

CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9807310016 DOC.DATE: 98/07/23 NOTARIZED: NO DOCKET #
 FACIL:50-410 Nine Mile Point Nuclear Station, Unit 2, Niagara Moha 05000410
 AUTH.NAME AUTHOR AFFILIATION
 DEAN,R.J. Niagara Mohawk Power Corp.
 DAHLBERG,K.A. Niagara Mohawk Power Corp.
 RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 98-020-00:on 980623,discovered previous inoperability of RCIC sys valves.Caused by initial design deficiency by misapplication or misinterpretation of design requirements. Corrected deviation in 1993.W/980723 ltr.

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NIAGARA MOHAWK

GENERATION
BUSINESS GROUP

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

July 23, 1998
NMP2L 1810

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

RE: Docket No. 50-410
LER 98-20

Gentlemen:

In accordance with 10CFR50.73 (a)(2)(i) and 10CFR50.73(a)(2)(ii), we are submitting LER 98-20, "Previous Inoperability of Reactor Core Isolation Cooling System Valves."

Very truly yours,

Kim A. Dahlberg
Plant Manager - Unit 2

KAD/GJG/kap
Attachment

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

9807310014 980723
PDR ADOCK 05000410
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 2	DOCKET NUMBER (2) 05000410	PAGE (3) 1 OF 4
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TITLE (4)
Previous Inoperability of Reactor Core Isolation Cooling System Valves

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)	
06	23	98	98	020	00	07	23	98	N/A	05000	
									N/A	05000	

OPERATING MODE (9) 4 THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)

POWER LEVEL (10) 000	<input type="checkbox"/> 20.2201(b) <input type="checkbox"/> 20.2203(a)(1) <input type="checkbox"/> 20.2203(a)(2)(i) <input type="checkbox"/> 20.2203(a)(1)(iii) <input type="checkbox"/> 20.2203(a)(2)(iii) <input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 20.2203(a)(2)(v) <input type="checkbox"/> 50.2203(a)(3)(i) <input type="checkbox"/> 50.2203(a)(3)(ii) <input type="checkbox"/> 50.2203(a)(4) <input type="checkbox"/> 50.36(c)(1) <input type="checkbox"/> 50.36(c)(2)	<input checked="" type="checkbox"/> 50.73(a)(2)(i) <input checked="" type="checkbox"/> 50.73(a)(2)(ii) <input type="checkbox"/> 50.73(a)(2)(iii) <input type="checkbox"/> 50.73(a)(2)(iv) <input type="checkbox"/> 50.73(a)(2)(v) <input type="checkbox"/> 50.73(a)(2)(vi)	<input type="checkbox"/> 50.731(a)(2)(viii) <input type="checkbox"/> 50.73(a)(2)(x) <input type="checkbox"/> 73.71 <input type="checkbox"/> OTHER <small>Specify in Abstract below and in Text, NRC Form 366A</small>
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LICENSEE CONTACT FOR THIS LER (12)

NAME R. J. Dean , Manager Engineering - NMP2	TELEPHONE NUMBER (315)349-4240
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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 (Limits to 1400 spaces, i.e., approximately fifteen single space typewritten lines) (16)

On June 23, 1998, Niagara Mohawk Power Corporation (NMPC) determined that Nine Mile Point Unit 2 (NMP2) had been operated from initial plant startup until December 1993 with Reactor Core Isolation Cooling (RCIC) valves 2ICS*MOV124 (Full Flow Test Return), 2ICS*MOV129 (Condensate Storage Tank Suction) and 2ICS*MOV116 (Turbine Cooling Water Supply Valve) in a degraded condition since the design did not provide for seal-in logic on initiation due to failure to bypass overload heater contacts. In December 1993, shorting bars were installed across the overload heater terminals as a solution to power supply concerns. This modification unintentionally corrected this deficiency.

The cause of this deviation is that the original plant designer misapplied or misinterpreted the design requirements from the NMP2 Final Safety Analysis Report (FSAR). During the design of the 1993 modification, an opportunity to identify this deficiency was missed.

The deviation was corrected in 1993 by the implementation of EDC 2E10764, which installed shorting bars across overload heater terminals for DC powered RCIC motor-operated valves (MOVs).



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 2	05000410	98	20	00	02 OF 04

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

I. DESCRIPTION OF EVENT

On June 23, 1998, Niagara Mohawk Power Corporation (NMPC) determined that Nine Mile Point Unit 2 (NMP2) had operated from initial plant startup until December 1993 with Reactor Core Isolation Cooling (RCIC) valves 2ICS*MOV124 (Full Flow Test Return), 2ICS*MOV129 (Condensate Storage Tank Suction) and 2ICS*MOV116 (Turbine Cooling Water Supply Valve) in a degraded condition. This deficiency was identified during NMPC's Generic Letter (GL) 96-01 review. The specific deficiency for each valve was that the valve control contacts used to provide valve seal-ins were in series with an active valve overload relay contact. If the overload relay were to trip in conjunction with a transitory initiation signal, the seal-in signal would have been lost. A modification performed in December 1993 unintentionally resolved this deficiency.

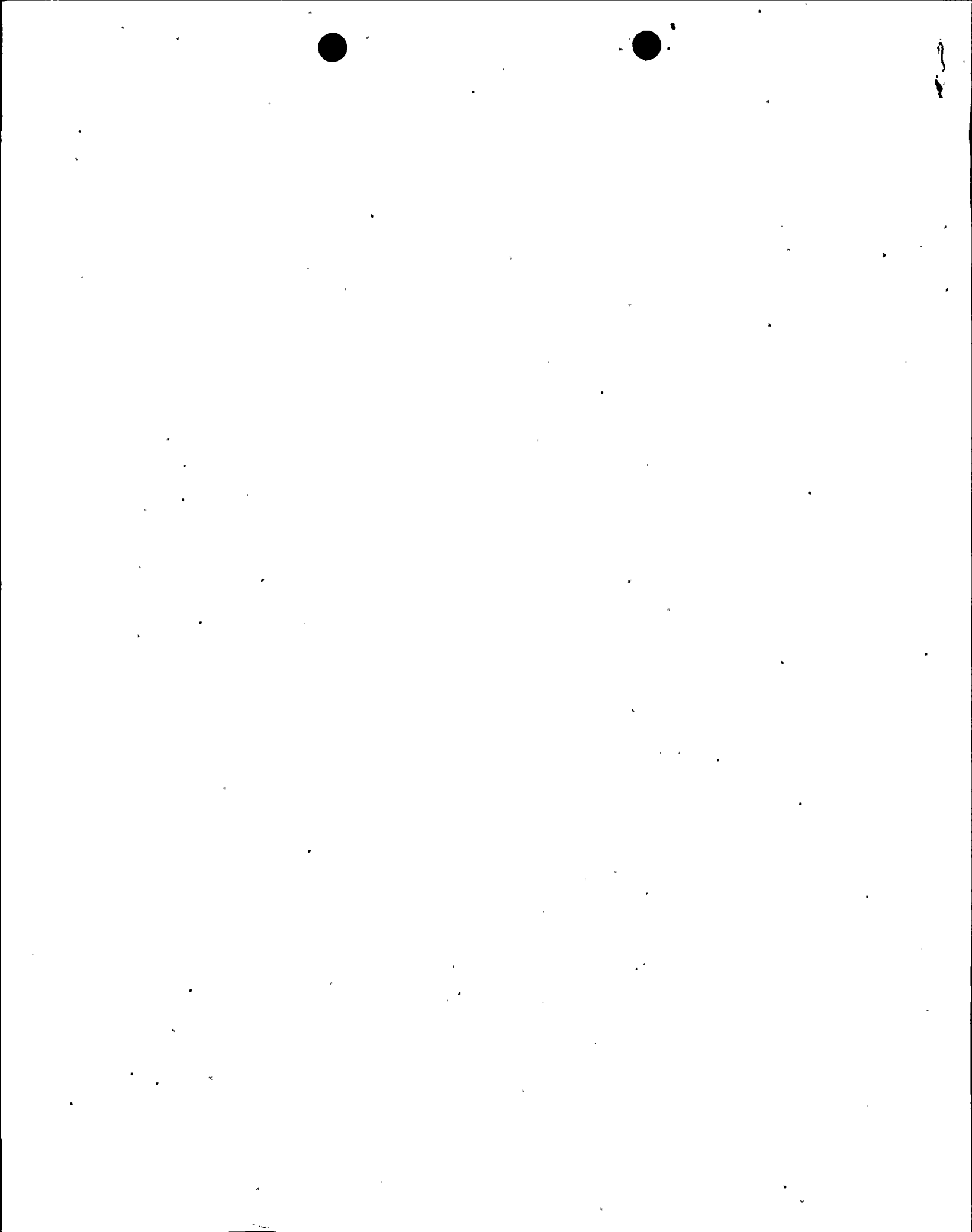
During 1985, the design/licensing phase of NMP2, NMPC and the Nuclear Steam Supply System (NSSS) supplier General Electric (GE) performed a logic design review of the RCIC system. The review failed to identify that the RCIC system logic did not meet the requirements of the NMP2 Final Safety Analysis Report (FSAR) Section 7.4.2.1.3.1 which states "Once the RCIC is initiated by reactor low water level, the logic seals in and the system operation must go to completion until terminated by deliberate Operator action or automatically stopped on a high vessel water level or system malfunction trip signal." In fact, the original design with the valve control contact in series with the active valve overload relay contact could have defeated RCIC, if a transitory initiation signal had occurred in conjunction with an overload relay trip.

This condition existed until December 1993, when shorting bars inactivated the overload heaters. The shorting bars were installed to eliminate voltage drop across the overload heaters so as to improve valve performance to meet GL 89-10 requirements. During the design and safety analysis for the 1993 modification, the deficiency was not identified.

II. CAUSE OF EVENT

The cause of the initial design deficiency is that the original plant designers misapplied or misinterpreted the design requirements applicable to the RCIC system. The designers failed to recognize the impact of a transitory initiation signal in conjunction with an overload relay trip on the valve seal-in capability.

A missed opportunity occurred in 1993 during the design of the modification which installed the shorting bars. The existence of the seal-in circuit deficiency was not identified. The cause of the missed opportunity was inadequate verification of compliance with UFSAR requirements.



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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (4)				PAGE (3)
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

III. ANALYSIS OF EVENT

This event is reportable in accordance with 10CFR50.73(a)(2)(i)(B), "any operation or condition prohibited by the plant's Technical Specifications," and 10CFR50.73(a)(2)(ii), "any event or condition that resulted in the condition of the nuclear power plant, including its principal safety barriers, being seriously degraded; or that resulted in the nuclear power plant being: (B) in a condition that was outside the design basis of the plant."

The RCIC valves would have sealed-in upon initiation of the system due to low-low Reactor Pressure Vessel (RPV) level. The design deficiency was that, if a transitory loss of the initiation signal would have occurred in conjunction with an overload relay trip, the seal-in would have been lost. However, if the low-low level signal were to recur, the valve stroke would be resumed due to bypass of the tripped overload relay contact and the RCIC system would then have performed its function.

In addition, the RCIC system is redundant to the High Pressure Core Spray (HPCS) system for the safe shutdown function. For the accident case with the RPV at a high pressure, the HPCS can be initiated to provide make up flow. If HPCS and RCIC were both postulated to fail, the Automatic Depressurization System (ADS) would automatically initiate depressurization of the RPV to permit low pressure Emergency Core Cooling Systems (ECCS), Low Pressure Coolant Injection (LPCI) or Low Pressure Core Spray (CSL), to provide make up cooling. Therefore, this deficiency did not pose a threat to the health and safety of the general public.

IV. CORRECTIVE ACTIONS

- The deviation was corrected in 1993 by the implementation of EDC 2E10764, which installed shorting bars across overload heater terminals for DC powered RCIC motor-operated valves (MOVs) that included 2ICS*MOV116, 2ICS*MOV124, and 2ICS*MOV129. The presence of the shorting bars prevents an overload relay trip and permits the MOV seal-in circuit to operate properly.
- This LER and the lack of identification of the deviation has been discussed with NMP2 Electrical Design personnel. The discussion reinforced the expectation that when modifications are being designed the original design should be thoroughly reviewed.
- Other systems that require completion of safety action after an automatic initiation were reviewed to determine if similar seal-in design existed. The remaining systems utilize a sealed-in initiation control circuit and do not rely on seal-in of the MOV controls for automatic operation of the safety function.



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V. ADDITIONAL INFORMATION

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

COMPONENT	IEEE 803 FUNCTION	IEEE 805 SYSTEM ID
Reactor Core Isolation Cooling System	N/A	BN
2ICS*MOV124, 2ICS*MOV129, 2ICS*MOV116	20	BN

