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DUKE POWER

April 20, 1990

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Subject: McGuire Nuclear Station Unit 2
Docket No. 50-370
Licensee Event Report 370/90-04

Gentlemen:

Pursuant to 10 CFR 50.73 Sections (a)(1) and (d), attached is Licensee Event Report 370/90-04 concerning Power Mismatch Exceeding Technical Specification Limits because of a Design Deficiency. This report is being submitted in accordance with 10 CFR 50.73(a)(2)(i)(B). This event is considered to be of no significance with respect to the health and safety of the public.

Very truly yours,

Tony L. McConnell

T.L. McConnell

TLP/cbl

Attachment

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MC-815-04
(20)

NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/85

LICENSEE EVENT REPORT (LER)

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TITLE (4)
Power Mismatch Exceeded Technical Specification Limits Because Of A Design Deficiency

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 3	2 1	9 0	9 0	0 0 4	0 0	0 4	2 0	9 0	N/A	0 5 0 0 0
										0 5 0 0 0

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)	1 0 0	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 (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
Alan Sipe, Chairman, McGuire Safety Review Group	AREA CODE 7 0 4 8 7 5 - 4 1 8 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 February 13, 1990, Reactor Power Mismatch exceeded the Technical Specification (TS) Interpretation requirement of ±5 percent for power maneuvers after a 50 percent Main Turbine Runback occurred at 1136 on Unit 2. Within 10 minutes after the runback, the Power Mismatch for all four channels spiked to -24.0 percent and then returned to -1.4 percent. While Operations personnel were stabilizing the unit, the Power Mismatch for all four channels oscillated between -7.5 percent and -5.0 percent. At 1335, all four channels of Power Mismatch were in the -3.0 to -4.9 percent range. This event is assigned a cause of Design Deficiency because of a mechanical equipment configuration deficiency. Power Mismatch exceeded the TS limit because of a shadowing effect on the excore detectors. This is caused by the Control Bank D control rods driving into the core during a power reduction transient and lowering the power on the periphery of the core; thereby lowering the power indicated by the Excore Detectors. This event is also assigned a contributory cause of Inappropriate Action because Operations personnel did not log the power range channels as inoperable and enter TS 3.0 3. Unit 2 was in Mode 1 (Power Operation) prior to the 50 percent runback. Station Management requested Design Engineering to investigate and recommend alternatives to the transient Power Mismatch limit of ± 5 percent and evaluate a mechanism to remove the shadowing effect.

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

EVALUATION:

Background

The purpose of the Out-of-Core Instrumentation System [EIIS:IG] (Excore Detectors) is to monitor Reactor [EIIS:RCT] Core leakage neutron flux and generate appropriate trips and alarms [EIIS:ALM] for various phases of Reactor Operations. The outputs of the three ranges (source, intermediate, and power) of detectors [EIIS:DET] are used to limit the maximum power output of the reactor within their respective ranges and are used as inputs to monitor neutron flux from a completely shutdown condition up to 118 percent of full power. There are four dual section uncompensated ionization chamber assemblies for the power range detectors (Excore Detectors). These assemblies are installed vertically at the four corners of the core and located equidistant from the reactor vessel at all points and, to minimize neutron flux pattern distortions, within one foot of the reactor vessel. Each power range detector provides two signals corresponding to the neutron flux in the upper and in the lower sections of a core quadrant.

TS 3.3.1, Table 3.3-1, requires that three out of four channels of Power Range Nuclear Instrumentation (Excore Detectors) must be operable during Mode 1 and Mode 2 (Startup).

TS 4.3.1.1 requires that a channel calibration be performed daily on the Power Range Neutron Flux High Setpoint. This is to be performed by comparison of calorimetric (reactor thermal power best estimate, based on secondary and/or primary heat balances) to excore power (based upon nuclear power levels from excore instrumentation) when the unit is above 15 percent Rated Thermal Power (RTP). Excore channel gains are to be adjusted to make indicated excore power consistent with indicated calorimetric power whenever this comparison reveals an absolute difference of more than 2 percent between the two. This deviation is called Power Mismatch.

The TS Interpretation for Table 4.3.1, sections 2 and 13 dated April 7, 1989, states that an adjustment of the Excore Detectors gains to the calorimetric power is required if the absolute difference is greater than 2 percent. This is required for the unit at steady state conditions to maintain channel operability. During power maneuvers or changes in rod position, a $\pm$ 5 percent difference is acceptable to maintain channel operability. Should the $\pm$ 5 percent difference be exceeded, the affected power range channel(s) must be declared inoperable. It should be the intent to limit rod motion and/or power maneuvers so that the $\pm$ 5 percent transient limit is not inadvertently exceeded. Recalibration to return to the $\pm$ 2 percent steady state difference limit may be delayed for up to 4 hours once stable conditions are reached to allow various parameters to reach equilibrium or near equilibrium conditions.

TS 3.0.3 is required to be entered when the unit is operating in a condition that exists when a Limiting Condition for Operation is not met except as provided in the associated Action Requirements. It requires that within one hour action shall be initiated to place the unit in a mode in which the specification does not apply by placing it, as applicable, in:

a. at least Hot Standby within the next 6 hours,

b. at least Hot Shutdown within the following 6 hours, and

c. at least Cold Shutdown within the subsequent 24 hours.

Quadrant Power Tilt Ratio (QPTR) shall be the ratio of the maximum upper excore detector calibrated output to the average of the upper excore detector calibrated outputs, or the ratio of the maximum lower excore detector calibrated output to the average of the lower excore detector calibrated outputs, whichever is greater.

TS 3.2.4 states that with QPTR determined to exceed 1.02 percent but less than or equal to 1.09 percent, a calculation of the QPTR is required at least once per hour. Also, within 2 hours the TS requires: 1) Reduce the QPTR to within its limit, or b) Reduce Thermal Power at least 3 percent from RTP for each 1 percent of indicated QPTR in excess of 1.0 and similarly reduce the Power Range Neutron Flux - High Trip Setpoints within the next 4 hours.

The purpose of procedure PT/0/A/4600/02G, Incore And Nuclear Instrumentation Systems Recalibration: RAOC, is two-fold. One purpose is to obtain the data from which the relationships between incore and excore quadrant axial offsets can be derived while remaining in the Relaxed Axial Offset Control (RAOC) axial flux difference band. The second purpose is to determine recalibration data with the INEXCAL computer program or equivalent for setting the nuclear instrumentation system amplifier gains, setting the function of the overpower differential temperature protective setpoints, and updating the excore power distribution monitor.

Description of Event

On February 13, 1990, Performance personnel were performing procedure PT/0/A/4600/02G, Incore and Nuclear Instrumentation System Recalibration: RAOC. This procedure requires Operations personnel to move the control rods [EIIS:ROD] (Control Bank D) into the core to cause the axial flux difference (AFD) to become more negative. A -6.97 percent value was the target AFD value that Performance personnel were working toward.

At 1136, a 50 percent Main Turbine Runback occurred because of a loss of Main Feedwater pump 2A. Prior to the runback, Performance personnel recorded an AFD of about -6.0 percent. During the runback, annunciators [EIIS:ANN] for Control Rod Lo and Lo-Lo Insertion Limit were received. At 1137 Operations personnel received a computer alarm for Power Mismatch exceeding the range of $\pm$ 3 percent difference. A value of -8.5 percent Power Mismatch was recorded on the Alarm Summary Typer. At 1140, Power Mismatch spiked to -24 percent for all four channels. See attached graph on page 10 of 13. At 1144, the computer alarm cleared and printed a value of -1.4 percent on the Alarm Summary Typer for all four channels.

Immediately after the runback, at 1136, Operations personnel entered procedure AP/2/A/5500/03, Load Rejection, to stabilize the unit and return the systems to normal. Operations personnel began pulling rods and borating to clear the Rod Insertion Limit alarm. This was performed slowly within TS limits by Operations

personnel to prevent inducing another transient. At 1146, Power Mismatch was -4.0 percent on all four channels according to the Alarm Summary Typer. At 1430, Operations personnel exited procedure AP/2/A/5500/03, Load Rejection, with Reactor Power at 54 percent.

Power Mismatch values addressed in this paragraph and the graph on page 10 of 13 were obtained from the Operator Aid Computer (OAC) all points data base by Performance personnel after the event occurred. This information is not available to Operations personnel. Between 1150 and 1310, during rod withdrawal, the Power Mismatch oscillated between -7.5 percent and -5.0 percent for all four channels; however, the trend was toward -5.0 percent. At certain times during this period, some channels were recorded with a value of -4.0 percent. By 1335, all four channels had returned to within the $\pm$5.0 percent difference band. From 1415 to 1635, the Power Mismatch for one channel, Channel 42, oscillated from -4 percent to -5.3 percent. This was recorded for 12 five minute intervals. At 1750, all four channels spiked to +5.2 percent, but then returned to -3.8 percent which was the value prior to the spike. (See Table on page 11 of 13.)

Operations personnel stated that at 1210 QPTR was increasing and was being monitored by all Operations personnel involved in the runback. QPTR on the Channel 41 upper detector did exceed the required limit of 1.02 percent around 1520 on February 13, 1990. This channel returned to less than 1.02 percent at 1805 and cleared out of alarm. Channel 42 lower detector also exceeded the required limit of 1.02 percent around 1620. At 1810, Operations personnel lowered the Neutron flux high trip setpoint on all four Power Range (Excore) detectors to 90 percent power to satisfy TS 3.2.4 2b.

On February 15, 1990, at 1040, Operations personnel returned Unit 2 to 100 percent power.

On February 19, 1990, the Channel 42 lower excore detector was calibrated by Instrumentation and Electrical (IAE) personnel. IAE personnel found that the Channel 42 lower detector was off by + 1.75 percent indicated power in the conservative direction.

On March 21, 1990, a meeting was held with and station personnel to discuss a February 4 and 5, 1990 incident where computer points were locked out and caused an indicated (not actual) power mismatch above 5 percent to occur for 15 minutes. This incident is documented by Special Report 2-M90-0067. Design Engineering personnel attended the meeting and the subject of the TS interpretation on Power Mismatch was discussed. Based on this discussion, the February 13, 1990 event was determined to be reportable.

Conclusion

This event is assigned a cause of Design Deficiency because of a mechanical equipment configuration deficiency. This deficiency is due to a shadowing effect on the Excore Detectors by the Controlling Bank D Control Rods. The configuration shown on page 12 of 13 shows that the Control Bank D Control Rods are aligned on the periphery of the core in line with the Excore detectors. When a transient

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

occurs (i.e. runback) the Control Bank D Control Rods insert rapidly into the core. These control rods lower the level of neutrons leaking out of the core which lowers the power level detected by the excore detectors. This occurs for a finite amount of time until the plant is stabilized. McGuire Nuclear Station (MNS) management has requested Design Engineering personnel to investigate and recommend alternatives to the transient power mismatch limit of ±5 percent as currently interpreted by Design Engineering personnel and implemented by MNS. During controlled power changes, this power mismatch can be anticipated and therefore, handled prior to exceeding the limit. However, under severe transient conditions such as a runback or other unplanned step power change with significant rod movement, this limit will most probably be violated for a short period of time. This would result in declaring the Excore Detectors inoperable, therefore, requiring entry into TS 3.0.3. This investigation, requested by MNS, should include but not be limited to all possible alternatives including: TS changes; additional safety analyses to support an increased power mismatch limit, or exemptions of the limit for a time period following an unplanned runback or a significant step power decrease; movement of Control Bank D from the core corners to the core flats by rotation of 45 degrees; movement of the excore detectors by a rotation of 45 degrees; reassignment of rod banks to move Control Bank D to locations currently occupied by other banks which are not directly in front of the excore detectors; or evaluation of replacing the existing five rod Control Bank D Configuration with a nine rod Control Bank D Configuration to limit insertion (and therefore shadowing) during a power reduction transient.

A contributing factor to this event is the fact that at no time did Operations personnel notice a power mismatch greater than -4.2 percent difference except for the initial spike of - 8.5 percent recorded on the Alarm Summary Typer. Power Mismatch is set to alarm at ± 3 percent. The Alarm Summary Typer only prints the Power Mismatch value when the alarm setpoint is exceeded and when the alarm setpoint clears. Page 13 of 13 shows Power Mismatch values that were printed from the Alarm Summary Typer. Tied to this is the Alarm Video Summary which records Computer Alarms. For example, when Power Mismatch exceeds its alarm setpoint, the Operators will get an audible OAC computer alarm and the value with the OAC computer point will print across the screen in red. When the computer alarm for Power Mismatch is acknowledged, the print out on the screen turns from red to green and may roll over to the next page if numerous computer alarms are received. One problem is that the Power Mismatch alarm does not reflash. A reflash alarm would alarm when the setpoint is exceeded and if the value remains outside the setpoint then another alarm would be received. Sometimes this is based on a rate of the value exceeding the setpoint. Since the Power Mismatch alarm does not reflash, the alarm would then not necessarily have been seen by Operations personnel.

Operations personnel are evaluating with Computer Section personnel and Performance personnel, the best value for which Power Mismatch should alarm at (e.g. ± 2 percent or ± 3 percent difference). Operations personnel will request Computer Section personnel to evaluate adding a re-flash on the Power Mismatch alarm. Operations personnel will add a step to the Load Rejection abnormal procedure for Operations personnel to check on Power Mismatch and monitor its value after the unit is stabilized.

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A contributory cause of Inappropriate Action is assigned to this event because the excore detectors were not declared inoperable when the TS limit for Power Mismatch was exceeded. Operations personnel did not recognize the need to declare all four Excore Detectors inoperable and thereby enter TS 3.0.3. Power Mismatch exceeded the -5 percent limit on all four excore detectors within the first minute following the runback and then all four detectors returned to within range (-1.4 percent) within the next seven minutes. During the runback, the attention of Operations personnel was focused on returning the unit to a stable condition. When a transient occurs, a large volume of annunciator alarms are received in the Control Room and most annunciator alarms (e.g. Low Rod Insertion Limit Alarm) require resolution prior to the computer alarms.

The tools available to the Operators for tracking Power Mismatch are the Alarm Summary Typer, the OAC Nuclear 06 Display Program, and the OAC Point Data Alarm Video Summary. The Alarm Summary Typer showed that Power Mismatch for all four excore detectors exceeded the ±5 percent range after the runback between 1137 and 1144 and again between 1750 and 1752. The runback occurred at 1136. At 1750, the Operators were busy bringing the main feedwater pump 2A back on-line. The Operators stated they were monitoring the alarm summary typer and stated they did not notice a Power Mismatch alarm on the OAC Alarm Video Summary.

The OAC Nuclear 06 Display program screen shows the Power Mismatch value for all four channels. Directly above the Power Mismatch value, the QPTR value is listed for all four upper and lower quadrants. When a value on the Nuclear 06 Display Program exceeds a pre-set alarm value the value turns red on the screen. The alarm setpoint for Power Mismatch is ±3 percent. Based on the OAC point data these Power Mismatch values for all four channels should have been in red for approximately two hours after the runback. The operators stated that they did not recall any channel displayed in red. However, the Operators were fixed on monitoring the QPTR values, because of two channels that had exceeded a 1.02 percent limit. The only way this Power Mismatch TS limit was determined to be exceeded was by Performance personnel obtaining a summary of OAC points from the all points data base at 5 minute intervals immediately preceding and following the runback. However, this information was obtained after the event occurred as a result of Special Report 2-M90-0067. During the event, the attention of Operations personnel was focused on stabilizing the unit, investigating the reason for the runback and monitoring QPTR.

An Operating Experience Program (OEP) data base search was conducted for the last 24 months for TS violations with a root cause or contributory cause code of Design Deficiency due to the equipment configuration. The OEP data base revealed 3 Licensee Event Reports (LERs) 369/88-28, 269/89-27, and 369/89-26 that resulted from equipment configuration problems. None of these events are similar to the Power Mismatch event because they involved different systems and their corrective actions were specific to each event. Therefore, this event is not considered to be recurring with respect to an Equipment Configuration problem.

An OEP Data Base Search was conducted for the last 24 months for TS violations with a root or contributory cause code of Inappropriate Action because of Improper Action. The OEP Data Base revealed 7 LERs; 369/88-28, 369/88-32, 369/88-31, 369/88-40, 369/88-45, 369/89-11, and 370/89-07. These events all involved

Inappropriate Actions because of Improper Actions, however, all dealt with different equipment and different personnel. Also, the corrective actions were specific to each event. This event is also considered to be not recurring with respect to an Improper action problem.

Also, during the OEP data base search, two LERs and one Special Report (non-reportable) were revealed that dealt with the Power Mismatch problem itself. LER 370/89-004 had a cause code of Deficient Procedure. The corrective actions added steps in the Operating Procedure to have IAE on standby to calibrate the excore detectors whenever power is increased or reduced and changed the OAC alarm setpoint for power mismatch from a ± 4 percent to a ± 3 percent value. This event did not involve a transient. It was a controlled change in power and Operations did enter TS 3.0 3 when the channels exceeded the ± 5 percent limit. LER 369/89-013 was an overpower incident due to computer points being locked out and causing the power range detectors to be miscalibrated. Special Report 2-M89-0067 also was a computer lockout problem that caused indicated Power Mismatch to reach 5 percent. The problem with Power Mismatch exceeding the TS limits seems to be recurring even though each event described above involves different aspects of problems with Power Mismatch.

This event is not Nuclear Plant Reliability Data System (NPRDS) reportable.

There were no personnel injuries, radiation overexposures, or uncontrolled releases of radioactive material as a result of this event.

CORRECTIVE ACTIONS:

Immediate: None

Subsequent:

1) MNS management requested Design Engineering to perform a design study to investigate and recommend alternatives to the transient power mismatch limit of ± 5 percent as currently interpreted by Design Engineering.

2) Operations Employee Training and Qualification Coordinator issued required reading package 90-009-LS to all Licensed Operators and Operations staff personnel covering the TS interpretation on excore detectors and the graph shown on page 10 of 13 for this event.

Planned:

1) Operations personnel, Computer Section personnel, and Performance personnel are evaluating changing the OAC alarm setpoint for power mismatch from ± 3 percent or ± 2 percent difference.

2) Operations personnel will request Computer Section personnel to add re-flash conditions for the power mismatch alarm setpoints.

3) Operations personnel added a step to the Load Rejection abnormal procedure for Operations personnel to check for power

mismatch limits exceeding the TS limit and then follow appropriate actions (i.e. declare channel inoperable).

4) This event will be covered with a representative from each Operations shift.

SAFETY ANALYSIS:

The excore power range neutron detectors are arranged and located such that two detectors measure core leakage neutron flux for one quadrant. Each quadrant of detectors and their associated circuitry comprise one channel, for a total of four Power Range Nuclear Instrumentation channels. The Power Range High Neutron Flux Trip (High Setpoint) function utilizes a 2-out-of-4 logic.

The Control Rods (RCCA) in Control Bank D are positioned more closely to the excore detectors than the other RCCAs in the RCCA Banks. A condition called "shadowing" results since the rods are physically close to the detectors. The flux seen by the detector is not representative of total core flux. If the rods are being withdrawn, the detectors indicate more neutrons. This results in a positive mismatch and is conservative with respect to the reactor trip setpoint which is 109 percent. However, if the rods are being inserted from the point at which they were calibrated, the detectors indicate fewer neutrons. This results in a negative mismatch and is nonconservative with respect to the reactor trip setpoint. This phenomenon commonly occurs during power reductions in which Control Bank D is partially inserted.

On October 14, 1985, Station Management requested that the Design Engineering Reactor Transient Analysis Group (DE RTAG) in the General Office better define the requirements related to calorimetric/excore detector mismatch. The RTAG performed a detailed review of trend data and identified and quantified various causes of the calorimetric/excore mismatch. The main cause is the positioning of Control Bank D in front of the excore detectors. A TS interpretation was developed based on the review conducted by the DE RTAG. The interpretation stated "a tolerance of +/-5 percent is acceptable during power maneuvers or changes in rod position if the plant will be returned to the previously steady state conditions within a reasonable time period". In addition, the interpretation stated, "The allowable degree to which the excore detectors may overestimate power (as indicated by calorimetric measurements) is determined by operational concerns relative to spurious trips and the reset functions associated with certain permissives. The allowable underestimation of power by excore detectors is limited by available margins to 5 percent." The interpretation was issued on July 28, 1986. A revision was issued on April 7, 1989.

All accident analyses in Chapter 15 of the Final Safety Analysis Report (FSAR) which are mitigated by the power range high neutron flux trip setpoint have been evaluated to a ± 5 percent transient mismatch. Results of transients exceeding ±5 percent Power Mismatch may be bounded by the acceptance criteria for the FSAR; however, these events have not been analyzed by the DE RTAG. Because of this incident, the DE RTAG is evaluating a mechanism to remove the shadowing effect on the excore detectors by the Control Bank D Control Rods.

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A number of events have been postulated which could result in reactivity and power distribution anomalies. The Analysis performed in FSAR Section 15.4.3.2 analyzes the effects and consequences of dropped RCCAs banks and statically misaligned rods. The most severe misalignment situations with respect to DNBR at significant power levels arise from cases in which one RCCA is fully inserted, or where bank D is fully inserted with one RCCA fully withdrawn. Multiple independent alarms, including a bank insertion limit alarm, alert the operator well before the postulated conditions are approached. The bank can be inserted to its insertion limit with any assembly fully withdrawn without the DNBR falling below the limit value.

Prior to this runback, an incore flux map had been taken by Performance personnel. After the event of power mismatch exceeding the required TS limit of $\pm$ 5 percent difference, Performance personnel took another incore flux map and there were no appreciable changes to the core performance.

The -24 percent Power Mismatch spike for all four excore detectors has been explained by Performance Reactor Group personnel as a lag in secondary heat balance calculations as compared to actual calorimetric power. This is because of the 200 Mw/minute runback rate for the Main Turbine. The secondary heat balance calculations are updated every minute.

The health and safety of the public were not affected by this event.

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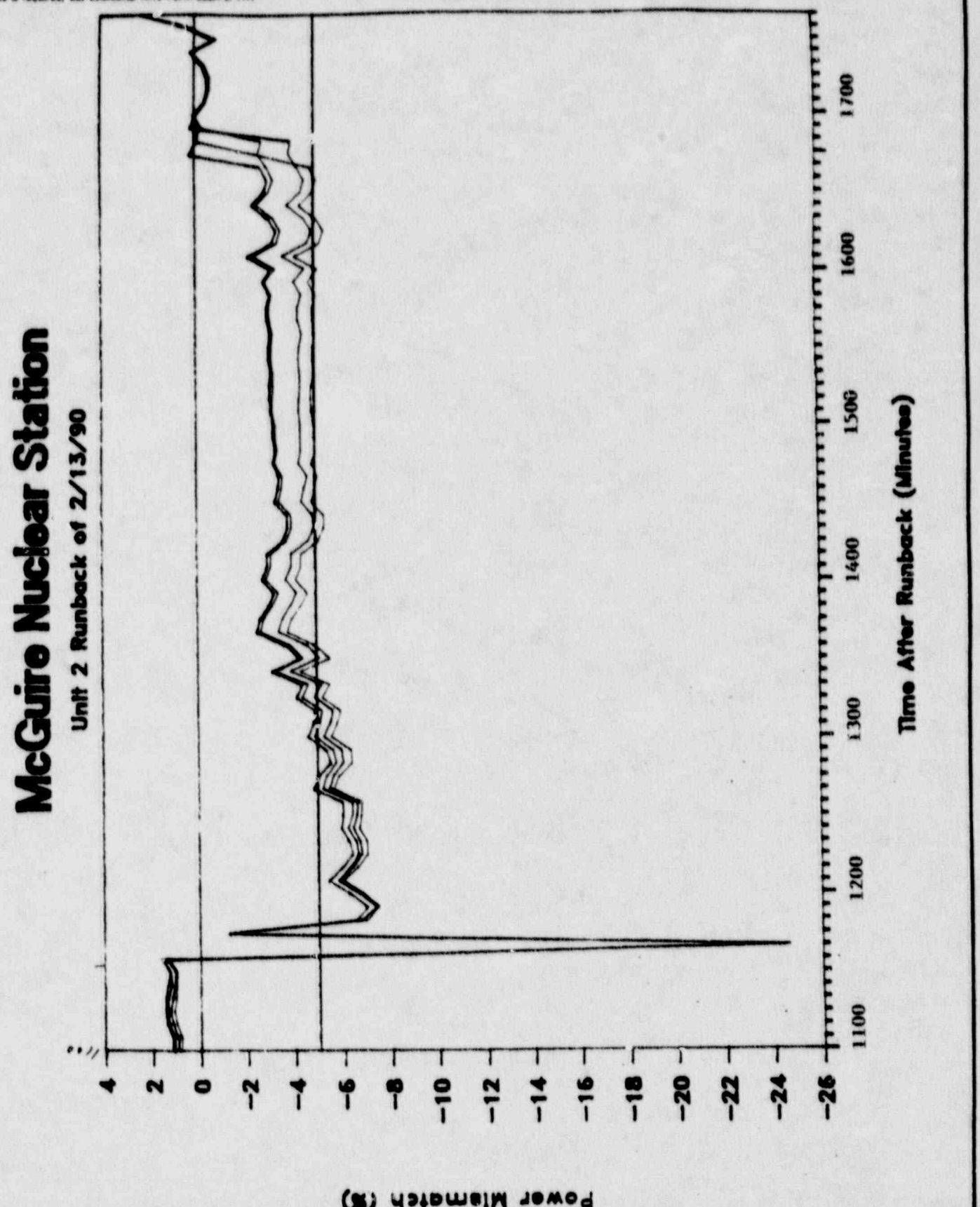
TEXT (If more space is required, use additional NRC Form 366A's) (17)



NRC Form 366A (9-83)

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

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

THERMAL POWER MISMATCH FOR U.2 RUNBACK OF 2/13/90

CALCULATED MISMATCH

TIME	PIP BEST EST	EXCORE POWER QUAD 1 POWER	QUAD 2 POWER	QUAD 3 POWER	QUAD 4 POWER	POWER MISMATCH QUAD 1	QUAD 2	QUAD 3	QUAD 4	CBD PWR
1100	99.959	100.938	100.783	101.158	101.059	0.979	0.824	1.199	1.1	211
1105	100.007	100.963	100.794	101.16	101.068	0.956	0.787	1.153	1.061	211
1110	99.71	100.883	100.747	101.145	100.936	1.173	1.037	1.435	1.226	211
1115	99.6475	100.923	100.754	101.095	101.075	1.2755	1.1065	1.4475	1.4275	211
1120	99.7324	100.939	100.755	101.15	101.084	1.2066	1.0226	1.4176	1.3516	211
1125	99.8242	100.938	100.773	101.224	101.09	1.1148	0.9488	1.4008	1.2668	211
1130	99.8154	100.754	100.754	101.009	101.035	0.9386	0.9386	1.1936	1.2196	210
1135	99.4756	100.833	100.648	101.068	101.053	1.3574	1.1724	1.5924	1.5774	210
1140	79.6426	55.0605	55.1699	55.0177	55.3496	-24.5821	-24.4727	-24.6249	-24.293	55
1145	48.4355	47.145	46.9966	47.0537	47.2295	-1.2905	-1.4389	-1.3818	-1.206	51
1150	54.0854	47.292	47.0942	47.3301	47.5396	-6.7934	-6.991	-6.7553	-6.5458	54
1155	55.2051	47.7441	47.7402	47.7949	48.1826	-7.461	-7.4649	-7.4102	-7.0225	54
1200	54.4341	47.6699	47.6348	47.7715	48.145	-6.7642	-6.7993	-6.6626	-6.2891	62
1205	53.6602	47.7451	47.7031	47.8462	48.2505	-5.9151	-5.9571	-5.814	-5.4097	67
1210	54.4712	48.0552	47.8652	48.1528	48.4366	-6.416	-6.606	-6.3184	-5.9746	72
1215	54.7041	47.9248	47.6802	48.04	48.3866	-6.7793	-7.0239	-6.6641	-6.3375	74
1220	54.8467	48.1592	47.8638	48.3013	48.5957	-6.6875	-6.9829	-6.5454	-6.251	78
1225	54.1074	47.7139	47.4443	47.845	48.1748	-6.3935	-6.6631	-6.2624	-5.9326	80
1230	54.3945	47.7935	47.6899	47.9634	48.3962	-6.601	-6.7846	6.4386	-6.0283	83
1235	54.0601	47.459	47.2637	47.6357	48.0654	-6.6011	-6.7964	6.4214	-5.9347	85
1240	53.4339	47.9863	47.8031	48.2349	48.6133	-5.4536	-5.6308	-5.215	-4.8066	90
1245	54.0962	48.4551	48.2139	48.7153	49.061	-5.6411	-5.8823	-5.3809	-5.0352	97
1250	54.9644	48.9199	48.5783	49.1802	49.4287	-6.0445	-6.3336	-5.7842	-5.5357	101
1255	54.3867	48.4473	48.02	48.7544	49.0485	-5.9394	-6.3667	-5.6323	-5.3432	104
1300	53.336	48.6709	48.358	49.0085	49.3842	-5.2251	-5.5454	-4.8755	-4.6118	110
1305	54.0068	48.481	48.1895	48.8348	49.166	-5.5258	-5.8173	-5.122	-4.8408	115
1310	54.0786	48.4341	48.1188	48.8638	49.1685	-5.6445	-5.9648	-5.2148	-4.9101	123
1315	53.4282	48.5396	48.249	49.0396	49.2949	-4.8886	-5.1792	-4.3886	-4.1333	129
1320	53.9009	48.7207	48.3794	49.2349	49.4951	-5.1802	-5.5215	-4.666	-4.4058	133
1325	52.8608	48.9746	48.5762	49.585	49.7544	-3.8862	-4.2846	-3.2758	-3.1064	142
1330	54.3379	49.2505	48.8037	49.835	50.021	-5.0874	-5.5342	-4.4429	-4.3169	150
1335	54.2471	49.6895	49.3066	50.3506	50.5356	-4.5576	-4.9405	-3.8965	-3.7115	156
1340	53.478	50.0981	49.709	50.8052	50.9746	-3.3799	-3.769	-2.6728	-2.5034	164
1345	53.7383	50.2842	49.8599	51.02	51.2153	-3.4541	-3.8784	-2.7183	-2.523	170
1350	53.9932	49.916	49.5186	50.7051	50.874	-4.0772	-4.4746	-3.2881	-3.1192	172
1355	53.833	49.6138	49.1895	50.3936	50.5864	-4.2192	-4.6435	-3.4394	-3.2466	171
1400	53.3223	49.6162	49.1841	50.4106	50.5811	-3.7061	-4.1382	-2.9117	-2.7412	175
1405	53.4033	49.4341	49.02	50.2725	50.4473	-3.9692	-4.3833	-3.1308	-2.956	176
1410	51.5483	49.5693	49.1514	50.4199	50.5811	-3.979	-4.3969	-3.1284	-2.9672	177

NRC FORM 366A (9-83)

*U.S. GPO: 1988-520-429 00010

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
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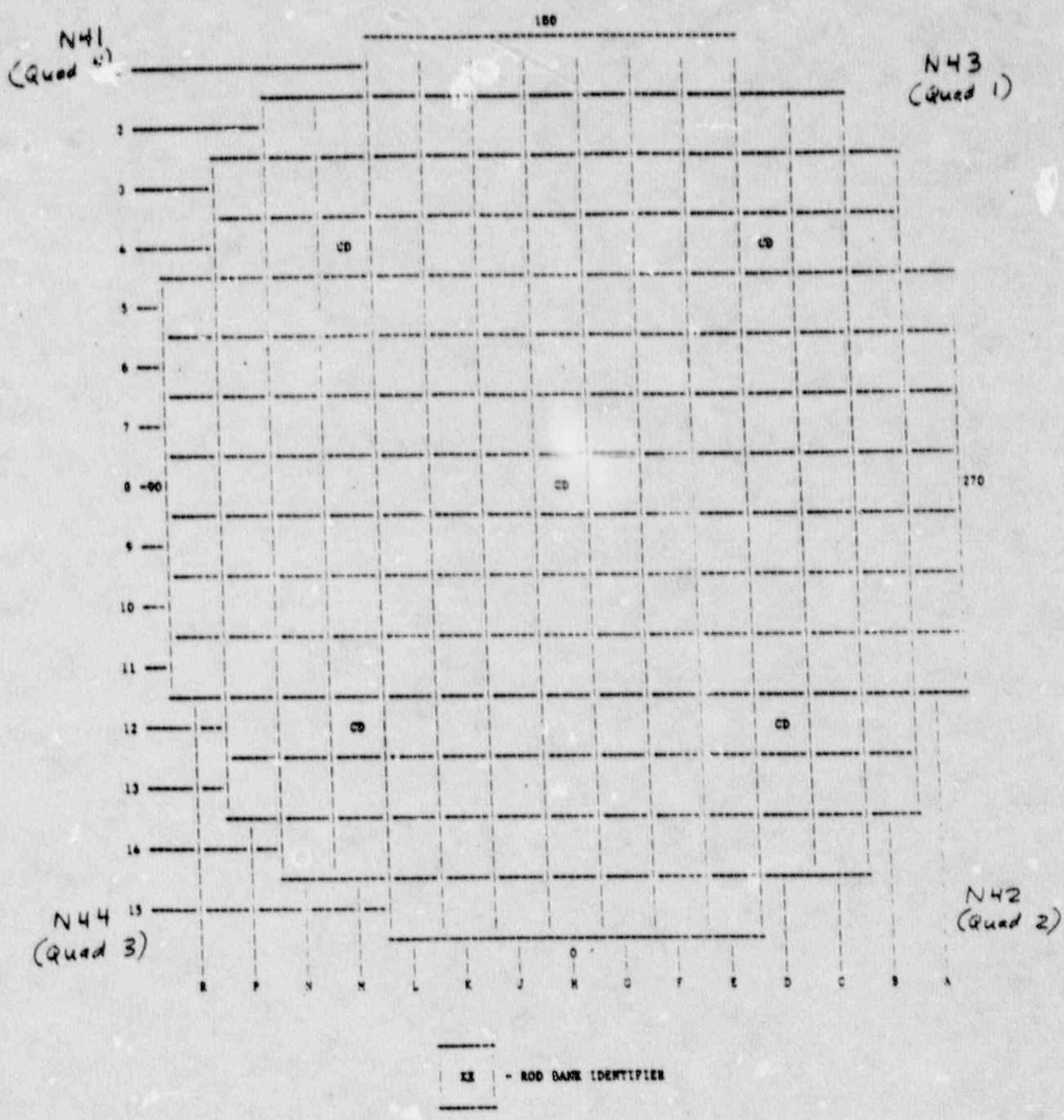
McGuire Nuclear Station, Unit 2	0 5 0 0 0 3 7 0	9 0	— 0 0 4	— 0 0	1 2 OF 1 3

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

M2C9

CONTROL ROD PLACEMENTS



XX - ROD BANK IDENTIFIER

ALARM SUMMARY TYPER DATA

Power Mismatch Values

Time	Power Mismatch Value	Channels Affected
1137	-8.5	All
1144	-1.4	All
1146	-4.0	All
1338	-2.9	3
	-2.7	4
1348	-3.1	3
1349	-3.0	4
1355	-2.99	4
1357	-3.04	4
1358	-2.92	3
	-2.74	4
1400	-3.03	3
1405	-3.01	4
1406	-2.92	4
1408	-3.13	4
1409	-2.96	4
1411	-3.1	4
1508	-2.95	4
1510	-3.08	4
1522	-2.96	4
1524	-3.02	4
1539	-2.95	4