

# NORTHEAST UTILITIES



The Connecticut Light And Power Company  
Western Massachusetts Electric Company  
Holtake Water Power Company  
Northeast Utilities Service Company  
Northeast Nuclear Energy Company

General Offices: Seiden Street, Berlin Connecticut

P.O. BOX 270  
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(203)665-5000

February 25, 1993  
MP-93-179

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

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

Reference: Facility Operating License No. NPF-49  
Docket No. 50-423  
Licensee Event Report 93-001-00

Gentlemen:

This letter forwards Licensee Event Report 93-001-00 required to be submitted within thirty (30) days pursuant to 10CFR50.73(a)(2)(i).

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

Stephen E. Scace  
Vice President - Millstone Station

SES/BNF:dlr

Attachment: LER 93-001-00

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

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## LICENSEE EVENT REPORT (LER)

Estimated burden per response to comply with this information collection request: 50.0 hrs. Forward comments regarding burden estimate to the Records and Reports Management Branch (p-530), U.S. Nuclear Regulatory Commission, Washington, DC 20585, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503.

FACILITY NAME (1)										Millstone Nuclear Power Station Unit 3										DOCKET NUMBER (2)										PAGE (3)																													
																				05000423										1 OF 4																													
TITLE (4)																																																											
Failure to Verify Testing of NIS Inputs Into Westinghouse 7300 Process Control System Due to Procedural Deficiency																																																											
EVENT DATE (5)										LER NUMBER (6)										REPORT DATE (7)										OTHER FACILITIES INVOLVED (8)																													
MONTH			DAY			YEAR				YEAR			SEQUENTIAL NUMBER			REVISION NUMBER			MONTH			DAY			YEAR				FACILITY NAMES																														
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OPERATING MODE (9)										THIS REPORT IS BEING SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)																																																	
1										20.402(b) <input type="checkbox"/> 20.402(c) <input type="checkbox"/> 50.73(a)(2)(iv) <input type="checkbox"/> 73.71(b) <input type="checkbox"/> 20.405(a)(1)(i) <input type="checkbox"/> 50.36(c)(1) <input type="checkbox"/> 50.73(a)(2)(v) <input type="checkbox"/> 73.71(c) <input type="checkbox"/> 20.405(a)(1)(ii) <input type="checkbox"/> 50.36(c)(2) <input type="checkbox"/> 50.73(a)(2)(vi) <input type="checkbox"/> OTHER (Specify in Abstract below and in Text, NRC Form 356A) <input type="checkbox"/> 20.405(a)(1)(iii) <input checked="" type="checkbox"/> 50.73(a)(2)(i) <input type="checkbox"/> 50.73(a)(2)(vii)(A) <input type="checkbox"/> 20.405(a)(1)(iv) <input type="checkbox"/> 50.73(a)(2)(ii) <input type="checkbox"/> 50.73(a)(2)(vii)(B) <input type="checkbox"/> 20.405(a)(1)(v) <input type="checkbox"/> 50.73(a)(2)(iii) <input type="checkbox"/> 50.73(a)(2)(x) <input type="checkbox"/>																																																	
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																																																											
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ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)																																																											
<p>At 1430 hours on January 26, 1993, while in Mode 1 at 100% power, a procedure deficiency in the testing of the Nuclear Instrumentation System (NIS) upper and lower Flux circuit input to the Westinghouse 7300 Process Controls System was identified. During a review of vendor start-up manuals and surveillance procedures, Instrumentation and Controls personnel discovered that the signal path from the NIS Axial Flux circuit input into the Westinghouse 7300 Process Control System was not periodically tested under any Instrumentation and Controls surveillances. Testing of this circuit is required by Plant Technical Specifications. Upon notification of the testing deficiency, Unit 3 Operations entered the appropriate Limiting Condition for Operation (L.C.O.)</p> <p>The root cause of the event is a procedural deficiency. The procedure associated with the NIS Axial Flux circuit input into the Westinghouse 7300 Process Control System does not verify that the circuit is adequately tested.</p> <p>Changes were incorporated into the applicable surveillance procedures and the NIS inputs were satisfactorily tested in the "as-found" condition.</p> <p>This review process is part of a continuing effort to identify and correct overlap deficiencies in existing procedures as a result of the concerns of LER 91-025, dated September 10, 1991.</p>																																																											

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

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

I. Description of Event

On January 26, 1993, at 1430 hours while in Mode 1 at 100% power, (587 degrees Fahrenheit and 2250 psia) a procedure deficiency in the testing methodology for the Nuclear Instrumentation System (NIS) circuit input to the Westinghouse 7300 Process Control System was identified. Instrumentation and Controls (I&C) Department personnel reviewing test methodology during a procedure review discovered that the NIS Axial Flux input signal path for the Westinghouse 7300 Process Control System was not adequately tested during periodic surveillances. The surveillance procedure did not verify that the signal path from the NIS Axial Flux circuit to the 7300 Process Control System input, (ref. attached diagram) was adequately tested as stipulated in the Westinghouse Periodic Test 4 portion of the System Start-up Manual. Periodic testing did verify that both the NIS and the 7300 Process Control System were satisfactorily tested as individual components. This particular test is specifically noted in the system start-up manual but was not completely incorporated during the initial development of the surveillance procedure.

Plant Technical Specification 4.3.1.1 requires that a CHANNEL CALIBRATION be performed on one of the four cabinets during the 18 month refueling cycle. The applicable procedure did not contain sufficient verification that the requirements stated in the Westinghouse Periodic Test 4 had adequately been covered.

II. Cause of Event

The root cause of the event is a procedural deficiency. The procedure was prepared from available start-up documentation. When the original surveillance procedure was drafted, the requirement to verify that testing included the axial flux input circuit for the 7300 Process Rack was inadvertently omitted.

The untested NIS inputs to 7300 provide a Flux Deviation signal to develop Overtemperature/Delta-T (OT/ $\Delta$ T) and setpoints. This signal is generated in the NIS Axial Flux circuit and processed through the 7300 Process Control Delta-T instrument loop.

III. Analysis of Event

This event is reportable under 10CFR50.73(a)(2)(i) as a condition prohibited by Technical Specifications. The procedure failed to test the NIS Axial Flux input into the 7300 Process Control System. Plant Technical Specifications 4.3.1.1 requires that a CHANNEL CALIBRATION be performed on one of the four cabinets on a quarterly basis. The requirement to verify the NIS input into 7300 was omitted.

The OT/ $\Delta$ T trip provides protection against Departure from Nucleate Boiling (DNB). The Axial Flux input to the OT/ $\Delta$ T setpoint will provide for a penalty to the setpoint when Axial Flux Difference (AFD) is outside the predefined limits. The purpose of this penalty is to ensure a heavily top or bottom skewed axial power distribution will not result in the design DNBR being violated in the event of a Design Basis Accident. The plant is required to operate such that this penalty is not applied.

All protective functions of the NIS were being tested satisfactorily prior to the event, with the exception of the input signal path wiring for the adjustment to the OT/ $\Delta$ T trip setpoint from the axial flux circuit. Subsequent to the event, overlap testing verified that the output signal path wiring from NIS to the 7300 Process Control had been properly calibrated per Technical Specification requirements. The implementation of test changes and the satisfactory re-test of the signal path wiring verified that the system would have met its intended function if the system had been challenged.

Operator actions would have been available to mitigate any transients which would have occurred. Each channel has an OT/ $\Delta$ T indicator. Common annunciators, Solid State Protection System (SSPS) outputs located on the mainboard, indicators and associated computer points were all available and operating properly.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)	
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TEXT (If more space is required, use additional NRC Form 365A's) (17)

Initial start-up testing verified that the NIS inputs to 7300 were tested. Test signals were injected into each channel at the test points of NIS. The signals were processed through the 7300 Process Control Racks and monitored on the output side of SSPS. In addition, one of the four channels of NIS is Time Response tested during an 18 month refueling cycle surveillance to verify the operability of the system.

This event did not pose a significant safety consideration. Any failure that may have gone undetected as a result of this event could not have prevented the Reactor Protection System (RPS) or Emergency Safeguard Features Actuation System from initiating a reactor trip. Results of the "as-found" testing indicated that the NIS would have performed its intended function if exercised.

IV. Corrective Action

Unit 3 Operations entered the appropriate Limiting Condition for Operation (L.C.O.) upon notification of the testing deficiency. Test changes were incorporated into the applicable I&C surveillances and the system was satisfactorily tested in the "as-found" condition.

This testing deficiency was identified as a result of actions generated by LER 91-025-00/01, "Failure to Verify De-energization of Solid State Protection Input Relays for Cold Overpressure Protection Due to Procedural Deficiency." I&C system surveillance reviews of 7300 Process Control System interfaces with SSPS, a review of SSPS output relay testing and start up manual reviews generated as plant corrective actions for LER 91-025-00/01 are currently on-going. This review will be completed by December 20, 1993.

V. Additional Information

LER 91-022, "Failure to Adequately Perform Overlap Testing of the Containment Depressurization Actuation Loops Due to Management Deficiency", this LER discussed inadequate overlaps testing requirements.

LER 91-025, "Failure to Verify De-energization of Solid State Protection Input Relays For Cold Overpressure Protection Due to Procedural Deficiency", discusses a non-standard circuit design as a contributing factor to a procedure deficiency.

LER 92-031, "Failure to Test High Pressure Output Relay for Power Operated Relief Valves Due to Procedural Deficiency", discussed inadequate overlap testing requirements.

EIIS CodesSystem

Solid State Protection System - JC

Westinghouse 7300 Process controls

NIS

Components

NIS Inputs to 7300

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

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FACILITY NAME (1)

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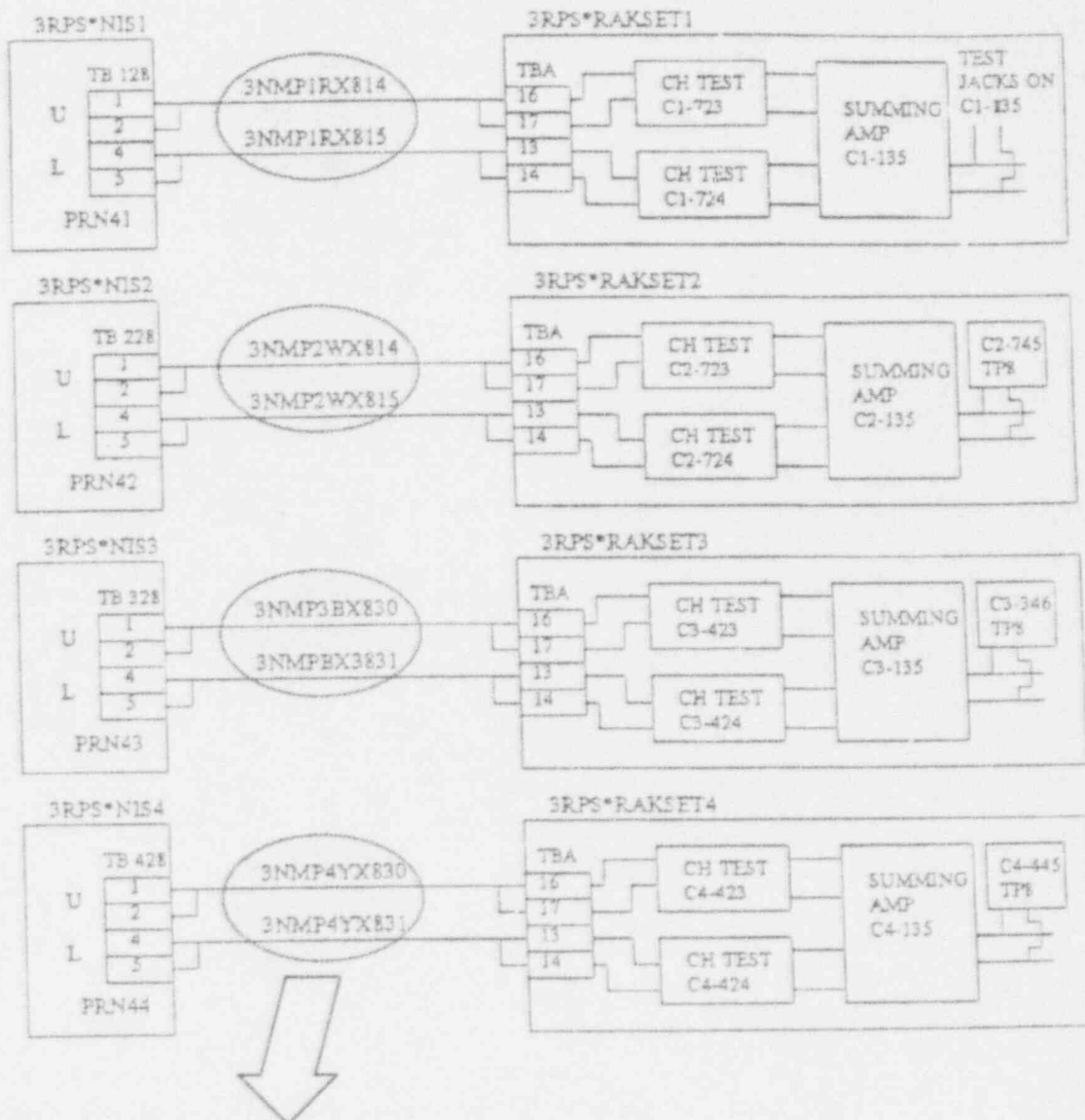
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TEXT (If more space is required, use additional NRC Form 365A's) (17)

## SIGNAL PATH FROM NIS TO 7300



NOTE: Signal Path wiring not tested between the four NIS channel inputs to the 7300 Process Control Cabinets.