

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

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 FACIL: 50-261 H. B. Robinson Plant, Unit 2, Carolina Power & Light C 05000261
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 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 88-008-00: on 880324, error in analytic factor decks used to process in-core detector measurements & for core power distributing mapping identified. Caused by oversight. Fuel vendor revised in-core input decks. W/880526 ltr.

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 TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2										DOCKET NUMBER (2) 0 5 0 0 0 2 6 1 1 OF 0 3				PAGE (3) 1 OF 0 3									
TITLE (4) OPERATION IN VIOLATION OF TECHNICAL SPECIFICATIONS DUE TO ANALYTIC INPUT 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	4	2	0	8	8	8	8	0	0	8	0	0	0	5	2	6	8	8	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)																					
N		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)									
0		20.405(a)(1)(ii)				50.36(c)(2)				50.73(a)(2)(vii)				OTHER (Specify in Abstract below and in Text, NRC Form 356A)									
		20.405(a)(1)(iii)				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 F. L. Legette - Senior Control Operator										TELEPHONE NUMBER													
										AREA CODE 8 0 3 3 8 3 - 1 2 5 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													
B																							
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 March 24, 1988, with Unit No. 2 operating at sixty percent power, the fuel vendor for H. B. Robinson notified the licensee's Nuclear Fuel Section (NFS) of an error in the analytic factor decks used to process in-core detector measurements and for core power distribution mapping. The error was caused by an oversight during the fuel vendors analysis when incorrect isotopic data were assigned to a Cycle 12 reinsert assembly. Subsequent evaluation of the error revealed that, as a result, nonconservative axial flux difference target bands were utilized during the period of June 29 through August 13, 1987. Operation during this period of time occurred without the use of the Axial Power Distribution Monitoring System, as required by Technical Specification 3.10.2.2.2. However, because of conservatism in the process, no unsafe condition resulted from operating contrary to Technical Specification Limits during this period.

The fuel vendor has revised the In-core Input Decks, and the NFS has reanalyzed the appropriate flux maps with the corrected data.

The licensee notified the NRC via the ENS of this condition on April 20, 1988, pursuant to 10CFR50.72(b)(1)(ii). This report is submitted pursuant to 10CFR50.73(a)(2)(ii).

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

FACILITY NAME (1) H. B. ROBINSON STEAM ELECTRIC PLANT UNIT NO. 2	DOCKET NUMBER (2) 0 5 0 0 0 2 6 1 8 8 - 0 0 8 - 0 0	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			

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

I. DESCRIPTION OF EVENT

On March 24, 1988, with Unit No. 2 at 60% power, Advanced Nuclear Fuel Corporation (ANF), the fuel vendor for H. B. Robinson, notified the licensee's Nuclear Fuel Section (NFS) that an error had been identified in the analytic factor decks supplied as input to the IN-CORE code.¹ IN-CORE processes moveable in-core detector measurements and performs core power distribution mapping to ensure compliance with Technical Specifications on Thermal Peaking limits. The review that identified the error was a result of an investigation by ANF based on variations in the predicted versus measured power distribution noted by ANF and the licensee.

Subsequent flux map reevaluations by the licensee using corrected data indicated that for the period of June 29, 1987, through August 13, 1987, the Allowable Power Level (APL) should have been 99.98% rather than 100.22% (as calculated with the original set of analytic factor decks) while operating within the $\pm 5\%$ Axial Flux Difference (AFD) target bands as defined under the fuel vendor's Power Distribution Control Methodology (PDC-II). Thus, Plant operation may have been in violation of Technical Specification 3.10.2.2.2 (initiation of Axial Power Distribution Monitoring System or APDMS) at those times when power levels exceeded 99.98%. The PDC-II methodology assures the total peaking factor, FQ^T , does not exceed the values assumed as initial conditions for the Loss of Coolant Accident Analysis (LOCA). To ensure peaking factor conformance, Technical Specification 3.10.2.2.2 requires use of the Axial Power Distribution Monitoring System (APDMS) when power levels exceed the APL. The licensee notified the NRC via the ENS on April 20, 1988, pursuant to 10CFR50.72(b)(1)(ii) of a "potential" unanalyzed condition that could compromise Plant safety.

II. CAUSE OF EVENT

Due to a limitation in an auxiliary computer code which was not recognized during the analysis, incorrect isotopic data were assigned by ANF to a reinsert assembly in developing the PDQ computer input used to generate the IN-CORE analytic factor decks. This oversight was not detected by the ANF's normal Quality Assurance checks. The error was subsequently incorporated into the analytic factor data provided for H. B. Robinson Unit No. 2, Cycle 12.

III. ANALYSIS OF EVENT

A. Reason Reportable

This condition is being reported to the NRC pursuant to 10CFR50.73(A)(2)(ii) as a "potential" unanalyzed condition that could compromise Plant safety.

¹H. B. Robinson Steam Electric Plant, Unit No. 2, is a Westinghouse 700 MW Pressurized Water Reactor, in commercial operation since March, 1971.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

FACILITY NAME (1) H. B. ROBINSON STEAM ELECTRIC PLANT UNIT NO. 2	DOCKET NUMBER (2) 0 5 0 0 0 2 6 1	LER NUMBER (8)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
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TEXT (If more space is required, use additional NRC Form 368A's) (17)

B. Safety Assessment

Based on the original flux map analysis with incorrect analytic factor decks, guidance was provided to the control operators which allowed operation at 100% power without the use of APDMS, 0.02% above the correct APL of 99.98% for the $\pm 5\%$ AFD bands. To this extent, the plant could have exceeded the conditions for which the safety analysis is valid.

However, this violation is considered insignificant, well within normal approximation and uncertainty parameters, and is of no significance to safety for the following reasons:

- Recent vendor analysis has demonstrated that an additional 4% margin is available in the V(z) bounding function applied to the measured FQ per PDC-II methodology. In this case, therefore, a minimum of 3% margin to thermal limits existed.
- Uncertainty in the determination of Plant power levels during normal operation greatly exceed 0.02%. This uncertainty is factored into the LOCA analysis by requiring 102% power as an initial analysis condition.
- Evaluation of the reanalyzed flux map showed that the map yielded very conservative results based on historical experience with the IN-CORE code.
- The flux map in question indicated a measured FQ of 1.933. The Technical Specification limit is 2.32. Therefore, the 20% difference between these values represents a buffer that would sufficiently allow for uncertainties in potential transient operations.

IV. CORRECTIVE ACTIONS

The Nuclear Fuel Vendor for H. B. Robinson has corrected the error and supplied corrected analytic factor decks. All Cycle 12 flux maps have been reanalyzed and the only period of nonconservative operation identified was the aforementioned. All remaining Cycle 12 flux maps will be processed with the corrected decks.

In addition, the Fuel Vendor is strengthening its internal procedures to prevent recurrence.

The licensee's Nuclear Fuel Section has established additional acceptance criteria to screen for errors of this nature.

V. ADDITIONAL INFORMATION

A. There were no component failures applicable to this condition.

B. There have been no previous similar events of this nature.

ROBINSON NUCLEAR PROJECT DEPARTMENT
POST OFFICE BOX 790
HARTSVILLE, SOUTH CAROLINA 29550
MAY 26 1988

Robinson File No: 13510C

Serial: RNP/88-2504
(10 CFR 50.73)

United States Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261
LICENSE NO. DPR-23
LICENSEE EVENT REPORT 88-008-00

Gentlemen:

The enclosed Licensee Event Report (LER) is submitted in accordance with
10 CFR 50.73 and NUREG-1022 including Supplements No. 1 and 2.

Very truly yours,



R. E. Morgan
General Manager
H. B. Robinson S. E. Plant

RDC:lko

Enclosure

cc: Dr. J. N. Grace
Mr. L. W. Garner
INPO

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