VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

December 7, 2000

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

Serial No. 00-552
SPS/CGL-SLW R0"
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
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION,
REVISED PROPOSED TECHNICAL SPECIFICATION CHANGE AND
GL 99-02 RESPONSE CLARIFICATION ON
LABORATORY TESTING OF NUCLEAR-GRADE ACTIVATED CHARCOAL

On June 3, 1999, the NRC issued Generic Letter (GL) 99-02 documenting the staff's position that testing of new and used charcoal should be performed using ASTM D3803-1989. Consistent with that determination, the GL required testing of new and used charcoal to ASTM D3803-1989 starting 60 days after issuance of the GL. In addition, the GL requested a 180-day response committing to test charcoal using ASTM D3803-1989 and, if necessary, submittal of a Technical Specification (TS) amendment request reflecting the ASTM D3803-1989 protocol.

In a November 29, 1999 letter (Serial No. 99-339A), Virginia Electric and Power Company (Dominion) provided the 180-day response to GL 99-02 and submitted a TS Amendment request to address the GL. Consistent with the interim actions outlined in our 60-day response (Serial No. 99-339, dated July 28, 1999), the proposed TS change reflected charcoal testing using ASTM D3803-1989, as well as an additional and separate test to confirm elemental iodine removal capabilities. Subsequently, in a June 13, 2000 phone call, the NRC verbally requested additional information. In response to this request and after further discussions with the NRC, the GL 99-02 response is clarified and the previously transmitted proposed Technical Specifications revised. Attachment 1 provides our response to the NRC Request for Additional Information (RAI). Attachment 2 provides our GL 99-02 clarification. Attachment 3 contains the revised Technical Specification amendment request.

Accordingly and pursuant to 10 CFR 50.90, Dominion requests amendments in the form of changes to the Technical Specifications and to Facility Operating License Numbers DPR-32 and DPR-37 for Surry Power Station Units 1 and 2, respectively. These proposed changes supersede the previous Technical Specification changes proposed in the 60-day and 180-day GL 99-02 response letters. A discussion of the proposed Technical Specifications changes is provided in Attachment 3A.

A081

The proposed Technical Specifications 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 Technical Specifications changes do not involve an unreviewed safety question as defined in 10 CFR 50.59 or a significant hazards consideration as defined in 10 CFR 50.92. The proposed Technical Specifications changes are provided as a mark-up in Attachment 3B and a typed version in Attachment 3C. The basis for our determination that the changes do not involve a significant hazards consideration is provided in Attachment 3D.

The GL states that the NRC will exercise enforcement discretion to eliminate unnecessary testing of charcoal samples to both ASTM D3803-1989 and the current TS testing during the interim and until approval of a TS amendment. Please be advised that, because our design necessitates minor qualification of the ASTM D3803-1989 standard, we plan to test to both the current TS and the proposed TS contained herein until we receive consent from the NRC indicating that we may exercise the enforcement discretion granted by the GL or until our TS amendment request is approved by the NRC.

If you have any further questions or require additional information, please contact us.

Very truly yours,

William R. Matthews
Vice President – Nuclear Operations

Attachments:

Attachment 1	Request for Additional Information – Response
Attachment 2	GL 99-02 Response Clarification
Attachment 3	Revised Technical Specifications Amendment Request

Commitments:

No new commitments have been made in this letter. However, the following previous commitments contained in the July 28, 1999 60-day response (Serial No. 99-339) and in the November 29, 1999 180-day response (Serial No. 99-339A) are reaffirmed:

1. ESF charcoal adsorbers will be tested for methyl iodide removal efficiency in accordance with ASTM D3803-1989 as discussed and qualified herein for samples taken beginning August 2, 1999.

2. Because our design necessitates minor qualification of the ASTM D3803-1989 requirements, we plan to test to both ASTM D3803-1979 and ASTM D3803-1989 until we receive feedback from the NRC indicating that we may exercise the enforcement discretion granted by the GL or until our TS amendment request is approved by the NRC.

The following previous commitment contained in the July 28, 1999 60-day response and in the November 29, 1999 180-day response is hereby deleted by this letter:

1. ESF charcoal adsorbers will be tested for elemental iodine removal efficiency in accordance with ASTM D3803-1979 as discussed and qualified herein for samples taken beginning August 2, 1999.

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

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

Commissioner
Department of Radiological Health
Suite 204
1500 East Main Street
Richmond, VA 23218

COMMONWEALTH OF VIRGINIA)
)
COUNTY OF HENRICO)

The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by William R. Matthews, who is Vice President - Nuclear Operations, of Virginia Electric and Power Company. He has affirmed before me that he is duly authorized to execute and file the foregoing document in behalf of that Company, and that the statements in the document are true to the best of his knowledge and belief.

Acknowledged before me this 7th day of December, 2000.

My Commission Expires: 3/31/04.

Maggie McClure
Notary Public

(SEAL)

Attachment 1

Request for Additional Information and Response

Surry Power Station
Units 1 and 2
Dominion

RESPONSES TO NRC REQUEST FOR ADDITIONAL INFORMATION
GL 99-02 CHARCOAL FILTER TESTING FOR SURRY POWER STATION

The following questions were received verbally from the NRC Project Manager for Surry Power Station on June 13, 2000 and discussed during a July 6, 2000 and a August 15, 2000 conference call with the NRC. The questions refer to our previous submittals on charcoal filter testing, including our Technical Specification change request, that we provided in response to GL 99-02 [Reference: Letters Serial No. 99-339 (July 28, 1999) and 99-339A (November 29, 1999)]. The questions are applicable to both the Auxiliary and Control Room Ventilation Systems.

QUESTION 1:

In the attachment to letter 99-339, page 1 of 3, you stated that the "...face velocity specified in ASTM D3803-1989 is approximately 12 M/min. The Surry Auxiliary Ventilation Exhaust Filter Trains have a nominal face velocity of 24.4 M/min. and the Control Room Air Filtration System has a nominal face velocity of 18.3 M/min. Historically, our charcoal testing has been performed at 24.4 M/min. to match in-service conditions of the Auxiliary Ventilation System and to envelope the in-service conditions of the Control Room Filtration System."

Please indicate how face velocity is calculated. Actual face velocity can be calculated by dividing the maximum system flow rates (nominal + 10%) by the total exposed surface area of the charcoal filter media. Per GL 99-02, if the value is greater than 110% of 40 fpm, the TS are to be revised to specify that value as the test velocity. Guidance for the calculation of residence times in ASME AG-1-1997 Div. 2, Sections FD and FE, Articles I-1000 or ANSI N5.10-1975 can be used to calculate the actual system face velocities.

RESPONSE TO QUESTION 1:

Consistent with GL 99-02, the proposed revisions to TS 4.12.B.7 and TS 4.20.B.4 on pages 7 and 10 of 13 in the Discussion of TS Changes (Attachment 2A to Letter Serial No. 99-339A) specify a test face velocity of 24.4 M/min.

The original Surry charcoal filters were designed and manufactured in accordance with Specification NUS-259, "Charcoal Ventilation Filter Assemblies", which was originally issued October 11, 1968. The specified design for the Auxiliary Ventilation System consists of sixty (60) cells each with a flow of 600 scfm for a total design flow of 36,000 scfm. The resultant design face velocity is 24.4 M/min. Included in the specification was a filter sketch with dimensions that allowed the determination of the flow area of the filters. Based on the total design flow, the total flow area, and the bed thickness, the design residence time in the charcoal was determined to be 0.125 seconds.

Specification NUS-259 also specified that the Control Room Filtration System uses two (2) cells of the same design with a total design flow of 1000 scfm, resulting in a design face velocity of 18.3 M/min. As stated in our Letter Serial No. 99-339A, testing at 24.4 M/min for the Control Room Filtration System envelopes the in-service conditions of 18.3 M/min. Calculating the residence time using the actual design flow (which is a lower value than the test flow) results in a residence time of ~0.16 seconds for the Control Room Filtration System.

As a result of the NRC question, a calculation was performed in accordance with ANSI N510-1975 (specified in the current and proposed TSs) which confirmed that the Auxiliary Ventilation System and the Control Room Filtration System filters have at least a 0.125 second residence time, consistent with the present licensing and design basis.

QUESTION 2:

In addition to a proposed methyl iodide test penetration of <14% for both systems, the amendment request also proposes to test simultaneously to a proposed elemental iodine test penetration of <4%. This is to provide agreement with the UFSAR analysis since both methyl iodide and elemental iodine filter removal efficiencies are identified in the UFSAR.

In your 11/29/99 letter, page 2 of 13, Attachment 2A, states "The maximum filter efficiency assumed in the design basis accident analysis for the main control room and the auxiliary ventilation charcoal adsorbers is 70% for methyl (organic) iodide and 90% for elemental (inorganic) iodine. The laboratory test acceptance criteria contains a safety factor to ensure that the efficiency assumed in the accident analysis is still valid at the end of the operating cycle."

a) Are the credited efficiencies of 70% for organic iodide and 90% for elemental iodine for a Fuel Handling Accident or a LOCA?
b) GL 99-02 does not request elemental iodine lab testing of charcoal filters because organic iodide testing bounds elemental iodine. ASTM D3803-1979 does not provide acceptable/reproducible results and should not be used. Section FF-5000 of ASME AG-1-97 requires qualification and batch testing of new charcoal to ASTM D3803-1989 for elemental iodine and methyl iodide. Please provide your basis for why the 1979 standard should be used for the elemental iodine test.

RESPONSE TO QUESTION 2a):

The credited efficiencies of 70% for organic (methyl) iodide and 90% inorganic (elemental) iodine are for a fuel handling accident. The LOCA analysis of record assumes methyl and elemental efficiencies of 30% and 90% respectively for the Control Room Air Filtration System and 0% and 90% respectively for the Auxiliary Ventilation System.

RESPONSE TO QUESTION 2b):

The Surry Power Station's accident analysis assumes charcoal efficiencies of 70% for methyl and 90% for elemental. Because the elemental iodine removal efficiency is higher than the methyl, if a single test were performed, the single test would need to be performed at the elemental efficiency requirements to demonstrate that the filter could remove both the elemental and the methyl assumed. We recognize that GL 99-02 does not require elemental iodine lab testing because testing for methyl iodide is intended to envelop elemental iodine. However, due to the significantly higher efficiency necessary for elemental iodine, an enveloping test with methyl iodide presents a potential concern for Surry when using the 1989 standard. Charcoal samples which otherwise would pass separate methyl and elemental tests, may not pass an enveloping test using methyl due to the atypical 0.125 second residence time across the charcoal cells. Instead of testing at the higher of the two efficiencies and potentially having to replace the charcoal at a greater frequency, we initially proposed in our Letter Serial No. 99-339A to split the testing into two separate (not simultaneous) tests - an elemental test and a methyl test. Our initially proposed Technical Specification in Letter Serial No. 99-339A references both ASTM standards, D3803-1979 for elemental testing and D3803-1989 for methyl testing, because the 1989 standard does not include a test methodology for elemental.

During a July 6, 2000 conference call with the NRC, the NRC indicated that they were unable to endorse testing using the 1979 standard. As a result of this feedback, we contacted NCS Corporation inquiring about information that would support testing only with methyl and having the methyl test envelope a higher assumed efficiency for elemental. In response to that inquiry, NCS Corporation provided the attached letter (page 6 of 7) that states:

> "Nuclear grade activated carbon, when tested in accordance with ASTM D3803-1989 (methyl iodide at 30°C, 24.4 m/min, and 70% relative humidity) to a penetration of 15%, is more conservative than testing the same carbon in accordance with ASTM D3803-1979 (elemental iodine at 30°C, 24.4 m/min, and 95% relative humidity) to a penetration of 5%.
>
> As a general rule, you may expect the radioiodine penetration through nuclear grade activated carbon to increase from 20 to 100 times when switching from elemental iodine to methyl iodide testing."

The NCS letter reflects a general comparison of removal efficiency at the Surry face velocity of 24.4 M/min. There are differences between the NCS letter and Surry parameters. The differences, which do not affect the applicability of the NCS letter to Surry, are:

NCS Letter	Surry Parameters
15% methyl penetration	14% methyl penetration
5% elemental penetration	4% elemental penetration
70% humidity	95% humidity

The penetration difference is not significant, and the Surry methyl testing at 95% relative humidity is a more stringent test requirement than the 70% reflected in the NCS letter. Therefore, the conclusions of the NCS letter – both in the specific example and in the general rule - are applicable to Surry.

Consequently, we propose to only test for methyl iodide penetration using the 1989 standard to a penetration less than or equal to 14% at 30°C, 24.4 m/min, and 95% relative humidity. On the basis of the NCS letter, this proposed methyl testing to a penetration less than or equal to 14% (applying a safety factor of 2) will demonstrate the assumed accident analysis efficiencies of 70% for methyl and 90% for elemental. Attachment 3 provides a revised Technical Specifications amendment request reflecting this change.

QUESTION 3:

Your amendment request proposes to revise TS 4.12.A.6.c, 4.12.A.7.c and 4.12.A.8.c to specify "during system operation." This is contrary to the staff position provided in a September 11, 1997 letter to Entergy, Inc. This letter stated that the "staff considers that a painting, fire, or chemical release is not in communication with the ventilation system only if it is not in operation and its isolation dampers are closed and leak tight thereby preventing air from passing through the filters."

Specifying "during system operation" ignores the idea that the isolation dampers are closed and leak tight. Please provide your basis for why the term "during system operation" should be added to these three specs.

RESPONSE TO QUESTION 3:

Application of the TS requirements for the Auxiliary Ventilation System is appropriate only "during system operation" based on the system design, configuration, and modes of operation. The Auxiliary Ventilation System layout is shown in the attached figure (page 7 of 7). The system is only operated during accident conditions or as required to filter the exhaust air from selected areas. In these alignments, the associated dampers are open and air is drawn through the filter bank, otherwise the isolation dampers to the filter bank and the filter bank exhaust fan are closed preventing air being drawn across the filter bank. In the isolated configuration, if any leakage through the dampers would occur, the air flow in the auxiliary building is such that communication with the filter banks would not occur. Therefore, the only time there will be flow across the filters is when the Auxiliary Ventilation System is operating.

QUESTION 4:

Your proposed TS surveillance requirement states that if test results are unacceptable for in-place charcoal adsorbers, all the adsorbent in the affected filters shall be replaced with new, qualified adsorbent. To what standard will the new charcoal be tested?

RESPONSE TO QUESTION 4:

As noted in the response to Question 2, we are now proposing to only test for methyl iodide penetration using the 1989 standard to a penetration less than or equal to 14% at 30°C, 24.4 m/min, and 95% relative humidity. This proposed methyl testing to a penetration less than or equal to 14% (applying a safety factor of 2) will demonstrate the assumed accident analysis efficiencies of 70% for methyl and 90% for elemental on the basis of the NCS letter. This testing will be performed for new and used charcoal for the Auxiliary Ventilation System as well as new charcoal for the Control Room Filtration System.

NCS CORPORATION
1385 West Goodale Boulevard Columbus. Ohio 43212
614-340-3700 • FAX 614-340-3707 • www.ncsc.com

July 10, 2000

Mr. Gene Henry
Virginia Power Company
Surry Power Station
5530 Hog Island Road
Surry, Virginia 23883

Dear Mr. Henry

Regarding: Methyl iodide versus elemental iodine penetration through carbon.

Nuclear grade activated carbon, when tested in accordance with ASTM D3803-1989 (methyl iodide at 30°C, 24.4 m/min, and 70% relative humidity) to a penetration of 15%, is more conservative than testing the same carbon in accordance with ASTM D3803-1979 (elemental iodine at 30°C, 24.4 m/min, and 95% relative humidity) to a penetration of 5%.

As a general rule, you may expect the radioiodine penetration through nuclear grade activated carbon to increase from 20 to 100 times when switching from elemental iodine to methyl iodide testing.

If you have questions regarding this matter, please contact me at 614-340-3700.

Sincerely,

John R. Pearson
Vice President
NCS Corporation

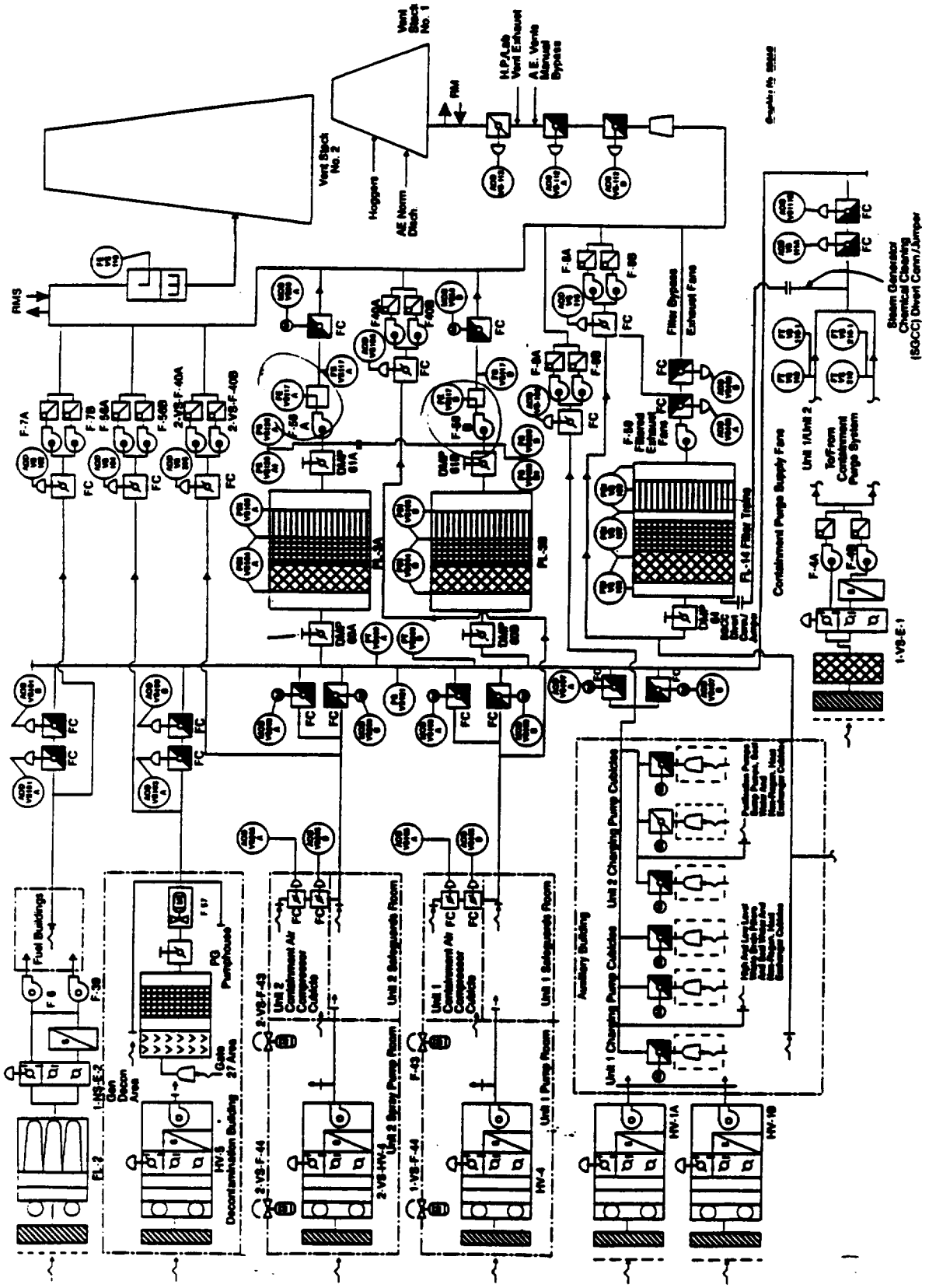

Figure 47-1-S
Primary Ventilation
12-21-98

Attachment 2

GL 99-02 Response Clarification

Surry Power Station
Units 1 and 2
Dominion

GL 99-02 Response Clarification

In a November 29, 1999 letter (Serial No. 99-339A), Dominion provided a response to GL 99-02 and requested changes to the Technical Specifications (TS) as required by the GL. Subsequently, in a June 13, 2000 phone call, the NRC verbally requested additional information. In response to the NRC's questions and after further discussions with the NRC, the following GL 99-02 responses were clarified and the previously transmitted proposed Technical Specifications were revised accordingly.

Requested Action 2

If you choose to adopt the ASTM D3803-1989 protocol, submit a TS amendment request to require testing to this protocol within 180 days of the date of this generic letter. The request should contain the test temperature, RH, and penetration at which the proposed TS will require the test to be performed and the basis for these values. If the system has a face velocity greater than 110 percent of 0.203 m/s [40 ft/min], then the revised TS should specify the face velocity. Also, indicate when the next laboratory test is scheduled to be performed.

Requested Action 2 – Response Clarification

In response to this request, Dominion submitted a TS amendment request in the previous transmittal. As a result of the Request for Additional Information (RAI) and subsequent discussions with the NRC, the proposed Technical Specifications have been superceded by the revised TS request provided in Attachment 3 of this submittal.

Requested Action 5

Addressees who choose not to do the above actions are requested to notify the NRC in writing of their decision, as soon as a decision is reached but no later than 60 days from the date of this generic letter. The 60-day written response should also discuss (1) addressee plans to pursue a proposed alternative course of action (including the basis for establishing its acceptability), (2) the schedule for submitting that proposal for NRC staff review (that proposal should be submitted to the NRC no later than 180 days from the date of this generic letter), and (3) the basis for continued operability of affected systems and components until such time that the proposed alternative course of action is approved by the NRC.

Requested Action 5 – Response Clarification

In our response to this requested action, we stated that although we satisfy the intent of the requirements of GL 99-02 for Surry, our planned method of testing includes minor qualification of the ASTM D3803-1989 requirements for methyl iodide due to the atypical design features in Surry's engineered safety feature (ESF) ventilation systems.

Further, we committed to performing a separate test to confirm elemental iodine removal capabilities as part of our interim testing plans. As a result of the RAI and the subsequent discussions with the NRC, we are retracting our interim commitment to test for elemental iodine and no longer propose an additional test to confirm elemental iodine removal capabilities. Attachment 1 contains the specific RAI and response. The originally proposed Technical Specification request has been revised accordingly and is provided in Attachment 3.

Attachment 3

Revised Technical Specifications Amendment Request

Attachment 3A - Discussion of Changes
Attachment 3B - Mark-up of Technical Specifications
Attachment 3C - Proposed Technical Specifications
Attachment 3D - Significant Hazards Consideration Determination

Surry Power Station
Units 1 and 2
Dominion

Attachment 3A

Discussion of Changes

Surry Power Station
Units 1 and 2
Dominion

DISCUSSION OF CHANGES

Introduction

Pursuant to 10 CFR 50.90, Virginia Electric and Power Company (Dominion) requests changes to Technical Specification (TS) 3.23 Basis "Main Control Room and Emergency Switchgear Room Ventilation and Air Conditioning Systems", TS Surveillance Requirement 4.20.A.7, 4.20.B.4 and 4.20 Basis "Control Room Air Filtration System" and TS Surveillance Requirement 4.12.A.6, 4.12.A.7, 4.12.A.8, 4.12.B.7 and 4.12 Basis "Auxiliary Ventilation Exhaust Filter Trains". These current Surveillance Requirements require each system to be demonstrated operable by laboratory analysis of representative carbon samples that meet the laboratory testing criteria of ASTM D3803. The current acceptance criteria is "at least 96 percent methyl iodide removal at 0.125 sec. residence time, 1.75±0.25 mg/m^3 inlet methyl iodide concentration, relative humidity equal to 95±2 percent, and air temperature equal to 30±0.5°C". The proposed changes will revise the above Surveillance Requirements for the laboratory testing of the carbon samples for methyl iodide removal efficiency to be consistent with American Society for Testing and Materials (ASTM) D3803–1989, "Standard Test Method for Nuclear-Grade Activated Carbon", with qualification, as the laboratory testing standard for both new and used charcoal adsorbent used in the ventilation systems.

The NRC has determined in Policy Issue (SECY-97-299), "Laboratory Testing of Nuclear-Grade Activated Charcoal" dated December 24, 1997 and in NRC Generic Letter 99-02, "Laboratory Testing of Nuclear-Grade Activated Charcoal" dated June 3, 1999, that testing of nuclear-grade activated charcoal to standards other than ASTM D3803-1989 does not provide assurance of compliance with the current licensing basis as it relates to the dose limits of General Design Criteria 19 of Appendix A to 10 CFR Part 50 and Subpart A of 10 CFR Part 100.

The proposed changes adopt ASTM D3803-1989 which imposes very stringent requirements for testing charcoal to establish the capability of new and used activated carbon to remove methyl iodide from air and gas streams. The conditions employed by this standard were selected to approximate operating or accident conditions of a nuclear reactor, which would reduce the performance of activated carbons. The results of this test provide a conservative estimate of the performance of nuclear-grade activated carbon used in nuclear power plant HVAC systems for the removal of methyl iodide. Therefore, the proposed Technical Specifications changes do not constitute an unreviewed safety question or significant hazards consideration.

Background

Current Licensing Basis

Technical Specifications Amendments No. 92 and No. 91 for Surry Power Station Units 1 and 2, respectively, revised the Technical Specifications to add new limiting conditions for operation and surveillance requirements which address engineered safety feature filter systems and the bottled air system for the main control room. These amendments, issued on January 17, 1984, established the acceptable efficiency requirements and test parameters for laboratory analysis of the charcoal adsorbers. The charcoal sample must demonstrate "96% removal of methyl iodide when tested using the procedures of ASTM D3803 with a residence time of 0.125 seconds, a methyl iodide concentration of 1.75 ± 0.25 mg/m^3, at a relative humidity of $95 \pm 2\%$ and an air temperature of 30 ± 0.5°C". New charcoal adsorbent is qualified in accordance with Table 5.1 of ANSI N509-1976.

Design Basis

Safety related air cleaning units used in the Engineered Safety Feature (ESF) Ventilation Systems of nuclear power stations are designed to reduce the potential onsite and offsite consequences of a radiological accident by adsorbing radioiodine. Design-basis accident analyses assume a particular ESF charcoal filter adsorption efficiency when calculating offsite and control room doses. To ensure that the charcoal filters used in these systems have a filter adsorber efficiency greater than that assumed in the design-basis accident analysis, periodic laboratory tests of the installed nuclear-grade activated charcoal and new charcoal are performed. The maximum filter efficiency assumed in the design basis accident analysis for the main control room and the auxiliary ventilation charcoal adsorbers is 70% for methyl (organic) iodide and 90% for elemental (inorganic) iodine. The laboratory test acceptance criteria contains a safety factor to ensure that the efficiency assumed in the accident analysis is still valid at the end of the operating cycle.

Discussion

The NRC's and the nuclear industry's understanding of the appropriate laboratory tests for nuclear-grade charcoal have evolved over the years since the issuance of Regulatory Guide 1.52, "Design, Testing, and Maintenance Criteria for Post-accident Engineered-Safety-Feature Atmosphere Cleanup System Air Filtration and Adsorption Units of Light-Water-Cooled Nuclear Power Plants." It was initially assumed that high temperature/high relative humidity conditions were the most severe. With additional test experience, it became clear that the most conservative tests were performed at low temperature/high relative humidity. Based upon this experience, it has recently been determined by the NRC that the use of inappropriate test conditions or test protocols other than ASTM D3803-1989 can lead to an overestimation of the charcoal's ability to adsorb methyl iodide following an accident.

The changes made in ASTM D3803-1989 were in response to the findings of a study performed by Idaho National Engineering Laboratory (INEL). This study evaluated large inter-laboratory discrepancies in the testing of charcoal when performed in

accordance with ASTM D3803-1979, as well as the capabilities of the testing companies. The INEL Report, EGG-CS-7653, "Final Technical Evaluation Report for the NRC/INEL Activated Carbon Testing Program", issued in April 1987, identified changes that were needed to provide more accurate and consistent results for measuring iodine removal efficiency and was used as the basis for the issuance of NRC Information Bulletin IN 87-32, "Deficiencies in the Testing of Nuclear-Grade Activated Charcoal", dated July 10, 1987.

Current Technical Specification surveillance requirements exist for laboratory testing of charcoal banks for the Auxiliary Ventilation Exhaust Filter Trains (TS 4.12.B.7) and the Control Room Air Filtration System (TS 4.20.B.4). The current Surveillance Requirements require carbon samples to demonstrate "96% removal of methyl iodide when tested using the procedures of ASTM D3803 with a residence time of 0.125 seconds, a methyl iodide concentration of 1.75 ± 0.25 mg/m^3, at a relative humidity of 95 ± 2% and an air temperature of 30 ± 0.5°C". New charcoal adsorbent is qualified in accordance with Table 5.1 of ANSI N509-1976, "Nuclear Power Plant Air Cleaning Units and Components", which lists the test conditions, physical properties, and iodine removal efficiencies of activated charcoal.

NRC Policy Issue (SECY-97-299), dated December 24, 1997 and NRC Generic Letter 99-02, dated June 3, 1999 have determined that testing nuclear-grade activated charcoal to standards other than ASTM D3803-1989 does not provide assurance of compliance with the current licensing basis as it relates to the dose limits of GDC 19 of Appendix A to 10 CFR Part 50 and Subpart A of 10 CFR Part 100. The NRC considers ASTM D3803-1989 to be the most accurate and most realistic protocol for testing charcoal in ESF ventilation systems because it offers the greatest assurance of accuracy and consistency in determining the capability of the charcoal.

As noted in the GL 60-day response, dated July 28,1999 (Serial Number 99-339), Surry Power Station is complying with the requirements of GL 99-02 in that, for samples taken on or after August 2, 1999, testing of new and used charcoal for ESF ventilation systems includes testing methyl iodide removal efficiency consistent with the methodology of ASTM D3803-1989 with minor qualification. Our method of interim testing includes minor qualification of the ASTM D3803-1989 requirements due to the atypical design of Surry's engineered safety feature (ESF) ventilation systems. Specifically, the face velocity specified in ASTM D3803-1989 is approximately 12 M/min. The Surry Auxiliary Ventilation Exhaust Filter Trains have a nominal face velocity of 24.4 M/min and the Control Room Air Filtration System has a nominal face velocity of 18.3 M/min. Historically, our charcoal testing has been performed at 24.4 M/min to match the in-service conditions of the Auxiliary Ventilation System and to envelop the in-service conditions of the Control Room Filtration System.

Although testing in verbatim compliance with ASTM D3803-1989 could be performed, use of a test flow not matching/not enveloping the in-service conditions would provide non-representative, as well as non-conservative, results for Surry. Testing is performed for new charcoal for both the Auxiliary Ventilation and Control Room Filtration Systems. Used charcoal is tested for continued use in the Auxiliary Ventilation System. Charcoal in the Control Room Filtration System is replaced with new charcoal rather than tested for continued use. Charcoal is replaced in the Control Room Filtration System because

the charcoal bed design does not include a provision for taking in-place charcoal samples.

Laboratory testing of charcoal samples is intended to demonstrate that the charcoal is and will continue to be capable of performing with a removal efficiency equal to or greater than that assumed in the design-basis accident analysis. Laboratory test acceptance criteria contain a safety factor to ensure that the efficiency assumed in the accident analysis is still valid at the end of the operating cycle. Because ASTM D3803-1989 is a more accurate and demanding test, a safety factor as low as 2 can be used for determining the acceptance criteria for the charcoal efficiency. The following are the accident analysis requirements for the Surry Auxiliary Ventilation and Control Room Air Filtration Systems.

ESF System	Accident Analysis Efficiency Assumption	Applying Safety Factor of 2	Minimum Required Test Efficiency with 1% TS Allowable Bypass Leakage
Control Room Filtration	70% Organic 90% Inorganic	85% Organic 95% Inorganic	86% Organic 96% Inorganic
Auxiliary Ventilation	70% Organic 90% Inorganic	85% Organic 95% Inorganic	86% Organic 96% Inorganic

The minimum test efficiency noted above is the value that new and used charcoal is required to meet to comply with the proposed technical specification criteria in the generic letter. The Surry accident analysis has a higher efficiency assumption for inorganic iodine than organic iodide. Because the inorganic (elemental) iodine removal efficiency requirement is higher than that for organic (methyl) iodide, if a single test were performed, the single test would need to be performed at the elemental efficiency requirements to demonstrate that the filter could remove both the elemental and the methyl assumed. We recognize that GL 99-02 does not require elemental iodine lab testing because testing for methyl iodide is intended to envelop elemental iodine. However, due to the significantly higher efficiency requirement for elemental iodine, envelope testing with methyl iodide presents a potential concern for Surry when using the 1989 standard. Charcoal samples, which would otherwise pass individual methyl iodide and elemental iodine tests, may not pass an enveloping test using methyl iodide due to the atypical 0.125 second residence time across the charcoal cells. Instead of testing at the higher of the two efficiencies and potentially having to replace the charcoal at a greater frequency, we initially proposed in our Letter Serial No. 99-339A to split the testing into two separate (not simultaneous) tests - an elemental test and a methyl test. Our initially proposed Technical Specification in Letter Serial No. 99-339A references both ASTM standards, D3803-1979 for elemental testing and D3803-1989 for methyl testing, because the 1989 standard does not include a test methodology for elemental.

During a July 6, 2000 conference call with the NRC, the NRC indicated that they were unable to endorse testing using the 1979 standard. As a result of this feedback, we contacted our NRC approved charcoal testing lab NCS Corporation inquiring about

information that would support testing only with methyl and having the methyl test envelope a higher assumed efficiency for elemental. NCS Corporation is mentioned in the GL as one of the two remaining laboratories that test nuclear-grade charcoal. In response to that inquiry, NCS Corporation provided a letter dated July 10, 2000 that states:

> "Nuclear grade activated carbon, when tested in accordance with ASTM D3803-1989 (methyl iodide at 30°C, 24.4 m/min, and 70% relative humidity) to a penetration of 15%, is more conservative than testing the same carbon in accordance with ASTM D3803-1979 (elemental iodine at 30°C, 24.4 m/min, and 95% relative humidity) to a penetration of 5%.
>
> As a general rule, you may expect the radioiodine penetration through nuclear grade activated carbon to increase from 20 to 100 times when switching from elemental iodine to methyl iodide testing."

The NCS letter reflects a general comparison of removal efficiency at the Surry face velocity of 24.4 M/min. There are differences between the NCS letter and Surry parameters. The differences, which do not affect the applicability of the NCS letter to Surry, are:

NCS Letter	Surry Parameters
15% methyl penetration	14% methyl penetration
5% elemental penetration	4% elemental penetration
70% humidity	95% humidity

The penetration difference is not significant, and the Surry methyl testing at 95% relative humidity is a more stringent test requirement than the 70% reflected in the NCS letter. Therefore, the conclusions of the NCS letter – both in the specific example and in the general rule - are applicable to Surry.

Consequently, we propose to only test for methyl iodide penetration using the 1989 standard to a penetration less than or equal to 14% at 30°C, 24.4 m/min, and 95% relative humidity. On the basis of the NCS letter, this proposed methyl testing to a penetration less than or equal to 14% (applying a safety factor of 2) will demonstrate the assumed accident analysis efficiencies of 70% for methyl and 90% for elemental. This Technical Specification change request incorporates the method of testing to ASTM D3803-1989 with qualification for methyl iodide penetration.

In addition, several minor changes are being made to Auxiliary Ventilation Technical Specification 4.12 for consistency and clarification. These changes clarify when adsorber efficiency testing is required due to the presence of adverse interactions. Specifically, it limits consideration to when system operation may result in adverse substance ingress into the adsorbers. These changes are consistent with similar requirements currently in Technical Specification 4.20.

Specific Changes

Revise the following current Surveillance Requirements for Units 1 and 2 as noted below to reflect the adoption of ASTM D3803-1989 with qualification. The wording is consistent with the recommended wording provided by the NRC as specified in NRC Generic Letter 99-02, Attachment 2, "Sample Technical Specification".

Auxiliary Ventilation Exhaust Filter Trains

Revise current Surveillance Requirement 4.12.A.6.c from:

"6. In-place cold DOP tests for HEPA filter banks shall be performed:

c. Following painting, fire, or chemical release in any ventilation zone communicating with the system;"

TO

6. In-place cold DOP tests for HEPA filter banks shall be performed:

c. Following painting, fire, or chemical release in any ventilation zone communicating with the system **during system operation**;

Revise current Surveillance Requirement 4.12.A.7.c from:

"7. In-place halogenated hydrocarbon leakage tests for the charcoal adsorber bank shall be performed:

c. Following painting, fire, or chemical release in any ventilation zone communicating with the system;"

TO

7. In-place halogenated hydrocarbon leakage tests for the charcoal adsorber bank shall be performed:

c. Following painting, fire, or chemical release in any ventilation zone communicating with the system **during system operation**;

Revise current Surveillance Requirement 4.12.A.8 from:

"8. Laboratory analysis on in-place charcoal samples shall be performed:

a. Initially, whenever a new batch of charcoal is used to fill adsorbers trays;

b. Once per 18 months;

c. After 720 hours of system operation; and

d. Following painting, fire, or chemical release in any ventilation zone communicating with the system or after any structural maintenance on the HEPA filter of charcoal adsorber housings.

The procedure for iodine removal efficiency tests shall follow ASTM D3803. The test conditions shall be in accordance with those listed in Specification 4.12.B.7."

TO

8. Laboratory analysis **of each charcoal train** shall be performed:

a. Initially, whenever a new batch of charcoal is used to fill adsorbers trays; **and**

b. After 720 hours of **train** operation; and

c. Following painting, fire, or chemical release in any ventilation zone communicating with the system **during system operation; and**

d. After any structural maintenance on the HEPA filter **or** charcoal adsorber housings **that could affect operation of the charcoal adsorber; and**

e. **At least** once per eighteen months, **if not otherwise performed per condition 8.b, 8.c, or 8.d within the last eighteen months.**

The procedure for iodine removal efficiency tests shall follow ASTM D3803. The test conditions shall be in accordance with those listed in Specification 4.12.B.7.

Revise current Surveillance Requirement 4.12.B.7 from:

"7. Laboratory analysis on in-place charcoal samples shall show at least 96 percent methyl iodide removal at 0.125 sec. residence time, 1.75±0.25 mg/m³ inlet methyl iodide concentration, relative humidity equal to 95±2 percent, and air temperature equal to 30±0.5°C.

a. Laboratory analysis of charcoal adsorbers shall be available within 31 days of sampling.

b. If the test results are unacceptable, all the adsorbent in the affected filter shall be replaced with new adsorbent qualified in accordance with Table 5.1 of ANSI N509-1976."

TO

7. Laboratory analysis on charcoal samples **of the in-place charcoal adsorber, or new adsorbent, when obtained as described in Regulatory Guide 1.52, Revision 2,** shall show:

Methyl iodide penetration less than or equal to 14 percent, when tested in accordance with ASTM D3803-1989 (with the exception of face velocity which is to be at 24.4 M/min), with the relative humidity equal to 95 percent, and **the** temperature equal to 30°C **(86°F).**

a. Laboratory analysis of charcoal adsorbers shall be available within 31 days of sampling.

b. If the test results are unacceptable **for the in-place charcoal adsorber,** all the adsorbent in the affected filter shall be replaced with new **qualified** adsorbent.

Revise current Surveillance Requirement 4.12 Basis from:

"...The laboratory carbon sample tests are required to indicate a radioactive methyl iodide removal efficiency of at least 96 percent at a relative humidity equal to 95±2 percent. The offsite dose calculations for LOCA and fuel handling accidents assume 90 percent and 70 percent, respectively, iodine removal efficiency for the air passing through the charcoal filters. Therefore, the efficiencies of the HEPA filters and charcoal adsorbers are demonstrated to be as specified, at flow rates, temperatures, velocities, and relative humidities which are less than the design values of the system, the resulting doses will be less than 10 CFR 100 guidelines for the accidents analyzed. The demonstration of bypass 1% and demonstration of 96 percent methyl iodide removal efficiency will assure the required capability of the filters is met or exceeded."

TO

...Methyl iodide testing to a penetration less than or equal to 14 percent (applying a safety factor of 2) demonstrates the assumed accident analysis efficiencies of 70 percent for methyl iodide and 90 percent for elemental iodine. This conclusion is supported by a July 10, 2000 letter from NCS Corporation that stated "Nuclear grade activated carbon, when tested in accordance with ASTM D3803-1989 (methyl iodide . . .) to a penetration of 15%, is more conservative than testing the same carbon in accordance with ASTM D3803-1979 (elemental iodine . . .) to a penetration of 5%. . . . As a general rule, you may expect the radioiodine penetration through nuclear grade activated carbon to increase from 20 to 100 times when switching from elemental iodine to methyl iodide testing." Therefore, the efficiencies of the HEPA filters and charcoal adsorbers are demonstrated to be as specified, at flow rates, temperatures, velocities, and relative humidities which are less than the design values of the system, the resulting doses will be less than 10 CFR 100 guidelines for the accidents analyzed. The demonstration of bypass 1% and demonstration of **86** percent methyl iodide removal efficiency will assure the required capability of the **adsorbers** is met or exceeded.

Control Room Air Filtration System

Revise current Technical Specification 3.23 Basis from:

"High efficiency particulate air (HEPA) filters are installed before the charcoal adsorbers to prevent clogging of the iodine adsorbers. The charcoal adsorbers are installed to reduce the potential intake of radio-iodine to the control room. The in-place test results should indicate a system leaktightness of less than 1 percent bypass leakage for the charcoal adsorbers and a HEPA efficiency of at least 99.5 percent removal of DOP particulates. The laboratory carbon sample test results should indicate a radioactive methyl iodide removal efficiency of at least 95 percent for expected accident conditions. The control room dose calculations assume only 90 percent iodine removal efficiency for the air passing through the charcoal filters. Therefore, if the efficiencies of the HEPA filters and charcoal adsorbers are as specified, at the temperatures, flow rates and velocities within the design values of the system, the resulting doses will be less than the allowable levels stated in Criterion 19 of the General Design Criteria for Nuclear Power Plants, Appendix A to 10 CFR Part 50."

TO

High efficiency particulate air (HEPA) filters are installed before the charcoal adsorbers to prevent clogging of the iodine adsorbers. The charcoal adsorbers are installed to reduce the potential intake of radio-iodine to the control room.

Revise current Surveillance Requirement 4.20.A.7 from:

"7. Laboratory analysis on charcoal samples shall be performed:

a. Initially, whenever a new batch of charcoal is used to fill adsorber trays;

b. Once per eighteen months;

c. After 720 hours of system operation; and

d. Following painting, fire, or chemical release in any ventilation zone communicating with the system during system operation."

TO

7. **Charcoal Adsorber shall be replaced:**

   a. **After 720 hours of train operation; and**

   b. **Following painting, fire, or chemical release in any ventilation zone communicating with the system during system operation; and**

   c. **After any structural maintenance on the HEPA filter or charcoal adsorber housing that could affect the operation of the charcoal adsorber; and**

   d. **At least once per eighteen months, if not otherwise replaced per condition 7.a, 7.b, or 7.c within the last eighteen months.**

   Upon meeting any of these conditions, the affected charcoal bank shall be removed from service and the charcoal replaced with new charcoal meeting the specifications in 4.20.B.4.

Revise current Surveillance Requirement 4.20.B.4 from:

"4. Laboratory analysis on in-place charcoal samples shall show at least 96 percent methyl iodide removal, at 0.125 sec. residence time, with 1.75±0.25 mg/m³ inlet methyl iodide concentration, relative humidity equal to 95±2 percent, and air temperature equal to 30±0.5°C. The laboratory analysis shall be available within 31 days of sampling. If the test results are unacceptable, all adsorbent in the filter shall be replaced with new adsorbent qualified in accordance with Table 5.1 of ANSI N509-1976."

TO

4. Laboratory analysis on **new charcoal adsorbent** shall show **the methyl iodide penetration less than or equal to 14 percent, when tested in accordance with ASTM D3803-1989 (with the exception of face velocity which is to be at 24.4 M/min), with the** relative humidity equal to 95 percent, and **the** temperature equal to 30°C **(86°F).**

Revise current Surveillance Requirement 4.20 Basis from:

"If painting, fire, or chemical release occurs such that the HEPA filter or charcoal adsorber could become contaminated from fumes, chemicals, or foreign material, the same tests and sample analysis are performed as required for operational use."

TO

If painting, fire, or chemical release occurs such that the HEPA filter or charcoal adsorber could become contaminated from fumes, chemicals, or foreign material, the **HEPA filters are tested and the charcoal adsorbers are replaced to ensure the operational requirements are met.**

The in-place test results should indicate a system leaktightness of less than 1 percent bypass leakage for the charcoal adsorbers and a HEPA efficiency of at least 99.5 percent removal of DOP particulates. Methyl iodide testing to a penetration less than or equal to 14 percent (applying a safety factor of 2) demonstrates the assumed accident analysis efficiencies of 70 percent for methyl iodide and 90 percent for elemental iodine. This conclusion is supported by a July 10, 2000 letter from NCS Corporation that stated "Nuclear grade activated carbon, when tested in accordance with ASTM D3803-1989 (methyl iodide . . .) to a penetration of 15%, is more conservative than testing the same carbon in accordance with ASTM D3803-1979 (elemental iodine . . .) to a penetration of 5%. . . . As a general rule, you may expect the radioiodine penetration through nuclear grade activated carbon to increase from 20 to 100 times when switching from elemental iodine to methyl iodide testing." Therefore, if the efficiencies of the HEPA filters and charcoal adsorbers are as specified, at the temperatures, flow rates and velocities within the design values of the system, the resulting doses will be less than the allowable levels stated in Criterion 19 of the General Design Criteria for Nuclear Power Plants, Appendix A to 10 CFR Part 50.

The charcoal in the Control Room Filtration System is replaced with new charcoal rather than tested for continued use because the charcoal bed design does not include a provision for taking in-place charcoal samples.

Safety Significance

The proposed Technical Specification changes adopt the nuclear-grade charcoal testing requirements of ASTM D3803-1989, with qualification, for methyl iodide removal efficiency. The method of testing nuclear-grade activated charcoal does not affect the design or operation of the plant. The changes also do not involve any physical modification to the plant or result in a change in a method of system operation. The adoption of the 1989 edition of ASTM D3803 for methyl iodide testing conforms with approved guidance for testing of nuclear-grade activated charcoal. This provides assurance that testing of ventilation systems is being performed with a suitable standard to ensure that charcoal adsorbers are capable of performing their required safety function and that regulatory requirements regarding onsite and offsite dose consequences continue to be satisfied. The changes do not constitute an unreviewed safety question.

a) The proposed changes do not increase the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report.

   The proposed changes modify surveillance testing requirements and do not affect plant systems or operation. The proposed surveillance requirements adopt ASTM D3803-1989, with qualification, as the laboratory method for testing samples of the charcoal adsorber for methyl iodide removal efficiency in response to NRC's Generic Letter 99-02. This method of testing charcoal adsorbers has been approved by the NRC as an acceptable method for determining methyl iodide removal efficiency. Since the charcoal adsorbers are used to mitigate the consequences of an accident, the more accurate the test, the better assurance we have that we remain within our accident analysis assumptions. The laboratory test acceptance criteria contain a safety factor to ensure that the efficiency assumed in the accident analysis is still valid at the end of the operating cycle. There is no change in the method of plant operation or system design. Therefore, the proposed changes do not increase the probability of occurrence or the consequences of any previously analyzed accident.

b) The proposed changes do not create the possibility of an accident or malfunction of a different type than any evaluated previously in the safety analysis report.

   The proposed changes modify surveillance testing requirements and do not impact plant systems or operations therefore no accident or malfunction of a different type is created. The proposed surveillance requirements adopt ASTM D3803-1989, with qualification, as the laboratory method for testing samples of the charcoal adsorber for methyl iodide removal efficiency. This change is in response to NRC's request in Generic Letter 99-02. There is no change in the method of plant operation or system design. Therefore, there is no new or different kind of accident or malfunction from any accidents previously evaluated.

c) The proposed changes do not reduce the margin of safety as defined in the basis of any Technical Specifications.

The proposed changes modify surveillance test requirements and do not impact plant operation. The revised surveillance requirements adopt ASTM D3803-1989, with qualification, as the laboratory method for testing samples of the charcoal adsorber for methyl iodide removal efficiency. The 1989 edition of this standard imposes very stringent requirements for establishing the capability of new and used activated carbon to remove radioactive methyl iodide from air and gas streams. The results of this test provide a more conservative estimate of the performance of nuclear-graded activated carbon used in nuclear power plant HVAC systems for the removal of methyl iodide. The laboratory test acceptance criteria contain a safety factor to ensure that the efficiency assumed in the accident analysis is still valid at the end of the operating cycle. Therefore, the proposed changes for charcoal testing do not result in a reduction in the margin of safety.

Environmental Assessment

The proposed Technical Specifications change the method used when testing nuclear-grade activated charcoal used in engineered safety feature ventilation systems. The proposed changes have no environmental impact or increase in the individual or cumulative occupational radiation exposure. No new effluents or effluent release paths are created as a result of the proposed Technical Specifications changes to the charcoal testing process. The proposed changes will continue to ensure that charcoal filter capability is adequately addressed and therefore, there is no environmental impact as a result of the proposed Technical Specifications changes.

Attachment 3B

Mark-up of Technical Specifications

Surry Power Station
Units 1 and 2
Dominion

Basis

When the supply of compressed bottled air is depleted, the Main Control Room and Emergency Switchgear Room Emergency Ventilation System is manually started to continue to maintain the control room pressure at the design positive pressure so that leakage is outleakage. One train of the main control room emergency ventilation consists of one fan powered from an independent emergency power source.

The Main Control Room and Emergency Switchgear Room Emergency Ventilation System is designed to filter the intake air to the control room pressure envelope, which consists of the control room, relay rooms, and emergency switchgear rooms during a loss of coolant accident.

High efficiency particulate air (HEPA) filters are installed before the charcoal adsorbers to prevent clogging of the iodine adsorbers. The charcoal adsorbers are installed to reduce the potential intake of radio-iodine to the control room. ~~The in-place test results should indicate a system leaktightness of less than 1 percent bypass leakage for the charcoal adsorbers and a HEPA efficiency of at least 99.5 percent removal of DOP particulates. The laboratory carbon sample test results should indicate a radioactive methyl iodide removal efficiency of at least 95 percent for expected accident conditions. The control room dose calculations assume only 90 percent iodine removal efficiency for the air passing through the charcoal filters. Therefore, if the efficiencies of the HEPA filters and charcoal adsorbers are as specified, at the temperatures, flow rates and velocities within the design values of the system, the resulting doses will be less than the allowable levels stated in Criterion 19 of the General Design Criteria for Nuclear Power Plants, Appendix A to 10 CFR Part 50.~~

Delete

If the system is found to be inoperable, there is no immediate threat to the control room, and reactor operation may continue for a limited period of time while repairs are being made. If the system cannot be repaired within the specified time, procedures are initiated to establish conditions for which the filter system is not required.

5. An air distribution test across the prefilter bank shall be performed initially and after any major modification, major repair, or maintenance of the air cleaning system affecting the filter bank flow distribution. The air distribution test shall be performed with an anemometer located at the downstream side and at the center of each carbon filter.

6. In-place cold DOP tests for HEPA filter banks shall be performed:

   a. Initially;

   b. Once per 18 months;

   c. Following painting, fire, or chemical release in any ventilation zone communicating with the system during system operation;

   d. After each complete or partial replacement of the HEPA filter cells; and

   e. After any structural maintenance on the filter housing.

   The procedure for in-place cold DOP tests shall be in accordance with ANSI N510-1975, Section 10.5 or 11.4. The flow rate during the in-place cold DOP tests shall be 36,000 CFM ±10 percent. The flow rate shall be determined by recording the flow meter reading in the control room.

7. In-place halogenated hydrocarbon leakage tests for the charcoal adsorber bank shall be performed:

   a. Initially;

   b. Once per 18 months;

c. Following painting, fire, or chemical release in any ventilation zone communicating with the system during system operation;

d. After each complete or partial replacement of charcoal adsorber trays; and

e. After any structural maintenance of the filter housing.

The procedure for in-place halogenated hydrocarbon leakage tests shall be in accordance with ANSI N510-1975, Section 12.5. The flow rate during the in-place halogenated hydrocarbon leakage tests shall be 36,000 CFM ±10 percent. The flow rate shall be determined by recording the flow meter reading in the control room.

8. ~~Laboratory analysis on in-place charcoal samples shall be performed:~~

Insert 1

~~a. Initially, whenever a new batch of charcoal is used to fill adsorbers trays;~~

~~b. Once per 18 months;~~

~~c. After 720 hours of system operation; and~~

~~d. Following painting, fire, or chemical release in any ventilation zone communicating with the system or after any structural maintenance on the HEPA filter of charcoal adsorber housings.~~

The procedure for iodine removal efficiency tests shall follow ASTM D3803. The test conditions shall be in accordance with those listed in Specification 4.12.B.7.

Revise Surveillance Requirement 4.12.A.8 (Insert 1)

8. Laboratory analysis of each charcoal train shall be performed:

   a. Initially, whenever a new batch of charcoal is used to fill adsorbers trays; and

   b. After 720 hours of train operation; and

   c. Following painting, fire, or chemical release in any ventilation zone communicating with the system during system operation; and

   d. After any structural maintenance on the HEPA filter or charcoal adsorber housings that could affect operation of the charcoal adsorber; and

   e. At least once per eighteen months, if not otherwise performed per condition 8.b, 8.c, or 8.d within the last eighteen months.

5. In-place cold DOP test on HEPA filters shall show greater than or equal to 99.5 percent DOP removal. Leakage sources shall be identified, repaired, and retested. Any HEPA filters found defective shall be replaced.

6. In-place halogenated hydrocarbon leakage tests on charcoal adsorber banks shall show greater than or equal to 99 percent halogenated hydrocarbon removal. Leakage sources shall be identified, repaired, and retested.

7. ~~Laboratory analysis on in-place charcoal samples shall show at least 96 percent methyl iodide removal at 0.125 sec. residence time, 1.75±0.25 mg/m^3 inlet methyl iodide concentration, relative humidity equal to 95±2 percent, and air temperature equal to 30±0.5°C.~~

   Insert 2

   a. ~~Laboratory analysis of charcoal adsorbers shall be available within 31 days of sampling.~~

   b. ~~If the test results are unacceptable, all the adsorbent in the affected filter shall be replaced with new adsorbent qualified in accordance with Table 5.1 of ANSI N509-1976.~~

8. The pressure drop across filter cells and adsorbers shall not exceed 7.0 inches W.G. If this condition cannot be met, new filter cells shall be installed.

Basis

Ventilation system filter components are not subject to rapid deterioration, having lifetimes of many years, even under continuous flow conditions. The tests outlined above provide assurance of filter reliability and will ensure timely detection of conditions which could cause filter degradation.

Revise Surveillance Requirement 4.12.B.7 (Insert 2)

7. Laboratory analysis on charcoal samples of the in-place charcoal adsorber, or new adsorbent, when obtained as described in Regulatory Guide 1.52, Revision 2, shall show:

   Methyl iodide penetration less than or equal to 14 percent, when tested in accordance with ASTM D3803-1989 (with the exception of face velocity which is to be at 24.4 M/min), with the relative humidity equal to 95 percent, and the temperature equal to 30°C (86°F).

   a. Laboratory analysis of charcoal adsorbers shall be available within 31 days of sampling.

   b. If the test results are unacceptable for the in-place charcoal adsorber, all the adsorbent in the affected filter shall be replaced with new qualified adsorbent.

A pressure drop across the combined HEPA filters and charcoal adsorbers of less than 7 inches of water at the system design flow rate will indicate that the filters and adsorbers are not clogged by excessive amounts of foreign matter. Operation of the filtration system for a minimum of 15 minutes a month prevents moisture buildup in the filters and adsorbers.

The frequency of tests and sample analysis of the degradable components of the system, i.e., the HEPA filter and charcoal adsorbers, is based on actual hours of operation to ensure that they perform as evaluated. System flow rates and air distribution do not change unless the ventilation system is radically altered.

If painting, fire, or chemical release occurs such that the HEPA filter or charcoal adsorber could become contaminated from the fumes, chemical, or foreign material, the same tests and sample analysis are performed as required for operational use.

The in-place test results should indicate a system leak tightness of less than 1 percent bypass leakage for the charcoal adsorbers and a HEPA efficiency of at least 99.5 percent removal of DOP particulates. The heat release from operating ECCS equipment limits the relative humidity of the exhaust air to less than 80 percent even when outdoor air is assumed to be 100 percent relative humidity and all ECCS leakage evaporates into the exhaust air stream. ~~The laboratory carbon sample tests are required to indicate a radioactive methyl iodide removal efficiency of at least 96 percent at a relative humidity equal to 95±2 percent. The offsite dose calculations for LOCA and fuel handling accidents assume 90 percent and 70 percent, respectively, iodine removal efficiency for the air passing through the charcoal filters. Therefore, the efficiencies of the HEPA filters and charcoal adsorbers are demonstrated to be as specified, at flow rates, temperatures, velocities, and relative humidities which are less than the design values of the system, the resulting doses will be less than 10 CFR 100 guidelines for the accidents analyzed. The demonstration of bypass 1% and demonstration of 96 percent methyl iodide removal efficiency will assure the required capability of the filters is met or exceeded.~~

Insert 3

Revise Surveillance Requirement 4.12 Basis (Insert 3)

Methyl iodide testing to a penetration less than or equal to 14 percent (applying a safety factor of 2) demonstrates the assumed accident analysis efficiencies of 70 percent for methyl iodide and 90 percent for elemental iodine. This conclusion is supported by a July 10, 2000 letter from NCS Corporation that stated "Nuclear grade activated carbon, when tested in accordance with ASTM D3803-1989 (methyl iodide . . .) to a penetration of 15%, is more conservative than testing the same carbon in accordance with ASTM D3803-1979 (elemental iodine . . .) to a penetration of 5%. . . . As a general rule, you may expect the radioiodine penetration through nuclear grade activated carbon to increase from 20 to 100 times when switching from elemental iodine to methyl iodide testing." Therefore, the efficiencies of the HEPA filters and charcoal adsorbers are demonstrated to be as specified, at flow rates, temperatures, velocities, and relative humidities which are less than the design values of the system, the resulting doses will be less than 10 CFR 100 guidelines for the accidents analyzed. The demonstration of bypass 1% and demonstration of 86 percent methyl iodide removal efficiency will assure the required capability of the adsorbers is met or exceeded.

5. In-place halogenated hydrocarbon leakage tests for the charcoal adsorber bank shall be performed:

   a. Initially;

   b. Once per eighteen months;

   c. Following painting, fire, or chemical release in any ventilation zone communicating with the system during system operation;

   d. After each complete or partial replacement of charcoal adsorber trays; and

   e. After any structural maintenance on the filter housing.

6. The procedure for in-place halogenated hydrocarbon leakage tests shall be in accordance with ANSI N510-1975 Section 12.5. The flow rate during this test shall be that value determined under Specification 4.20.A.1 and shall be within the range specified in Specification 4.20.B.1.

7. ~~Laboratory analysis on charcoal samples shall be performed:~~

   ~~a. Initially, whenever a new batch of charcoal is used to fill adsorber trays;~~

   ~~b. Once per eighteen months;~~

   ~~c. After 720 hours of system operation; and~~

   ~~d. Following painting, fire, or chemical release in any ventilation zone communicating with the system during system operation.~~

Insert 4

Revise Surveillance Requirement 4.20.A.7 (Insert 4)

7. Charcoal Adsorber shall be replaced:

    a. After 720 hours of train operation; and

    b. Following painting, fire, or chemical release in any ventilation zone communicating with the system during system operation; and

    c. After any structural maintenance on the HEPA filter or charcoal adsorber housing that could affect the operation of the charcoal adsorber; and

    d. At least once per eighteen months, if not otherwise replaced per condition 7.a, 7.b, or 7.c within the last eighteen months.

    Upon meeting any of these conditions, the affected charcoal bank shall be removed from service and the charcoal replaced with new charcoal meeting the specifications in 4.20.B.4.

Insert 5

4. ~~Laboratory analysis on in-place charcoal samples shall show at least 96 percent methyl iodide removal, at 0.125 sec. residence time, with 1.75±0.25 mg/m^3 inlet methyl iodide concentration, relative humidity equal to 95±2 percent, and air temperature equal to 30±0.5°C. The laboratory analysis shall be available within 31 days of sampling. If the test results are unacceptable, all adsorbent in the filter shall be replaced with new adsorbent qualified in accordance with Table 5.1 of ANSI N509-1976.~~

5. The pressure drop across filter cells and adsorbers shall not exceed 5.0 inches W.G. at design flow rate. If this condition cannot be met, new filter cells shall be installed.

6. The minimum period of air flow through the filter shall be 15 minutes per month.

Basis

Ventilation system filter components are not subject to rapid deterioration, having lifetimes of many years. The tests outlined above provide assurance of filter reliability and will ensure timely detection of conditions which could cause filter degradation.

A pressure drop across the combined HEPA filters and charcoal adsorbers of less than 5 inches of water will indicate that the filters and adsorbers are not clogged by excessive amounts of foreign matter. Operation of the filtration system for a minimum of 15 minutes a month prevents moisture buildup in the filters and adsorbers.

Revise Surveillance Requirement 4.20.B.4 (Insert 5)

4 Laboratory analysis on new charcoal adsorbent shall show the methyl iodide penetration less than or equal to 14 percent, when tested in accordance with ASTM D3803-1989 (with the exception of face velocity which is to be at 24.4 M/min), with the relative humidity equal to 95 percent, and the temperature equal to 30°C (86°F).

The frequency of tests and sample analysis are necessary to show that the HEPA filters and charcoal adsorbers can perform as evaluated.

~~If painting, fire, or chemical release occurs such that the HEPA filter or charcoal adsorber could become contaminated from fumes, chemicals, or foreign material, the same tests and sample analysis are performed as required for operational use.~~

Insert 6

Revise Surveillance Requirement 4.20 Basis (Insert 6)

If painting, fire, or chemical release occurs such that the HEPA filter or charcoal adsorber could become contaminated from fumes, chemicals, or foreign material, the HEPA filters are tested and the charcoal adsorbers are replaced to ensure the operational requirements are met.

The in-place test results should indicate a system leaktightness of less than 1 percent bypass leakage for the charcoal adsorbers and a HEPA efficiency of at least 99.5 percent removal of DOP particulates. Methyl iodide testing to a penetration less than or equal to 14 percent (applying a safety factor of 2) demonstrates the assumed accident analysis efficiencies of 70 percent for methyl iodide and 90 percent for elemental iodine. This conclusion is supported by a July 10, 2000 letter from NCS Corporation that stated "Nuclear grade activated carbon, when tested in accordance with ASTM D3803-1989 (methyl iodide . . .) to a penetration of 15%, is more conservative than testing the same carbon in accordance with ASTM D3803-1979 (elemental iodine . . .) to a penetration of 5%. . . . As a general rule, you may expect the radioiodine penetration through nuclear grade activated carbon to increase from 20 to 100 times when switching from elemental iodine to methyl iodide testing." Therefore, if the efficiencies of the HEPA filters and charcoal adsorbers are as specified, at the temperatures, flow rates and velocities within the design values of the system, the resulting doses will be less than the allowable levels stated in Criterion 19 of the General Design Criteria for Nuclear Power Plants, Appendix A to 10 CFR Part 50.

The charcoal in the Control Room Filtration System is replaced with new charcoal rather than tested for continued use because the charcoal bed design does not include a provision for taking in-place charcoal samples.

Attachment 3C

Proposed Technical Specifications

Surry Power Station
Units 1 and 2
Dominion

TABULATION OF CHANGES

Surry Units 1 and 2
License Nos. DPR-32 and DPR-37
Docket Nos. 50-280 and 50-281

Summary of change:

The proposed changes to the Technical Specifications and Bases reflect Surry Power Station complying with the requirements of GL 99-02 in that testing of new and used charcoal for ESF ventilation systems includes testing methyl iodide removal efficiency consistent with the methodology of ASTM D3803-1989 with minor qualification. I addition, minor clarifications are made as to when ventilation testing is required.

DELETE	DATED	SUBSTITUTE
TS 3.23-3	09-01-93	TS 3.23-3
TS 4.12-2	06-11-98	TS 4.12-2
TS 4.12-3	06-11-98	TS 4.12-3
TS 4.12-5	01-17-84	TS 4.12-5
TS 4.12-6	01-17-84	TS 4.12-6
TS 4.20-3	06-11-98	TS 4.20-3
TS 4.20-5	01-17-84	TS 4.20-5
TS 4.20-6	01-17-84	TS 4.20-6

Basis

When the supply of compressed bottled air is depleted, the Main Control Room and Emergency Switchgear Room Emergency Ventilation System is manually started to continue to maintain the control room pressure at the design positive pressure so that leakage is outleakage. One train of the main control room emergency ventilation consists of one fan powered from an independent emergency power source.

The Main Control Room and Emergency Switchgear Room Emergency Ventilation System is designed to filter the intake air to the control room pressure envelope, which consists of the control room, relay rooms, and emergency switchgear rooms during a loss of coolant accident.

High efficiency particulate air (HEPA) filters are installed before the charcoal adsorbers to prevent clogging of the iodine adsorbers. The charcoal adsorbers are installed to reduce the potential intake of radio-iodine to the control room.

If the system is found to be inoperable, there is no immediate threat to the control room, and reactor operation may continue for a limited period of time while repairs are being made. If the system cannot be repaired within the specified time, procedures are initiated to establish conditions for which the filter system is not required.

5. An air distribution test across the prefilter bank shall be performed initially and after any major modification, major repair, or maintenance of the air cleaning system affecting the filter bank flow distribution. The air distribution test shall be performed with an anemometer located at the downstream side and at the center of each carbon filter.

6. In-place cold DOP tests for HEPA filter banks shall be performed:

   a. Initially;

   b. Once per 18 months;

   c. Following painting, fire, or chemical release in any ventilation zone communicating with the system during system operation;

   d. After each complete or partial replacement of the HEPA filter cells; and

   e. After any structural maintenance on the filter housing.

   The procedure for in-place cold DOP tests shall be in accordance with ANSI N510-1975, Section 10.5 or 11.4. The flow rate during the in-place cold DOP tests shall be 36,000 CFM ±10 percent. The flow rate shall be determined by recording the flow meter reading in the control room.

7. In-place halogenated hydrocarbon leakage tests for the charcoal adsorber bank shall be performed:

   a. Initially;

   b. Once per 18 months;

c. Following painting, fire, or chemical release in any ventilation zone communicating with the system during system operation;

d. After each complete or partial replacement of charcoal adsorber trays; and

e. After any structural maintenance of the filter housing.

The procedure for in-place halogenated hydrocarbon leakage tests shall be in accordance with ANSI N510-1975, Section 12.5. The flow rate during the in-place halogenated hydrocarbon leakage tests shall be 36,000 CFM ±10 percent. The flow rate shall be determined by recording the flow meter reading in the control room.

8. Laboratory analysis of each charcoal train shall be performed:

a. Initially, whenever a new batch of charcoal is used to fill adsorbers trays; and

b. After 720 hours of train operation; and

c. Following painting, fire, or chemical release in any ventilation zone communicating with the system during system operation; and

d. After any structural maintenance on the HEPA filter or charcoal adsorber housings that could affect operation of the charcoal adsorber; and

e. At least once per eighteen months, if not otherwise performed per condition 8.b, 8.c, or 8.d within the last eighteen months.

The procedure for iodine removal efficiency tests shall follow ASTM D3803. The test conditions shall be in accordance with those listed in Specification 4.12.B.7.

5. In-place cold DOP test on HEPA filters shall show greater than or equal to 99.5 percent DOP removal. Leakage sources shall be identified, repaired, and retested. Any HEPA filters found defective shall be replaced.

6. In-place halogenated hydrocarbon leakage tests on charcoal adsorber banks shall show greater than or equal to 99 percent halogenated hydrocarbon removal. Leakage sources shall be identified, repaired, and retested.

7. Laboratory analysis on charcoal samples of the in-place charcoal adsorber, or new adsorbent, when obtained as described in Regulatory Guide 1.52, Revision 2, shall show:

   Methyl iodide penetration less than or equal to 14 percent, when tested in accordance with ASTM D3803-1989 (with the exception of face velocity which is to be at 24.4 M/min), with the relative humidity equal to 95 percent, and the temperature equal to 30°C (86°F).

   a. Laboratory analysis of charcoal adsorbers shall be available within 31 days of sampling.

   b. If the test results are unacceptable for the in-place charcoal adsorber, all the adsorbent in the affected filter shall be replaced with new qualified adsorbent.

8. The pressure drop across filter cells and adsorbers shall not exceed 7.0 inches W.G. If this condition cannot be met, new filter cells shall be installed.

Basis

Ventilation system filter components are not subject to rapid deterioration, having lifetimes of many years, even under continuous flow conditions. The tests outlined above provide assurance of filter reliability and will ensure timely detection of conditions which could cause filter degradation.

A pressure drop across the combined HEPA filters and charcoal adsorbers of less than 7 inches of water at the system design flow rate will indicate that the filters and adsorbers are not clogged by excessive amounts of foreign matter. Operation of the filtration system for a minimum of 15 minutes a month prevents moisture buildup in the filters and adsorbers.

The frequency of tests and sample analysis of the degradable components of the system, i.e., the HEPA filter and charcoal adsorbers, is based on actual hours of operation to ensure that they perform as evaluated. System flow rates and air distribution do not change unless the ventilation system is radically altered.

If painting, fire, or chemical release occurs such that the HEPA filter or charcoal adsorber could become contaminated from the fumes, chemical, or foreign material, the same tests and sample analysis are performed as required for operational use.

The in-place test results should indicate a system leak tightness of less than 1 percent bypass leakage for the charcoal adsorbers and a HEPA efficiency of at least 99.5 percent removal of DOP particulates. The heat release from operating ECCS equipment limits the relative humidity of the exhaust air to less than 80 percent even when outdoor air is assumed to be 100 percent relative humidity and all ECCS leakage evaporates into the exhaust air stream. Methyl iodide testing to a penetration less than or equal to 14 percent (applying a safety factor of 2) demonstrates the assumed accident analysis efficiencies of 70 percent for methyl iodide and 90 percent for elemental iodine. This conclusion is supported by a July 10, 2000 letter from NCS Corporation that stated "Nuclear grade activated carbon, when tested in accordance with ASTM D3803-1989 (methyl iodide...) to a penetration of 15%, is more conservative than testing the same carbon in accordance with ASTM D3803-1979 (elemental iodine...) to a penetration of 5%. ...As a general rule, you may expect the radioiodine penetration through nuclear grade activated carbon to increase from 20 to 100 times when switching from elemental iodine to methyl iodide testing." Therefore, the efficiencies of the HEPA filters and charcoal adsorbers are demonstrated to be as specified, at flow rates, temperatures, velocities, and relative humidities which are less than the design values of the system, the resulting doses will be less than 10 CFR 100 guidelines for the accidents analyzed. The demonstration of bypass 1% and demonstration of 86 percent methyl iodide removal efficiency will assure the required capability of the adsorbers is met or exceeded.

5. In-place halogenated hydrocarbon leakage tests for the charcoal adsorber bank shall be performed:

   a. Initially;

   b. Once per eighteen months;

   c. Following painting, fire, or chemical release in any ventilation zone communicating with the system during system operation;

   d. After each complete or partial replacement of charcoal adsorber trays; and

   e. After any structural maintenance on the filter housing.

6. The procedure for in-place halogenated hydrocarbon leakage tests shall be in accordance with ANSI N510-1975 Section 12.5. The flow rate during this test shall be that value determined under Specification 4.20.A.1 and shall be within the range specified in Specification 4.20.B.1.

7. Charcoal Adsorber shall be replaced:

   a. After 720 hours of train operation; and

   b. Following painting, fire, or chemical release in any ventilation zone communicating with the system during system operation; and

   c. After any structural maintenance on the HEPA filter or charcoal adsorber housing that could affect the operation of the charcoal adsorber; and

   d. At least once per eighteen months, if not otherwise replaced per condition 7.a, 7.b, or 7.c within the last eighteen months.

Upon meeting any of these conditions, the affected charcoal bank shall be removed from service and the charcoal replaced with new charcoal meeting the specifications in 4.20.B.4.

4. Laboratory analysis on new charcoal adsorbent shall show the methyl iodide penetration less than or equal to 14 percent, when tested in accordance with ASTM D3803-1989 (with the exception of face velocity which is to be at 24.4 M/min), with the relative humidity equal to 95 percent, and the temperature equal to 30°C (86°F).

5. The pressure drop across filter cells and adsorbers shall not exceed 5.0 inches W.G. at design flow rate. If this condition cannot be met, new filter cells shall be installed.

6. The minimum period of air flow through the filter shall be 15 minutes per month.

Basis

Ventilation system filter components are not subject to rapid deterioration, having lifetimes of many years. The tests outlined above provide assurance of filter reliability and will ensure timely detection of conditions which could cause filter degradation.

A pressure drop across the combined HEPA filters and charcoal adsorbers of less than 5 inches of water will indicate that the filters and adsorbers are not clogged by excessive amounts of foreign matter. Operation of the filtration system for a minimum of 15 minutes a month prevents moisture buildup in the filters and adsorbers.

The frequency of tests and sample analysis are necessary to show that the HEPA filters and charcoal adsorbers can perform as evaluated.

If painting, fire, or chemical release occurs such that the HEPA filter or charcoal adsorber could become contaminated from fumes, chemicals, or foreign material, the HEPA filters are tested and the charcoal adsorbers are replaced to ensure the operational requirements are met.

The in-place test results should indicate a system leaktightness of less than 1 percent bypass leakage for the charcoal adsorbers and a HEPA efficiency of at least 99.5 percent removal of DOP particulates. Methyl iodide testing to a penetration less than or equal to 14 percent (applying a safety factor of 2) demonstrates the assumed accident analysis efficiencies of 70 percent for methyl iodide and 90 percent for elemental iodine. This conclusion is supported by a July 10, 2000 letter from NCS Corporation that stated "Nuclear grade activated carbon, when tested in accordance with ASTM D3803-1989 (methyl iodide...) to a penetration of 15%, is more conservative than testing the same carbon in accordance with ASTM D3803-1979 (elemental iodine...) to a penetration of 5%. ...As a general rule, you may expect the radioiodine penetration through nuclear grade activated carbon to increase from 20 to 100 times when switching from elemental iodine to methyl iodide testing." Therefore, if the efficiencies of the HEPA filters and charcoal adsorbers are as specified, at the temperatures, flow rates and velocities within the design values of the system, the resulting doses will be less than the allowable levels stated in Criterion 19 of the General Design Criteria for Nuclear Power Plants, Appendix A to 10 CFR Part 50.

The charcoal in the Control Room Filtration System is replaced with new charcoal rather than tested for continued use because the charcoal bed design does not include a provision for taking in-place charcoal samples.

Attachment 3D

Significant Hazards Consideration Determination

Surry Power Station
Units 1 and 2
Dominion

Significant Hazards Consideration

Virginia Electric and Power Company (Dominion) has reviewed the requirements of 10 CFR 50.92 as they relate to the proposed Technical Specification changes to adopt the nuclear-grade charcoal testing requirements of ASTM D3803-1989, with qualification, for methyl iodide removal efficiency for Surry Units 1 and 2 and determined that a significant hazards consideration is not involved. In support of this conclusion, the following evaluation is provided.

Criterion 1 – Operation of Surry Units 1 and 2 in accordance with the proposed license amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed changes only modify surveillance testing requirements and do not affect plant systems or operation and therefore do not increase the probability or the consequences of an accident previously evaluated. The proposed surveillance requirements adopt ASTM D3803-1989, with qualification, as the laboratory method for testing samples of the charcoal adsorber for methyl iodide removal efficiency consistent with NRC's Generic Letter 99-02. This method of testing charcoal adsorbers provides an acceptable approach for determining methyl iodide removal efficiency and ensuring that the efficiency assumed in the accident analysis is still valid at the end of the operating cycle. There is no change in the method of plant operation or system design with this change.

Criterion 2 – The proposed license amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed changes only modify surveillance testing requirements and do not impact plant systems or operations and therefore do not create the possibility of an accident or malfunction of a different type than evaluated previously. The proposed surveillance requirements adopt ASTM D3803-1989, with qualification, as the laboratory method for testing samples of the charcoal adsorber for methyl iodide removal efficiency. This change is in response to NRC's request in Generic Letter 99-02. There is no change in the method of plant operation or system design. There are no new or different accident scenarios, transient precursors, nor failure mechanisms that will be introduced.

Criterion 3 – The proposed license amendment does not involve a significant reduction in a margin of safety.

The proposed changes only modify surveillance test requirements and do not impact plant systems or operations and therefore do not significantly reduce the margin of safety. The revised surveillance requirements adopt ASTM D3803-1989, with qualification, as the laboratory method for testing samples of the charcoal adsorber for methyl iodide removal efficiency. The 1989 edition of this standard imposes stringent

requirements for establishing the capability of new and used activated carbon to remove methyl iodide from air and gas streams. The results of this test provide a more conservative estimate of the performance of nuclear-graded activated carbon used in nuclear power plant HVAC systems for the removal of methyl iodide. The laboratory test acceptance criteria contain a safety factor to ensure that the efficiency assumed in the accident analysis is still valid at the end of the operating cycle.

This evaluation concludes that the proposed amendment to the Surry Units 1 and 2 Technical Specifications does not involve a significant increase in the probably or consequences of a previously evaluated accident, does not create the possibility of a new or different kind of accident and does not involve a significant reduction in a margin of safety.