

**AEC DISTRIBUTION FOR PART 50 DOCKET MATERIAL  
(TEMPORARY FORM)**

CONTROL NO: 7988

FILE:

<b>FROM:</b> Carolina Power & Light Co Raleigh, NC E. E. Utley			<b>DATE OF DOC</b>  7-29-74		<b>DATE REC'D</b>  7-31-74		<b>LTR</b>  X	<b>TWX</b>	<b>RPT</b>	<b>OTHER</b>
<b>TO:</b>  Edson Case			<b>ORIG</b>  2 signed		<b>CC</b>  38	<b>OTHER</b>	<b>SENT AEC PDR</b> XXX <b>SENT LOCAL PDR</b> XXX			
<b>CLASS</b>	<b>UNCLASS</b>	<b>PROP INFO</b>	<b>INPUT</b>		<b>NO CYS REC'D</b>		<b>DOCKET NO:</b>			
	XXX				40		50-261			

**DESCRIPTION:**

Ltr trans the following.....

**ENCLOSURES:**

Abnormal occurrence rpt #50-261/74-15 of 7-18-74 re radial tilt in excess of 1.09 with no control rods out of alignment....

**PLANT NAME:** HB ROBINSON UNIT #2

(40 cys encl rec'd)

FOR ACTION/INFORMATION    7-31-74    GMC

BUTLER (L)	SCHWENCER (L)	ZIEMANN (L)	REGAN (E)
W/ CYS	W/ CYS	W/ CYS	W/ CYS
CLARK (L)	STOLZ (L)	DICKER (E)	✓LEAR
W/ CYS	W/ CYS	W/ CYS	W/7 CYS
DAVE (L)	VASSALLO (L)	KNIGHTON (E)	
W/ CYS	W/ CYS	W/ CYS	W/ CYS
KNIEL (L)	PURPLE (L)	YOUNGBLOOD (E)	
W/ CYS	W/ CYS	W/ CYS	W/ CYS

**INTERNAL DISTRIBUTION**

✓ <u>REC FILE</u>	✓ <u>TECH REVIEW</u>	DENTON	<u>LIC ASST</u>	<u>A/T IND</u>
✓ <u>AEC PDR</u>	✓ <u>HENDRIE</u>	GRIMES	DIGGS (L)	BRAITMAN
✓ <u>OGC</u>	✓ <u>SCHROEDER</u>	GAMMILL	GEARIN (L)	SALTZMAN
✓ <u>MUNTZING/STAFF</u>	✓ <u>MACCARY</u>	KASTNER	GOULBOURNE (L)	B. HURT
✓ <u>CASE</u>	✓ <u>KNIGHT</u>	BALLARD	KREUTZER (E)	
GIAMBUSO	✓ <u>PAWLICKI</u>	SPANGLER	LEE (L)	<u>PLANS</u>
BOYD	✓ <u>SHAO</u>		MAIGRET (L)	MCDONALD
MOORE (L)(LWR-2)	✓ <u>STELLO</u>	<u>ENVIRO</u>	REED (E)	CHAPMAN
DEYOUNG (L)(LWR-1)	✓ <u>HOUSTON</u>	MULLER	SERVICE (L)	DUBE w/input
SKOVHOLT (L)	✓ <u>NOVAK</u>	DICKER	SHEPPARD (L)	E. COUPE
✓ <u>GOLLER (L)</u>	✓ <u>ROSS</u>	KNIGHTON	SLATER (E)	
P. COLLINS	✓ <u>IPPOLITO</u>	YOUNGBLOOD	SMITH (L)	✓ <u>D. THOMPSON (2)</u>
DENISE	✓ <u>TEDESCO</u>	REGAN	✓ <u>TEETS (L)</u>	✓ <u>KLECKER</u>
✓ <u>REG OPR</u>	✓ <u>LONG</u>	PROJECT MGR	WILLIAMS (E)	✓ <u>EISENHUT</u>
✓ <u>FILE &amp; REGION (3)</u>	✓ <u>LAINAS</u>		WILSON (L)	
✓ <u>MORRIS</u>	✓ <u>BENAROYA</u>	<u>HARLESS</u>		
✓ <u>STEELE</u>	✓ <u>VOLLMER</u>			

**EXTERNAL DISTRIBUTION**

✓1 - LOCAL PDR    HARTVILLE, SC	(1)(2)(10)-NATIONAL LABS	1-PDR-SAN/LA/NY
✓1 - TIC    (ABERNATHY)	1-ASLBP(E/W Bldg, Rm 529)	1-BROOKHAVEN NAT LAB
✓1 - NSIC    (BUCHANAN)	1-W. PENNINGTON, Rm E-201 GT	1-G. ULRICKSON, ORNL
1 - ASLB	1-B&M SWINEBROAD, Rm E-201 GT	1-AGMED (RUTH GUSSMAN)
1 - P. R. DAVIS	1-CONSULTANTS	Rm B-127 GT
✓16 - ACRS SENT TO LIC ASST TEETS 7-31-74	NEWMARK/BLUME/AGBABIAN	1-RD..MUELLER, Rm F-300
		GT



Carolina Power & Light Company

July 29, 1974

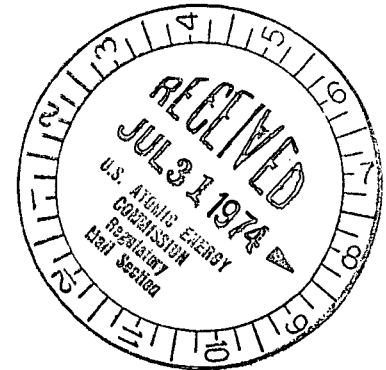
100-261

File: NG-3513 and NG-3514

Serial: NG-74-933

Mr. Edson Case, Acting Director  
Directorate of Licensing  
Office of Regulation  
U. S. Atomic Energy Commission  
Washington, D. C. 20545

Mr. Norman C. Moseley, Director  
Directorate of Regulatory Operations  
U. S. Atomic Energy Commission  
Region II - Suite 818  
230 Peachtree Street, N.W.  
Atlanta, Georgia 30303



Dear Sirs:

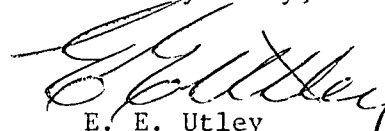
H. B. ROBINSON UNIT NO. 2

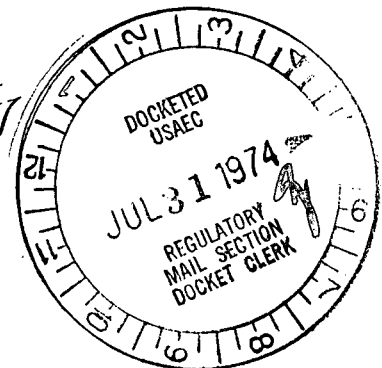
LICENSE DPR-23

RADIAL TILT RATIO IN EXCESS OF 1.09 WITHOUT MISALIGNED CONTROL ROD

In accordance with 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 requirement 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



CWC:DBW:mvp  
Attachment

cc: Messrs. N. B. Bessac  
W. B. Howell  
J. B. McGirt  
D. V. Menscer  
D. B. Waters  
R. A. Watson

**REGULATORY DOCKET FILE COPY**

## ABNORMAL OCCURRENCE REPORT

1. Report No. 50-261/74-15
- 2a. Date July 25, 1974
- 2b. Occurrence Date July 18, 1974
3. Facility H. B. Robinson Unit No. 2  
Hartsville, South Carolina 29550

4. Identification of Occurrence

Radial tilt ratio in excess of 1.09 with no control rods out of alignment.

5. Conditions Prior to Occurrence

During the control rod exercise periodic test, rod L-5 was dropped at 0521 on July 18, 1974. The radial tilt ratio was determined to be 1.172 at 0546. The misaligned rod could not be repaired within the allowed two hours, and the reactor was placed in the hot shutdown condition.

Control rod L-5 was repaired and satisfactorily test operated with its bank at 1337, July 18, 1974. The reactor was returned to criticality at 1500 hours. The unit was synchronized with the system at 2357 on July 18, 1974, and power was increased to 25% at which time the tilt was determined.

6. Description of Occurrence

After the control rod malfunction was corrected the plant was returned to approximately 25% power and the upper and lower detector radial tilt ratios were determined to be 1.032 and 1.148 respectively at 0101, July 19, 1974. Since there were no misaligned control rods a violation of Technical Specifications 3.10.3.3 occurred. An immediate reactor shutdown was initiated.

7. Designation of Apparent Cause of the Occurrence

Operation with the misaligned rod, L-5, and resulting power tilt caused a radial xenon tilt. During the shutdown period the xenon transient caused the relative xenon peak to move across the core. The subsequent at power operation resulted in a radial tilt ratio in excess of 1.09 which was a function of xenon distribution in the core when the control rods were properly aligned.

#### 8. Analysis of Occurrence

When rod L-5 was dropped, the power level was run back to approximately 60%. Power and setpoints were further reduced as required by the Technical Specifications while attempts to recover the rod were made. After several attempts and system checks, it became apparent that the rod could not be recovered and the tilt eliminated within two hours, therefore, a plant shutdown was necessary. During the period in which recovery attempts were in progress a large radial tilt was experienced due to the location of L-5 in the center of a quadrant of the core. This allowed a significant xenon tilt to also build in. After the plant was shut down, the xenon buildup proceeded which caused the peak xenon concentration to move into the previously peaked power region.

When the plant was returned to power, the quadrant that experienced the higher power density was now depressed due to xenon. A tilt ratio greater than 1.09 was now located in the opposite quadrant of the core.

#### 9. Corrective Action

- (1) Immediate reactor shutdown was initiated.
- (2) Xenon was allowed to decay for four hours with the plant shutdown. With PNSC approval, the plant was returned to power and increased to approximately 45% so that a more accurate measurement of the tilt could be made. All previous tilt ratios were calculated using data from the delta flux indicators. These indicators give very inaccurate tilt ratios at power levels less than 50%, therefore, the source of data was changed to the NIS racks. This is a more direct and accurate source of data. At 45% power the tilt ratio was determined to be 1.035. Power was then increased to 80% for further testing. The tilt ratio was determined to be less than 1.02 and the power level increased to 100%. Further monitoring insured that the tilt ratio did not exceed 1.02.

#### 10. Failure Data

There have been no previous tilt ratios in excess of 1.09 with the proper control rod alignment.