NRC FORM 195 (2-76)

U.S. NUCLEAR REGULATORY COMMISSION

DOCKET NUMBER 50-261

FILE NUMBER INCIDENT REPORT

NRC DISTRIBUTION FOR PART 50 DOCKET MATERIAL

TO:	FROM:	DATE OF DOCUMENT
Mr Moseley	Carolina Power & Light Co Raleigh, NC H R Banks	8-19-76
		DATE RECEIVED 9-3-76

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				one signed

DESCRIPTION

Ltr trans the following:

ENCLOSURE

Licensee Event Report (RO#76-14) on 8-5-76 concerning developments regarding Westinghouse safety analyses result in significant impacts to LOCA analysis peak clad temperatrue & rod bow DNB penalty.....(1 cy rec'd)

PLANT NAME: Robinson #2

NOTE: IF PERSONNEL EXPOSURE IS INVOLVED SEND DIRECTLY TO KREGER/J..COLLINS

FOR ACTION/INFORMATION 9-8-76 ehf

BRANCH CHIEF:	Reid		
W/3 CYS FOR ACTION			
LIC..ASST.:	Ingram		
W/ 1 CYS			
ACRS 16 CYS ~~HOLDING~~/SENT TO LA			

INTERNAL DISTRIBUTION

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EXTERNAL DISTRIBUTION

CONTROL NUMBER 8979

LPDR: Hartsville, SC			
TIC:			
NSIC:			

CP&L
Carolina Power & Light Company

August 19, 1976

Regulatory Docket File

FILE: NG-3513 (R) SERIAL: NG-76-1131

Mr. Norman C. Moseley, Director
U. S. Nuclear Regulatory Commission
Region II, Suite 818
230 Peachtree Street, N.W.
Atlanta, Georgia 30303

Dear Mr. Moseley:

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET 50-261
LICENSE NO. DPR-23
LICENSEE EVENT REPORT 76-14

In accordance with Section 6.9.2.a of the Technical Specifications for the H. B. Robinson Steam Electric Plant, Unit 2, the attached Licensee Event Report is submitted. This report fulfills the requirement for a written report within fourteen (14) days of a reportable occurrence and is in accordance with the format set forth in Regulatory Guide 1.16, Revision 4.

Yours very truly,

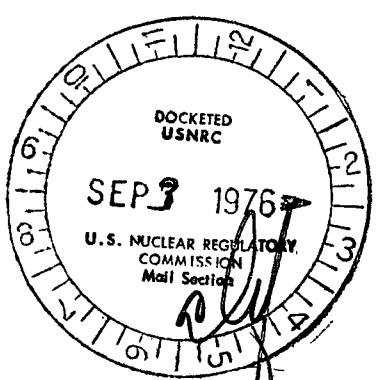
C. S. Bohanan for H. R. Banks

H. R. Banks
Manager
Nuclear Generation

CSB:jfc

Attachment

cc: Messrs. W. G. McDonald
E. Volgenau



8979

336 Fayetteville Street • P. O. Box 1551 • Raleigh, N. C. 27602

LICENSEE EVENT REPORT

CONTROL BLOCK: [ ] (1–6)

[PLEASE PRINT ALL REQUIRED INFORMATION]

LICENSEE NAME	LICENSE NUMBER	LICENSE TYPE	EVENT TYPE
01 SCHBR2 (7–8, 9–14)	00-00000-00 (15–25)	4110 (26–30)	01 (31–32)

CONT	CATEGORY	REPORT TYPE	REPORT SOURCE	DOCKET NUMBER	EVENT DATE	REPORT DATE
01 (7–8)	[ ] (57–58)	T (59)	L (60)	050-0261 (61–68)	080576 (69–74)	081976 (75–80)

EVENT DESCRIPTION

02 Developments regarding Westinghouse safety analyses result in significant impacts to
03 LOCA analysis peak clad temperature and rod bow DNB penalty. As a result, CP&L has
04 reduced its value of limiting F_Q from 2.26 to 2.10 and accounted for an increase in
05 rod bow DNB penalty be adjusting limiting $F_{\Delta H}$. CP&L had recently reduced limiting
06 F_Q (See HBR-2 RO 76-6) as a result of a similar development. (HBR-2 RO 76-14)

SYSTEM CODE	CAUSE CODE	COMPONENT CODE	PRIME COMPONENT SUPPLIER	COMPONENT MANUFACTURER	VIOLATION
07 ZZ (9–10)	F (11)	ZZZZZZ (12–17)	Z (43)	Z990 (44–47)	N (48)

CAUSE DESCRIPTION

08 Westinghouse incorrectly assumed the fluid temperature in the vessel head as T_{cold}
09 Pending further investigation this temperature will be treated as T_{hot} in the LOCA
10 analysis. Recent tests indicated that an increase in rod bow penalty was justified.

FACILITY STATUS	% POWER	OTHER STATUS	METHOD OF DISCOVERY	DISCOVERY DESCRIPTION
11 Z (9)	100 (10–12)	NA (13–44)	D (45)	Notified by Westinghouse (46–80)

FORM OF ACTIVITY RELEASED	CONTENT OF RELEASE	AMOUNT OF ACTIVITY	LOCATION OF RELEASE
12 Z (9)	Z (10)	NA (11–44)	NA (45–80)

PERSONNEL EXPOSURES

NUMBER	TYPE	DESCRIPTION
13 000 (9–11)	[ ] (12)	NA (13–80)

PERSONNEL INJURIES

NUMBER	DESCRIPTION
14 000 (9–11)	NA (12–80)

OFFSITE CONSEQUENCES

15 NA (9–80)

LOSS OR DAMAGE TO FACILITY

TYPE	DESCRIPTION
16 Z (9)	NA (10–80)

PUBLICITY

17 NA (9–80)

ADDITIONAL FACTORS

18 Cause description cont'd . . . CP&L has complied with Westinghouse recommendations
19 pending further investigations. Supplemental Information attached.

NAME: J. B. McGirt PHONE: 332-1351

GPO 881-667

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
SUPPLEMENTAL INFORMATION FOR
REPORTABLE OCCURRENCE 76-14

1. Report No: 50-261/76-14

2a. Report Date: August 18, 1976

2b. Occurrence Date: August 5, 1976

3. Facility: H. B. Robinson SEG Plant
Hartsville, SC 29550

4. Identification of Occurrence:

Recent developments regarding Westinghouse safety analyses significantly impact the peak clad temperature (PCT) of the LOCA analysis and the rod bow DNB penalty. They involve the treatment of the fluid temperature in the Reactor Vessel (RV) upper head region and the results of tests at a university involving rod bow. In both cases, the developments resulted in the reduction of limiting values addressed in Section 3.10.2 of the Technical Specifications. This constitutes a reportable occurrence as set forth in Technical Specification 6.9.2.a.b.

5. Conditions Prior to Occurrence:

The unit was operating at full power with about 6900 MWD/MTU burnup into Cycle-4.

6. Description of Occurrence:

On August 5, 1976, Carolina Power & Light Company was notified by Westinghouse Electric Corporation of recent developments that bear on the Westinghouse safety analyses. The developments which affect H. B. Robinson Unit No. 2 are summarized below:

1. Past ECCS analyses treated the fluid temperature in the RV upper head region as equal to vessel inlet temperature (T_{cold}). Recent tests and methods discount this and indicate the temperature to be nearer to that of T_{hot}. The consequences of this is an impact on peak clad temperature on the LOCA analysis which results in a necessary reduction in the limiting value of F_Q.

2. A separate development involved a recent test which indicated that the rod bow DNB penalty is higher than previously used as a licensing basis. Test data shows that previously developed methods for accounting for the affect of fuel rod bowing on DNB may not contain adequate thermal margin when unheated rods are present (such as thimble tubes). Incorporating the additional penalty required a reduction of the limiting value of $F_{\Delta H}$.

As an interim action, the limiting values for F_Q and $F_{\Delta H}$, as described in Section 3.10.2 of the Technical Specification were reduced to 2.27 and 1.49, respectively in accordance with Westinghouse recommendations.

On August 12, 1976, Carolina Power & Light Company was notified by the NRC that restrictions, conservative to the interim measures, would be necessary. The new operating limits were to result from revised methods of evaluating PCT, namely, assuming the fluid temperature in the upper head region to be equal to T_{hot}. From this new analysis, a revised PCT was to be determined and limiting F_Q adjusted accordingly. As a result of this new analysis, a limiting value for F_Q was set at 2.10.

In addition of the notification of adjustment to F_Q, the NRC clarified their position on the rod bow DNB penalty. In particular, the $F_{\Delta H}$ limit was to be reduced for the expected loss of thermal margin. This reduction was to be treated on a region by region basis depending on the cycle residency of each region as follows:

Cycle Residency	Limiting $F_{\Delta H}$
1	1.550
2	1.528
3	1.512

The limits above include the steam generator tube plugging penalty and a margin for power operation limited to 2200 MWt. The margin results from the initial analysis being performed for a power level of 2300 MWt.

As a result of the NRC order, on August 18, 1976, the interim measures were abandoned and the new values for F_Q and $F_{\Delta H}$ were complied with.

7. Designation of Apparent Cause of Occurrence:

The occurrences resulted from a failure by Westinghouse to account for the two effects, addressed above, in their safety analyses. The issues were judged by the Westinghouse Safety Review Committee and the committee's findings were reported to the NRC as generic problems as an Unreviewed Safety Question for operating plants. The issues and the development of measures to answer the issues are presented above under Description of Occurrence.

8. Analysis of Occurrence:

This occurrence did not significantly affect the present operating conditions of the Robinson plant since current values of F_Q including all uncertainties and penalties are well below this new limit.

Similarly, present measured values of $F_{\Delta H}$ are well below the new limitations which results in no significant impact to present operating conditions.

With the advent of the steam generator tube plugging penalty, operation of the Axial Power Distribution Monitoring System (APDMS) was initiated for power levels at or above 98% of rated power. With the lower value of limiting F_Q, addressed in this report, initiation of APDMS surveillance will be required at 90% of rated power. With the conservatisms employed with the measurement of the APDMS paramater F(Z)S(Z), which is related to F_Q, certain limitations on operation may occur during transient conditions. The potential for limitations will be evaluated as the appropriate conditions occur.

9. Corrective Action:

As an immediate corrective action, the recommendations expressed by Westinghouse on August 5, 1976, were followed. This action was an interim measure which was superceded by the NRC order of August 12, 1976. As required by the order, Carolina Power & Light has complied with the measures and adjustments to operating limits described above effective August 18, 1976. The limitations will be complied with pending further developments regarding these items.

10. Previous Failures:

On March 12, 1976, Carolina Power & Light was notified of a possible error in the LOCA analysis resulting from steam generator tube plugging. As an interim measure, the limiting value of F_Q was reduced from 2.30 to 2.26.