

CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9804200084 DOC.DATE: 98/04/06 NOTARIZED: NO DOCKET #
FACIL: 50-410 Nine Mile Point Nuclear Station, Unit 2, Niagara Moha 05000410
AUTH.NAME AUTHOR AFFILIATION
BOSNIC, D.P. Niagara Mohawk Power Corp.
DAHLBERG, K.A. Niagara Mohawk Power Corp.
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 98-005-00: on 980307, Unit 2 experienced actuation of ESF.
Caused by relief valve prematurely lifting on filter
demineralizer placed in svc. Relief valve replaced & old
relief valve disassembled for insp. W/980406 ltr.

DISTRIBUTION CODE: IE22T COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 6
TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:

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	NRR/DE/ECGB	1 1	NRR/DE/EELB	1 1
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	NRR/DRCH/HQMB	1 1	NRR/DRPM/PECB	1 1
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NIAGARA MOHAWK

GENERATION
BUSINESS GROUP

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

April 6, 1998
NMP2L 1768

United States Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

RE: Docket No. 50-410
LER 98-05

Gentlemen:

In accordance with 10CFR50.73 (a)(2)(iv), we are submitting LER 98-05, "Reactor Water Cleanup Isolation on High Differential Flow Caused by Relief Valve Lifting."

Very truly yours,

Kim A. Dahlberg
Plant Manager - NMP2

KAD/TWP/lmc
Attachment

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

980003

IE221

9804200084 980406
PDR ADDCK 05000410
S PDR



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2

LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 30.0 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 2

DOCKET NUMBER (2)

05000410

PAGE (3)

1 OF 5

TITLE (4)

Reactor Water Cleanup Isolation on High Differential Flow Caused by Relief Valve Lifting

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)	
03	07	98	98	005	00	04	06	98	N/A	05000	
									N/A	05000	

OPERATING MODE (9)

1

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

POWER LEVEL (10)

092

- 20.402(b)
- 20.405(a)(1)(i)
- 20.405(a)(1)(ii)
- 20.405(a)(1)(iii)
- 20.405(a)(1)(iv)
- 20.405(a)(1)(v)

- 20.405(e)
- 50.36(c)(1)
- 50.36(c)(2)
- 50.73(a)(2)(i)
- 50.73(a)(2)(ii)
- 50.73(a)(2)(iii)

- 50.73(a)(2)(iv)
- 50.73(a)(2)(v)
- 50.73(a)(2)(vii)
- 50.73(a)(2)(viii)(A)
- 50.73(a)(2)(viii)(B)
- 50.73(a)(2)(x)

- 73.71(b)
- 73.71(c)
- OTHER

(Specify in Abstract below and in Text, NRC Form 366A)

LICENSEE CONTACT FOR THIS LER (12)

NAME

D. P. Bosnic - Operations Manager NMP2

TELEPHONE NUMBER

(315) 349-7952

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPD	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NFRDS
X	CE	RV	Crosby	Y					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)

NO

EXPECTED SUBMISSION DATE (15)

MONTH

DAY

YEAR

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

On March 7, 1998, at approximately 0428 hours, Nine Mile Point Unit 2 (NMP2) experienced the actuation of an Engineered Safety Feature (ESF). Specifically, the Reactor Water Cleanup System (WCS) isolated on high differential flow when a filter demineralizer (F/D) was being placed in service. Both divisions of the isolation logic actuated and isolated the inboard and outboard containment isolation valves as designed. The plant was operating in Operational Condition 1 at approximately 92 percent of rated thermal power.

The cause of the ESF actuation was the relief valve prematurely lifting on the filter demineralizer that was being placed in service. The root cause of the relief valve prematurely lifting was determined to be a degraded component, specifically, the valve disc seating surface.

Immediate corrective actions included responding to and verifying the WCS automatic isolation and implementing the required actions of Technical Specification (TS) 4.4.4.c for reactor water continuous conductivity monitoring. The relief valve was replaced and the old relief valve was disassembled for inspection. The three other WCS F/D inlet relief valves will be removed, inspected and calibrated. This inspection will identify any potential common cause failure.



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-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 2	05000410	98	- 05	- 00	02 OF 05	

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

I. DESCRIPTION OF EVENT

On March 7, 1998, Nine Mile Point Unit 2 (NMP2) was operating in Operational Condition 1 at approximately 92 percent of rated thermal power. Reactor Water Cleanup System (WCS) filter/demineralizer (F/D) backwash and precoat activities had been completed and a F/D was being placed in service. At approximately 0428 hours, NMP2 experienced the actuation of an Engineered Safety Feature (ESF). Specifically, WCS isolated on high differential flow. Both divisions of the isolation logic actuated and isolated the inboard and outboard containment isolation valves as designed. The WCS pump also tripped as designed.

At approximately 0426 hours on March 7, 1998, F/D 4A was removed from service to allow placing F/D 4D in service, which had been backwashed and precoated earlier that morning. WCS system flow was lowered by throttling 2WCS*MOV200 (cleanup return isolation throttle valve), which caused the two remaining inservice F/Ds (4B and 4C) to go into the Hold mode as expected. When the control switch for F/D 4D was placed in the Filter position to unisolate and pressurize the F/D, both divisional high delta-flow timers initiated and cleared a few seconds later. A perturbation was also noted on the flow meters for F/Ds 4B and 4C. These indications were not unusual for this evolution.

The high delta-flow alarms came in again approximately 37 seconds later. The delta-flow indication went upscale (>200 gpm) and the indicated flow for F/Ds 4B and 4C dropped to approximately 75 gpm (versus the 150 gpm previously). When the alarm condition did not clear, the control switch for F/D 4D was returned to Hold to isolate the F/D. The F/D had not completely isolated when the WCS isolation occurred at approximately 0428. An investigation subsequently determined that the F/D 4D inlet relief valve lifted, which caused F/D 4D to depressurize and established a system high differential flow condition. A corresponding level increase was noted in the WCS phase separator tank, which receives water from the F/Ds during F/D evolutions and from various system relief valves.

Technical Specification 4.4.4.c requires that an in-line conductivity measurement be taken at least once per 4 hours in Operational Condition 1 when the continuous recording conductivity monitor is inoperable. The WCS isolation rendered this conductivity monitor inoperable. Actions were taken to establish an in-line measurement.

The WCS System was unisolated on March 7, 1998, at approximately 1727 hours. System flow was re-established with F/Ds 4B and 4C in service by March 8, 1998 at approximately 0116 hours.



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-330), U.S. NUCLEAR REGULATORY
COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT
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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
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Nine Mile Point Unit 2	05000410	98	05	00	03 OF 05

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

II. CAUSE OF EVENT

The cause of the ESF actuation was the relief valve prematurely lifting on the filter demineralizer that was being placed in service (F/D 4D). The root cause of the relief valve prematurely lifting was determined to be a degraded subcomponent on the relief valve, specifically, the valve disc seating surface.

III. ANALYSIS OF EVENT

This event is reportable in accordance with 10CFR50.73 (a)(2)(iv), which requires licensees to report "any event or condition that resulted in a manual or automatic actuation of any Engineered Safety Feature (ESF), including the Reactor Protection System (RPS)."

The NMP2 Updated Safety Analysis Report Section 5.4.8 states: "The (WCS) system is classified as a primary power generation system (not an engineered safety feature [ESF]), a small part of which is part of the RCPB [Reactor Coolant Pressure Boundary] up to and including the outside isolation valve. The other portions of the system are not part of the RCPB and can be isolated from the reactor. The (WCS) system may be operated at any time during planned reactor operations or it may be shut down if water quality is within the Technical Specification limits."

Although WCS is classified as a primary power generation system, the isolation valves are included in the Primary Containment Isolation System, which is an ESF, and are designed to provide protection against the release of radioactive materials to the environment during accidents involving breaches of the RCPB. The WCS uses the differential flow measurement as one method to detect system leakage. The flow into the cleanup system is compared with the flow out of the system, and an isolation signal is initiated when high differential flow occurs. In this case, the lifting of the F/D suction relief valve caused a system high differential flow which isolated WCS as designed. Therefore, had an actual breach of the RCPB occurred, the design function to prevent the release of radioactive material would have been accomplished.

A WCS isolation does not impair the station's ability to achieve a safe shutdown condition, nor is there any impact to the health and safety of the general public or plant personnel.



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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 366A's) (17)

IV. CORRECTIVE ACTIONS

1. The actions for a WCS automatic isolation were performed in accordance with the alarm response procedure.
2. The Chemistry department was notified on March 7, 1998 at 0428 hours to obtain an in-line conductivity measurement in accordance with TS 4.4.4.c until continuous conductivity recording of the reactor coolant could be restored. An alternate sample path was established for continuous conductivity monitoring on March 7, 1998 at 0633 hours.
3. WCS system flow was reestablished with F/Ds in service by March 8, 1998 at approximately 0116 hours. The WCS continuous conductivity recorder was restored to operable status at approximately 0118 hours on the same day. Alternate sampling per TS 4.4.4.c was secured.
4. A replacement relief valve was calibrated and installed. The old relief valve was disassembled and inspected to determine the cause, which is described in Section II.
5. The three other WCS F/D inlet relief valves will be removed, inspected and calibrated. This inspection will identify any potential common cause failure. This action will be completed by November 30, 1998.

V. ADDITIONAL INFORMATION**A. Failed components:**

Component Description: F/D 4D relief valve (2WCS-RV21D)

Manufacturer: Crosby Valve and Gage Co.

Model Number: Style J045WR, Size 1-1/2 F2, Type B



A

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

V. **ADDITIONAL INFORMATION** (cont'd)

B. Previous similar events:

LERs 91-13 and 91-08 describe WCS isolations due to high differential flow which took place during manipulations involving WCS filter/demineralizers. Both of these events involved high differential flow due to filter/demineralizers being placed in service that were not completely filled due to faulty equipment. In addition, LER 97-04 described another WCS isolation on high differential flow due to personnel error. As such, the previous corrective actions would not have prevented this event.

There have been other previous events involving WCS isolations on high differential flow. However, these did not deal with filter/demineralizer evolutions and as such would not have helped in the prevention of this event.

C. Identification of components referred to in this LER:

COMPONENT	IEEE 803 EHS FUNCTION	IEEE 805 SYSTEM ID
Primary Containment Isolation System	N/A	JM
Reactor Water Cleanup System	N/A	CE
Filter/Demineralizer	FDM	CE
Isolation Valve	ISV	CE
Relief Valve	RV	CE
Pump	P	CE

