarms were received, it can be assumed that the J6 connector did not come loose until during the shutdown.

The J6 connector is subject to bending stresses from the position of the connector relative to the cable bundle for the drawer. If not properly reconnected after being removed for testing, the stresses from repeated opening and closing the NI drawer could cause J6 to work loose. Five procedures require Linear Range NI Power Drawers to be opened for access to test potentiometers. Three of these procedures were performed during the August shutdown. Two of them were performed during the week prior to the J6 connector being found disconnected. Neutron flux levels were off-scale low for the Linear Range NIs, which would preclude discovery of a loose J6 connector by either channel deviation alarms or comparison with other channels. While shutdown, technicians also removed and reinstalled the J6 connector on the "B" Linear Range NI Drawer while conducting ground loop isolation for Channel "B" ion chamber cabling. Again, neutron flux levels were off-scale low, prohibiting comparison with other channels.

EXPIRES: 5/31/95

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Millstone Nuclear Power Station Unit 2	05000336	<table border="1"><tr><th data-bbox="999 344 1073 388">YEAR</th><th data-bbox="1073 344 1230 388">SEQUENTIAL NUMBER</th><th data-bbox="1230 344 1346 388">REVISION NUMBER</th></tr><tr><td data-bbox="999 388 1073 454">94</td><td data-bbox="1073 388 1230 454">— 027 —</td><td data-bbox="1230 388 1346 454">00</td></tr></table>	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	94	— 027 —	00	03 OF 03
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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

III. Analysis of Event

This event is being reported pursuant to requirements of paragraph 50.73(a)(2)(i)(b), any operation prohibited by the plant's Technical Specifications.

Channel "B" was declared operable prior to entering Mode 1 and then subsequently found to be inoperable because the J6 High Voltage connector was disconnected from the Linear Range NI Drawer.

The safety consequences of this event have been determined to be negligible. The ability of the Reactor Protection System to provide a trip signal from two of the three channels of Linear Range NIs (the minimum called for by the plant Technical Specifications) was unaffected.

IV. Corrective Action

The J6 Connector was reinstalled. When the "B" drawer was reenergized, NI power indication on all four channels matched closely at approximately 7% power. The I&C Technician who had performed the most recent work related to connector J6 was counseled on the need to ensure that this, and similar connectors, are properly and securely made up.

The next time connector J6 was removed and replaced for testing, the following cautionary note to technicians was added to the work package:

"Ensure that connector J6 is documented with lifted lead form (WC-10 attachment 3). Ensure connector is secure."

Action to Prevent Recurrence

All NI drawer connectors will be verified properly terminated to their respective jacks during the current refueling outage, which started October 1, 1994.

An automated work order has been written to add cable restraining harnesses to the Linear Range HV cables in the RCO5A/B/C/D cabinets to relieve tension on the cables and their electrical connections in the rear of the drawers.

This event was also discussed in detail during an I&C Department meeting.

V. Additional Information

The drawer is Gulf General Atomics Model NP-6 Dual Linear Range Drawer, ELJ 179-00005L, serial number W61149-5.

No similar LERs found in a database search.

EIIS Codes

PR-SAF-B

JC-B/P-G063