

# CATEGORY 1

REGULATOR INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9705140247      DOC. DATE: 97/05/05      NOTARIZED: NO      DOCKET #  
 FACIL: 50-220 Nine Mile Point Nuclear Station, Unit 1, Niagara Powe      05000220  
 AUTH. NAME      AUTHOR AFFILIATION  
 YAEGER, W.R.      Niagara Mohawk Power Corp.  
 RADEMACHER, N.L.      Niagara Mohawk Power Corp.  
 RECIPIENT NAME      RECIPIENT AFFILIATION

SUBJECT: LER 97-003-00: on 970403, reactor water cleanup auxiliary pump rooms were not monitored by thermal sensors. Caused by original designers. Relocated sensors in appropriate locations. W/970505 ltr.

DISTRIBUTION CODE: IE22T      COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 5  
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NIAGARA MOHAWK

GENERATION  
BUSINESS GROUP

NINE MILE POINT NUCLEAR STATION/LAKE ROAD, P.O. BOX 63, LYCOMING, NEW YORK 13093

May 5, 1997  
NMP1L 1216

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

RE: LER 97-003  
Docket No. 50-220

Gentlemen:

In accordance with 10CFR50.73 (a)(2)(i)(B), we are submitting LER 97-003, "Reactor Water Cleanup Auxiliary Pump Rooms Not Monitored by Thermal Sensors."

Very truly yours,

Norman L. Rademacher  
Plant Manager - NMP1

J.S.

NLR/GJG/cmk  
Enclosure

xc: Mr. H. J. Miller, Regional Administrator, Region I  
Mr. B. S. Norris, Senior Resident Inspector  
Records Management



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PDR ADCK 05000220  
S PDR



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 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503

FACILITY NAME (1)

Nine Mile Point Unit 1

DOCKET NUMBER (2)

5000220

PAGE (3)

1 OF 4

TITLE (4)

Reactor Water Cleanup Auxiliary Pump Rooms Not Monitored By Thermal Sensors

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	DOCKET NUMBER(S)	
04	03	97	97	003	00	05	05	97	N/A	05000	
									N/A	05000	

OPERATING MODE (9)

5

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)

POWER LEVEL (10)

0

- |  |   |   |   |
|--|---|---|---|
| <input type="checkbox"/> 20.402(b)         | <input type="checkbox"/> 20.405(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)(vii)     | <input type="checkbox"/> OTHER                                |
| <input type="checkbox"/> 20.405(a)(1)(iii) | <input type="checkbox"/> 50.73(a)(2)(i)             | <input type="checkbox"/> 50.73(a)(2)(viii)(A) | <i>(Specify in Abstract below and in Text, NRC Form 366A)</i> |
| <input type="checkbox"/> 20.405(a)(1)(iv)  | <input checked="" type="checkbox"/> 50.73(a)(2)(ii) | <input type="checkbox"/> 50.73(a)(2)(viii)(B) |   |
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LICENSEE CONTACT FOR THIS LER (12)

NAME

W. R. Yaeger - Engineering Manager NMP1

TELEPHONE NUMBER

(315) 349-7834

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)

NO

EXPECTED SUBMISSION DATE (15)

MONTH

DAY

YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single space typewritten lines) (16)

On April 3, 1997, Niagara Mohawk Power Corporation (NMPC) determined that thermal sensors used to detect line breaks were not appropriately located in the RWCU system auxiliary pump room as described in Section 10.B.3 of the Nine Mile Point Unit 1 (NMP1) Updated Safety Analysis Report (USAR). The cause of this event is that the original designers of the plant in the 1960s did not locate thermal sensors in the reactor water cleanup (RWCU) auxiliary pump room.

To correct the deviation, thermal sensors have been installed in the RWCU system auxiliary pump room.



LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATIONESTIMATED 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 20555, 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)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Nine Mile Point Unit 1	05000220	97	03	00	02 OF 04

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

**I. DESCRIPTION OF EVENT**

On November 6, 1996, General Electric (GE) SIL-604 was issued to owners of boiling water reactors (BWRs) to alert owners that the previously assumed guillotine line break being the most limiting high energy line break (HELB) may not be correct. NMP1 was not originally designed and licensed to meet the HELB requirements as defined in USAR Chapter XVI, Section 2.0. However, NMPC chose to evaluate the implications of the information on the plant design. NMPC identified that thermal sensors were not installed in appropriate locations to detect line breaks as described in Section 10.B.3 of the NMP1 USAR.

USAR Section 10.B.3 states that area temperature detectors are installed at appropriate locations which detect line breaks. However, the RWCU auxiliary pump room did not have thermal sensors installed. NMPC's retrospective evaluation concluded, on April 3, 1997, that thermal sensors should be installed in the auxiliary pump room since it is possible to have leaks in the area. Additionally, block walls were installed in 1980 to form a stair tower to meet BTP-9.5.1, fire protection requirements which isolated the room from other thermal sensors, which was a missed opportunity to identify this condition.

On October 25, 1984, in response to a request for additional information from the NRC dated September 7, 1984, NMPC provided information regarding the Leak Before Break Analysis for high energy piping systems outside the containment. One question related to the susceptibility of the RWCU system to intergranular stress corrosion cracking (IGSCC). Our response stated "...that the majority of the original stainless steel piping was replaced with carbon steel in 1975, but that stainless steel did remain in heat exchanger nozzles and other portions of the RWCU system piping. Therefore, the portions of the system which were not replaced may be susceptible to IGSCC in weld heat affected zones". This response also stated that "...the RWCU system area in the reactor building is continuously monitored by thermal sensors in order to detect leaks". This last statement implied that each location in the reactor building is monitored, but the implication was incorrect based upon our recent evaluation.

**II. CAUSE OF EVENT**

The original designers of NMP1 failed to design and install thermal sensors in appropriate locations in the RWCU auxiliary pump room in accordance with the USAR. A modification to include the addition of the block walls in 1980 and our response on October 25, 1984, were missed opportunities to identify this condition.





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 RECORDS AND REPORTS MANAGEMENT BRANCH (P-330), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, 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)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Nine Mile Point Unit 1	05000220	97	- 03	- 00	03 OF 04

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

### III. ANALYSIS OF EVENT

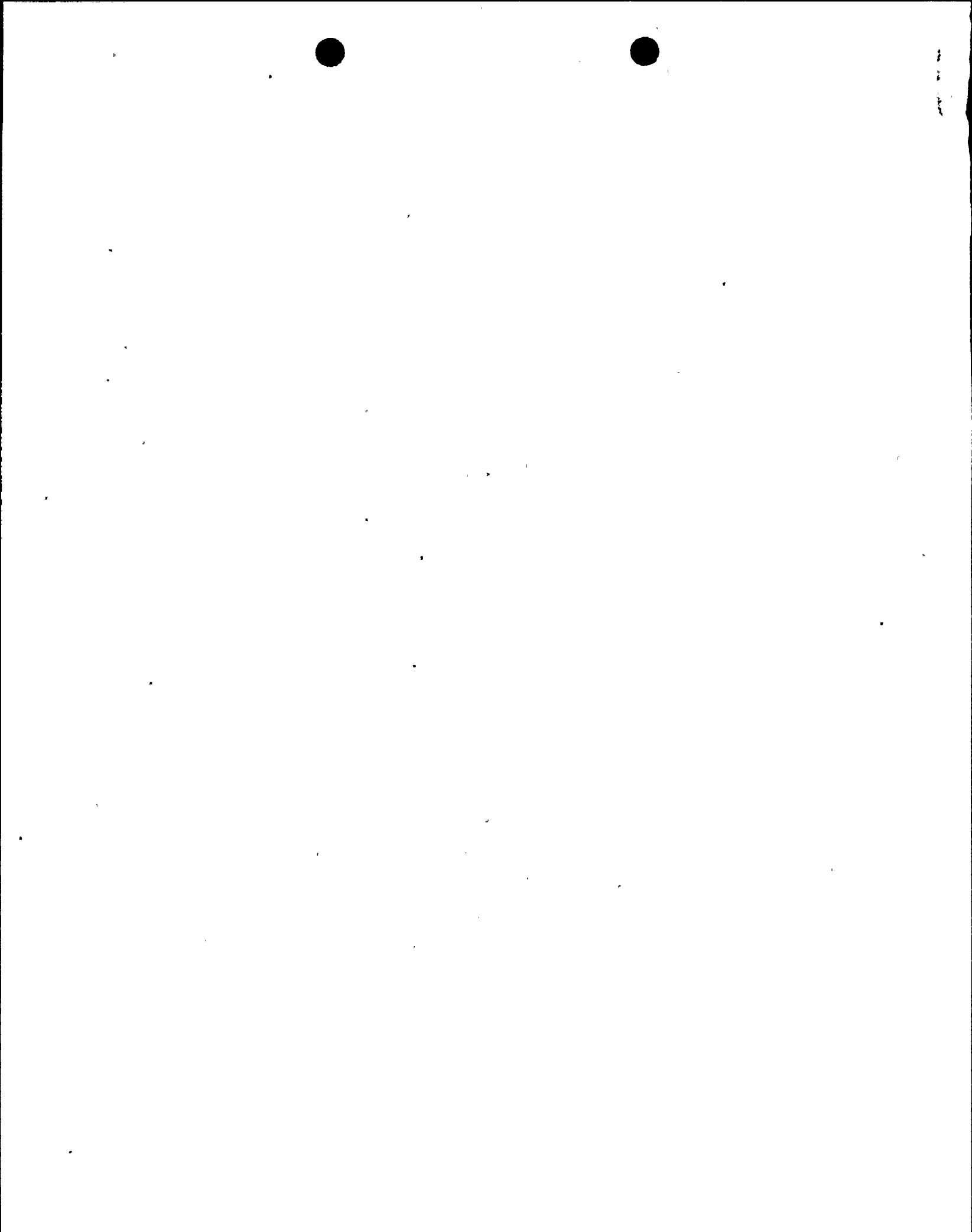
This condition is reportable in accordance with 10CFR50.73 (a)(2)(ii), "any event or condition that resulted in a condition at a nuclear power plant, including principle safety barriers, being seriously degraded, or that resulted in a nuclear plant being: (B) in a condition that is outside the design basis of the plant." Thermal sensors were installed to monitor the RWCU system for line breaks, however, the basis for the selected sensor locations was not documented in the original design. Therefore, retrospective evaluation leads NMPC to believe that detectors should have been installed in the RWCU system auxiliary pump room.

NMPC's Leak Before Break Analysis, submitted to the NRC on August 6, 1984, evaluated the likelihood of unstable ruptures in high energy piping at NMP1. Specifically, the analyses demonstrate that high energy piping systems will develop leaks before flaws can grow to unstable sizes, and that the resulting leakage can be detected and appropriate action taken before the risk of unstable piping failure develops. NMP1 has inherent features and capabilities which provide a basis for reasonable assurance that leaks and small breaks will not go undetected for long periods of time to the point that they become a threat to nuclear safety. Leaks within the reactor building as small as 1 GPM will be readily identified as daily logs of sump inflow are maintained such that a step change from a leak would result in timely identification and correction. The thermal sensors were not credited in the analysis. Therefore, the conditions had no adverse impact on the ability to detect leaks in the RWCU system. There was no adverse affect on the health and safety of the public or NMP1 plant personnel.

Furthermore, even if there was a HELB of the RWCU system, and isolation did not occur via lo-lo reactor water level signal, the engineering analyses, demonstrate that the resultant dose rates are within the 10CFR100 limits with credit for operator action within 5 minutes.

### IV. CORRECTIVE ACTIONS

1. Thermal sensors have been appropriately relocated in the RWCU auxiliary pump room and have been qualified to meet the environmental qualification requirements.
2. A design basis document for the leak detection system for the RWCU system will be developed by October 31, 1997.



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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
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Nine Mile Point Unit 1	05000220	97	- 03	- 00	04 OF 04

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

**IV. CORRECTIVE ACTIONS (cont'd)**

3. In addition to the RWCU system, the Shutdown Cooling System (the only other applicable system) was reviewed for postulated HELBs and the results show that the Shutdown Cooling System is also bounded by the main steam line break analysis for radiological releases and bounded by the emergency cooling steam line break for environmental qualification purposes.
4. In response to GE SIL 604, a safety evaluation was performed which documents the environmental qualification upgrade of equipment.

Since the original design of the leak detection system for RWCU in the 1960s, and the subsequent missed opportunities of the installation of the block wall stair tower in the 1980s and the incorrect response to the 1984 NRC request for additional information, NMPC has instituted preventive actions by upgrading design control procedure, NIP-DES-01, Determination of Design Control Applicability, as well as safety evaluation procedure, NIP-SEV-01, Applicability Reviews and Safety Evaluations, that would prevent reoccurrence.

**V. ADDITIONAL INFORMATION**

- A. Failed components: none.
- B. Provide similar events: none.
- C. Identification of components referred to in this LER:

COMPONENT	IEEE 803 FUNCTION	IEEE 805 SYSTEM ID
Reactor Water Cleanup System	N/A	CE
Thermal Sensors	DET	CE

