NIAGARA MOHAWK

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RICHARD B. ABBOTT
Vice President
Nuclear Generation

December 15, 1995
NMP2L 1599

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

RE: Docket No. 50-410
LER 95-11

Gentlemen:

In accordance with 10CFR50.73(a)(2)(i)(B), we hereby submit the following Licensee Event Report, "Operation in Excess of 100 Percent Rated Core Thermal Power due to Core Thermal Power Calculation Methodology Error."

Very truly yours,

R. B. Abbott
Vice President - Nuclear Generation

RBA/TWR/kap
Attachment

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

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NRC FORM 366 (6-89)

U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

APPROVED OMB NO. 3150-0104

EXPIRES: 4/30/92

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	0 5 0 0 0 4 1 0	1 OF 0 4

TITLE (4) Operation in Excess of 100 Percent Rated Core Thermal Power due to Core Thermal Power Calculation Methodology Error

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)
												0 5 0 0 0
1 1	1 5	9 5	9 5	—	0 1 1	—	0 0	1 2	1 5	9 5		0 5 0 0 0

OPERATING MODE (9)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10)	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 (Specify in Abstract below and in Text, NRC Form 366A)
	20.405(a)(1)(iii)	X 50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
	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
	AREA CODE
Mr. K. D. Ward, Manager Engineering NMP2	3 1 5 3 4 9 - 1 0 4 3

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)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

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

On November 15, 1995, while operating at approximately 100 percent power, Nine Mile Point Unit 2 (NMP2) discovered that it had previously exceeded 100 percent of rated core thermal power (CTP) (i.e., 3323 and 3467 Megawatts thermal (Mwt) during fuel cycles 4 and 5) by as much as 4.23 Mwt or approximately 0.12 percent of rated core thermal power. The condition was a result of failure to account for approximately 24 gpm flow from the Control Rod Drive (RDS) system to the reactor vessel in the NSSS heat balance and plant core thermal power calculations. Based on the low order of magnitude of the error and conservatism inherent in the accident analysis, this condition did not result in any adverse impact on the health and safety of the general public.

Corrective actions taken included reducing power and establishing an administrative limit on power until long-term corrective actions are complete. In addition, heat balance and core thermal power calculations will be corrected and Engineering Design Procedures will be revised to assure proper assessment of plant changes for impact on the NSSS heat balance and CTP calculations.

I. DESCRIPTION OF EVENT

On November 15, 1995, while operating at approximately 100 percent power, Nine Mile Point Unit 2 (NMP2) discovered that it had previously exceeded 100 percent of rated core thermal power (i.e., 3323 and 3467 Megawatts thermal (Mwt) during fuel cycles 4 and 5). Specifically, flow from the Control Rod Drive (RDS) system was not properly accounted for in the NSSS heat balance and core thermal power calculation. The flow not properly accounted for is approximately 24 gpm which results in an actual reactor power that exceeds indicated power by as much as 4.23 Mwt, or approximately 0.12 percent of rated core thermal power.

An evaluation of this condition against NMP2 operating history was completed on December 4, 1995, and determined that actual power exceeded indicated power for occasional periods of time by as much as 4.23 Mwt from February 7, 1995 through November 15, 1995. This condition did not exist prior to the installation of the feedwater Leading Edge Flow Meters (LEFM) in February 1995. Prior to this installation, the actual CTP was less than the calculated CTP by approximately 30 Mwt. Hence, the addition of approximately 4 Mwt to the actual CTP would not have caused actual CTP to exceed the licensed limit.

The General Electric (GE) design of the RDS system required 8 gpm be provided to the Reactor Recirculation (RCS) pumps for seal staging flow. A review of General Electric Nuclear Energy Group (GE-NEG) documentation and discussion with GE personnel indicates that the flow from the RDS system to the RCS pumps, historically, has never been considered in the NSSS heat balance and Core Thermal Power (CTP) calculations for any BWR plants. GE was unable to determine why this value was not considered. In addition, GE determined that there was no margin in the CTP calculation methodology which would offset the 4.23 Mwt error.

Modification PN2Y88MX059, Control Rod Drive System (CRD) to RWCU Piping Installation was implemented on May 16, 1992 to provide a maximum of 4 gpm to each Reactor Water Cleanup WCS pump seal (16 gpm total for two pumps) for seal cooling. This flow is provided continuously, regardless of the number of pumps operating in the Reactor Water Cleanup (WCS) system. This modification did not properly evaluate the impacts to the NSSS heat balance calculation or CTP calculation methodology.

II. CAUSE OF EVENT

The root cause for omission of the additional RDS flow in the CTP calculation and heat balance for the RCS pump seal injection flow (original design) was inadequate review of system interactions by GE-NEG and NMPC Design Engineering.

In the early 1970's, GE-NEG incorporated the RDS purge water design for the RCS pumps. At that time, GE did not recognize the system interaction nor the impact to the NSSS heat balance and CTP calculation. In addition, review of the original system design by the Architect Engineer and NMPC Engineering also failed to recognize the system interaction.

Additionally, inadequate change management resulted in implementation of modification PN2Y88MX059, "Control Rod Drive System to RWCU Piping Installation," which also failed to properly account for the impact on the NSSS heat balance and CTP calculation methodology.

A contributing factor affecting modification PN2Y88MX059 was the failure of the safety review process to identify this discrepancy.

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."

Both the design basis Loss of Coolant Accident and the design basis Containment Accident analyses assume 102 percent of rated core thermal power (i.e., 3536 Mwt) as the initial condition. Operation at 3471.23 Mwt (100.12 percent rated core thermal power) is bounded by these analyses in Chapter 15, "Accident Analysis," of the updated FSAR. These analyses demonstrate that the emergency core cooling acceptance criteria of 10CFR50.46 would be met in the event of a design basis accident occurring at 102 percent of rated core thermal power. Since NMP2 operated at a maximum of 100.12 percent of rated core thermal power, this event is within the bounds of the design basis LOCA and containment analyses. There were no adverse consequences to the health and safety of the general public or plant personnel as a result of this event.

IV. CORRECTIVE ACTIONS

The following corrective actions have been taken:

1. Core thermal power was reduced and administratively limited to 3462 Mwt on November 15, 1995, until long-term corrective actions are complete.

2. NMPC will revise the as-built original and power uprate NSSS heat balances to reflect the correct flow and enthalpies. In addition, Engineering will determine the appropriate design change required to correct the error. This will be completed by June 30, 1996.

3. Engineering will issue calculation A10.1-C-019, Rev. 0, which documents the original engineering evaluation of the CTP reported on November 15, 1995. This will be completed by December 15, 1995.

4. Engineering Procedure NEP-DES-06, Rev. 1, "Design Impact Checklist" will be revised to require assessment of plant changes for impact to NSSS heat balance and CTP calculation methodology. This procedure and other design guidelines for implementation of design changes assure a similar problem will not recur. This will be completed by December 15, 1995.

5. This missed opportunity to identify this discrepancy in the safety review process will be reviewed with the current membership of the Site Operations Review Committee and the Safety Review and Audit Board. This action will be completed by February 29, 1996.

V. ADDITIONAL INFORMATION

A. Failed components: none.

B. Previous similar event:

There were no other similar events related to this LER.

C. Identification of components referred to in this LER:

Component	IEEE 803 Function	IEEE 805 System ID
Process Computer	CPU	ID