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REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9207230065 DOC.DATE: 92/07/20 NOTARIZED: NO DOCKET #
FACIL:50-400 Shearon Harris Nuclear Power Plant, Unit 1, Carolina 05000400
AUTH.NAME AUTHOR AFFILIATION
HAMBY,M.R. Carolina Power & Light Co.
HINNANT,C.S. Carolina Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 92-006-00:on 920619,determined that since 1987 until May 1992 excess flow check valves was mispositioned.Caused by personnel error.Valves properly aligned w/internal manual bypass shut & procedures revised.W/920720 ltr.

DISTRIBUTION CODE: IE22T COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 7
TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:Application for permit renewal filed. 05000400

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EXTERNAL:	EG&G BRYCE,J.H	3	3	L ST LOBBY WARD	1	1
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JUL 2 0 1992

Letter Number: HO-920111

U.S. Nuclear Regulatory Commission
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SHEARON HARRIS NUCLEAR POWER PLANT UNIT 1
DOCKET NO. 50-400
LICENSE NO. NPF-63
LICENSEE EVENT REPORT 92-006-00

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

C. S. Hinnant
General Manager
Harris Nuclear Project

MRH:kjc

Enclosure

cc: Mr. S. D. Ebneter (NRC - RII)
Mr. N. B. Le (NRC - RII)
Mr. J. E. Tedrow (NRC - SHNPP)
Mr. G. E. Vaughn

MISC/LER92-006/1/OS1

IE27

NRC FORM 366 (6-89)

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)
Shearon Harris Nuclear Power Plan Unit 1	0 5 0 0 0 4 0 0	1 OF 0 6

TITLE (4)

Mispositioned Excess Flow Check Valves

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 6	1 9	9 2	9 2	— 0 0 6	— 0 0	0 7	2 0	9 2		0 5 0 0 0

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	1 0 0	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
		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
	AREA CODE
M. R. Hamby, Project Specialist - Regulatory Compliance	9 1 9 3 6 2 - 2 2 0 4

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

CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	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)

ABSTRACT:

Since plant start-up in 1987, excess flow check valves in the Reactor Auxiliary Building (RAB) hydrogen supply line and auxiliary steam line have been bypassed. The RAB hydrogen supply excess flow check valve is installed to meet a fire protection design requirement for hydrogen lines in safety-related areas. The RAB auxiliary steam line excess flow check valves were installed to meet an environmental qualification design commitment. These excess flow check valves have a handwheel on the valve which opens and shuts an internal bypass. This handwheel was mistakenly identified as operating the actual check valve and was in the open position to allow flow through the valves. With the internal manual bypass open, flow would not have completely isolated in the event of a line break. The operating procedure for the Hydrogen and Auxiliary Steam Systems were revised to specify that the handwheel on the excess flow check valve be in the closed position and a note was added to explain that this only isolates the internal bypass and does not prevent flow through the valve. The cause of this event was personnel error, in that it was not properly determined how the excess flow check valves operated.

This event is being reported in accordance with 10CFR50.73(a)(2)(v) as an event that alone could have prevented the fulfillment of a safety-function.

EVENT DESCRIPTION:

On June 19, 1992, it was determined the Harris Nuclear Plant had apparently operated since plant start-up in 1987 until May 8, 1992, with excess flow check valves in the Reactor Auxiliary Building (RAB) hydrogen supply line, 3HY-83, and the RAB auxiliary steam supply line, 1AS-344 and 1AS-345, bypassed.

The excess flow check valve in the RAB hydrogen supply line was installed to meet an FSAR design requirement that hydrogen lines in safety-related areas be seismically supported and/or equipped with excess flow check valve(s) so in case of a line break, the hydrogen concentration in the affected areas does not exceed 2 percent. This design meets requirement C.5.d.(5) of Branch Technical Position CMEB 9.5-1, Guidelines for Fire Protection for Nuclear Power Plants.

The auxiliary steam excess flow check valves were installed to limit potential steam flow from a steam line break in the RAB. This design was in accordance with an environmental qualification (EQ) design commitment contained in an August 27, 1985 letter from A. B. Cutter to H. R. Denton, to ensure the potential impact of a steam line break on safety-related equipment was limited.

The excess flow check valves were manufactured by Dragon Valves, Inc. These valves have two major operating components; a poppet assembly which closes on high flow and an internal manual bypass valve, see Attachment 1. The excess flow check valve has a handwheel on the valve which opens and shuts this bypass. This handwheel was mistakenly identified as operating the actual check valve and was open to allow flow through these lines. This internal manual bypass valve is used to equalize pressure on both sides of the valve after actuation on high flow, thus allowing the poppet assembly to reopen. With the internal manual bypass open, a higher flow rate would be required to cause the poppet assembly to shut and even if it had shut, flow would not have been completely isolated.

This problem was identified while researching a tagout for maintenance on the auxiliary steam system. Once it was identified that the external handwheel on these valves only affected the internal bypass and did not isolate the primary flow path through the poppet assembly, it was realized that the excess flow check valves were not in the correct position to automatically isolate flow on a pipe break as required. The internal manual bypass valves were shut as required to provide break protection. The operating procedures for these excess flow check valves were revised to specify that the handwheel be in the closed position and a note was added to explain that this only isolates the internal manual bypass valve and does not prevent flow through the valve. Additional instructions were added to the appropriate procedures for use of the internal manual bypass valves for resetting an actuated poppet mechanism.

Following these corrective actions, this event was being reviewed for industry information distribution when it was recognized by the specialist, who previously had extensive fire protection experience, that the hydrogen excess flow check valve was required as part of the plant fire protection design. Based on this, the event was reviewed and determined reportable in accordance with 10CFR50.73 (a) (2) (v), as an event that alone could have prevented the fulfillment of a safety-function.

During the investigation of this event, another hydrogen line which passes through the RAB without an installed excess flow check valve was identified. This line supplies a hydrogen overpressure on the Reactor Coolant Drain Tank (RCDT) inside containment. To ensure a limited volume of hydrogen can be added to the containment atmosphere post-accident, this line is supplied from a separate hydrogen bottle in the turbine building instead of the bulk hydrogen storage tank. This bottle contains a maximum of 233 cubic feet of hydrogen when fully charged. This limited volume of hydrogen will minimize the potential for a explosive mixture developing in the RAB, but this line does not contain a excess flow check valve nor is it seismically designed. This line has been isolated outside the RAB since June 30, 1992, to investigate hydrogen buildup in the Pressurizer Relief Tank. This line will remain isolated, except under limited direct operator action, until the potential effect of a break in this line can be fully evaluated, or until an excess flow check valve can be installed on this line.

CAUSE:

The cause of the excess flow check valves being bypassed was personnel error, in that the internal operation of these valves was inadequately researched when these valves were incorporated into the system operating procedures.

The cause of the RCDT hydrogen supply line not having an installed excess flow check valve installed was personnel error in that this line was not previously evaluated for compliance with the FSAR commitment on hydrogen lines in safety-related areas. A contributing factor to this error was that this line was assigned a Waste Gas (WG) line number when installed; therefore, when hydrogen lines were evaluated, this line was inadvertently excluded.

There have been no similar events reported.

SAFETY SIGNIFICANCE:

The hydrogen line with the open excess flow check valve passes through the 261' elevation of the RAB to supply hydrogen cover gas to the Volume Control Tank. This cover gas provides the hydrogen required for oxygen control in the Reactor Coolant System. This line is approximately ten feet above the floor and the hydrogen would tend to rise if a leak occurred. In addition, the normal ventilation from the RAB would dissipate and discharge the hydrogen from the RAB.

Despite these mitigating factors, it can not be assured that the hydrogen concentration would not exceed 2% as required. Located in the vicinity of this hydrogen line are Auxiliary Feedwater piping and one of the Essential Services Chilled Water Units. The valves in the Auxiliary Feedwater piping in this area are either locked open manual valves or normally open, fail open, electro-hydraulic valves. Based on the equipment in the area, the potential for seriously impacting plant safety appears small. A larger leak that allowed hydrogen to accumulate in the RAB for a longer period of time may have affected additional equipment and may have resulted in a more serious impact on plant safety. However, indications are available to alert operators of a significant loss of hydrogen inventory from the bulk hydrogen storage tank.

The auxiliary steam line in the RAB passes through areas where no safety related equipment is located; therefore, direct affect on safety-related equipment would not occur. However, a steam release from a break in the RAB could result in EQ equipment in adjacent areas exceeding their design limits. This could potentially affect operability of safety related equipment in the RAB. This equipment would not be required to mitigate the consequences of the auxiliary steam line break, but if it did occur coincident with a plant accident or transient, it may have affected required mitigation equipment.

The safety consequences of a line break in the RCDT hydrogen supply line would be similar to and bounded by, the consequences discussed above for the RAB hydrogen supply line.

CORRECTIVE ACTIONS:

1) The RAB hydrogen supply and auxiliary steam excess flow check valves were properly aligned with the internal manual bypass shut.

2) Procedures were revised to properly specify the required position for the excess flow check valve manual bypass handwheel.

3) A Night Order describing the operation of these excess flow check valves was reviewed by all Radwaste Operating crews.

4) Real-Time Training will be presented to all operators on this event and the proper operation of excess flow check valves.

5) The operation of excess flow check valves will be incorporated into initial Auxiliary and Radwaste Operator Training.

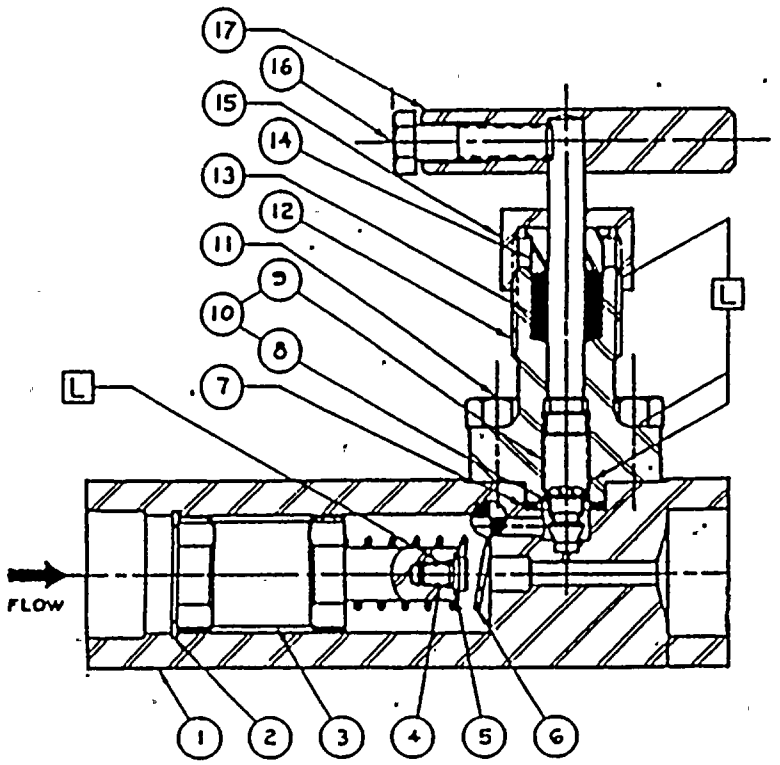
6) The RCDT hydrogen supply line will remain isolated except under direct operator control pending completion of a detailed design review to verify an excess flow check valve is not required or until an excess flow check valve is installed.

7) Other waste gas lines which may contain hydrogen will be reviewed for compliance with fire protection design criteria.

EIIS CODE INFORMATION:

Hydrogen Supply System - LJ
Auxiliary Steam System - SA

Attachment 1



L LUBE

NOTES:

	ITEM	QTY. PER ASSY.	PART NAME
	17	1	HANDLE
	16	1	CAP SCREW
	15	1	PACKING NUT
	14	1	PACKING GLAND
	13	3	PACKING
	12	1	BONNET
	11	4	BOLT
	10	1	STEM ASSY.
	9	1	• SHANK
	8	1	• DISC
	7	1	GASKET
	6	1	SPRING
	5	1	SEAT, O-RING
	4	1	RETAINER
	3	1	POPPET
	2	1	RETAINING RING
3	1	1	BODY