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ACCESSION NBR: 9209010081 DOC. DATE: 92/08/27 NOTARIZED: NO DOCKET #
FACIL: 50-261 H. B. Robinson Plant, Unit 2, Carolina Power & Light C 05000261
AUTH. NAME AUTHOR AFFILIATION
BAUR, D. Carolina Power & Light Co.
CHAMBERS, R. H. Carolina Power & Light Co.
RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 92-015-00: on 920731, determined that results of analysis of svc water sys external piping corrosion rendered sys seismically inoperable. Caused by externally corroded piping. Piping replaced & insp program established. W/920827 ltr.

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TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

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INTERNAL:	ACNW	2	2	AEOD/DOA	1	1
	AEOD/DSP/TPAB	1	1	AEOD/ROAB/DSP	2	2
	NRR/DET/EMEB 7E	1	1	NRR/DLPQ/LHFB10	1	1
	NRR/DLPQ/LPEB10	1	1	NRR/DOEA/OEAB	1	1
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	NRR/DST/SRXB 8E	1	1	REG FILE 02	1	1
	RES/DSIR/EIB	1	1	RGN2 FILE 01	1	1
EXTERNAL:	EG&G BRYCE, J. H	2	2	L ST LOBBY WARD	1	1
	NRC PDR	1	1	NSIC MURPHY, G. A	1	1
	NSIC POORE, W.	1	1	NUDOCS FULL TXT	1	1

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H. B. ROBINSON STEAM ELECTRIC PLANT
DOCKET NO. 50-261
LICENSE NO. DPR-23
LICENSEE EVENT REPORT 92-015-00

Gentlemen:

The enclosed Licensee Event Report (LER) is submitted in accordance with 10 CFR 50.73 and NUREG-1022 including Supplements No. 1 and 2.

Very truly yours,

M T Page for

R. H. Chambers
Plant General Manager
H. B. Robinson S. E. Plant

DHB:1kg

Enclosure

cc: Mr. S. D. Ebneter
Mr. L. W. Garner
INPO

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NRC FORM 366 U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104
EXPIRES: 4/30/92
ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
H. B. ROBINSON UNIT NO. 2	05000261	1

TITLE (4)

SEISMICALLY INOPERABLE SERVICE WATER SYSTEM DUE TO CORRODED PIPING

EVENT DATE (5)			LER NUMBER (6)					REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR		SEQ. NO.		REV. NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
07	31	92	92	-	015	-	00	08	27	92		05000

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)							
			20.402(b)		20.405(c)		50.73(a)(2)(iv)		73.71(b)
POWER LEVEL (10)	100		20.405(a)(1)(i)		50.36(c)(1)		50.73(a)(2)(v)		73.71(c)
			20.405(a)(1)(ii)		50.36(c)(2)		50.73(a)(2)(vii)		OTHER (Specify in Abstract and Text)
			20.405(a)(1)(iii)	X	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)		
			20.405(a)(1)(iv)		50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)		
			20.405(a)(1)(v)		50.73(a)(2)(iii)		50.73(a)(2)(x)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
DAVID BAUR, REGULATORY COMPLIANCE	(803)383-1296

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)			EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
	YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

ABSTRACT (Limit to 1400 spaces, i.e. approximately fifteen single space typewritten lines) (16)

On July 31, 1992, it was determined by results of analysis that previously identified Service Water System external piping corrosion, in combination with valves removed in support of outage activities, had rendered the Service Water System seismically inoperable while Plant conditions required it to be operable. The analysis also concluded that the corroded piping alone did not render the Service Water System inoperable, therefore, the system was operable during the last operating cycle. The externally corroded piping located at the discharge of the Service Water Pumps was replaced and the Service Water System was returned to operable status prior to returning fuel to the Reactor Vessel.

This event is being reported pursuant to 10CFR50.73(a)(2)(i)(B), "Any operation or condition prohibited by the plant's Technical Specification".

I. DESCRIPTION OF EVENT

On July 31, 1992, with the H. B. Robinson Unit No. 2[1] operating at 100% power it was determined, by results of analysis, that previously identified Service Water System external piping corrosion in combination with valves removed in support of outage activities, had rendered the Service Water System seismically inoperable while plant configuration required it to be operable. The analysis also concluded that the corroded piping alone did not render the Service Water System inoperable, therefore, the system was operable during the last cycle and did not become inoperable until 8 days into Refueling Outage 14.

Prior to the start of Refueling Outage 14 it was determined that the North Service Water Header isolation valve, V6-12D, needed to be removed and blank flanged to support outage activities. Engineering performed an analysis and determined that the valve could be removed without rendering the system seismically inoperable. Based on this analysis, valve V6-12D was removed from the system on April 4, 1992. On April 22, 1992, the Service Water Pump discharge check valves, SW-374 and SW-376, for Service Water Pumps A and B respectively, were removed prior to their scheduled removal. The removal of these check valves has been identified in NRC Inspection Report RII-92-11 as a Severity Level 4 Violation, RII-92-11-03 and was responded to in letter RNPD/92-1772 dated July 1, 1992. Again the seismic qualifications of the system were in question and an analysis conducted. This analysis considered only the removal of check valves SW-374 and SW-376 using nominal wall thickness, and resulted in the system being considered operable. However, at about the same time a request was being made to Engineering to determine the seismic qualification of the Service Water System considering the externally corroded 18 inch piping located between the Service Water Pumps and the 30 inch Service Water Header. During the process of this analysis it was concluded that the corroded piping could not be considered separately and that the removed valves must also be included in the analysis. Therefore, the analysis was conducted based on the known remaining pipe wall thickness using three different piping configurations.

These configurations were:

1. All valves and equipment connected,

2. Check valves, SW-374 and SW-376, and header isolation valve V6-12D removed, and

3. Header isolation valve V6-12D removed.

The results of the analysis for the first configuration met the requirements of ASME Code Case N-480 and NRC Generic Letter 90-05 and verifies that the Service Water System was seismically operable until valve V6-12D was removed. The results of the analysis of the other configurations did not support the system being seismically operable.

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[1]H. B. Robinson Unit No. 2 is a Pressurized Water Reactor in commercial operation since March, 1971.

II. CAUSE OF EVENT

This event, in retrospect, had more than one cause. One cause is associated with the reason for the piping being in a corroded state, while the other deals with the performance of analyses that supported system operability when in reality it was not.

The cause of the externally corroded piping appears to be the result of the piping being insulated and exposed to the elements. Moisture apparently penetrated the insulation and was retained on the surface of the pipe resulting in the corrosion. However, the insulation had been removed and the piping painted at some time prior to Refueling Outage 14.

The first analysis that was performed, and was used to support the removal of V6-12D, was completed prior to the start of the outage and assumed nominal wall thickness. On March 28, 1992 the plant was shutdown for the scheduled refueling outage and valve V6-12D was removed from the system on April 4, 1992. The Service Water System piping external corrosion was questioned by the NRC Structural Inspection Team during the week of April 13, 1992, and resulted in an Inspector Follow Item (IFI) RII-92-09-01 in Report RII 92-09. In response to the IFI, plans were formulated to perform Ultrasonic (UT) thickness measurements of the questionable piping. The Shift Outage Managers (SOM) log contains an entry dated 1630 hours April 21, 1992, that the UT measurements were complete and that the 18 inch piping would require replacement. Based upon the UT results it was recognized that an analysis would be required to determine seismic operability of the system and it was also decided to replace the corroded piping without knowing the results of the analysis. Therefore a request was prepared to have the analysis of the corroded piping performed by the Nuclear Engineering Department (NED). The Nuclear Engineering Department received partial wall thickness information, UT results, on April 23, 1992. Complete thickness information was not received until after the 18 inch piping had been removed.

At 0830 hours on April 22, 1992, the SOM was notified that valves SW-374 and SW-376 had been removed prior to their scheduled removal. At this time defueling was in progress and only about 33% of the fuel had been removed from the Reactor Vessel. Again, due to the latest system configuration, the seismic operability of the system was questioned and NED was requested to provide the analysis. Because fuel was still in the Reactor Vessel, and the decision had already been made to replace the corroded piping, the analysis of configuration took precedence over the analysis of corrosion. The analysis of the system configuration with only valves SW-374 and SW-376 removed, was completed using nominal wall thickness and resulted in a memorandum dated April 24, 1992, stating that the Service Water System was seismically operable. The results of this analysis had been transmitted to the plant verbally on April 22, 1992, and a decision was made to continue removing fuel in lieu of reinstalling the valves because the system was considered operable. The fuel was completely removed from the Reactor Vessel at 2327 hours on April 22, 1992.

When NED started its analysis of the corroded piping it was recognized that the analyses of removed valves could not continue to be treated as events separate from the corrosion. The subsequent analyses that were accomplished covered the configurations and results as stated under Section I, Description of Event.

TEXT (If more space is required, use additional NRC Form 366A's) (17)

III. ANALYSIS OF EVENT

This event is being reported pursuant to 10CFR50.73(a)(2)(i)(B), "Any operation or condition prohibited by the plant's Technical Specification", in that the Service Water System was rendered inoperable during a time when it was required to be operable.

During the period the Service Water System was inoperable the North Header was isolated by the removal of the isolation valve V6-12D, A and B Service Water Pumps were out of service because their Emergency Bus was out of service and their discharge check valves, SW-374 and SW-376, were removed, the 18 inch downcomers located at the discharge of C and D Service Water Pumps were corroded to the point of being seismically inoperable, and fuel was in the Reactor Vessel. However, the plant had been in Cold Shutdown eight days for Refueling Outage 14 which is a significant reduction of decay heat as compared to 100% power. A temporary cooling system was installed on or about April 7, 1992, to provide cooling for Spent Fuel Storage, and the probability of a seismic event occurring between April 4, 1992, and April 22, 1992, was very low.

Based on the system configuration, had a seismic event occurred, alternate methods of core cooling may have been required such as those identified in procedure AOP-020, Loss of Residual Heat Removal (Shutdown Cooling).

IV. CORRECTIVE ACTIONS

The externally corroded piping located at the discharge of the Service Water Pumps has been replaced. Additionally, the valves removed were replaced and the system was returned to operable prior to returning fuel to the Reactor Vessel.

To prevent recurrence of the externally corroded Service Water System piping a Periodic Preventative Maintenance Program inspection has been established. This inspection will consist of a visual examination, by the System Engineer, for protective coating and/or corrosion. Piping to be inspected consists of the Service Water Pump discharge piping and the exposed North and South Header piping.

V. ADDITIONAL INFORMATION

1. Failed Component Identification

None

2. Previous Similar Events

None