

**VIRGINIA ELECTRIC AND POWER COMPANY**  
**RICHMOND, VIRGINIA 23261**

April 27, 2000

U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555-0001

Serial No. 00-143  
NE/EM/DB-CGL R1  
Docket Nos. 50-280  
50-281  
License Nos. DPR-32  
DPR-37

Gentlemen:

**VIRGINIA ELECTRIC AND POWER COMPANY**  
**SURRY POWER STATION UNITS 1 AND 2**  
**COMPLETION OF OUTSTANDING ISSUES RELATED TO**  
**INDIVIDUAL PLANT EXAMINATION OF EXTERNAL EVENTS (IPEEE) - SEISMIC**  
**GENERIC LETTER (GL) 88-20, SUPPLEMENTS 4 AND 5**

By a November 26, 1997 letter (Serial No. 97-665), Virginia Electric and Power Company transmitted the plant-specific summary report for a seismic event in response to GL 88-20, Supplement 4, "Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities". The IPEEE-Seismic was performed using a seismic probability risk assessment (SPRA) in accordance with the guidelines provided in GL 88-20 Supplement 4 (including NUREG-1407) and Supplement 5, as well as commitments identified in our letters dated December 20, 1991 (Serial No. 91-410) and November 3, 1995 (Serial No. 95-497). While the summary report reflected completion of the majority of the effort addressing IPEEE-Seismic, it identified a few issues that had not been resolved at that time. These unresolved issues were listed and discussed in Section 6.1 and Table 6.1-1 of the summary report.

In our November 26, 1997 letter, we stated that disposition of the unresolved issues was planned by the end of the Surry Unit 2 refueling outage then scheduled to begin in September 2000. The resolution of these issues is now complete. Attachment 1 summarizes the completed resolution of these issues and includes an updated Table 6.1-1 from the summary report. For the components related to the previously unresolved issues, we have determined that the high-confidence-of-low-probability-of-failure (HCLPF) capacities are greater than 0.3g, the screening criteria

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established for Surry's IPEEE-Seismic program. Therefore, there is no change in the previous SPRA quantification results provided in our summary report.

If you have any questions or require further information regarding completion of the IPEEE-Seismic issues for Surry, please contact us.

Very truly yours,

A handwritten signature in black ink, appearing to read 'L. Hartz', written in a cursive style.

Leslie N. Hartz  
Vice President – Nuclear Engineering and Services

Attachment:

1. Disposition of Unresolved Issues- IPEEE-Seismic, Surry Power Station Units 1 and 2

Commitments made in this letter: None.

cc: U.S. Nuclear Regulatory Commission  
Region II  
Atlanta Federal Center  
61 Forsyth Street, SW  
Suite 23 T85  
Atlanta, Georgia 30303-8931

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

## ATTACHMENT 1

### DISPOSITION OF UNRESOLVED ISSUES – INDIVIDUAL PLANT EXAMINATION OF EXTERNAL EVENTS (IPEEE) - SEISMIC

#### SURRY POWER STATION UNITS 1 AND 2

For the IPEEE-Seismic effort conducted at Surry Power Station, a summary report was prepared and submitted to the NRC on November 26, 1997 (Serial No. 97-665). A few issues required further review and/or modifications or safety enhancement, as noted in Section 6.1 of the summary report. These issues have now been resolved by area and system walkdowns, evaluations, and modifications. The issues and their resolutions are summarized below. Issues related to electrical and mechanical equipment in the Safe Shutdown Equipment List (SSEL) and their resolutions are discussed in the updated Table 6.1-1 from the summary report that follows. The completed resolutions are presented in bold type.

#### Seismic-Induced Fire Issues

- In the Turbine Building hydrogen flat area of Unit 1, a stainless steel tube is connected to the hydrogen piping near an elbow. The piping appeared to be flexible which may cause relatively large displacements to occur. The flexibility of the tubing will be further reviewed and if needed, a modification will be performed to correct this concern.

#### **Resolution:**

**Upon further review, it was determined that either the piping should be better restrained or the tubing made more flexible to alleviate this concern. An engineering transmittal (ET CEM-99-0024) was issued providing direction to make the tubing more flexible, which required relocation of a spacer that acts as a support on the vertical run of the 0.5" tubing. Analysis showed that the stresses in the tubing would be considerably below the allowable value with the spacer relocated. This modification was implemented, and the concern has been resolved.**

- Housekeeping/conduct of maintenance issues related to hydrogen cylinders in the Turbine Building will be addressed via a procedure. A carbon dioxide bottle in the Emergency Service Water Pump-house was not clamped properly and will also be addressed via a housekeeping procedure. In the Turbine Building, adjacent to the skid containing 1(2)-LO-FL-1 was an unanchored oil drum resting on the floor and a

small container containing oil, which is supported approximately 5' off the floor by four angles. The unanchored oil drum is also a housekeeping issue, and will be addressed programmatically. Further review will be performed for the smaller container. These issues are discussed in Section 3.5.

**Resolution:**

**A Station Administrative Procedure (VPAP-0312) addressing seismic housekeeping concerns has been issued and the seismic housekeeping guidelines are being implemented. The specific issues identified in the IPEEE-Seismic summary report have been satisfactorily resolved as follows:**

**Follow-up walkdowns of the affected plant areas and evaluations were conducted. In the hydrogen flat area of the Turbine Building, it was found that the hydrogen and nitrogen cylinders are adequately supported and are not expected to topple in a seismic event. In the Emergency Service Water Pump house, all six carbon dioxide bottles are well restrained in the middle and the end bottles are also restrained on the side. The unanchored oil drums in the Turbine Building in the vicinity of the Lube Oil Conditioner Prefilter skids do not rest on the floor, but rather on a platform with slightly raised edges; evaluation of this configuration concluded that these drums do not have a sliding or overturning potential in a seismic event. Therefore, these concerns have been resolved.**

**Miscellaneous Issues**

- The light diffuser panels in the Control Room ceiling rest on a frame of inverted tees. Diffusers that are not tied to the frame have been known to fall through the frame during past earthquakes. The diffuser panels will be further evaluated and, if required, they will be tied to the frame preferably at two sides, in areas where they could injure operators or damage sensitive equipment.

**Resolution:**

**To resolve this concern, engineering transmittal (ET CEM 99-0020) was issued. In accordance with this engineering transmittal, Control Room ceiling panels were tied to the T-bars on which they rest using metal clips. This issue is, therefore, resolved.**

- The Auxiliary fuel oil day tanks in each EDG room (1-EE-TK-3 and 4, and 2-EE-TK-3) have a site level indicator (glass) whose structural adequacy during a seismic event needs to be further reviewed, since glass tubes have been known to break during earthquakes. The indicator sight tubes will be replaced, as necessary.

**Resolution:**

**The sight glass tubes were assessed and found to be acceptable. This issue is, therefore, resolved.**

- Cable and Conduit Raceway Systems - Several conduit covers were missing in the cable vault and tunnel area and in the Service Building. In addition, at three locations in the Turbine Building, some of the expansion anchor bolts were missing from the conduit support base plate. These issues are planned to be corrected in accordance with the Station procedures.

**Resolution:**

**The deficiencies related to the missing conduit covers and expansion anchor bolts have been satisfactorily resolved.**

### **Electrical and Mechanical Equipment**

A description of each outstanding, unresolved issue related to electrical and mechanical equipment, as well as the completed resolution, is summarized in the updated Table 6.1-1 that follows. For each of these components, it was determined that the HCLPF capacity is greater than 0.3g. Therefore, there is no impact on the risk quantification calculations presented in the summary report.

**UPDATED TABLE 6.1-1**

**Resolution of Outstanding Issues - Electrical and Mechanical Equipment**

ITEM NO.	DESCRIPTION OF ISSUE	EQUIPMENT MARK NUMBER	RESOLUTION PLAN FROM NOV. 26, 1997 SUMMARY REPORT / <b>COMPLETED RESOLUTION (BOLD)</b>
1	Housekeeping /conduct of maintenance issues.	In areas containing safe-shutdown or other risk-significant components	<p>A procedure will be written and implemented at the station to address these issues.</p> <p><b>A Station Administrative Procedure (VPAP-0312) addressing seismic housekeeping concerns has been issued and the seismic housekeeping guidelines are being implemented. Specific issues identified in the IPEEE-Seismic summary report have been resolved.</b></p> <p><b>This issue is therefore resolved.</b></p>
2	Cabinet contains essential relays and is not connected to the adjacent cabinet. The cabinet also contains a low ruggedness (Westinghouse-SV) relay, as identified in the USI A-46 effort.	3-EE-PNL-35	<p>Field Change to DCP 93-033-3 has been issued to bolt the cabinet to adjacent cabinet to prevent potential impact. Also the low ruggedness relay is planned to be replaced via Station approved Design Change 95-017.</p> <p><b>The cabinets have been bolted together per the DCP. The SV relay in the cabinet (for EDG No. 3) was replaced by a seismically qualified Wilmar relay per the DCP.</b></p> <p><b>This issue is therefore resolved.</b></p>

ITEM NO.	DESCRIPTION OF ISSUE	EQUIPMENT MARK NUMBER	RESOLUTION PLAN FROM NOV. 26, 1997 SUMMARY REPORT / <b>COMPLETED RESOLUTION (BOLD)</b>
3	A low ruggedness relay (Westinghouse - SV) was found in these cabinets during USI A-46 review.	1-AP-CC-35-1 2-AP-CC-35-2	<p>The low ruggedness relay is planned to be replaced via Station approved Design Change 95-017.</p> <p><b>The low ruggedness SV relay was replaced by a seismically qualified Wilmar relay in cabinets 1-AP-CC-35-1 (EDG No. 1) and 2-AP-CC-35-2 (EDG No. 2).</b></p> <p><b>This issue is therefore resolved.</b></p>
4	MCC cabinet contains essential relays (identified in the USI A-46 effort), and is not connected to an adjacent cabinet. Also, the anchorage is to be enhanced.	1-EP-MCC-1J1-1A	<p>Field Change to DCP 93-033-3 has been issued to bolt the MCC cabinet to the adjacent cabinet, and to enhance MCC cabinet anchorage.</p> <p><b>The cabinets were bolted together, and the anchorage was modified per the DCP.</b></p> <p><b>This issue is therefore resolved.</b></p>
5	The nuts for some of the bolts connecting the transformer coils to the base channels are loose (up to 1/8"). Also, anchor bolt tightness check was not performed for the transformer cabinet anchor bolts.	1-EP-TRAN-1H 1-EP-TRAN-1H1 1-EP-TRAN-1J 1-EP-TRAN-1J1 2-EP-TRAN-2H 2-EP-TRAN-2H1 2-EP-TRAN-2J	<p>The nuts for the bolts connecting the transformer coils to the base channels will be tightened, and a tightness check will be performed on a representative sample of the transformer cabinet anchor bolts.</p> <p><b>The nuts for the bolts connecting the transformer coils to base channels have been tightened for the transformers. A tightness check was performed for the anchor bolts of Unit 1 transformers. The accessible Unit 1 anchor bolts were found to be tight. Based on this and past results of bolt tightness checks on Unit 1 and Unit 2 USI A-46 components, it is concluded that both accessible and inaccessible Unit 1 and Unit 2 transformer anchor bolts are adequate. Further review is not required.</b></p> <p><b>This issue is therefore resolved.</b></p>

ITEM NO.	DESCRIPTION OF ISSUE	EQUIPMENT MARK NUMBER	RESOLUTION PLAN FROM NOV. 26, 1997 SUMMARY REPORT / <b>COMPLETED RESOLUTION (BOLD)</b>
6	The gaps between batteries do not have close-fitting, crush - resistance fillers.	1-SW-B-1A 1-SW-B-1B 1-SW-B-1C	<p>A Field Change to DCP 93-033-3 will be issued to install the fillers.</p> <p><b>Further walkdown of the batteries was performed. A structural member separates the battery cells and sufficient gap exists between battery cells and rack frames. An evaluation was performed and concluded that the cells will remain intact in a seismic event without sliding, rocking or tipping over. No modification is required.</b></p> <p><b>This issue is therefore resolved.</b></p>
7	Capacity of the dampers will be verified.	1-VS-SAD-22A 1-VS-SAD-22B 1-VS-SAD-22C	<p>Guidelines provided by SQUG for this type of equipment will be reviewed to assess their applicability and adequacy.</p> <p><b>The dampers are mounted on the EDG radiator cooling fan-housing enclosure as part of engine on the skid and can be considered as rule-of-the-box items. Further, the vendor catalog sheets for the fans and dampers, as well as the specification, were reviewed. No concern was noted related to the capacity of the dampers.</b></p> <p><b>This issue is therefore resolved.</b></p>
8	This switchgear cabinet is missing base plug welds at some locations.	1-EP-SW-1H	<p>The anchorage will be enhanced through a Field Change to DCP 93-033-3.</p> <p><b>The missing plug welds were completed per the above DCP.</b></p> <p><b>This issue is therefore resolved.</b></p>



ITEM NO.	DESCRIPTION OF ISSUE	EQUIPMENT MARK NUMBER	RESOLUTION PLAN FROM NOV. 26, 1997 SUMMARY REPORT / <b>COMPLETED RESOLUTION (BOLD)</b>
9	These MCCs are back-to-back and tied together at the end cabinet bays only. A potential exists for seismic interaction of the center bays.	1-EP-MCC-1J1-2E 1-EP-MCC-1J1-2W 1-EP-MCC-1H1-2N 1-EP-MCC-1H1-2S 2-EP-MCC-2J1-2E 2-EP-MCC-2J1-2W 2-EP-MCC-2H1-2N 2-EP-MCC-2H1-2S	<p>Further review of the cabinet displacement will be performed. If required, the center bays will be bolted together to prevent potential interaction.</p> <p><b>The center bays of the MCCs for Unit 1 and Unit 2 were bolted together by Field Change to DCP 93-033-3.</b></p> <p><b>This issue is therefore resolved.</b></p>
10	The relief valve may interact with an adjacent heat exchanger 2-CH-E-4.	2-CC-RV-218	<p>A field change will be issued to eliminate the potential interaction, as required.</p> <p><b>The 1" discharge piping for the relief valve was rerouted to provide a sufficient gap between the pipe and the heat exchanger via Field Change to DCP 93-033-3.</b></p> <p><b>This issue is therefore resolved.</b></p>
11	These valves are close to existing structures and could impact them during a seismic event.	1-BD-TV-100A 1-BD-TV-100C 1-BD-TV-100E 1-BD-SOV-100C	<p>Further review of valve and structure displacement during a seismic event will be conducted to evaluate the impact. If needed, a modification will be done.</p> <p><b>Additional walkdown of these valves was performed and an assessment indicated that the interaction concerns during a seismic event are not credible.</b></p> <p><b>This issue is therefore resolved.</b></p>
12	Further evaluation of the anchorage of the valve support will be performed.	1-RM-TV-100C 1-RM-SOV-100C	<p>Further details for anchorage evaluation will be obtained via a walkdown during the outage.</p> <p><b>Additional walkdown of these valves was performed and an assessment indicated that the valve support is adequate.</b></p> <p><b>This issue is therefore resolved.</b></p>