

**Virginia Electric and Power Company
Surry Power Station
5570 Hog Island Road
Surry, Virginia 23883**

April 18, 1997

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

Serial No.: 97-218
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

50-280/97-006-00

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,



D. A. Christian
Station Manager

Enclosure
Commitments contained in this letter: None.

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

R. A. Musser
NRC Senior Resident Inspector
Surry Power Station

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LICENSEE EVENT REPORT (LER)

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

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), 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 5
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TITLE (4)
Loss of Refueling Integrity Due to Inadequate Containment Closure Process.

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 NAME	DOCUMENT NUMBER
03	20	97	97	-- 006 --	00	04	18	97	FACILITY NAME	DOCUMENT NUMBER
										05000-
										05000-

OPERATING MODE (9)	n	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)								
		20.2201(b)	20.2203(a)(2)(v)	X	50.73(a)(2)(i)	50.73(a)(2)(viii)				
POWER LEVEL (10)	000 %	20.2203(a)(1)	20.2203(a)(3)(i)		50.73(a)(2)(ii)	50.73(a)(2)(x)				
		20.2203(a)(2)(i)	20.2203(a)(3)(ii)		50.73(a)(2)(iii)	73.71				
		20.2203(a)(2)(ii)	20.2203(a)(4)		50.73(a)(2)(iv)	OTHER				
		20.2203(a)(2)(iii)	50.36(c)(1)		50.73(a)(2)(v)	Specify in Abstract below				
		20.2203(a)(2)(iv)	50.36(c)(2)		50.73(a)(2)(vii)	or in NRC Form 366A				

LICENSEE CONTACT FOR THIS LER (12)	
NAME D. A. Christian, Station Manager	TELEPHONE NUMBER (Include Area Code) (757) 365-2000

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	
				NO						

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
YES	X	NO					
(If yes, complete EXPECTED SUBMISSION DATE).							

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)
 At 1206 hours on March 20, 1997, with Unit 1 in refueling shutdown and fuel movement underway, and Unit 2 at 100% power, a management walkdown of selected refueling containment integrity penetrations questioned the adequacy of the main steam safety valve inlet pipe flange cover installation. Investigation by a maintenance team determined that the flange cover on main steam safety valve, 1-MS-SV-103C, had a gap of approximately one-eighth inch. Technical Specification 3.10.A.1, regarding refueling operations, requires penetrations which provide a direct path from containment atmosphere to the outside atmosphere to be closed by a valve, blind flange, or equivalent. Since refueling containment integrity was not satisfied, fuel movement was stopped in accordance with the action requirements of Technical Specification 3.10.B. A containment integrity verification plan was developed and implemented. Additional containment integrity issues were identified, corrected and evaluated. The health and safety of the public were not affected by this event. A fuel handling accident or radiological release did not occur. This event was caused by inadequate refueling containment closure process and verification. A Root Cause Evaluation is underway. This report is being made pursuant to 10CFR50.73(a)(2)(i)(B) for any operation or condition prohibited by Technical Specifications.

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

1.0 DESCRIPTION OF THE EVENT

Technical Specification 3.10.A.1 requires refueling containment integrity during refueling operations. This specification requires penetrations [EIS: NH, PEN] which provide a direct path from containment atmosphere to the outside atmosphere to be closed by a valve, blind flange, or equivalent.

During performance of scheduled Unit 1 refueling activities, main steam safety valves [EIS: SB, RV] were removed for setpoint testing and maintenance. In accordance with the maintenance procedure that removed the valves, a blank flange cover was installed on the safety valve inlet pipe flange for foreign material exclusion purposes. The old gasket remained installed to provide a seal between the piping flange and blank flange cover. Subsequently, refueling containment integrity, required by Technical Specification 3.10.A.1, was established in accordance with the refueling containment integrity procedure. The refueling containment integrity procedure provided the requirements for establishing and verifying that containment penetrations [EIS: NH, PEN] were properly sealed. At 1206 hours on March 29, 1997, during a management walkdown of selected refueling containment integrity penetrations, the adequacy of the main steam safety valve blank flange covers was questioned. Further investigation by a maintenance team determined that the flange cover on the "C" main steam safety valve, 1-MS-SV-103C, had a gap of approximately one-eighth inch. The gap between the "C" main steam safety valve flange and cover did not satisfy the procedural requirements for refueling containment integrity.

Fuel off-load had commenced at 0856 hours on March 20, 1997, and fuel off-load was stopped in accordance with the action requirements of Technical Specification 3.10.B at 1206 hours on March 20, 1997. The main steam safety valve inlet pipe flange cover was subsequently installed correctly and the closure bolts for all flange covers tightened. Fuel off-load recommenced at 1542 hours on March 20, 1997.

At 1054 hours on March 21, 1997, an independent inspection by a nuclear oversight specialist identified a gap in the flange cover installed over the equipment hatch emergency escape trunk containment penetration [EIS: NH, AL, PEN]. Further investigation identified the raised surface of a seam weld on the flange cover caused a visible gap between the mating surfaces of the cover and the flange. Since the gap between the equipment hatch cover and flange allowed a direct path from containment atmosphere to the outside atmosphere, refueling containment integrity in accordance with Technical Specification 3.10.A.1 was not satisfied.

A containment integrity verification plan was developed and implemented to verify proper installation of refueling containment integrity covers and to verify actual valve position in accordance with tag-out boundaries.

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At approximately 1305 hours on March 21, 1997, during implementation of the containment integrity verification plan, it was determined that main steam trip valve [EIS: SB, ISV], 1-MS-TV-101C, was no longer fully closed. Instrument air leaking past an isolation valve [EIS: LD, ISV] to the air actuation cylinder was causing the trip valve actuator to hold the valve disc slightly off its seat. At 2046 hours on March 21, 1997, also during implementation of the containment integrity verification plan, minor leakage was identified at the equipment hatch emergency escape trunk cover penetrations. The valve and penetrations had been previously verified to be properly closed prior to fuel off-load activities.

Fuel off-load had been stopped at 1054 hours on March 21, 1997, upon discovery of the equipment hatch emergency escape trunk flange cover gap and did not recommence until 2353 hours on March 21, 1997, after the containment integrity verification plan issues were resolved.

This report is being made pursuant to 10CFR50.73(a)(2)(i)(B) for any operation or condition prohibited by Technical Specifications, since the gap in the main steam safety valve inlet pipe flange cover and the gap in the equipment hatch emergency escape trunk cover did not satisfy Technical Specification 3.10.A.1 requirements for refueling containment integrity.

2.0 SIGNIFICANT SAFETY CONSEQUENCES AND IMPLICATIONS

The health and safety of the public were not affected by this event. A fuel handling accident or radiological release did not occur. There are no safety consequences or implications associated with this event. The requirements of 10 CFR 100 would not have been exceeded during this event, even if a postulated fuel handling accident had occurred with the containment integrity conditions identified.

For the conditions involving the leakage paths from containment atmosphere through the main steam safety valve flange cover and the main steam trip valve, no leakage of any safety significance would have occurred due to the design configuration and existing condition of the steam generators [EIS: SJ, HX]. The feedwater ring [EIS: SJ, PSX] inside the steam generator is maintained full of water by a loop seal design. This feedwater ring water seal would block any direct release path to the outside atmosphere. At the time of the event, the "C" steam generator feedwater ring was filled with water. There was no direct release path from containment atmosphere to the outside atmosphere. The conditions of the event involving the main steam safety valve flange cover and the main steam trip valve were bounded by the initial conditions assumed in the UFSAR Fuel Handling Accident Analyses. No increase in accident consequences would have occurred as a result of the conditions identified above.

For those conditions involving the equipment hatch emergency escape trunk cover and its penetrations, an engineering evaluation determined that the observed breaches in the equipment hatch cover did not represent a compromise in refueling containment integrity which would have had a discernible impact on offsite releases in the event of a Fuel Handling Accident. There were no credible mechanisms present to create a significant pressure

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differential between the containment atmosphere and the outside atmosphere. If a postulated Fuel Handling Accident were to occur with the equipment hatch conditions identified, any release would have been by diffusion and would have been negligible. Thus for the observed conditions, the limiting case results presented in the UFSAR Fuel Handling Accident Analyses remained bounding.

3.0 CAUSE OF THE EVENT

This event was caused by inadequate refueling containment closure process and verification. A Root Cause Evaluation is underway.

4.0 IMMEDIATE CORRECTIVE ACTION

Upon discovery that refueling containment integrity was not satisfied, fuel movement was stopped in accordance with the action statement requirements of Technical Specification 3.10.B. The main steam safety valve flange cover was installed correctly and the closure bolts tightened. At 1527 hours on March 20, 1997, the main steam safety valve flange covers were verified to be installed correctly.

A refueling containment integrity verification plan was also developed and implemented. The refueling containment integrity verification plan included:

- Verification of proper installation of refueling containment integrity covers by the refueling Senior Reactor Operator and Mechanical Maintenance personnel.
- Verification of actual valve position in accordance with tag-out boundaries.
- Review of previous events related to loss of refueling containment integrity to ensure they were factored into the integrity review.
- Heightened sensitivity to work orders affecting containment integrity.

5.0 ADDITIONAL CORRECTIVE ACTIONS

A sealant was applied on the inside and outside of the equipment hatch emergency escape trunk flange cover. Checks for air leakage and visible gaps were completed. Proper installation of the equipment hatch emergency escape trunk flange cover and its penetrations was verified. At 2157 hours on March 21, 1997, the required actions for equipment hatch integrity were verified to be satisfactory.

The equipment hatch emergency escape trunk flange cover weld bead was ground flush with the face of the flange cover to ensure a proper sealing surface existed.

The affected refueling containment integrity procedures were revised. Maintenance procedure revisions included additional details for installing the equipment hatch emergency escape trunk flange cover and the main steam safety valve inlet pipe flange covers for establishing refueling containment integrity. These instructions provide criteria for assuring that an atmospheric seal is established and verified by maintenance personnel. Also, the operations procedures were revised to verify installation was accomplished in accordance with the maintenance procedures.

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The revised procedures were utilized to establish containment integrity for core reload, which commenced at 2356 hours on April 2, 1997.

6.0 ACTIONS TO PREVENT RECURRENCE

A Root Cause Evaluation is being performed. Approved recommendations from the Root Cause Evaluation will be implemented in accordance with the Corrective Action Program. The Root Cause Evaluation will address the effectiveness of corrective actions associated with previous refueling containment integrity events.

7.0 SIMILAR EVENTS

- LER 50-280 / 92-005-00, Loss Of Refueling Containment Integrity Due To Inadequate Procedures And Work Practices.
- LER 50-281 / 89-001-00, Loss Of Containment Integrity During Refueling Operations Due To Loss Of Administrative Controls.
- LER 50-280 / 83-015-00, Loss of Refueling Containment Integrity Due to Nitrogen Purge Valve Removal.
- LER 50-281 / 81-078-00, Loss of Refueling Containment Integrity Due to Removal of Inside and Outside Trip Valves.

8.0 ADDITIONAL INFORMATION

Unit 2 was at 100% power during this event.