AEC DISTRIBUTION FOR PART 50 DOCKET MATERIAL
(TEMPORARY FORM)

CONTROL NO: 8679

FILE:

FROM:	DATE OF DOC	DATE REC'D	LTR	MEMO	RPT	OTHER
Carolina Power & Light Company Raleigh, N.C. 27602 Mr. E.E. Utley	12-3-73	12-6-73	X			

TO:	ORIG	CC	OTHER	SENT AEC PDR	SENT LOCAL PDR
J.F. O'Leary	3 signed			XXX	XXX

CLASS	UNCLASS	PROP INFO	INPUT	NO CYS REC'D	DOCKET NO:
	XXX			40	50-261

DESCRIPTION:
Ltr reporting an abnormal occurrence at the H.B. Robinson Unit #2 concern...Primary to secondary leak in "C" Steam Generator....trans the following....

ENCLOSURES:
Abnormal Occurrence Rpt. No 50-261/73-70

ACKNOWLEDGED

DO NOT REMOVE

(40 cys encl rec'd)

PLANT NAME: H.B. Robinson

FOR ACTION/INFORMATION 12-6-73 JB

BUTLER(L)	SCHWENCER(L)	ZIEMANN(L)	REGAN(E)
W/ Copies	W/ Copies	W/ Copies	W/ Copies
CLARK(L)	STOLZ(L)	DICKER(E)	
W/ Copies	W/ Copies	W/ Copies	W/ Copies
GOLLER(L)	VASSALLO(L)	KNIGHTON(E)	
W/ Copies	W/ Copies	W/ Copies	W/ Copies
✓ KNIEL(L)	SCHEMEL(L)	YOUNGBLOOD(E)	
W/7 Copies	W/ Copies	W/ Copies	W/ Copies

INTERNAL DISTRIBUTION

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

EXTERNAL DISTRIBUTION

✓ 1 - LOCAL PDR Hartville, S.C.
✓ 1 - DTIE(ABERNATHY)
✓ 1 - NSIC(BUCHANAN)
1 - ASLB(YORE/SAYRE/WOODARD/"H" ST.
✓ 16 - CYS ACRS ~~HOLDING~~ Sent to Service 12-6-73

(1)(2)(10)-NATIONAL LAB'S
1-ASLBP(E/W Bldg,Rm 529)
1-W. PENNINGTON, Rm E-201 GT
1-CONSULTANT'S
NEWMARK/BLUME/AGBABIAN
1-GERALD ULRIKSON...ORNL

1-PDR-SAN/LA/NY
1-GERALD LELLOUCHE
BROOKHAVEN NAT. LAB
1-AGMED(Ruth Gussman)
RM-B-127, GT.
1-RD..MULLER..F-309 GT

Regulatory File Cy.

CP&L

Carolina Power & Light Company

December 3, 1973

File: NG-3514 Serial: NG-73-419

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:

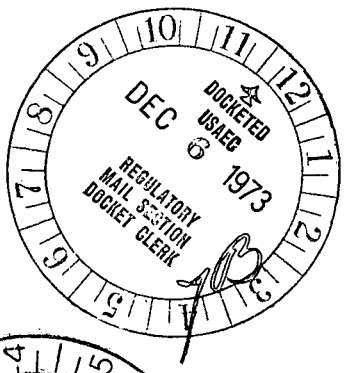
50-261

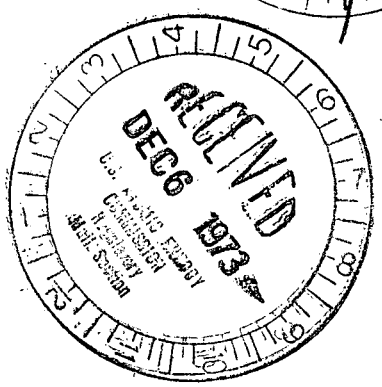
H. B. ROBINSON UNIT NO. 2
LICENSE DPR-23
PRIMARY TO SECONDARY LEAK IN "C" STEAM GENERATOR

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 10 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. C. D. Barham
N. B. Bessac
T. E. Bowman
B. J. Furr
D. V. Menscer
N. C. Moseley
D. B. Waters

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

8679

ABNORMAL OCCURRENCE REPORT

1. Report No. 50-261/73-70

2a. Date November 27, 1973

2b. Occurrence Date November 22, 1973

3. Facility H. B. Robinson Unit No. 2, Hartsville, S. C.

4. Identification of Occurrence

Primary to secondary leak in steam generator "C".

5. Conditions Prior to Occurrence

The plant was operating at 100% power with normal temperatures and pressures. All systems and components were normal.

6. Description of Occurrence

At 1110 hours on November 22, 1973, radiation monitor R-15, condenser air ejector exhaust, alarmed in the control room. This resulted in routing of the condenser exhaust to the plant vent. At 1112 hours, the plant vent monitor, R-14, alarmed. An alarm of R-19, steam generator blowdown followed at 1117 hours automatically isolating steam generator blowdown. Therefore, at 1117 hours, all systems that would cause an uncontrolled radioactive release to the environment were secured.

Subsequent steps were taken to locate the source of the apparent primary to secondary leakage and to establish the leakage rate. The leak was traced to high activity in steam generator "C". Analysis of secondary system chemistry indicated that the calculated leak rate was 4.18 gpm. Two primary system leak tests of about 30 minutes duration were performed. These volumetric checks based on the increase of primary system makeup water indicated leak rates of 3.49 gpm and 4.29 gpm. It was thus determined that steam generator leakage was in excess of the maximum rate of 1 gpm.

specified in Figure 3.1-4 of the Technical Specifications. With the problem thus identified, the reactor was placed in a hot shutdown condition at 1504 hours. An orderly cooldown then proceeded and the plant was at a cold shutdown condition at 1400 on November 23, 1973.

Following cooldown of the system and lowering of the primary system water level to the range required for steam generator access, the primary manway covers were removed from steam generator "C". The source of the leakage was found to be a tube located at column 33, row 43, on the hot leg side. The tube leaked at approximately 26 feet above the tube sheet according to steam generator water level and eddy current examination. A depressurized, static head of steam generator water was sufficient to cause leakage of approximately one gpm.

7. Designation of the Apparent Cause of Occurrence

The leakage is the result of the failure of a tube within steam generator "C". The mechanism of failure has not been determined.

8. Analysis of Occurrence

There were no personnel injuries or exposures as a result of the incident, nor was there any operator error involved or damage to a system other than the subject pressure boundary failure.

The steam generator blowdown discharged to the impoundment for 7 minutes following the inception of the incident. This resulted in a liquid release of the following activities.

LIQUID RELEASE TO IMPOUNDMENT, 11-22-73

Isotope	Activity (millicurie)
F_{18}	0.181
I_{132}	0.013
I_{133}	0.0063
I_{134}	0.0031
I_{135}	0.0164

To accomplish the subsequent plant cooldown, condenser vacuum was maintained and the following gaseous activities were released from the condenser vacuum pump exhaust through the plant vent:

GASEOUS RELEASE TO ATMOSPHERE

Date	Activity (curie)	
11-22-73	Xe^{133}	10.5
	Xe^{135}	6.2
	Kr^{88}	0.9
11-23-73	Xe^{133}	0.86
	Xe^{133m}	0.04
	Xe^{135}	0.36
	Xe^{135m}	0.34

These activites are below established limits and do not constitute a hazard to the public health or safety.

9. Corrective Action

Westinghouse technical representatives arrived on site and began their investigation on November 24. An eddy current examination is presently being conducted in steam generator "C". The ultimate extent of eddy current work will depend on the results of the present inspection.

Corrective action to prevent repetition of problems of this nature has been initiated previously. It consisted of adjustment of the steam generator circulation ratios and establishment of proper chemistry control in conjunction with continuous steam generator blowdown. This action had resulted in some 18 months of operation without a steam generator leakage problems. The present leak will require exact definition and close study to determine what further corrective action is required.

10. Failure Data

Problems with defects within the subject steam generator have been experienced in the past. The generator is a Westinghouse Series 44 vertical steam generator, serial no. 16A6081-2.

The first problem was identified June 11, 1971, when a cladding failure of the tube sheet was detected. The defective cladding was removed, and the area was weld repaired. This resulted in plugging of 184 tube ends, the first row on each side of the channel head.

The next problem was detected by an eddy current inspection performed during an outage to repair leaks in steam generator "A". This inspection was made in May, 1972, and revealed two tubes with their wall thicknesses deteriorated 75%. The tubes were located on row 15, column 48 and row 19, column 45 on the inlet side of the channel head. They were plugged during the outage.

Eddy current inspection of the generator tubes during the refueling outage of March, 1973, indicated no additional deteriorated tubes.