

VIRGINIA ELECTRIC AND POWER COMPANY
Surry Power Station
P. O. Box 315
Surry, Virginia 23883

May 23, 1989

U.S. Nuclear Regulatory
Commission
016 Phillips Building
Washington, D.C. 20555

Serial No.: 89-016
Docket No.: 50-280
Licensee No.: DPR-32

Gentlemen:

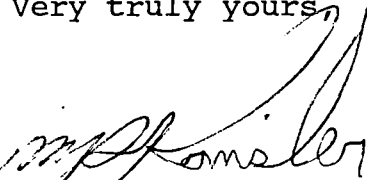
Pursuant to Surry Power Station Technical Specifications,
Virginia Electric and Power Company hereby submits the
following Licensee Event Report for Surry Unit 1.

REPORT NUMBER

89-016-00

This report has been reviewed by the Station Nuclear Safety
and Operating Committee and will be reviewed by Safety
Evaluation and Control.

Very truly yours,



M. R. Kansler
Station Manager

Enclosure

cc: Regional Administrator
Suite 2900
101 Marietta Street, NW
Atlanta, Georgia 30323

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) SURRY POWER STATION, UNIT 1	DOCKET NUMBER (2) 0 5 0 0 0 2 8 0	PAGE (3) 1 OF 04
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TITLE (4) **Inadvertent Positive Reactivity Addition By Boron Dilution Without Containment Integrity Intact Due To Leaking RCP Standpipe Makeup Valve**

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		
0	4	23	8	9	016	0	5	23	0 5 0 0 0		

OPERATING MODE (8) N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)																					
POWER LEVEL (10) 0 0 0	20.402(b)	20.405(a)(1)(i)	20.405(a)(1)(ii)	20.405(a)(1)(iii)	20.405(a)(1)(iv)	20.405(a)(1)(v)	20.405(c)	50.36(c)(1)	50.36(c)(2)	50.73(a)(2)(i)	50.73(a)(2)(ii)	50.73(a)(2)(iii)	50.73(a)(2)(iv)	50.73(a)(2)(v)	50.73(a)(2)(vii)	50.73(a)(2)(viii)(A)	50.73(a)(2)(viii)(B)	50.73(a)(2)(ix)	73.71(b)	73.71(c)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)	
											X											

LICENSEE CONTACT FOR THIS LER (12)

NAME M. R. Kansler, Station Manager	TELEPHONE NUMBER 8 0 4 3 5 7 - 3 1 8 4
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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
D	C	B	H C V G	2 5 7	N				

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On April 14, 1989 with Unit 1 at cold shutdown, an increase in Reactor Coolant System (RCS) inventory of approximately .05 gallons per minute (gpm) was detected. The inleakage rate increased over a period of several days, and RCS boron concentration decreased. Several attempts were made to determine the source of the inleakage. Following a review of chemistry data, primary grade water to the containment was isolated, and the RCS boron concentration stabilized. On April 23, it was determined that the source of the inleakage to the RCS was the "A" reactor coolant pump standpipe primary grade water makeup valve. Boron concentration was reduced by less than 80 ppm over a period of nine days, and the lowest calculated shutdown margin was 9.3 percent delta k/k. This event is being reported as a positive reactivity addition by boron dilution without maintaining containment integrity. The valve leakage was due to the improper adjustment of the valve operator travel stops. The valve diaphragm was replaced and the stops properly adjusted. Procedures will be developed/revised to preclude a similar occurrence. Guidance will be provided for actions to be taken should a slow dilution of the RCS be suspected.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

1.0 Description of the Event

On April 14, 1989, with Unit 1 at cold shutdown, the Shift Technical Advisor (STA) noted an increase of approximately .05 gallons per minute (gpm) to the Unit 1 Reactor Coolant System (RCS) {EIIS-AB} inventory. This inventory increase was detected during routine surveillance of the RCS. At 1630 hours on April 14, the RCS boron concentration was 2091 ppm. The RCS sample taken at 0035 hours on April 15 showed a concentration decrease to 2079 ppm. During the next several days, RCS inleakage increased and attempts were made to determine the inleakage source. By 0113 hours on April 18, the RCS boron concentration had decreased by 33 ppm to 2058 ppm. The Unit 1 Senior Reactor Operator (SRO) directed operators to isolate Primary Grade (PG) water {EIIS-CB} to the Unit 1 containment. Increased boron sampling over the next two days verified that the boron concentration had stabilized following isolation of PG water.

On April 20, at 0735 hours, the PG water to containment trip valve, 1-PG-TV-1519A, was reopened to verify the RCS suspected inleakage source. Boron concentration again slowly decreased until April 23, 0420 hours when it was determined that the leakage source was a 0.16 gpm leak past the PG water makeup valve 1-RC-HCV-1522A {EIIS-HCV} to the "A" Reactor Coolant Pump (RCP) {EIIS-P} standpipe. A manual isolation valve {EIIS-ISV} was closed to isolate the leak and no further decrease in boron concentration was observed. The lowest boron concentration reached in the RCS was 2015 ppm.

During this event, the RCS loops were isolated, and leakage past the loop stop valves was being directed to the Primary Drains Transfer Tank (PDTT). The RCP standpipe overflow was also directed to the PDTT. The PDTT inventory was pumped to the Primary Drains Tank (PDT), then pumped back to the RCS via the Volume Control Tank (VCT). Therefore, when PG water leakage by 1-RC-HCV-1522A and overflowed the RCP standpipe into the PDTT, it was mixed with the RCS recovered leakage and pumped back to the RCS causing a slow dilution. This event is being reported as a positive reactivity addition by boron dilution without maintaining containment integrity. This is contrary to Technical Specification 3.8.A.6.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

2.0 Safety Consequences and Implications

The impact of the reactor coolant system unplanned boron dilution was minimal since boron concentration was reduced by less than 80 ppm over a period of 9 days and the lowest calculated shutdown margin was 9.3% delta k/k. Shutdown margin for cold shutdown is administratively controlled at or above 5.5% delta k/k for the present core burnup. The 5.5% shutdown margin was never challenged during this event. Therefore, the health and safety of the public were not affected.

3.0 Cause

The dilution of the RCS was due to leakage of the RCS standpipe makeup valve, 1-RC-HCV-1522A. The leakage was due to the improper adjustment of the valve operator travel stops. The existing valve maintenance procedure does not provide specific guidance to adjust the stops.

4.0 Immediate Corrective Action(s)

The RCP standpipe makeup manual isolation valve was closed to stop any further dilution of the RCS. In addition, the increased sampling frequency of RCS boron concentration was maintained to verify that the dilution had been stopped.

5.0 Additional Corrective Action(s)

The valve diaphragm was replaced, and the travel stops were adjusted to ensure proper diaphragm compression.

6.0 Action(s) Taken to Prevent Recurrence

Procedures will be developed/ revised to overhaul, set and adjust Grinnel air operated valves. In addition, guidance will be provided for actions to be taken should a slow dilution of the RCS be suspected.

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

7.0 Similar Events

None.

8.0 Manufacturer/Model Number(s)

Grinnell Diaphragm Valve
3/4" Weir Valve
32225 Reverse Acting Air Motor