

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

TITLE (4)

Outside Appendix R Design Basis Due to Vital Bus Isolation Issue

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
09	30	97	97	-- 007 --	00	10	30	97	Surry Power Station, Unit 2	05000-281
									FACILITY NAME	DOCUMENT 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)		100 %	20.2201(b)		20.2203(a)(2)(v)		50.73(a)(2)(i)		50.73(a)(2)(viii)	
			20.2203(a)(1)		20.2203(a)(3)(i)		X 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)(vi)		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
NA	NA	NA	NA	NA					

SUPPLEMENTAL REPORT EXPECTED (14)

YES

(If yes, complete EXPECTED SUBMISSION DATE).

X

NO

EXPECTED
SUBMISSION
DATE

MONTH

DAY

YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On September 30, 1997, it was identified that during an earlier time frame Surry Units 1 and 2 had been outside the Appendix R design basis due to a 120 VAC vital bus isolation issue. From July 1988 on Unit 1 and September 1989 on Unit 2 when Appendix R isolation switches were removed until August 1997 when the procedures containing interim compensatory measures were revised, Operations did not have adequate procedural direction necessary to ensure isolation of the required power supplies and/or replacement of UPS fuses. Without proper isolation, power to the Appendix R panels may not have been available, thereby placing Surry Units 1 and 2 outside the Appendix R design basis during this period. Therefore, this report is being submitted pursuant to the requirements of 10CFR50.73(a)(2)(ii)(B). When it was determined that Surry was outside the Appendix R design basis, appropriate compensatory measures had already been defined and put into place. This condition resulted in no significant safety consequences or implications, and the health and safety of the public were not affected at any time.

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1.0 DESCRIPTION OF THE EVENT

On September 30, 1997, an Engineering Transmittal was issued indicating that during an earlier time frame Surry Units 1 and 2 had been outside the Appendix R design basis due to a vital bus isolation issue. In 1985, Appendix R isolation switches were installed in the circuit between the Units 1 and 2 feed to vital bus panels 1-III and 2-III and the vital bus inverters, which powered the Appendix R Distribution Panels. The Appendix R Distribution Panels supply the Remote Monitoring Panel instrumentation, which is required if the Main Control Room instrumentation is unavailable. The isolation switches were installed in order to isolate the inverters from a possible fault caused by an Appendix R Control Room fire. Subsequently, modifications to the 120 VAC Vital Bus System [EIIIS - ED, RJX] installing 15KVA uninterruptible power supplies (UPSs) 1A-2 and 2A-2 [EIIIS - EF, UJX] required for Appendix R on Units 1 and 2 were completed in July 1988 and September 1989, respectively. The UPS design change removed the Appendix R isolation switches (installed in 1985) without providing an alternate means of isolating the UPSs in the event of a Main Control Room fire. Without proper isolation, power to the Appendix R Remote Monitoring Panels may not have been available, thereby placing Surry Units 1 and 2 outside the Appendix R design basis. When it was determined that Surry was outside the Appendix R design basis during an earlier time frame, appropriate compensatory measures had already been defined and put into place.

The removal of the Appendix R isolation switches was documented in a November 1992 station deviation. However, at that time, it was not recognized that removal of the isolation switches placed Surry outside the Appendix R design basis for a Main Control Room fire; a contributing factor in not recognizing this was that the Control Room being continuously manned was considered to be equivalent to having a compensatory measure in place. Also as a result of the isolation switch removal, interim compensatory measures, providing procedural direction to station personnel to isolate the required power supplies, were incorporated into a Fire Contingency Action (FCA) procedure, which was approved in June 1993. In late 1992, the design change process was initiated to perform the required modification.

Discussion of the isolation issue, compensatory measures, and the planned modification (i.e., circuit protective device installation) was provided to the NRC in an August 27, 1997 letter (Serial No. 97-464). In that letter, we committed to implement the modification during the next refueling outages for Surry Units 1 and 2, scheduled for October 1998 and October 1997, respectively. The modification was recently completed on Unit 2 during the October 1997 refueling outage. A September 25, 1997 NRC letter documented the NRC staff's acceptance of our compensatory measures until the required modifications are completed.

Recently, while finalizing implementation of the planned modification to install circuit

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1.0 DESCRIPTION OF THE EVENT (continued)

protective devices, it was recognized that the internal UPS fuses could be blown due to a fault caused by a Main Control Room fire and that compensatory measures were not in place to address that possibility. In August 1997, a station deviation was issued, and the interim compensatory measures in the FCAs were revised to include procedural direction for fuse replacement.

From July 1988 on Unit 1 and September 1989 on Unit 2 when the isolation switches were removed until August 1997 when the FCAs were revised, Operations did not have adequate procedural direction necessary to ensure isolation of the required power supplies and/or replacement of UPS fuses. Without proper isolation, power to the Appendix R Remote Monitoring Panels may not have been available. Therefore, Surry Units 1 and 2 were outside the Appendix R design basis during this period. This report is being submitted pursuant to the requirements of 10CFR50.73(a)(2)(ii)(B).

2.0 SIGNIFICANT SAFETY CONSEQUENCES AND IMPLICATIONS

It is considered highly unlikely that a fire in the Main Control Room would disable the vital bus panels required for Appendix R, based on the following considerations:

- The Main Control Room is continuously manned by a staff whose primary function is to operate the plant safely and to observe any abnormal conditions. Many members of the Operations staff are trained as fire brigade members.
- Based on a 37 minute fire loading, a fire in the Main Control Room fire area would be of moderate duration, as defined in the Appendix R Report.
- The two vital bus panels that are required for Appendix R are located in the Units 1 and 2 Computer Rooms, respectively. Both of the Computer Rooms are located in the Main Control Room fire area. Although the Computer Rooms are located within the same fire area, the rooms are separated by a concrete wall with a steel door, as well as two block walls.
- Wall-mounted fire extinguishers are located in the immediate vicinity of the vital bus panels in the Units 1 and 2 Computer Rooms.
- In view of the continuous Main Control Room staffing, fire loading, physical separation, and accessibility of fire extinguishers, a Main Control Room fire would be detected and suppressed by the fire brigade prior to the vital bus panels 1-III and 2-III being disabled.

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2.0 SIGNIFICANT SAFETY CONSEQUENCES AND IMPLICATIONS (continued)

Given these considerations and the fact that a Main Control Room fire, resulting in disablement of the required vital bus panels, did not occur, this situation resulted in no significant safety consequences or implications, and the health and safety of the public were not affected at any time.

3.0 CAUSE

Removal of the Appendix R isolation switches, which resulted in Surry being outside its Appendix R design basis, was caused by personnel error. The personnel errors occurred in the mid-1980s during the preparation and review of the design change for modifications installing 15KVA UPSs. The UPS design change package was prepared and independently reviewed by an architect/engineering firm with lead engineer responsibility within Virginia Power. As part of the design change process, an Appendix R Design Checklist was completed and erroneously concluded that the modification did not have an adverse impact on compliance with Appendix R.

Additionally, the failure to identify the potential for internal UPS fuses to be blown was also caused by personnel error. The impact of a sustained fault on the output of the UPS resulting from the lack of an isolation device was not adequately considered or understood when the UPS design change was developed in the mid-1980s, as well as when the original compensatory measures were developed in 1993.

4.0 IMMEDIATE CORRECTIVE ACTION(S)

Upon issuance of the Engineering Transmittal indicating that Surry was outside the Appendix R design basis during an earlier time frame, a station deviation was issued. At that point in time, it was determined that an immediate report was not required because compensatory measures had already been defined and put into place, thereby placing Surry Units 1 and 2 back into the Appendix R design basis.

This Licensee Event Report was initiated to report that Surry was outside the Appendix R design basis during an earlier time frame due to a vital bus isolation issue.

5.0 ADDITIONAL CORRECTIVE ACTIONS

Implementation of the planned modification (i.e., circuit protective device installation) was recently completed on Unit 2 during the October 1997 refueling outage. Implementation

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5.0 ADDITIONAL CORRECTIVE ACTIONS (continued)

of the modification on Unit 1 will be completed during the next refueling outage scheduled for October 1998.

6.0 ACTIONS TO PREVENT RECURRENCE

A Virginia Power multi-disciplined review of portions of the Appendix R Report is planned. As a minimum, this review will include Chapters 3, "Safe Shutdown Systems Analysis," and 4, "Appendix R Section III.G Compliance Summary." For the chapters being reviewed, the accuracy of the Appendix R Report will be assessed relative to the current plant configuration, and compliance with the Appendix R requirements will be validated. This review is currently being initiated.

As a separate effort, a multi-utility assessment of the Appendix R program is also planned. The intended purpose of this assessment is to conduct a review that focuses on the Appendix R portions of the draft NRC Inspection Module used during recent pilot Fire Protection Functional Inspections. This assessment is tentatively scheduled for late January 1998.

7.0 SIMILAR EVENTS

No similar LERs were issued.

8.0 MANUFACTURER/MODEL NUMBER

Not applicable.

9.0 ADDITIONAL INFORMATION

When it was determined that Surry was outside the Appendix R design basis for an earlier time frame, both units were at 100% power.