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REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:8809140359 DOC.DATE: 88/09/08 NOTARIZED: NO DOCKET #
FACIL:50-400 Shearon Harris Nuclear Power Plant, Unit 1, Carolina 05000400
AUTH.NAME AUTHOR AFFILIATION
HOWE,A.J. Carolina Power & Light Co.
WATSON,R.A. Carolina Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 88-023-00:on 880812,reactor coolant sys vent opened less than required Tech Spec due to failure of valve gagging.
W/8 ltr.

DISTRIBUTION CODE: IE22D COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 5
TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:Application for permit renewal filed. 05000400

	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL
	PD2-1 LA	1	1	PD2-1 PD	1	1
	BUCKLEY,B	1	1			
INTERNAL:	ACRS MICHELSON	1	1	ACRS MOELLER	2	2
	ACRS WYLIE	1	1	AEOD/DOA	1	1
	AEOD/DSP/NAS	1	1	AEOD/DSP/ROAB	2	2
	AEOD/DSP/TPAB	1	1	ARM/DCTS/DAB	1	1
	DEDRO	1	1	NRR/DEST/ADS 7E	1	0
	NRR/DEST/CEB 8H	1	1	NRR/DEST/ESB 8D	1	1
	NRR/DEST/ICSB 7	1	1	NRR/DEST/MEB 9H	1	1
	NRR/DEST/MTB 9H	1	1	NRR/DEST/PSB 8D	1	1
	NRR/DEST/RSB 8E	1	1	NRR/DEST/SGB 8D	1	1
	NRR/DLPQ/HFB 10	1	1	NRR/DLPQ/QAB 10	1	1
	NRR/DOEA/EAB 11	1	1	NRR/DREP/RAB 10	1	1
	NRR/DREP/RPB 10	2	2	NRR/DRIS/SIB 9A	1	1
	NUDOCS-ABSTRACT	1	1	REG FILE 02	1	1
	RES TELFORD,J	1	1	RES/DSIR DEPY	1	1
	RES/DSIR/EIB	1	1	RGN2 FILE 01	1	1
EXTERNAL:	EG&G WILLIAMS,S	4	4	FORD BLDG HOY,A	1	1
	H ST LOBBY WARD	1	1	LPDR	1	1
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RIDS/ADDS

RIDS/ADDS

NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
SHEARON HARRIS NUCLEAR POWER PLANT - UNIT 1	0 5 0 0 0 4 0 0	1 OF 0 4

TITLE (4) TECHNICAL SPECIFICATION NON-COMPLIANCE: REACTOR COOLANT SYSTEM VENT LESS THAN REQUIRED DUE TO FAILURE OF VALVE GAGGING DEVICE

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBER(S)
										0 5 0 0 0
0 8	1 2	8 8	8 8	— 0 2 3	— 0 0	0 9	0 8	8 8		0 5 0 0 0

OPERATING MODE (9)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
5	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10) 1 0 0	20.405(a)(1)(i)	50.36(c)(1)	X 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 below and in Text, NRC Form 366A)
	20.405(a)(1)(iii)	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
ANDREW J. HOWE - SR. ENGINEER	AREA CODE 9 1 9 — 3 6 2 — 2 7 1 9

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)	NO				

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

ABSTRACT:

On August 12, 1988, the plant was in Mode 5, 100°F, with the Reactor Coolant System (RCS) drained and vented through a gagged open pressurizer Power Operated Relief Valve (PORV) in compliance with Technical Specification 3.4.9.4 for low temperature overpressure protection. An operator observed a midposition indication on the control board for the gagged open PORV at 1515, and this was locally verified at 1540. Since it was unknown whether the midposition PORV provided the minimum 2.9 square inch vent path required by the Technical Specifications, the remaining two PORVs were returned to operational status and opened at 1620.

An initial evaluation of vent path opening available with a PORV at midposition yielded only a 1.25 square inch vent, and a total of only 1.47 square inches was determined to have existed when taking credit for all other openings in the RCS. Thus the requirements of Specification 3.4.9.4 were not met.

Over time, the packing in the PORV was compressed by the valve gag, allowing the valve to drift approximately 1/4 inch closed. A longer gagging device was installed on the PORV to ensure it remained fully open until two pressurizer safety relief valves could be removed to provide an RCS vent. A new device which will not be subject to this potential failure mechanism will be designed for the PORV prior to its next use as a vent. Additional procedural controls for the use of valve gags will be implemented to reduce the potential for similar events.

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
SHEARON HARRIS NUCLEAR POWER PLANT - UNIT 1	0 5 0 0 0 4 0 0	8 8	— 0 2 4	— 0 0	0 2 OF 0 4

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

INITIAL CONDITIONS:

The plant was in Mode 5, 100°F, with the Reactor Coolant System (RCS) drained down to approximately four inches below the reactor vessel head flange and vented to the Pressurizer Relief Tank via a gagged open valve.

DESCRIPTION:

On August 12, 1988, at 1515, a control operator observed a midposition indication on valve 1RC-114, Pressurizer Power Operated Relief Valve (PORV) (EIIS: AB:PCV). This valve had been previously opened and a gag device installed to ensure a minimum 2.9 square inch vent path for the RCS in compliance with Technical Specification 3.4.9.4, Low Temperature Overpressure Protection. The valve was locally checked and was verified to be approximately midposition at 1540.

Since it was not known whether the midposition PORV provided the minimum required 2.9 square inch vent, the remaining two PORVs were restored to operational status by re-establishing nitrogen to the valve operators, and the two PORVs were opened at 1620, ensuring compliance with Specification 3.4.9.4.

An initial evaluation of the midposition PORV configuration concluded that it had provided only a 1.25 square inch opening. The existing configuration of the RCS at that time also had two other openings, 3/8 inch pipes for the reactor vessel head vent and reactor vessel level indicator, for a cumulative vent path of 1.47 square inches. This was determined at 1745, and the Shift Foreman reported the situation to the NRC at 1900, as required by 10 CFR 50.72(b)(2)(iii). (Further evaluation based on the increased length of the longer gag subsequently installed on the PORV determined that the actual PORV position provided approximately 2 square inches of vent path.)

CAUSE:

The PORV uses a spring close, nitrogen/air open actuator. The nitrogen/air supply to the actuator had been isolated for outage activities, and without this force acting against the spring, the valve packing was gradually compressed sufficiently to allow the PORV to move from the fully open position.

The gag was originally installed on the PORV under the control of a work request/authorization (WR&A) to support surveillance test activities. Although the WR&A provides the administrative control of the use of valve gags, no specific procedure provides guidance on the acceptability of the design of such devices. It was not realized that slight valve movement could result in noncompliance with the Technical Specifications.

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

CAUSE: (continued)

There have been no previous similar events with failures of valve gags. A pressurizer PORV has been gagged open during previous outages without occurrence of failure. The packing on the PORV had been recently replaced and the compressibility of new packing material contributed to the event. In addition, in previous situations with the PORVs gagged, the nitrogen/air supply was not isolated, so that this was the first time the gagging device alone was holding the valve open against the spring.

ANALYSIS:

Technical Specification 3.4.9.4 requires either two OPERABLE PORVs of the Low Temperature Overpressure Protection System, or a minimum 2.9 square inch vent, which corresponds to the area provided by a single PORV in the fully open position. This ensures protection of the RCS against the overpressure transient associated with either 1) the start of an idle Reactor Coolant Pump (RCP) with secondary side of the steam generators less than 50°F above primary coolant temperature, or 2) the start of an idle charging/safety injection pump (CSIP) and injection into a water-solid RCS. These transients are associated with the 10CFR 50 Appendix G limits based on protecting the reactor vessel integrity, assuming a vessel metal irradiation at 4 Effective Full Power Years (EFPY).

With the RCS drained and vented, the RCPs could not be started without violating several prerequisites for pump start. In fact, the RCP breakers were not in service, greatly reducing any potential for inadvertent start-up due to personnel error. One CSIP was in operation during the event, with the other available pump breaker racked out as required by Technical Specifications below 335°F.

During this event, a 1.47 square inch vent was calculated to be available to relieve any pressure transient, based on the PORV being at midposition. Additional data obtained shows that the PORV had slipped approximately 1/4 inch from the fully open position, and this would indicate that up to 2 square inches of vent path actually existed.

Since a substantial vent path actually existed, and with the RCPs out of service and the RCS not water-solid, and with vessel irradiation levels not yet at the limiting value of 4 EFPY, the probability of a limiting pressure transient is not likely. The required vent path was unavailable for at least one hour and five minutes, based on the time of discovery until correction.

This event is reportable in accordance with 10 CFR 50.73(a)(2)(v) as a condition that could have prevented the plant from being maintained in a safe shutdown condition due to an equipment failure.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
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SHEARON HARRIS NUCLEAR POWER PLANT - UNIT 1	0 5 0 0 0 4 0 0	8 8	— 0 2 4	— 0 0	0 4 OF 0 4

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

CORRECTIVE ACTION:

1. The PORV packing was tightened and a longer gagging device was installed until two of the three pressurizer safety relief valves were removed to provide the required RCS vent.

2. A different device will be designed for installation on the pressurizer PORV which does not risk compression of the valve packing and closure of the valve. This new design will be in place prior to using an open PORV to comply with Specification 3.4.9.4

3. A procedure to control the use of valve gagging devices will be implemented, requiring such devices to be either vendor supplied or designed as a plant modification with appropriate engineering reviews and controls.

CP&L
Carolina Power & Light Company

HARRIS NUCLEAR PROJECT
P.O. Box 165
New Hill, NC 27562

SEP 0 8 1988

File Number: SHF/10-13510C
Letter Number: HO-880186 (O)

U.S. Nuclear Regulatory Commission
ATTN: NRC Document Control Desk
Washington, DC 20555

SHEARON HARRIS NUCLEAR POWER PLANT UNIT 1
DOCKET NO. 50-400
LICENSE NO. NPF-63
LICENSEE EVENT REPORT 88-023-00

Gentlemen:

In accordance with Title 10 to the Code of Federal Regulations, the enclosed Licensee Event Report is submitted. This report fulfills the requirement for a written report within thirty (30) days of a reportable occurrence and is in accordance with the format set forth in NUREG-1022, September 1983.

Very truly yours,

C S Hinnant for

R. A. Watson
Vice President
Harris Nuclear Project

RAW:tbb

Enclosure

cc: Dr. J. Nelson Grace (NRC - RII)
Mr. B. Buckley (NRR)
Mr. W. H. Bradford (NRC - SHNPP)

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MEM/LER-88-023/1/OS1