

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

August 24, 1990

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

Serial No.: 90-526
Docket No.: 50-280
License No.: DPR-32

Gentlemen:

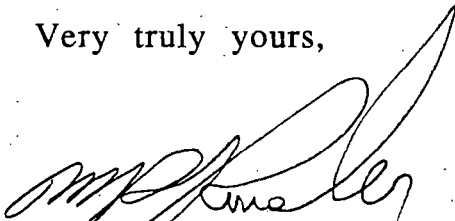
Pursuant to Surry Power Station Technical Specifications, Virginia Electric and Power Company hereby submits the following Licensee Event Report for Unit 1.

REPORT NUMBER

90-008-00

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

Very truly yours,



M. R. Kansler
Station Manager

Enclosure

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

03503

9008310122 900824
PDR ADCK 05000280
S PDC
9008310122

1522
11

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 6
--	--------------------------------------	--------------------

TITLE (4)
RCS Leakage Exceeds 10 gpm Due to Gage Sensing Line Break

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)		
07	27	90	90	008	000	08	24	90				0 5 0 0 0		
												0 5 0 0 0		

OPERATING MODE (9): N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)											
POWER LEVEL (10) 0 9 9	20.402(b)			20.405(c)			50.73(e)(2)(iv)			73.71(b)		
	20.406(a)(1)(i)			50.36(e)(1)			50.73(e)(2)(v)			73.71(c)		
	20.406(a)(1)(ii)			50.36(e)(2)			50.73(e)(2)(vii)			OTHER (Specify in Abstract below and in Text, NRC Form 366A)		
	20.406(a)(1)(iii)			X 50.73(a)(2)(i)			50.73(e)(2)(viii)(A)					
	20.406(a)(1)(iv)			50.73(a)(2)(ii)			50.73(e)(2)(viii)(B)					
20.406(a)(1)(v)			50.73(a)(2)(iii)			50.73(e)(2)(ix)						

LICENSEE CONTACT FOR THIS LER (12)

NAME M. R. Kansler, Station Manager	TELEPHONE NUMBER AREA CODE: 8 0 4 3 5 7 - 3 1 8 4
--	--

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS
X	C B	T B G	X X X X	N					

SUPPLEMENTAL REPORT EXPECTED (14)

<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
--	--	-------------------------------	-------	-----	------

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

On July 27, 1990, at 0530 hours, with Unit 1 at 99% reactor power, the Unit 1 Reactor Operator (RO) determined that Reactor Coolant System (RCS) leakage was greater than 10 gpm as indicated by the level drop indicated on the Volume Control Tank (VCT) level recorder. This was contrary to Technical Specification 3.1.C.5 which limits the amount of total RCS leakage. The source of the leak was a broken gage sensing line in the letdown system. The system was isolated in accordance with procedures, and no radiation monitor alarms were received. The sensing line has been repaired. Appropriate follow-up actions will be initiated pending determination of the failure mechanism of the tubing. The failure of the sensing line occurred after flow was diverted to a previously isolated portion of the system. The previous shift had closed manual isolation valves for the unit's deborating demineralizers (deborator) in accordance with an optional section of an approved procedure. The relief RO, during the event, attempted to place the deborator in service using the divert valve only. Operating procedures will be clarified to eliminate confusion on operating practices.

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

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.

FACILITY NAME (1) Surry Power Station, Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 2 8 0 9 0	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		0 0 8	0 0 0	0 2	OF	0 6	

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

1.0 DESCRIPTION OF THE EVENT

On July 27, 1990 at 0530 hours, with Unit 1 at 99% reactor power, the Unit 1 Reactor Operator (RO) determined Reactor Coolant System (RCS) leakage to be approximately 15 gpm calculated from a level drop noted on the control room recorder for Volume Control Tank (VCT) level. The abnormal procedure (AP-16) for excessive RCS leakage was entered, and operators were dispatched to the Auxiliary Building to determine the source of the leak. A Senior Reactor Operator (SRO) noticed water flowing on the floor outside the area which encloses RCS letdown filter 1-CH-FL-5, and notified Operations personnel in the main control room. Normal letdown was promptly secured, and the Unit was placed on excess letdown in accordance with AP-16. These actions resulted in isolating the leak and the RCS leak rate was then verified to be significantly less than 10 gpm at 0609 hours using the pressurizer and VCT recorder trends. A Notification of Unusual Event, as defined by the Surry Emergency Plan, was not declared, since no power reduction was required.

The SRO determined the source of the leakage to be a sensing line for the letdown filter pressure indicator which had failed at a 1/2 inch diameter "Swagelok" fitting. The SRO isolated the sensing line at 0629 hours by closing sensing line isolation valve 1-CH-119 (EIS-V). At 0923 hours, RCS total leakage was calculated to be 2.07 gpm with an unidentified leakage of 0.24 gpm.

The above event is contrary to Technical Specification (T.S.) 3.1.C.5, which allows a maximum leakage of 10 gpm from the RCS. This event also required a T. S. Limiting Condition for Operation be entered to identify the source of leakage within four hours.

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

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.

FACILITY NAME (1) Surry Power Station, Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 2 8 0 9 0 - 0 0 8 - 0 0	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		0 9	0 0 8	- 0 0	0 3	OF 0 6

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

2.0 SAFETY CONSEQUENCES AND IMPLICATIONS

A limited amount of leakage from the RCS is expected, but the maximum 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 prior to the leakage becoming excessive. Leak rate calculations are performed once per day, or more often if required. During this event, the normal charging system was in service and was able to compensate for all RCS leakage and the leak was promptly isolated in accordance with the AP. In addition, no radiation monitor alarms were received which indicates minimal amounts of entrained gases from the leakage were released into the Auxiliary Building. Gaseous release monitor recorders were checked, and it was verified that no releases above the alarm set point had occurred. As a precaution, the Auxiliary Building was placed on filtered exhaust. Therefore, the health and safety of the public were not affected.

3.0 CAUSE

The cause of the excessive RCS leakage was the failure of the sensing line (for pressure indicator PI-1166 for RCS letdown filter 1-CH-FL-5) which occurred approximately 20 minutes after letdown flow was diverted to a previously isolated flow path. The operating crew prior to this event had locally isolated the "A" deborating demineralizer 1-CH-I-3A (EIS-FDM) by closing the manual inlet and outlet isolation valves for the deborator. This was done in accordance with an optional portion of the operating procedure for removing the deborator from service. Log entries and communications made at the time did not explicitly indicate the deborator had been manually isolated. The RO at the time of the event attempted to place the deborator in service by solely operating the divert

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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.

FACILITY NAME (1) Surry Power Station, Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 2 8 0 9 0 - 0 0 8 - 0 0	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
					0 4	OF 0 6

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

valve switch from the control room. This is common practice after the deborator is initially manually aligned to the system (normally at the end of core life) and is verified as functioning correctly.

When the operator attempted to place the deborator in service using only the control room switch, the system pressurized up to the letdown pressure relief valve (1-CH-RV-1289) set point (200 psi) which lifted and diverted flow directly to the VCT. Approximately 20 minutes later, the tubing failed, and the RO noticed the VCT level decrease. He calculated the RCS leakage as approximately 15 gpm.

The exact cause of the sensing line failure has not been determined. The pressurization of the piping due to aligning the letdown flow to the isolated deborator is not considered to be sufficient, by itself, to have caused the 1/2 inch diameter stainless steel sensing line (rated in excess of 2000 psig) to break unless tubing was already in a degraded condition. A preliminary analysis was performed on the failed end of the tubing and determined that the initial fracture was brittle in nature. A detailed analysis will be performed to determine the exact failure mechanism.

The event was initiated due to failure of the operating shifts to communicate the positions of the manual isolation valves for the deborating demineralizers. The deborator is only used at core end-of-life (EOL) to remove the last amount of boron from the RCS prior to refueling. It is placed in service by opening manual valves and sampling prior to use. Thereafter, common practice is to operate the divert valve switch, only, from the control room to put the deborator in the flow path when required to control boron concentration. The manual isolation valves are not normally closed unless a problem occurs. The

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

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.

FACILITY NAME (1) Surry Power Station, Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 2 8 0	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		9 0	- 0 0 8	- 0 0	0 5	OF	0 6

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

operating procedure for removing the deborator from service includes optional steps for closing the manual isolation valves. The RO prior to the event performed all steps of the operating procedure, including the closing of manual isolation valves, but did not make explicit communications because he was not aware of the common operating practice and the potential for confusion.

4.0 IMMEDIATE CORRECTIVE ACTION(S)

The operations shift performed the required procedures and isolated the leakage path well within allowable Technical Specification time limits.

5.0 ADDITIONAL CORRECTIVE ACTION(S)

The failed end of the tubing was cut off and retained for analysis. The existing sensing line has been repaired. Visual inspections showed no obvious conditions which could have caused the failure.

6.0 ACTIONS TO PREVENT RECURRENCE

Operating procedures which contributed to the event will be clarified to indicate that closing the manual isolation valves is not commonly done during normal operation of the deborator. In addition, to eliminate confusion on operating practices, an administrative procedure is currently being written to clarify which operating evolutions are considered "skill of the craft". Also, this event has been discussed with the operating shifts. Following completion of analysis of the failed end of tubing, appropriate additional inspections and repairs will be initiated.

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

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.

FACILITY NAME (1) Surry Power Station, Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 2 8 0	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		9 0	- 0 0 8	- 0 0	0 6	OF	0 6

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

7.0 SIMILAR EVENTS

LER 87-13: RCS Leakage Greater Than T.S. Limits Due to Failed Packing on a Loop Stop Valve.

LER 87-25: RCS Leakage Greater Than T.S. Limits Due to Valve Seat Leakage.

8.0 MANUFACTURER/MODEL NUMBER

Not known.