

VIRGINIA ELECTRIC AND POWER COMPANY  
RICHMOND, VIRGINIA 23261

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50-281  
License Nos. DPR-32  
DPR-37

Gentlemen:

**VIRGINIA ELECTRIC AND POWER COMPANY**  
**SURRY POWER STATION UNITS 1 AND 2**  
**PROPOSED TECHNICAL SPECIFICATIONS CHANGES**  
**CHARCOAL FILTER TESTING CLARIFICATION**

Pursuant to 10 CFR 50.90, Virginia Electric and Power Company requests amendments, in the form of changes to the Technical Specifications, to Facility Operating License Nos. DPR-32 and DPR-37 for Surry Power Station Units 1 and 2. The proposed changes clarify the requirements for testing charcoal adsorbent in the Auxiliary Ventilation and Control Room Air Filtration Systems as outlined in Technical Specifications 4.12 and 4.20, respectively. The proposed changes to the Technical Specifications for Units 1 and 2 are provided in Attachment 2.

The interpretation of these requirements and the related application of referenced industry test standards has been the subject of several recent NRC telephone conference calls regarding the charcoal adsorbent in the ventilation systems. Although no safety or technical concerns have been identified in these discussions, questions have been raised concerning interpretation of requirements and the consistency by which referenced industry standards are applied.

We continue to believe that Surry Power Station is in compliance with its Technical Specifications for testing charcoal adsorbents. However, to preclude subjective interpretations and future misinterpretations of the testing standards, Technical Specifications changes are being proposed for Surry Units 1 and 2 that explicitly specify the current test method or standard currently being used to test new and used charcoal adsorbent.

These changes have been reviewed and approved by the Station Nuclear Safety and Operating Committee and the Management Safety Review Committee. It has been determined that the proposed changes do not involve an unreviewed safety question

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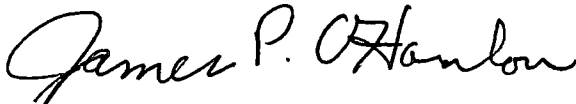
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as defined by 10 CFR 50.59 or a significant hazards consideration as defined in 10 CFR 50.92. A discussion of the proposed changes and the basis for our no significant hazards considerations are included in Attachment 1.

To facilitate the NRC's review of these changes, we are available to meet with the NRC staff at their earliest convenience. Should you have any questions or require additional information, please contact us.

Very truly yours,



James P. O'Hanlon  
Senior Vice President - Nuclear

Attachments

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**Attachment 1**  
**Discussion of Changes and Significant**  
**Hazard Consideration Determination**  
**Proposed Technical Specifications Changes**  
**for Surry Units 1 and 2**

## Discussion of Change

### Introduction

Currently, Surry Power Station tests the charcoal adsorbent in the Auxiliary Ventilation and the Control Room Air Filtration Systems in accordance with ASTM D3803-1979<sup>1</sup>. This method of testing provides assurance that these ventilation systems will perform their safety function. To preclude misinterpretation of the Surry Units 1 and 2 Technical Specifications, changes are being proposed to clarify the test requirements and to explicitly identify ASTM D3803-1979 as the current test method in the Technical Specifications for charcoal adsorbent. The current testing methodology fully establishes operability of the charcoal adsorbent in the ventilation systems. Since the proposed changes only clarify and explicitly identify the current testing methodology, the proposed changes do not create an unreviewed safety question or generate a significant hazards consideration.

### Background

Technical Specifications require that the charcoal adsorbent be tested in accordance with ASTM D3803, and new charcoal be qualified in accordance with Table 5.1 of ANSI N509-1976<sup>3</sup>. The 1979 version of ASTM D3803 was in effect when Technical Specifications Amendments No. 92 and No. 91 were issued to Surry Units 1 and 2, respectively. ASTM D3803-1979 is the testing methodology used for new and used charcoal. For new charcoal, the manufacturer's process shall be qualified in accordance with item 5.a, Table 5.1 of ANSI N509-1976. Table 5.1 references RDT M16-1T<sup>2</sup> as an acceptable qualification test method for determining iodine removal efficiencies. ANSI N509-1976 does not provide a date or revision for the RDT M16-1T standard. The 1973 RDT M16-1T standard was for in-containment applications and was superseded by the 1977 version. The 1977 RDT M16-1T standard was superseded in 1981 by U.S.D.O.E. Standard NE M16-1T which fully embraces ASTM D3803-1979. Therefore, the 1981 NE M16-1T standard is used for qualification of the manufacturer's process for new charcoal adsorber. However, by not specifically identifying the revision and date of the standard required for charcoal adsorbent testing, the Technical Specifications test requirements can be ambiguous and may result in potential misinterpretation.

### Description of Amendment Request

The proposed changes clarify Surveillance Requirements for the charcoal adsorbent in the Auxiliary Ventilation Exhaust Filter Trains (TS 4.12) and the Control Room Air Filtration System (TS 4.20) by explicitly identifying the test methods used for new and used carbon adsorbent. These changes specify ASTM D3803-1979 as the laboratory testing standard for both new and used charcoal adsorbent in the ventilation systems identified above. Laboratory testing of the carbon samples adsorbers will be performed as noted below:

## NEW CHARCOAL TESTING:

### Manufacturer's Process Qualification in accordance with ANSI N509-1976:

#### Methyl Iodide Removal Efficiency:

- Relative humidity (RH) of 95%.
- Temperature of 25° C.
- 12.2 M/min. face velocity.
- Equilibrated for 16 hours with flow at 25° C and 95% RH.
- Loading with 1.75 mg/M<sup>3</sup> methyl iodide for 2 hours.
- Elution period of 4 hours.
- Acceptance criteria is < 1% penetration.

### Batch Tests in accordance with ASTM D3803-1979:

- Physical Properties:
- The ASTM D2862 for Particle Size Distribution
- The ASTM D3802 for Hardness Number
- The ASTM D3466 for Ignition Temperature
- The ASTM D3467 for Activity.
- The ASTM D2854 method for Bulk Density
- Impregnant Content shall not exceed 5.0% by weight.

#### Methyl Iodide Removal Efficiency:

- Relative humidity of 95%.
- Temperature of 30° C.
- 24.4 M/min. face velocity for Auxiliary Ventilation Exhaust Filter Trains (to match in-service conditions) and 12.2 M/min. face velocity for Control Room Air Filtration System.
- Equilibrated for 16 hours with flow at 30° C and 95% RH.
- Loading with 1.75 mg/M<sup>3</sup> methyl iodide for 2 hours.
- Elution period of 4 hours.
- Acceptance criteria is < 3% penetration.

#### Elemental Iodine Retention:

- No equilibration.
- 12.2 M/min. face velocity through a 1 inch sample for a residence time of 0.125 seconds.
- Loading with 75 mg/M<sup>3</sup> elemental iodine with flow ambient laboratory temperature and relative humidity for 10 minutes.
- Elution period of 4 hours; during the first 30 minutes gas temperature is raised to 180° C.
- Acceptance criteria is > 99.5% retention.

## USED CHARCOAL TESTING IN ACCORDANCE WITH ASTM D3803-1979:

The testing of Surry used charcoal is performed in accordance with ASTM D3803-1979 and at the test conditions specified in Technical Specifications 4.12.B.7 for the Auxiliary Ventilation Exhaust Banks. The charcoal in the Control Room banks is replaced with new charcoal, versus being tested. To summarize, the used charcoal testing is performed as follows:

- Relative humidity of 95% since no heaters are installed.
- Temperature of 30° C.
- 24.4 M/min. face velocity (to match in-service conditions).
- Temperature equilibrated to 30° C without flow.
- Loading with 1.75 MG/M<sup>3</sup> methyl iodide for 1 hour.
- Elution period of 4 hours.
- Acceptance criteria is < 4% penetration.

### Specific Changes

The Unit 1 and 2 Technical Specifications are identical. The specific changes identified below are for both units:

#### • **Auxiliary Ventilation Exhaust Filter Trains**

The original requirements of Technical Specification 4.12.A.8 have been retained, although the items have been reordered and the new charcoal conditions removed. The section has been changed to clarify the applicable year of ASTM D3803-1979. Some of the specific technical requirements (i.e., residence time and 31 day availability of laboratory results) have been relocated from Technical Specification 4.12.B.7 to 4.12.A.8. Section 4.12.A.8 is being clarified to require testing after 720 hours of "train" operation rather than "system" operation.

A new Technical Specification 4.12.A.9 has been added to clarify the testing requirements for new charcoal. The requirements to test new charcoal were relocated from Technical Specification 4.12.A.8.a to 4.12.A.9. The qualification testing requirements have been relocated from Technical Specification 4.12.B.7 to 4.12.A.9.

The old Technical Specification 4.12.A.9 has been renumbered 4.12.A.10.

The Basis section of Technical Specification 4.12 is being changed to clarify the statement concerning the iodine removal efficiencies assumed in the dose calculations and to make the section consistent with the dose analysis approved by the NRC.

Sections 4.12.A.6.c and 4.12.A.7.c are clarified by adding "while it is in service" following painting, fire, or chemical release in any ventilation zone communicating with the system to be consistent throughout the specifications.

Sections 4.12.A.6.e and 4.12.A.7.e are clarified by adding "that could affect the operation of the system" following any structural maintenance on the filter housing.

- **Control Room Air Filtration System**

The original requirements of Technical Specification 4.20.A.7 have been reordered in the same manner they were in section 4.12.A.8. The specific technical requirement to test in accordance with ASTM D3803 has been relocated from Technical Specification 4.20.A.8 to 4.20.A.7 and 4.20.A.8 was deleted. Technical Specification 4.20.A.7 has been changed to clarify the applicable year of ASTM D3803-1979.

The new Technical Specification 4.20.A.8 has been added to clarify the testing requirements for new charcoal. The requirements to test new charcoal was relocated from Technical Specification 4.20.A.7.a to 4.20.A.8. The qualification testing requirements of ANSI N509-1976 have been relocated from Technical Specification 4.20.B.4 to 4.20.A.8.

Testing and laboratory analysis on used charcoal is not performed on the control room air filtration system, since the charcoal adsorber is replaced when sampling is required by Technical Specifications. The technical laboratory analysis requirements were deleted from Technical Specification 4.20.B.4.

Sections 4.20.A.1.e, 4.20.A.3.e, and 4.20.A.5.e are clarified by adding "that could affect the operation of the system" following any structural maintenance on the filter housing.

#### Safety Significance

The test methodology, included in the proposed Technical Specifications changes represents current testing practices, accurately determines the iodine removal efficiencies, and fully establishes operability of the charcoal adsorbent in the Auxiliary Ventilation Exhaust Filter Trains and the Control Room Air Filtration System. Therefore, there is no degradation in the ability of the charcoal adsorbent to perform its safety function based on the current testing of charcoal adsorbent in the ventilation systems noted above.

The proposed Technical Specifications changes explicitly identify the current charcoal testing methodology and therefore do not affect system operation or performance, nor do they affect the probability of any event initiators. These changes do not affect any Engineered Safety Features actuation setpoints or accident mitigation capabilities. As a clarification, the proposed changes do not increase the consequences of an accident or malfunction of equipment important to safety previously evaluated in the UFSAR.

The proposed Technical Specifications changes to the charcoal sample testing methodology do not affect the method of operation of the system. The proposed changes only clarify the Technical Specifications by explicitly identifying the actual



testing methodology currently being used for the charcoal samples. No new or different accident scenarios, transient precursors, failure mechanisms, or limiting single failures will be introduced as a result of these changes. Therefore, no new accident or malfunction of a different kind is created by the proposed changes.

The new charcoal adsorber sample laboratory testing accurately demonstrates the required performance of the adsorbers following a design basis LOCA or Fuel Handling Accident. Changing the Technical Specifications to clarify the actual test methodology for charcoal sample testing does not affect system performance or operation. Therefore, these changes do not result in a reduction in any margin of safety.

References:

1. ASTM D3803-1979, Standard Test Methods for Radioiodine Testing of Nuclear-Grade Gas-Phase Adsorbents
2. RDT M1-1T-1977, Gas-Phase Adsorbent for Trapping Radioactive Iodine and Iodine Compounds.
3. ANSI/ASME N509-1976, Nuclear Power Plant Air Cleaning Units and Components

## Basis for No Significant Hazards Consideration Determination

The proposed changes clarify Surveillance Requirements for the charcoal adsorbent in the Auxiliary Ventilation Exhaust Filter Trains (4.12) and the Control Room Air Filtration System (TS 4.20) and explicitly identify the testing methodology for new and used carbon adsorbent. These changes specify ASTM D3803-1979 as the laboratory testing standard for both new and used charcoal adsorbent used in the ventilation systems identified above.

Virginia Electric and Power Company has evaluated the proposed changes to the Surry Units 1 and 2 Technical Specifications described above against the Significant Hazards Criteria of 10 CFR 50.92 and determined that the changes do not involve any significant hazard for the following reasons:

1. The probability or consequences of an accident previously evaluated is not significantly increased.

The charcoal testing clarifications and explicit reference to the testing currently conducted do not affect system operation or performance, nor do they affect the probability of any event initiators. These changes do not affect any Engineered Safety Features actuation setpoints or accident mitigation capabilities. Therefore, the proposed changes do not significantly increase the consequences of an accident or malfunction of equipment important to safety previously evaluated in the UFSAR.

2. The possibility of an accident or a malfunction of a different type than any previously evaluated is not created.

The clarification to the charcoal sample testing protocol does not affect the method of operation of the system. The proposed changes clarify and explicitly identify the testing methodology for the charcoal samples. No new or different accident scenarios, transient precursors, failure mechanisms, or limiting single failures are introduced as a result of these changes. Therefore, the possibility of a new or different kind of accident other than those already evaluated is not created by this change.

3. The margin of safety has not been significantly reduced.

The charcoal adsorber sample laboratory testing accurately demonstrates the required performance of the adsorbers following a design basis LOCA or Fuel Handling Accident. Changing the Technical Specifications to clarify the actual test methodology and explicitly reference the charcoal testing actually performed does not affect system performance or operation. Therefore, these changes do not result in a significant reduction in any margin of safety.

Based on the above discussions, it has been determined that the proposed Technical Specification changes do not involve a significant increase in the probability or consequences of an accident or other adverse condition over previous evaluations; or create the possibility of a new or different kind of accident or condition over previous evaluations; or involve a significant reduction in a margin of safety. Therefore, the proposed license amendment does not involve a significant hazards consideration.

**Attachment 2  
Surry Units 1 and 2**

**Proposed Technical Specifications Changes**