

AEC DISTRIBUTION FOR PART 50 DOCKET MATERIAL  
(TEMPORARY FORM)

CONTROL NO: 987

FILE:

FROM: Duke Power Company Charlotte, North Carolina A. C. Thies			DATE OF DOC  2-1-74	DATE REC'D  2-5-74	LTR  X	MEMO	RPT	OTHER
TO:  A. Giambusso			ORIG  1 signed	CC	OTHER	SENT AEC PDR XXX SENT LOCAL PDR XXX		
CLASS  XXX	UNCLASS	PROP INFO	INPUT	NO CYS REC'D  1		DOCKET NO:  50-270		

DESCRIPTION:

Ltr trans the following....

**DO NOT REMOVE**  
**ACKNOWLEDGED**

PLANT NAME: OCONEE UNIT #2

ENCLOSURES:

REPORT: Abnormal Occurrence #AO-270/74-2  
of 1-22-74 in which a seal leak was discovered on Reactor Coolant Pump 2B2

(1 cy encl rec'd)

FOR ACTION/INFORMATION 2-5-74 GMC

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CLARK(L) W/ Copies	STOLZ(L) W/ Copies	DICKER(E) W/ Copies	W/ Copies
GOLLER(L) W/ Copies	VASSALLO(L) W/ Copies	KNIGHTON(E) W/ Copies	W/ Copies
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INTERNAL DISTRIBUTION

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

EXTERNAL DISTRIBUTION

✓ 1 - LOCAL PDR WALHALLA, SC	(1) (2) (10) NATIONAL LAB'S	1-PDR-SAN/LA/NY
✓ 1 - DTIE(ABERNATHY)	1-ASLBP(E/W Bldg, Rm 529)	1-GERALD LELLOUCHE
✓ 1 - NSIC(EUCHANAN)	1-W. PENNINGTON, Rm E-201 GT	BROOKHAVEN NAT. LAB
1 - ASLB(YORE/SAYRE/	1-CONSULTANT'S	1-ACMED(Ruth Gussman)
WOODARD/"H" ST.	NEWMARK/BLUME/AGBABIAN	RM-B-127, GT.
✓ 16 - CYS ACRS <del>HOLDING</del>	1-GERALD ULRIKSON...ORNL	1-RD..MULLER..F-309 GT

Sent to Lic Asst Goulbourne 2-5-74

## DUKE POWER COMPANY

POWER BUILDING

422 SOUTH CHURCH STREET, CHARLOTTE, N. C. 28201

A. C. THIES  
SENIOR VICE PRESIDENT  
PRODUCTION AND TRANSMISSION

P. O. Box 2178

February 1, 1974

Mr. Angelo Giambusso  
Deputy Director for Reactor Projects  
Directorate of Licensing  
U. S. Atomic Energy Commission  
Washington, D. C. 20545

Re: Oconee Unit 2  
Docket No. 50-270

Dear Mr. Giambusso:

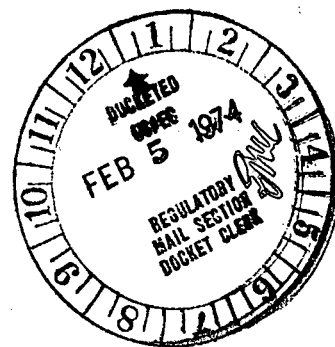
Pursuant to Sections 6.2 and 6.6.2 of the Oconee Nuclear Station  
Technical Specifications, please find attached Abnormal Occurrence  
Report AO-270/74-2, "Seal Leak on Reactor Coolant Pump 2B2."

Very truly yours,

*A. C. Thies*  
A. C. Thies

ACT:vr  
Attachment

cc: Mr. Norman C. Moseley



DUKE POWER COMPANY  
ABNORMAL OCCURRENCE REPORT AO-270/74-2

Report Date: February 1, 1974

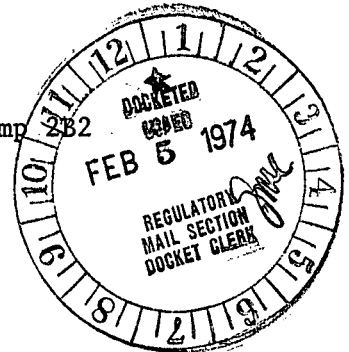
Occurrence Date: January 22, 1974

Facility: Oconee 2, Seneca, South Carolina

Identification of Occurrence: Seal Leak on Reactor Coolant Pump 2B2

Conditions Prior to Occurrence: Routine Startup Operation

Description of Occurrence



January 22, 1974

0830: A leak was discovered by an operator in the seal injection line to reactor coolant pump (RCP) 2A1 between valves 2HP-283 (seal injection stop valve) and 2HP-64 (seal injection throttle valve)

1200: Seal injection flow to RCP 2A1 was secured to repair leak. Due to boundary valve leakage, seal flow (approx. 1.5 gpm) to RCP 2A1 continued, and the leak could not be repaired. The total flow control valve was closed to secure flow to all four reactor coolant pumps and permit repair of the leak; leakage continued.

1729: Seal injection flow was stopped completely by closing manually operated isolation valve 2HP-129.

The following events were recorded by the plant computer:

1729:40 RCP 2B2 Seal Inlet Temp. Hi. (217.14°F)  
1731:06 RCP 2B2 Seal Leakoff (Return) Flow Hi (1.75 gpm)  
1731:14 Quench Tank Press. Hi  
1733:06 RCP 2B2 Seal Leakoff Flow 1.28 gpm  
1733:26 RCP 2B2 Seal Inlet Temp. 344.31°F  
1733:57 RCP 2B2 Off  
1735:21 RCP 2B2 Seal Return Closed  
1735:35 RCP 2B2 Seal Inlet Temp. 363.91°F  
1736:46 RCP 2A1 Seal Inlet Temp. Hi 186.65°F  
1737:26 RCP Motor 2B2 LWR Air Temp. Hi 187°F  
1737:56 Quench Tank Level Hi 90.05 Inches  
1738:36 RCP Seal Filter ΔP Hi  
1739:16 RCP 2A1 Leakoff 1.4 gpm  
1741:07 RCP Motor 2B2 Upper Air Temp. Hi 188.32°F  
1745:18 Reactor Manual Trip

In addition, alarms were received from the reactor building fire monitor, RCP 2B2 oil catch tank level, RCP 2B1 oil catch tank level (overflow from 2B2), and on the loose parts monitor (RCP 2B2) prior to shutdown of RCP 2B2.

- 1733: Operator commenced load reduction from 22 percent full power and reactor shutdown.
- 1744: Turbine was taken off line.
- 1746: Reactor was manually tripped from 15% full power. System cooldown commenced.
- ~1800: An operator entered reactor building to investigate the cause of the fire monitor and RCP oil catch tank level alarms. He reported steam blowing around the RCP 2B2 seals and no visual indication of fire. Fire monitor, oil catch tank level and quench tank high pressure alarms were due to this leaking steam.
- 2250: Unit cooldown was in progress, with reactor coolant system pressure at approximately 700 psig. Depressurization of the core flood tanks was initiated by bleeding the nitrogen to the quench tank instead of the vent header or waste gas filter, as is normally done. Venting to the waste gas filter or vent header would have required operation of valves 2CF-33 and 2CF-32, located in the reactor building basement, and these valves were inaccessible due to seal leakage collecting there. In the process of venting the core flood tanks to the quench tank, the quench tank rupture disk blew out, severing the impulse line on pressurizer level instrumentation RCL-LT3, bending the stem on the impulse line root valve FS/2/50/117, thus preventing isolation of the leak, and damaging the insulation on the bottom and side of the pressurizer.

January 23, 1974

- The leak on the seal injection line was repaired by cutting out the leaking section and welding in a new section.
- ~1745: Visual inspection of RCP 2B2 by Bingham Pump representative commenced.

#### Designation of Apparent Cause of Occurrence

The investigation of the cause of the seal failure on RCP 2B2 is in progress. Duke Power Company is being assisted in this investigation by Bingham and Babcock & Wilcox. The findings of this investigation will be submitted as a supplement to this report.

The results of the visual inspection conducted on January 23, 1974 are listed below. Terminology and parts referenced were obtained from the Bingham Manual Installation, Operation and Maintenance Instructions, 28 x 28 x 41 Type RQV Reactor Recirculation Pump.

The seal leakage cover (Item No. 90) was lifted off its seat, all hold-down bolts having sheared off. These 16 bolts are socket head capscrews (Item No. 92),  $\frac{1}{2}$  - 13 UNC x  $1\frac{1}{2}$  inches long.

The steam leakage through the seals drove the seal leakage cover up against the upper seal sleeve nut (Item No. 101), causing the four socket head capscrews (Item No. 103),  $\frac{3}{8}$  - 16 UNC x  $1\frac{1}{8}$  inches long, being bent or sheared, and stripping some of the threads.

The coupling assembly between the pump shaft and the motor was unbolted. The pump motor was then energized and operated normally.

Inspection of the impeller revealed the following were missing:

- a. Socket head capscrew (Item No. 20), 1-12 UNF x  $3\frac{1}{4}$  inches long.
- b. Capscrew spirol pin (Item No. 17),  $\frac{3}{16}$  inch diameter x  $\frac{3}{4}$  inch long.

Visual inspection of the impeller and pump casing revealed no evidence of damage.

Disassembly is continuing to inspect the seals, lower thermal barrier, and shaft.

#### Analysis of the Occurrence

Neither the seal failure on RCP 2B2 or the blow-out of the quench tank rupture disk prevented the orderly shutdown of the unit and placing it in a cold shutdown condition in order that corrective action could commence. The reactor building purge system was in operation during this incident. Stack releases were monitored and did not exceed allowable release rates of the operating procedures or 10CFR20. Grab samples taken from the reactor building atmosphere three hours after the incident showed less than MPC levels of activity. This incident did not affect the health and safety of the public.

#### Corrective Action

An extensive investigation into this occurrence is now being made. After the results of the investigation are analyzed, appropriate corrective action will be taken, and a supplementary report of this corrective action will be issued.