

AEC DISTRIBUTION FOR PART 50 DOCKET MATERIAL  
(TEMPORARY FORM)

CONTROL NO: 740

FILE: \_\_\_\_\_

FROM: Carolina Power & Light Company Raleigh, N. C. 27602 E. E. Utley			DATE OF DOC 1-23-74	DATE REC'D 1-28-74	LTR X	MEMO	RPT	OTHER
TO: J. F. O'Leary			ORIG 3 signed	CC	OTHER	SENT AEC PDR X SENT LOCAL PDR X		
CLASS	UNCLASS XXXX	PROP INFO	INPUT	NO CYS REC'D 40	DOCKET NO: 50-261			

DESCRIPTION:

Ltr trans the following:

**DO NOT REMOVE**

**ACKNOWLEDGED**

PLANT NAME: H. B. Robinson Unit #2

ENCLOSURES:

REPORT No. 50-261/74-2: reporting abnormal occurrence on 1-15-74 & 1-16-74, in which the plant computer failed due to a faulty core memory card

FOR ACTION/INFORMATION 1-28-74 GC

BUTLER(L) W/ Copies	SCHWENCER(L) W/ Copies	ZIEMANN(L) W/ Copies	REGAN(E) W/ Copies
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KNIEL(L) W/ Copies	✓SCHEMEL(L) W/ 7Copies	YOUNGBLOOD(E) W/ Copies	W/ Copies

INTERNAL DISTRIBUTION

<u>REG FILE</u> ✓AEC PDR ✓OGC, ROOM P-506A ✓MUNTZING/STAFF ✓CASE GIAMBUSSO BOYD MOORE (L)(BWR) DEYOUNG(L)(PWR) ✓SKOVHOLT (L) P. COLLINS DENISE ✓BEG OPR ✓FILE & REGION(3) ✓MORRIS ✓STEELE	<u>TECH REVIEW</u> ✓HENDRIE ✓SCHROEDER ✓MACCARY ✓KNIGHT ✓PAWLICKI ✓SHAO ✓STELLO ✓HOUSTON ✓NOVAK ✓ROSS ✓IPPOLITO ✓TEDESCO ✓LONG ✓LAINAS ✓BENAROYA ✓VOLLMER	DENTON GRIMES GAMMILL KASTNER BALLARD SPANGLER  ✓ENVIRO MULLER DICKER KNIGHTON YOUNGBLOOD REGAN PROJECT LDR  HARLESS	<u>LIC ASST</u> DIGGS (L) GEARIN (L) GOULBOURNE (L) LEE (L) MAIGRET (L) SERVICE (L) SHEPPARD (E) SMITH (L) ✓TEETS (L) WADE (E) WILLIAMS (E) WILSON (L)	<u>A/T IND</u> BRAITMAN SALTZMAN B. HURT  <u>PLANS</u> MCDONALD DUBE w/Input  <u>INFO</u> C. MILES ✓B. KING (RO)
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EXTERNAL DISTRIBUTION

✓1 - LOCAL PDR Hartville, S. C.	(1)(2)(10)-NATIONAL LAB'S	1-PDR-SAN/LA/NY
✓1 - DTIE(ABERNATHY)	1-ASLEP(E/W Bldg, Rm 529)	1-GERALD LELLOUCHE
✓1 - NSIC(BUCHANAN)	1-W. PENNINGTON, Rm E-201 GT	BROOKHAVEN NAT. LAB
1 - ASLB(YORE/SAYRE/ WOODARD/"H" ST.	1-CONSULTANT'S	1-AGMED(Ruth Gussman)
✓16 - CYS ACSRS <del>XXXXXX</del> SENT TO LIC. ASST.	NEWMARK/BLUME/AGBABIAN	RM-B-127, GT.
1-28-74 TEETS	1-GERALD ULRIKSON...ORNL	1-RD..MULLER..F-309 GT

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Carolina Power & Light Company

January 23, 1974

File: NG-3514

Serial: NG-74-79

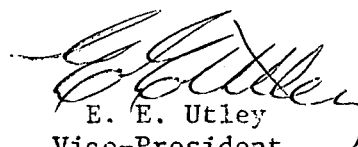
Mr. John F. O'Leary, Director  
Directorate of Licensing  
Office of Regulation  
U. S. Atomic Energy Commission  
Washington, D. C. 20545

Dear Mr. O'Leary:

H. B. ROBINSON UNIT NO. 2  
LICENSE DPR-23  
VIOLATION OF POWER DISTRIBUTION LIMITS

In accordance with Section 6.6.2.a of the Technical Specifications for H. B. Robinson Unit No. 2, the attached Abnormal Occurrence Report is submitted for your information. This report fulfills the requirements for a written report within ten days of an abnormal occurrence and is in accordance with the format set forth in Regulatory Guideline 1.16.

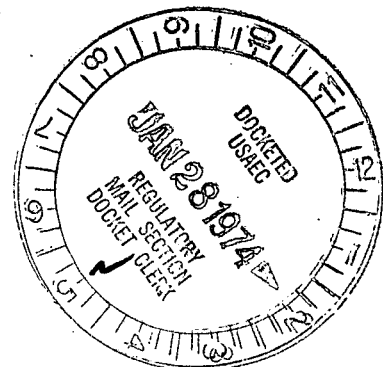
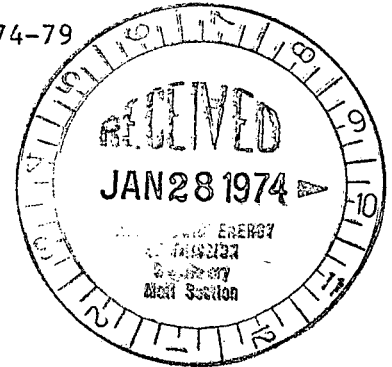
Yours very truly,



E. E. Utley  
Vice-President  
Bulk Power Supply

DBW:mvp  
Attachment

cc: Messrs. N. B. Bessac  
T. E. Bowman  
B. J. Furr  
B. Howell  
D. V. Menscer  
N. C. Moseley  
D. B. Waters



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Received W/Lr Dated 1-23-74

## ABNORMAL OCCURRENCE

1. Report No. 50-261/74-2
- 2a. Date January 21, 1974
- 2b. Occurrence Date January 15-16, 1974
3. Facility H. B. Robinson Unit No. 2  
Hartsville, South Carolina 29550

4. Identification of Occurrence

Violation of Power Distribution Limits

5. Conditions Prior to Occurrence

The plant was operating normally at 100% power.

6. Description of Occurrence

On Friday, January 11, 1974, the plant computer failed due to a faulty core memory card. A new card was ordered and scheduled for replacement on Monday, January 14. New limits for F(z) S(z) were determined on Friday, January 11, and were entered into the Shift Foreman's log for immediate implementation. These new limits were also placed in the computer memory when it was put back into service following temporary repairs late Friday, January 11.

On Monday, January 14, the computer was taken out of service for replacement of the faulty core card. Repair work of this type requires that all entered constants be re-entered into the memory. This was accomplished by use of a special teletype tape called the "common tape." This tape had been punched on January 8, 1974, so it did not contain the new limits. This action entered obsolete F(z) S(z) limits which went unnoticed until Wednesday, January 16, 1974. These limits were not exceeded in reactor operation until recovery from a load reduction was made late Tuesday, January 15.

7. Designation of Apparent Cause of Occurrence

On Monday, January 14, 1974, the personnel involved in the computer repair work inadvertently entered obsolete limits into the APDMS (Axial Power Distribution Monitoring System) program. These erroneous limits went unnoticed until discovered by an engineer at 1345 hours on January 16.

#### 8. Analysis of Occurrence

The  $F(z)$   $S(z)$  limit is the value at which the core reaches the limiting value for  $F_q^n$  when penalized for uncertainty factors. The  $S(z)$  term assumes worst case collapse, fuel pellet separation, and a variable kw/ft penalty. There is a 5% margin included in the limit for measurement uncertainty and 2% margin for instrument uncertainty not including any margin from the calculation of the  $S(z)$  curve. The amount that the measured  $F(z)$   $S(z)$  exceeded the limit was never greater than 3%. In comparison, the Technical Specifications allow the limit to be exceeded by 4% if corrective action is taken to bring the measured value below the limit within two hours.

Noting the amount of conservative margin incorporated into the limits, it is highly unlikely that any adverse effect was suffered by the fuel. A flux map was made on Monday, January 14. An analysis of this map that included corrections for power and included 3% additional decrease in the  $F_q^n$  limit to account for exceeding  $F(z)$   $S(z)$  limits, showed that we did not exceed the limiting value for  $F_q^n$ .

#### 9. Corrective Action

The control bank was inserted 3 steps, and power was reduced less than 1% to bring the measured  $F(z)$   $S(z)$  below the limit. The total amount of time required to bring it within the limit was less than ten minutes.

To prevent this situation from occurring again, a log will be kept of all changes made to the computer memory. Periodically a new tape will be punched and the log re-initialized. This will allow an up-to-date tape to be on hand for reloading common and a log for all changes not on the tape.

#### 10. Failure Data

The following is a list of all logged APDMS readings that exceeded the limits on the most restrictive thimble, and the amount exceeded in %.

Refer to Table I

TABLE I

<u>Day</u>	<u>Time</u>	<u>Measured F(z) S(z)</u>	<u>Limit</u>	<u>Per Cent Exceeded</u>
1, 15, 1974	2059	1.662	1.659	0.203
1, 15, 1974	2130	1.649	1.633	0.98
1, 15, 1974	2300	1.644	1.633	0.674
1, 15, 1974	2342	1.636	1.620	1.011
1, 16, 1974	0012	1.627	1.602	1.585
1, 16, 1974	0042	1.640	1.608	1.982
1, 16, 1974	0116	1.635	1.602	2.084
1, 16, 1974	0135	1.626	1.600	1.625
1, 16, 1974	0142	1.648	1.600	3.000
1, 16, 1974	0149	1.621	1.598	1.415
1, 16, 1974	0242	1.610	1.606	0.218
1, 16, 1974	0425	1.599	1.595	0.240
1, 16, 1974	0455	1.597	1.592	0.317
1, 16, 1974	0525	1.610	1.594	1.032
1, 16, 1974	0625	1.610	1.597	0.828
1, 16, 1974	0725	1.601	1.587	0.871
1, 16, 1974	0825	1.623	1.587	2.257
1, 16, 1974	0836	1.614	1.587	1.69
1, 16, 1974	0853	1.608	1.587	1.312
1, 16, 1974	0902	1.600	1.587	0.808
1, 16, 1974	1027	1.599	1.587	0.745
1, 16, 1974	1225	1.600	1.587	0.808