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FACIL:50-410 Nine Mile Point Nuclear Station, Unit 2, Niagara Moha 05000410
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RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 96-006-00:on 960502,incorrect safety limit caused by inadequate calculational procedure.Increased OLMCPR in core monitoring computer to reflect increase in SLMCPR for two-loop operation.W/960603 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

June 3, 1996
NMP2L 1636

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

RE: LER 96-06
Docket No. 50-410

Gentlemen:

In accordance with 10 CFR 50.73 (a)(2)(v)(D), we are submitting LER 96-06, "Incorrect Safety Limit Caused by Inadequate Calculational Procedure."

Very truly yours,

John T. Conway
Plant Manager - Unit 2

JTC/AFZ/lmc
Enclosure

xc: Mr. Thomas T. Martin, Regional Administrator, Region I
Mr. Barry S. Norris, Senior Resident Inspector

100123

NRC FORM 366 U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104
EXPIRES: 4/30/92

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)	DOCKET NUMBER (2)	PAGE (3)
Nine Mile Point Unit 2	5000410	01 OF 04

TITLE (4) Incorrect Safety Limit Caused by Inadequate Calculational Procedure

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)
05	02	96	96		06	00	06	03	96	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)				
100	☐ 20.402(b)	☐ 20.405(c)	☐ 50.73(a)(2)(iv)	☐ 73.71(b)
	☐ 20.405(a)(1)(i)	☐ 50.36(c)(1)	☒ 50.73(a)(2)(v)	☐ 73.71(c)
	☐ 20.405(a)(1)(ii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(vii)	☐ OTHER
	☐ 20.405(a)(1)(iii)	☐ 50.73(a)(2)(i)	☐ 50.73(a)(2)(viii)(A)	*(Specify in Abstract below and in Text, NRC Form 366A)*
	☐ 20.405(a)(1)(iv)	☐ 50.73(a)(2)(ii)	☐ 50.73(a)(2)(viii)(B)	
	☐ 20.405(a)(1)(v)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
Mr. A. Vierling, Manager Fuels and Analysis	(315) 349-1582

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

CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
☐ YES *(If yes, complete EXPECTED SUBMISSION DATE)*	☒ NO				

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

On May 2, 1996 at approximately 1500 hours, General Electric (GE) informed Nine Mile Point Unit 2 (NMP2) that they had performed a cycle specific two-loop Safety Limit Minimum Critical Power Ratio (SLMCPR) calculation and had determined that the existing 1.07 limit was nonconservative for the Peak Hot Excess (PHE) and End-of-Cycle (EOC) exposure points for Cycle 5. Based on this analysis, GE advised that a SLMCPR of 1.10 must be implemented. NMP2 increased the Operating Limit MCPR (OLMCPR) in the core monitoring computer to reflect the increase in the SLMCPR for two-loop operation. At the time of GE's notification, the reactor mode switch was in the "RUN" position (Operational Condition 1) with the plant operating at approximately 100 percent rated thermal power. Because the cycle specific calculation indicated that the SLMCPR value specified in Technical Specification Section 2.1.2 was nonconservative, this condition was reported under 10 CFR 50.72(b)(2)(iii)(D) and is being reported in accordance with 10 CFR 50.73 (a)(2)(v)(D) as a condition that could have prevented the fulfillment of the safety function of systems needed to mitigate the consequences of an accident.

The apparent cause of this event is that the GE generic SLMCPR calculation that was performed in 1991 was based on a procedure that did not adequately bound all boiling water reactors (BWRs) for all plant operating parameters.

The immediate corrective actions were to increase the OLMCPR in the core monitoring computer to reflect the increase in the SLMCPR for two-loop operation.

I. DESCRIPTION OF EVENT

Nine Mile Point Unit 2 (NMP2) was first notified by General Electric (GE) by letter received on April 9, 1996, that the GE calculation for cycle specific Safety Limit MCPR (SLMCPR) may be more limiting than the previously performed generic calculations. As such, the procedure for calculating the SLMCPR was suspect and GE was evaluating these calculations. The notification was preliminary and no actions were recommended at that time.

On April 10, 1996, Niagara Mohawk contacted GE to discuss the information provided in their letter. GE stated that a potential nonconservatism in the SLMCPR calculational methodology had been identified at several plants and that this may be applicable to NMP2. GE recommended administrative controls be implemented immediately to limit the Maximum Fraction Limit Critical Power Ratio (MFLCPR) to < 0.985 since preliminary information indicated that the SLMCPR could be 1.09. Consequently, NMP2 implemented an administrative limit on MFLCPR of < 0.985.

On April 16, 1996 additional information from GE indicated that the preliminary cycle specific NMP2 analysis showed that the SLMCPR could be as high as 1.10. Therefore, the MFLCPR administrative limit was further reduced to <0.975.

On May 2, 1996 at approximately 1500 hours, GE informed NMP2 that they had completed a cycle specific two-loop SLMCPR calculation and had determined that the existing 1.07 limit was nonconservative for the Peak Hot Excess (PHE) and End-of-Cycle (EOC) exposure points for Cycle 5. Based on this analysis, GE advised that a SLMCPR of 1.10 must be implemented. NMP2 increased the Operating Limit MCPR (OLMCPR) in the core monitoring computer to reflect the increase in the SLMCPR for two-loop operation and the previous administrative restriction was removed. Additionally, it was concluded that the K_f OLMCPR multiplier curve did not require revision and the single loop operation SLMCPRwas confirmed to be 0.01 higher than the revised two-loop SLMCPR. At the time of notification, the reactor mode switch was in the "RUN" position (Operational Condition 1) with the plant operating at approximately 100 percent rated thermal power.

II. CAUSE OF EVENT

The apparent cause of this event is that the GE generic SLMCPR calculation that was performed in 1991 was based on a procedure that did not adequately bound all boiling water reactors (BWRs) for all plant operating parameters. GE has committed to perform a root cause evaluation for this event, and Niagara Mohawk will review the conclusions of this evaluation.

III. ANALYSIS OF EVENT

Since the newly calculated SLMCPR is greater than the values specified in Technical Specification Section 2.1.2 (1.07 with two recirculation loop operation or 1.08 with single loop operation), this condition is reportable in accordance with 10 CFR 50.73 (a)(2)(v)(D) as a condition that could have prevented the fulfillment of the safety function of systems that are needed to mitigate the consequences of an accident.

In the course of developing a process for evaluating cycle specific SLMCPR values, GE has discovered that the procedure used for determination of generic SLMCPR values may not always yield the most conservative result. GE is currently evaluating the adequacy of the procedure to bound the actual expected plant operating states.

Following this discovery, GE examined the adequacy of the generic SLMCPR (1.07) for a plant having a large reload batch fraction (37%). When the NRC-approved licensing basis conditions and uncertainties were used with the core specific loading and rod patterns selected to place the plant on limits, preliminary results showed a SLMCPR of 1.08 for both PHE and EOC.

Niagara Mohawk has evaluated core performance for the current operating cycle, and determined that, even with the .03 increase in the SLMCPR, neither the Safety Limit nor the Operating Limit would have been exceeded for any analyzed plant transient.

This situation is being reported to the NRC by GE under the 10 CFR 21 reporting requirements, and GE has initiated actions to evaluate the adequacy of the generic SLMCPR values for all plants operating with GE fuel.

IV. CORRECTIVE ACTIONS

In response to GE's verified calculation of the NMP2 cycle specific SLMCPR, immediate corrective actions were taken to increase the OLMCPR in the core monitoring computer to reflect a .03 increase in the SLMCPR for two-loop operation.

GE is currently performing calculations to confirm the .01 SLMCPR adder for single-loop operation (SLO) and will be providing NMP2 with a revised Supplemental Reload Licensing Report. When this report is received from GE, the Reload Safety Evaluation will be revised to incorporate any necessary changes to the Core Operating Limits Report, the Updated Safety Analysis Report (USAR), and the Technical Specifications.

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
Core Monitoring Computer	CPU	ID