AEC DISTRIBUTION FOR PART 50 DOCKET MATERIAL

(TEMPORARY FORM)

CONTROL NO: 6684

FILE:

FROM:	DATE OF DOC	DATE REC'D	LTR	TWX	RPT	OTHER
Duke Power Company Charlotte, NC A. C. Thies	7-18-74	7-22-74	X			

TO:	ORIG	CC	OTHER	SENT AEC PDR XXX SENT LOCAL PDR XXX
A. Giambusso	1 signed			

CLASS	UNCLASS	PROP INFO	INPUT	NO CYS REC'D	DOCKET NO:
	XXX			1	50-270

DESCRIPTION:

Ltr trans the following....

ENCLOSURES:

Unusual Event #UE-270/74-3 of7-1-74 re missing guide pin from valve 2LP-12....

DO NOT REMOVE

ACKNOWLEDGED

(1 cy encl rec'd)

PLANT NAME: OCONEE UNIT #2

FOR ACTION/INFORMATION 7-22-74 GMC

BUTLER (L) W/ CYS
CLARK (L) W/ CYS
[illegible] (L) W/ CYS
KNIEL (L) W/ CYS
SCHWENCER (L) W/ CYS
STOLZ (L) W/ CYS
[illegible] (L) W/ CYS
✓PURPLE (L) W/ 7 CYS
ZIEMANN (L) W/ CYS
DICKER (E) W/ CYS
[illegible] (E) W/ CYS
YOUNGBLOOD (E) W/ CYS
REGAN (E) W/ CYS
LEAR W/ CYS
W/ CYS

INTERNAL DISTRIBUTION

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

EXTERNAL DISTRIBUTION

✓1 - LOCAL PDR WALHALLA, SC
✓1 - TIC (ABERNATHY)
✓1 - NSIC (BUCHANAN)
1 - ASLB
1 - P. R. DAVIS
✓16 - ACRS SENT TO LIC ASST SHEPPARD 7-23-74

(1)(2)(10)-NATIONAL LABS
1-ASLBP(E/W Bldg, Rm 529)
1-W. PENNINGTON, Rm E-201 GT
1-B&M SWINEBROAD, Rm E-201 GT
1-CONSULTANTS
NEWMARK/BLUME/AGBABIAN

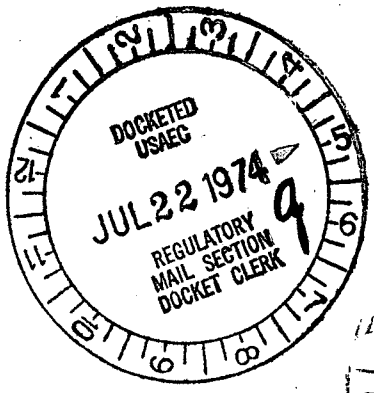
1-PDR-SAN/LA/NY
1-BROOKHAVEN NAT LAB
1-G. ULRIKSON, ORNL
1-AGMED (RUTH GUSSMAN) Rm B-127 GT
1-RD..MUELLER, Rm F-309 GT

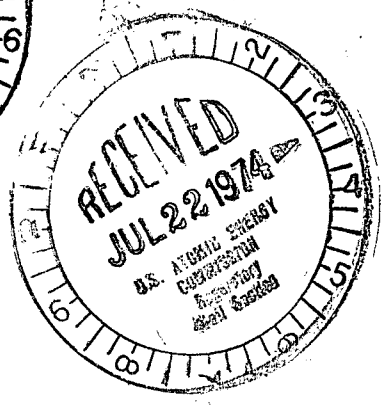
DUKE POWER COMPANY
POWER BUILDING
422 SOUTH CHURCH STREET, CHARLOTTE, N. C. 28201

A. C. THIES
SENIOR VICE PRESIDENT
PRODUCTION AND TRANSMISSION

P. O. BOX 2178

July 18, 1974





Mr. Angelo Giambusso
Deputy Director for Reactor Projects
Directorate of Licensing
Office of Regulation
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 Unusual Event Report UE-270/74-3.

Very truly yours,

Paul H. Barton For A.C.T.

A. C. Thies

ACT:gje
Attachment

cc: Mr. Norman C. Moseley

6684

REGULATORY DOCKET FILE COPY

DUKE POWER COMPANY
OCONEE UNIT 2

Report No.: UE-270/74-3

Report Date: July 18, 1974

Event Date: July 1, 1974

Facility: Oconee Unit 2, Seneca, South Carolina

Identification of Event: Missing guide pin from valve 2LP-12

Conditions Prior to Event: Cold shutdown, reactor coolant system partially drained

Description of Event:

On June 30, 1974, it was observed that low pressure injection flow in the decay heat removal mode could not be throttled below 4,000 gpm using valve 2LP-12 (outlet valve from low pressure injection cooler 2A). It was noted that the valve stem was not traveling full stroke. Disassembly of the valve on July 1, 1974 revealed that the guide pin on the base of the valve disc had broken off (see Figure 1) and the valve seat was cracked. A visual inspection of the valve indicated that the guide pin, made of 304 stainless steel with dimensions 3/4 in. by 4 in., was missing. The location of this part is not known at this time.

Designation of Apparent Cause of Event:

The apparent cause for the failure of the guide pin in valve 2LP-12 is cavitation damage when operating in the decay heat removal mode. Consultation with the Crane Company, manufacturer of the valve, and Babcock & Wilcox reveal that operation at flow rates less than 3000 gpm could cause cavitation to occur.

The integrity of the guide pin was verified in January 1974. Since then, the system has operated at flow rates less than 3000 gpm in the decay heat removal mode for considerable periods of time. Although it is possible for the pin to have broken off anytime since January, it was not recovered during reactor refueling in March 1974.

Analysis of Event:

The location of valve 2LP-12 in the low pressure injection system is shown in Figure 2. There are two check valves, 2LP-48 and 2CF-14, and one Engineered Safeguards (ES) valve, 2LP-17, between 2LP-12 and the reactor vessel.

The function of the Low Pressure Injection System upon an Engineered Safeguards (ES) signal is to supply borated water to the reactor core. This requires valves 2LP-48, 2CF-14 and 2LP-17 to open to provide one of two

redundant paths for low pressure injection flow. Valve 2LP-12 does not receive an ES signal but is open during reactor operation. The dimensions of the missing part (3/4 in. by 4 in.) are such that it could only prevent full opening or closing of the eight-inch valves 2LP-45, 2CF-14 or 2LP-17 should it interfere. This would only reduce the flow of water through one redundant path to the core. However, these three valves have been satisfactorily tested.

Low points of the piping between 2LP-12 and the reactor vessel have been radiographed without revealing the pin location. Flow orifice 2FT-5A has been removed and inspected for signs of the pin colliding with the orifice; none were noted.

The reactor coolant pumps were run in various combinations in an attempt to detect the guide pin in the reactor vessel. In a previous instance of operating with a loose part, in January 1974, it was detected during startup and coastdown of the reactor coolant pumps. No such discovery has been made in this instance. The Loose Parts Monitoring System has demonstrated its capability to detect parts of this size in the reactor vessel. On January 6, 1974, a noise response test was performed using the Unit 3 reactor vessel and various test specimens. It is concluded that there is no indication this part is loose in the reactor vessel.

The worst possible safety-related situation for operating with a missing part is considered to be the lodging of the object within a fuel assembly. It would then be assumed that local fuel clad failure occurs due to either departure from nucleate boiling or mechanical wear. As a result of this, reactor coolant activity would increase; hence, activity would be a satisfactory parameter for judging the status of fuel clad integrity during operation. Only localized fuel damage is postulated; therefore, the core would remain in a coolable geometry. Coolant activity will be monitored daily and the plant promptly shut down for further investigation if fuel damage is indicated.

There is no indication that the missing valve guide pin is interfering with the operation of one of the redundant flow paths of the Low Pressure Injection System nor is there indication that the pin is loose in the reactor vessel. Consequently, Duke Power Company considers that the continued operation of Oconee 2 does not represent undue risk to the health and safety of the public.

Corrective Action:

A monitoring and surveillance program is established to ensure continued safe operation of Oconee Unit 2. To ensure early detection of the part, the Loose Parts Monitoring System provides an alarm whenever a preset limit is exceeded. The reactor coolant is being monitored for gross activity and isotopic content daily to detect fuel clad failure.

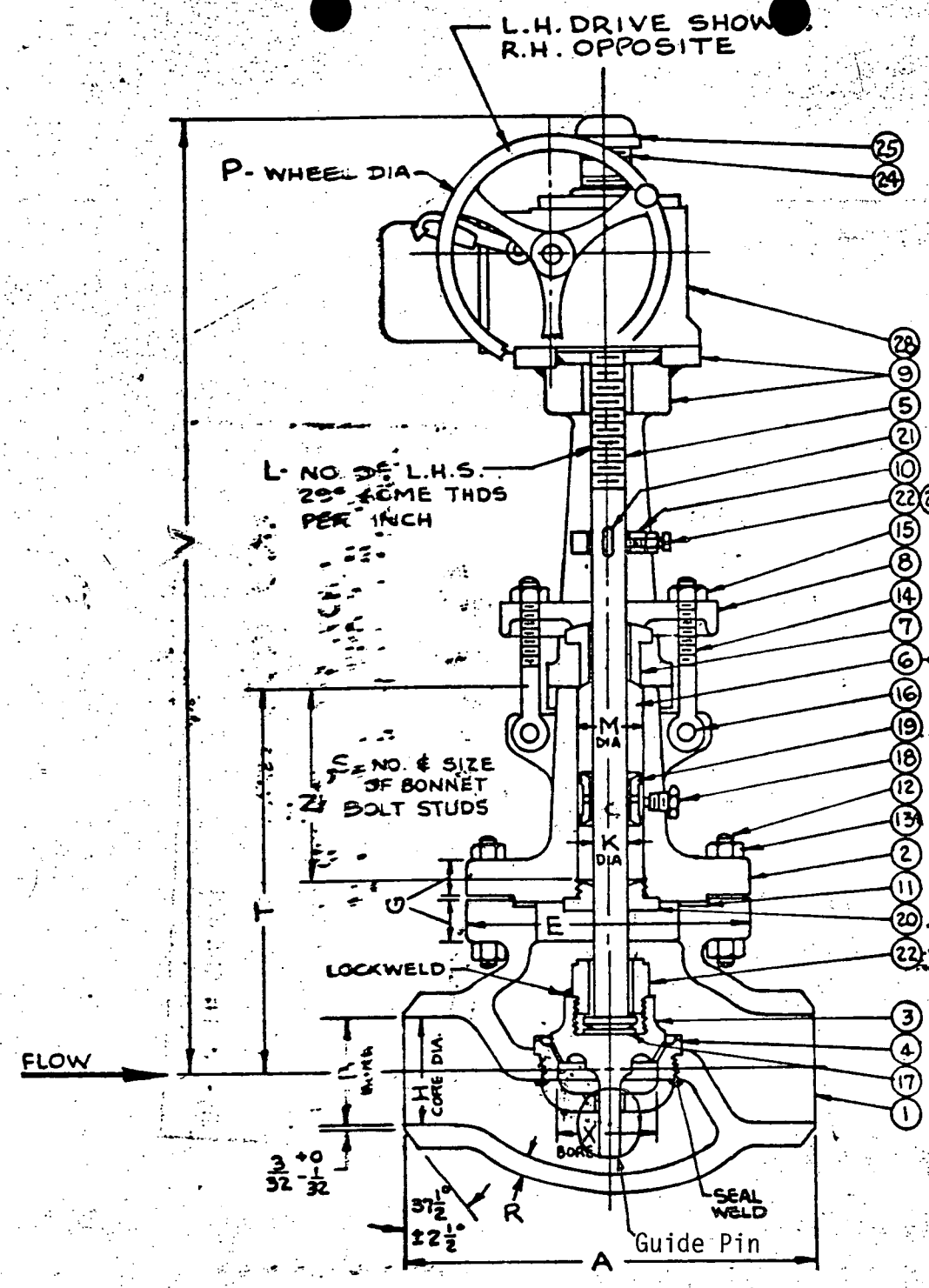
Procedures are being revised to ensure flow rates of at least 3000 gpm in 2LP-12 and similar valves to eliminate the possibility of cavitation.

However, several maintenance procedures such as operation with the water level below the reactor vessel nozzles will not permit flow in excess of 3000 gpm without the low pressure injection pumps cavitating. A study is underway to determine the best means for eliminating the cavitation problems associated with the flow rates through the valves.

Failure Data:

2LP-12 - 10 inch, 300 lb., cast alloy steel globe valve, Crane Company Catalog No. 151½LU.

LETTER CHANGE	
	C
2-6-70 DETAIL ON MOTOR CHANGED PER MARKED PRINT. L.E.W.	F
12-3-69 ADDED DWG, DETAIL & DRIVE DIRECTION TO VALVES. R.A.S.	E
4/15/69 MOTOR ORIENTATION ADDED PER MARKED PRINT L.E.W.	D
MILL POWER SUP. CO. CHARLOTTE ORD. R-92454 SHOP ORDER 21981-01,02,03. REDRAWN F/ CHG. TO MOT. OP.	C



MOTOR UNITS
VALVES AS PE
DETAIL OF DW

VAL. NO.	DWG.	DE
1/53/18	132-A	
2/53/18	132-B	
3/53/18		
1/53/19	132-A	
2/53/19	132-B	
3/53/19		

6 RINGS BELOW SPAC

NOTES:
1. WELDING END POWER CO. DW
2. NOT SHOWN

NO COMMEN

*MINIMUM METAL TH

WT. VALVE	WT. SMB-1	SIZE	A	1 B $^{+\frac{1}{32}}_{-0}$	E	G	H	K	L	M	N	P	R*	S	
1008	495	10	$24\frac{1}{2}$	10.250	$19\frac{3}{4}$	$1\frac{7}{8}$	10	$2\frac{1}{8}$	$3\frac{1}{2}$	$3\frac{1}{64}$	$9\frac{7}{16}$	12	$\frac{3}{4}$	12-1	2

Figure 1. 2LP-12

DIMENSIONS ARE IN INCHES UNLESS OTHE

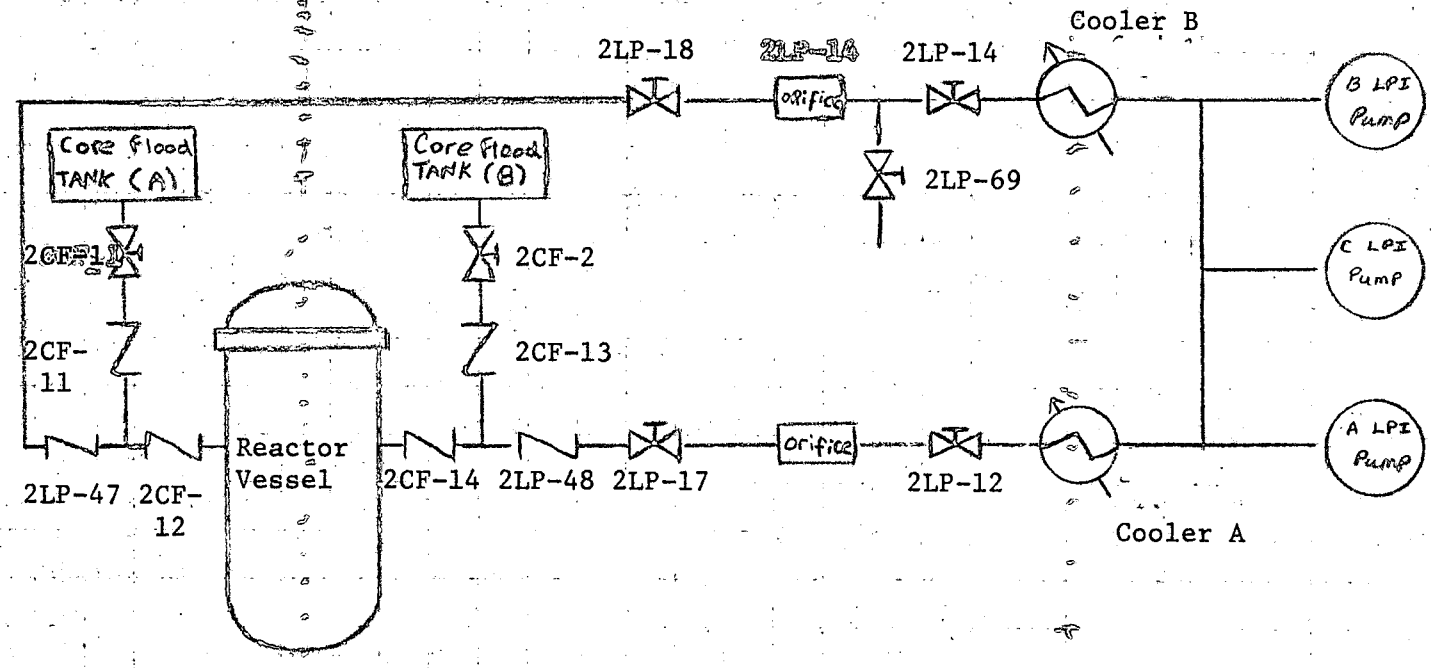


Figure 2. Simplied Low Pressure Injection System