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March 31, 2000
PY-CEI/NRR-2472L

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

Perry Nuclear Power Plant
Docket No. 50-440

Ladies and Gentlemen:

Enclosed is Licensee Event Report 2000-002, "Inadequate Data Validation Checks Result in Missed Power Distribution Limits Surveillance Requirements."

If you have questions or require additional information, please contact Mr. Gregory A. Dunn, Manager - Regulatory Affairs, at (440) 280-5305.

Very truly yours,



Enclosure

cc: NRC Project Manager
NRC Resident Inspector
NRC Region III

IE22

FACILITY NAME (1)

PERRY NUCLEAR POWER PLANT, UNIT 1

DOCKET NUMBER (2)

050000440

PAGE (3)

1 OF 3

TITLE (4) Inadequate Data Validation Checks Result in Missed Power Distribution Limits Surveillance Requirements

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 NAME	DOCKET NUMBER
3	1	2000	2000	-- 002	-- 00	3	31	2000	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	POWER LEVEL (10)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)			
		20.2201(b)	20.2203(a)(1)	20.2203(a)(2)(i)	20.2203(a)(2)(iv)
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LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Sterling W. Sanford, Senior Compliance Engineer	(440) 280-5361

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

SUPPLEMENTAL REPORT EXPECTED (14)	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
<input checked="" type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE).	<input type="checkbox"/> NO			

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On March 1, 2000, reactor engineering personnel identified that the parameters on 3D Monicore reports, listing thermal limits and other plant parameters, were not varying as expected. The 3D Monicore was determined to be using static (historical) data instead of current plant data to calculate the thermal limits. This condition existed since an Integrated Computer System (ICS) reset was performed on February 28, 2000. This condition was corrected on March 1, 2000.

The Technical Specification (TS) Power Distribution Limits Surveillance Requirements (SRs) verify that plant parameters are within the specified limits once per 24 hours. During the interval that static data was being used, these SRs were not satisfied. Failure to perform these SRs and to restore 3D Monicore configuration within the required completion time is a condition prohibited by TS and, therefore, a Licensee Event Report is required by 10 CFR 50.73 (a)(2)(i)(B). Subsequently, reactor engineering personnel evaluation concluded with a high degree of confidence that plant parameters were within TS thermal limits during this interval.

Two primary causes for this condition were identified, both attributed to inadequate software design. A parameter validation check is being performed by operations during the conduct of the SRs to ensure current plant data is being utilized to calculate thermal limits. The ICS software is scheduled to be modified by April 6, 2000.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
PERRY NUCLEAR POWER PLANT, UNIT 1	05000440	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 3
		2000	-- 002 --	00	

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

I. INTRODUCTION

The Perry Nuclear Power Plant (PNPP) Integrated Computer System (ICS) [JA] consists of two subsystems, a primary and a backup. One subsystem normally acquires data to be used as an input to the General Electric 3D Monicore computer that calculates power distribution limits or thermal limits. The ICS supplier designed the software interface with input from General Electric. The ICS was installed during refueling outage seven in the spring of 1999. The ICS is designed such that under certain conditions the backup will automatically take control from the primary to supply plant data.

II. EVENT DESCRIPTION

On March 1, 2000, reactor engineering personnel identified that the parameters on 3D Monicore reports were not varying as expected. Upon further investigation, a software process was determined not to have terminated as expected and reactivated during an ICS reset. This software process was providing the same static (historical) data on each update and overwriting the current plant data. Therefore, 3D Monicore was not utilizing current plant data to calculate the thermal limits. This condition existed since the ICS was manually reset on February 28, 2000, at approximately 0930 hours, and was subsequently corrected on March 1, 2000, at approximately 2100 hours.

The Technical Specification (TS) Power Distribution Limits Surveillance Requirements (SRs) verify that plant parameters are within specified limits once per 24 hours. During the 55-hour interval that the 3D Monicore was using static data, these SRs were not satisfied for approximately 31 hours. Failure to perform the SRs and to restore the 3D Monicore configuration within the required completion time is a condition prohibited by TS, and, therefore, a Licensee Event Report is required by 10 CFR 50.73 (a)(2)(i)(B).

During the interval that the thermal limits were not being calculated with current plant data, the plant was at 100 % of rated thermal power with essentially steady state conditions. There were no other systems, structures, or components that contributed to this condition.

III. EVENT CAUSE

Two primary causes were identified; both attributed to inadequate software design. The software specification and the subsequent communications between the ICS supplier and General Electric were not of sufficient detail to ensure an adequate software interface design. The ICS supplier incorrectly understood that 3D Monicore used the date and time provided to ensure the data was current. However, General Electric had specified the update to cease when the data was not current. Therefore, software controls were insufficient to ensure current data was being used. Additionally, the backup should have attained complete control of the ICS when the proper data was not received from the primary. The incomplete transfer required the ICS to be reset, which initiated the static data transfer to 3D Monicore.

IV. SAFETY ANALYSIS

The thermal limits are maintained as specified to ensure that the fuel design is not exceeded or core damage does not occur during normal operation and anticipated operational occurrences. The thermal limit values are verified to satisfy the associated TS Limiting Condition for Operation once per 24 hours during normal operation to ensure that the reactor is operated within the assumptions of the safety analysis. The frequency of determining thermal limits is based on both engineering judgement and the recognition of the slowness of changes in power distribution under normal conditions.

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

During the interval that 3D Monicore input data was static, PNPP was at steady state full power. The actual plant parameters remained within one percent of the static data provided to 3D Monicore. Additionally, reactor engineering personnel performed back calculations of thermal limits based on the actual known plant data using core simulation software. The simulation results provided a high degree of confidence that the specified limits were not exceeded. Also, a review determined that there were no other occurrences of 3D Monicore operating with static data since installation of the ICS in the previous refueling outage. Therefore, there is no safety significance to this condition.

V. CORRECTIVE ACTIONS

On March 1, 2000, at approximately 2100 hours, the ICS configuration was restored and plant parameters were verified to be within the specified thermal limits.

On March 2, 2000, the operations staff was provided additional direction on performing the thermal limit surveillances. A parameter validation check is now performed during the surveillance to ensure the 3D Monicore is using current plant data.

The ICS software is scheduled to be modified by April 6, 2000, to correct the software deficiencies identified in this LER.

VI. PREVIOUS SIMILAR EVENTS

A review of PNPP Licensee Event Reports (LERs) from the last 5 years was performed. PNPP LER 1999-007 discussed a condition where feedwater temperature compensation for core thermal power determination had been disabled, resulting in exceeding core thermal power limitations. The corrective actions associated with LER 1999-007 were to ensure interface reviews were performed for future software changes and to define ICS interrelations. Since the plant ICS had been installed previous to LER 1999-007 and due to the multiple errors that occurred, these actions could not have reasonably been expected to prevent this condition.

In 1996, a condition was identified where the plant computer system (subsequently replaced by ICS) was providing static data to 3D Monicore. A corrective action implemented a software validation check that ensured current plant data was being utilized by 3D Monicore. Also, a parameter validation check was identified, but not implemented. This validation check may have prevented this event.

Energy Industry Identification System (EIIIS) Codes are identified in the text by square brackets [XX].