

**Virginia Electric and Power Company  
Surry Power Station  
P. O. Box 315  
Surry, Virginia 23883**

December 16, 1993

U. S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, D. C. 20555

Serial No.: 93-785  
SPS:MDK  
Docket No.: 50-280  
License No.: DPR-32

Dear Sirs:

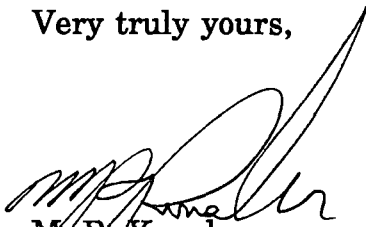
Pursuant to Surry Power Station Technical Specifications, Virginia Electric and Power Company hereby submits the following Licensee Event Report applicable to Surry Power Station Unit 1.

**REPORT NUMBER**

50-280/93-013-00

This report has been reviewed by the Station Nuclear Safety and Operating Committee and will be forwarded to the Management Safety Review Committee for its review.

Very truly yours,



M. R. Kansler  
Station Manager

Enclosure

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

M. W. Branch  
NRC Senior Resident Inspector  
Surry Power Station

9312300190 931216  
PDR ADOCK 05000280  
S PDR



*IF22  
1/1*

**LICENSEE EVENT REPORT (LER)**

(See reverse for required number of digits/characters for each block)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) Surry Power Station, Unit 1	DOCKET NUMBER (2) 05000 - 280	PAGE (3) 1 OF 4
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TITLE (4) Volume Control Tank Level Decrease Results in Excessive Reactor Coolant System Leakage

EVENT DATE (5)			LER NUMBER (6)			REPORT NUMBER (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
11	17	93	93	-- 013	-- 00	12	16	93	FACILITY NAME	DOCKET NUMBER 05000
									FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9) N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)						
POWER LEVEL (10) 091	20.402(b)		20.405(c)		50.73(a)(2)(iv)		73.71(b)
	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
	20.405(a)(1)(iii)		X 50.73(a)(2)(i) (B)		50.73(a)(2)(viii)(A)		(Specify in Abstract below and in Text, NRC Form 366A)
	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 M. R. Kansler, Station Manager	TELEPHONE NUMBER (include Area Code) (804) 357-3184
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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
X	CB	TSV	G257	Yes					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)	X	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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**ABSTRACT** (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On November 17, 1993, at 0945 hours, with Unit 1 at 91% reactor power and Unit 2 at Cold Shutdown, the Unit 1 Volume Control Tank (VCT) level decreased unexpectedly during an ion exchanger resin transfer. The Unit 1 Senior Reactor Operator (SRO) was notified immediately by the Reactor Operator (RO). Leakage through a two-inch manual isolation valve was diverting demineralizer effluent away from the VCT and into the resin transfer piping. The leakage was isolated promptly by closing the resin transfer isolation valve. Since the leakage was characterized as RCS leakage and exceeded 10 gallons per minute, a condition not allowed by Technical Specifications existed for a brief time. Therefore, this report is being made in accordance with 10CFR50.73(a)(2)(i)(B) for a condition prohibited by Technical Specifications which occurred when Reactor Coolant System total leakage exceeded 10 gallons per minute.

**REQUIRED NUMBER OF DIGITS/CHARACTERS  
FOR EACH BLOCK**

<b>BLOCK NUMBER</b>	<b>NUMBER OF DIGITS/CHARACTERS</b>	<b>TITLE</b>
1	UP TO 46	FACILITY NAME
2	8 TOTAL 3 IN ADDITION TO 05000	DOCKET NUMBER
3	VARIES	PAGE NUMBER
4	UP TO 76	TITLE
5	6 TOTAL 2 PER BLOCK	EVENT DATE
6	7 TOTAL 2 FOR YEAR 3 FOR SEQUENTIAL NUMBER 2 FOR REVISION NUMBER	LER NUMBER
7	6 TOTAL 2 PER BLOCK	REPORT DATE
8	UP TO 18 -- FACILITY NAME  8 TOTAL -- DOCKET NUMBER 3 IN ADDITION TO 05000	OTHER FACILITIES INVOLVED
9	1	OPERATING MODE
10	3	POWER LEVEL
11	1 CHECK BOX THAT APPLIES	REQUIREMENTS OF 10 CFR
12	UP TO 50 FOR NAME 14 FOR TELEPHONE	LICENSEE CONTACT
13	CAUSE VARIES 2 FOR SYSTEM 4 FOR COMPONENT 4 FOR MANUFACTURER NPRDS VARIES	EACH COMPONENT FAILURE
14	1 CHECK BOX THAT APPLIES	SUPPLEMENTAL REPORT EXPECTED
15	6 TOTAL 2 PER BLOCK	EXPECTED SUBMISSION DATE

**LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION**

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Surry Power Station, Unit 1	05000 - 280	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 4
		93	- 013	- 00	

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

**1.0 DESCRIPTION OF THE EVENT**

On November 17, 1993, with Unit 1 at 91% reactor power in End-of-Life coast down and Unit 2 at Cold Shutdown for maintenance, resin transfers from Deborating Demineralizer 3B [EIIIS: CB,IX] and Mixed Bed Demineralizer 1A were scheduled for the day. After pre-job briefs had taken place, the resin transfers began. The transfer from Deborating Demineralizer 3B was completed without incident, and the valve lineup was performed to allow the transfer from Mixed Bed Demineralizer 1A.

At approximately 0945 hours, the Unit 1 Volume Control Tank (VCT) [EIIIS: CG, TK] level decreased unexpectedly. The Unit 1 Reactor Operator (RO) immediately notified the Unit 1 Senior Reactor Operator (SRO). The Unit 1 SRO directed the RO to bypass the Mixed Bed Demineralizers, commence makeup to the VCT, secure the resin transfer lineup, and initiate Abnormal Procedure 1-AP-16.00, "Excessive RCS Leakage". After estimating the leak rate to be greater than 25 gallons per minute (GPM), the RO confirmed pressurizer level, pressurizer pressure, and average RCS temperature stable in accordance with 1-AP-16.00. Charging flow did not increase during the event. Prompt operator actions taken to secure the resin transfer lineup were appropriate in identifying and isolating the source of the leakage within approximately two minutes.

The VCT and Mixed Bed Demineralizers are part of the Chemical and Volume Control System (CVCS) [EIIIS:CB] which maintains and controls proper water inventory and water chemistry. Following a review of station drawings, valve alignment checks, and troubleshooting by the operating team, it was determined that the manual isolation valve on the discharge side of Mixed Bed Demineralizer 1A was leaking. Leakage through two-inch manual isolation valve, 1-CH-21, into the tagged boundary of Mixed Bed Demineralizer 1A, was diverting demineralizer effluent from Mixed Bed Demineralizer 1B into the Mixed Bed Demineralizer 1A resin transfer lineup. In this condition, demineralizer effluent flow to the VCT was decreased and resulted in a decreasing VCT level. This condition did not affect normal makeup capability to the VCT or normal charging flow to the RCS.

The unexpected decrease in VCT level was considered a loss of RCS inventory until such time as the source of leakage was isolated. Technical Specifications (TS) pertaining to RCS leakage, specifically TS 3.1.C.5, do not allow plant operation with a RCS total leak rate of greater than 10 gallons per minute. Consequently, this event is being reported pursuant to 10CFR50.73(a)(2)(i)(c) as a result of operating in a condition prohibited by Technical Specifications.

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FACILITY NAME (1)		DOCKET NUMBER (2)		LER NUMBER (6)			PAGE (3)
Surry Power Station, Unit 1		05000 - 280		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	3 OF 4
				93	- 013 -	00	

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**2.0 SAFETY CONSEQUENCES AND IMPLICATIONS**

A limited amount of leakage from the RCS is expected. The Technical Specification allowable values are 1 GPM from unidentified sources and 10 GPM from identified sources. These values are sufficiently low to ensure corrective actions are taken before the leakage becomes excessive. RCS leak rate calculations are performed once each shift, or more often if required. The leakage past 1-CH-21 was contained within the resin transfer piping with no breach of piping, component, or system integrity. Effluent parameters did not exceed the piping design conditions. RCS integrity remained intact throughout the event with the RCS pressure boundary valves, the letdown isolation valves, and the containment isolation valves operable. These RCS isolation valves were available to isolate the RCS through automatic actions or procedurally controlled manual operator actions from the main control room.

In accordance with Operating and Abnormal Procedures, VCT level was restored and the leakage through 1-CH-21 isolated when the operators performing the resin transfer secured the resin transfer lineup. The leakage was contained in the Low Level Liquid Waste System. The gaseous radioactivity released from the waste tank vent was monitored by the installed radioactivity monitoring system, and no TS limits were exceeded. There were no personnel injuries, no personnel contamination, no uncollected leakage, and no safety significant radiological consequences associated with this event. The health and safety of the public were not affected. Therefore, no significant safety consequences or implications resulted from this event.

**3.0 CAUSE**

The decrease in VCT level was due to leakage past the seat of manual isolation valve 1-CH-21. This was the valve closed to isolate Mixed Bed Demineralizer 1A.

**4.0 IMMEDIATE CORRECTIVE ACTION(S)**

Upon noting the level decrease in the VCT, the Unit 1 RO immediately notified the Unit 1 SRO. The Unit 1 SRO directed the RO to bypass the Mixed Bed Demineralizers, commence makeup to the VCT, secure from the resin transfer lineup, and initiate Abnormal Procedure 1-AP-16.00, "Excessive RCS Leakage".

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TEXT CONTINUATION**

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**5.0 ADDITIONAL CORRECTIVE ACTION(S)**

The operators reviewed the valve lineup and system drawings and verified their tagging boundary. Based on these reviews, they determined that 1-CH-21, the manual isolation valve downstream of Mixed Bed Demineralizer 1A, was the source of the leakage. By utilizing an alternate valve line up, operators successfully completed the resin transfer evolution.

The manual isolation valve, 1-CH-21, will be repaired or replaced.

**6.0 ACTIONS TO PREVENT RECURRENCE**

The shift involved with the resin transfer was debriefed by Management. When possible, the isolation capability of the isolation valves will be tested as part of future resin transfers.

A failure analysis will be conducted on the failed valve, and appropriate corrective actions will be taken based on the results of that analysis.

**7.0 SIMILAR EVENTS**

The following Licensee Event Reports for Surry Units 1 and 2 contain Reactor Coolant System Leakage issues:

- LER S1-87-025: Excessive RCS Leakage Due to Valve Seat Leakage.
- LER S1-90-008: Reactor Coolant System Leakage Exceeds 10 GPM Due to Gage Sensing Line Break.
- LER S2-91-005: RCS Leakage exceeds TS Limits Due to Mechanical Failure of Isolation Valve.
- LER S2 92-008: RCS Leakage Rate Greater Than 10 GPM Due to Failure of Swagelok Fitting on a Flow Transmitter

**8.0 MANUFACTURER/MODEL NUMBER**

Manufacturer: Grinnell  
Type: Two-inch diaphragm valve  
Serial Number: none