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AUTH.NAME AUTHOR AFFILIATION
CROOK,R.D. Carolina Power & Light Co.
PEARSON,M.P. Carolina Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 93-020-00:on 931119,TS violation occurred due to exceeding F-Delta-H Hot channel factor.Caused by managment deficiency.Six misloaded fuek assemblies repositioned in core to compensate anomoly.w/931231 ltr.

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CP&L

Carolina Power & Light Company
Robinson Nuclear Plant
PO Box 790
Hartsville SC 29550

Robinson File No: 13510C
Serial: RNP/93-3242
(10CFR50.73)

United States Nuclear Regulatory Commission
Attn: Document Control Desk
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DEC 3 1 1993

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261
LICENSE NO. DPR-23
LICENSEE EVENT REPORT NO. 93-020-00

Gentlemen:

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

Very truly yours,

Marc P. Pearson
Plant General Manager

RDC:lst
Enclosure
c: Mr. S. D. Ebneter
Mr. W. T. Orders
INPO

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IE22
1/1

Enclosure to Serial: RNP/93-324

NRC FORM 366 (5-92) | U.S. NUCLEAR REGULATORY COMMISSION | APPROVED BY OMB NO. 3150-0104 EXPIRES 5/31/95

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
H. B. ROBINSON UNIT NO. 2	05000 261	1 OF 4

TITLE (4)
TECH. SPEC. VIOLATION DUE TO EXCEEDING F-DELTA-H HOT CHANNEL FACTOR

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
11	19	93	93	-- 020 --	00	01	03	94		05000
									FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9)	N
POWER LEVEL (10)	30

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)

	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)	X	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 (Include Area Code)
R. D. Crook, Sr. Specialist - Regulatory Affairs	(803) 383-1179

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 15 single-spaced typewritten lines) (16)

On December 3, 1993, H. B. Robinson Engineering personnel determined that while operating at 30% reactor power prior to shutdown on November 17, 1993, the Technical Specification 3.10.2.1, hot channel factor F-Delta-H limit, was exceeded by 0.36 percent of the Core Operating Limit Report limit value. The reason that the thermal limit was exceeded was that fuel rods in certain assemblies in the core were not loaded as designed which had the effect of accentuating power peaking in the core, causing the thermal limit to be exceeded. A preliminary determination had been made on November 19, 1993, that the Technical Specification limit was exceeded, and the NRC was notified as such at 1440 hours via the ENS. A followup notification was made on December 6, 1993, at 1748 hours to provide the results of the validated calculation.

This report is submitted pursuant to 10 CFR 50.73(a)(2)(i) as a condition prohibited by the plant's Technical Specifications.

NRC FORM 366A (5-92) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
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LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
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H. B. Robinson, Unit No. 2	505000	93	-- 020 --	00	2 OF 4

TEXT (If more space is required, use additional copies of NRC Form 366A) (7)

I. DESCRIPTION OF EVENT

On December 3, 1993, H. B. Robinson Engineering personnel determined that while operating at 30% reactor power prior to shutdown on November 17, 1993, the Technical Specification 3.10.2.1, hot channel factor F-Delta-H limit, was exceeded by 0.36 percent of the Core Operating Limit Report limit value. The reason that the thermal limit was exceeded was that fuel rods in certain assemblies in the core were not loaded as designed which had the effect of accentuating power peaking in the core, causing the thermal limit to be exceeded. A preliminary determination had been made on November 19, 1993, that the Technical Specification limit was exceeded, and the NRC was notified as such at 1440 hours via the ENS. A follow-up notification was made on December 6, 1993, at 1748 hours to provide the results of the validated calculation.

The following sequence of events provides the major occurrences that contributed to this event:

On November 15, 1993, following start-up and power ascension from Refueling Outage 15, the data for the first 30% power flux map was taken by licensee Reactor Engineering and transmitted to the CP&L Nuclear Fuel Section (NFS) for evaluation. The NFS completed the first flux map on November 16, 1993. This flux map indicated a power tilt of 2.8%, which exceeded the acceptance criteria of less than 2%. The flux map also indicated that the peaking factors were higher than expected but less than the Technical Specification limits. The flux map program also produced a comparison of "predicted" versus "measured" fuel bundle relative powers. This comparison indicated higher than predicted powers (approximately 14% higher) in the core areas surrounding certain fuel assemblies (later determined to have been misfabricated assemblies) and also indicated lower than expected relative powers (approximately 10%) in other localized areas of the core. Copies of the flux map results were transmitted to the plant and to the fuel vendor.

A second 30% power flux map was taken and evaluated by the NFS on November 16, 1993. This map produced results similar to the first flux map indicating a power tilt of approximately 2.7% and peaking factors higher than expected. It also indicated anomalous, lower than predicted relative powers in the same localized core areas. The results of the second flux map were also transmitted to the plant and to the fuel vendor.

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LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
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H. B. Robinson, Unit No. 2	505000	93	-- 020 --	00	3 OF 4

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

I. DESCRIPTION OF EVENT (Continued)

At approximately 0100 hours on November 17, 1993, the plant was taken to hot shutdown conditions for unrelated reasons.

At approximately 1300 hours on November 18, 1993, the fuel vendor notified CP&L of the discovery of a misfabrication of six fuel assemblies loaded in the H. B. Robinson core. Based on this notification, licensee management directed that the plant be taken to cold shutdown condition.

II. CAUSE OF EVENT

The reason that the thermal limit was exceeded was that fuel rods in certain assemblies in the core were not loaded as designed which had the effect of accentuating power peaking in the core, causing the thermal limit to be exceeded. The root cause of this event is attributed to management deficiency. Licensee management failed to ensure that the fuel assemblies fabricated by the manufacturer met the design requirements.

III. ANALYSIS OF EVENT

Analyses have confirmed that this event had no impact on plant safety. Further, continued operation of the core, as misloaded, could not have created a safety hazard.

Subsequent evaluation based on accurate modeling of the misload indicates that a 0.36% violation of the Technical Specification F-Delta-H thermal limit occurred (1.953 actual versus a limit of 1.946 at 30% power). Analyses further indicate that if the misloaded core had operated at full power, this would have resulted in a "true" F-Delta-H value of 1.797 versus a limit of 1.70. However, the analyses also confirm that there would be no violation of core safety limits since the cycle-specific undetected Bundle Misloading Event was analyzed to yield a maximum F-Delta-H value of 1.82. This misloading event was bounded by the static RCCA Misalignment Analysis which concludes that a F-Delta-H of 1.94 can be tolerated during full power operation without Departure from Nucleate Boiling Ratio (DNBR) safety significance. The Power Distribution Monitoring System detected this anomaly at 30% power.

This report is submitted pursuant to 10 CFR 50.73(a)(2)(i) as a condition prohibited by the plant's Technical Specifications.

NRC FORM 366A (5-92) U.S. NUCLEAR REGULATORY COMMISSION

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

IV. CORRECTIVE ACTIONS

Adverse Condition Report 93-305 was initiated to determine the root cause of this event and to establish corrective actions. The schedule for corrective action completion has been established commensurate with plant start-up and safe operation considerations.

The six misloaded fuel assemblies were repositioned in the core in order to compensate for the power anomaly.

The Nuclear Fuels Section has affirmed to H. B. Robinson Plant Management that fuel assemblies, safety analyses, and other relevant analyses and documentation meet design, licensing and performance requirements.

H. B. Robinson management has conducted a questioning review of formal statements from the fuel vendor, the Nuclear Fuel Section, and CP&L Reactor Engineering that the fuel design, manufacturing, safety analyses, receiving, handling, inspections, and core placement meet requirements.

V. ADDITIONAL INFORMATION

This event was reported to the NRC pursuant to 10 CFR 21 as a deviation which existed in the nuclear fuel assemblies (RNP/93-3113, December 17, 1993).

A. Component Failures

None

B. Previous Similar Events

None