

Energy Sciences and Technology Department
Nuclear Energy and Infrastructure Systems Division

BROOKHAVEN
NATIONAL LABORATORY

Building 130
P.O. Box 5000
Upton, NY 11973-5000
Phone 631 344-2429
Fax 631 344-4255
subudhi@bnl.gov

managed by Brookhaven Science Associates
for the U.S. Department of Energy

www.bnl.gov

January 12, 2001

Mr. Lawrence C. Ruth
U.S. Nuclear Regulatory Commission
NRR/DSSA/SPLB
Mail Stop 11A1
One White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738

Re: JCN J-2427, Task 8, "Engineered Safety Features Ventilation System Technical Specification Amendment Reviews" - Sub-task 2.e - Final Technical Evaluation Report (TER) - Surry Power Station - Units 1 and 2, TAC MA7867 and MA7868.

Dear Mr. Ruth:

For licensee submittals in response to Generic Letter 99-02, "Laboratory Testing of Nuclear Grade Activated Charcoal," Sub-tasks 2.a and 2.b specify that BNL review the technical specification (TS) Amendment Request for Compliance with the Actions Requested in Generic Letter 99-02. BNL is to prepare a letter with input for a request for additional information (RAI), as necessary, to support the review of the TS amendment request and submit the draft RAI input to the NRC Technical Monitor, John Segala. BNL is to then participate in telephone discussions with the NRC Technical Monitor, as necessary, to discuss the RAI input and prepare final RAI input and submit final RAI input to the Technical Monitor. Following a telephone call with licensee under Sub-task 2.c, as necessary, BNL is to prepare a draft technical evaluation report (TER) regarding review of the TS amendment request under Sub-task 2.d. (BNL is not required to provide any summary of the telephone calls. Such summaries are normally written by the NRC Project Manager for each plant). Under Sub-task 2.e, the draft TER will be accepted as the final TER if the Technical Monitor does not have any comments.

In fulfillment of Sub-task 2.e, we are enclosing a hard copy **Final TER** for the Surry Power Station - Units 1 and 2. The Final TER package includes the TER and associated tables (Table 1 - Current TS Requirements; Table 2 - Proposed TS Requirements, both part of the TER). Table GL99-02 (Surry Power Station - Units 1 and 2), entitled "Industry Responses to Generic Letter (GL) 99-02 on Laboratory Testing of Nuclear-Grade Activated Charcoal," which contains five sections summarizing the licensee response to Items 1 to 5 of GL 99-02, is for NRC information purposes only.

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Letter to Mr. Lawrence Ruth
JCN J-2427, Task 8
January 12, 2001

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We began evaluation of licensee's original submittal on May 8, 2000 and the final RAIs were sent to the licensee on June 13, 2000. A phone call with the licensee representatives (Gene Henry and others), the NRC Licensing Project Manager, and BNL was held on July 6, 2000, to discuss RAI responses by the licensee, specifically on the use of ASTM 3803-1979 for elemental iodine testing. Based on this discussion, the licensee submitted draft responses to RAIs on August 10, 2000, which satisfactorily addressed all concerns except that the proposed TS sections still include the elemental iodine testing in accordance with ASTM 3803-1979. BNL issued the draft TER based on the telephone discussions and was contingent upon NRC resolving the issue with the licensee that the 1979 ASTM standard be removed from the TS sections. In another telephone discussion on August 15, 2000, the licensee agreed to remove the elemental testing in accordance with ASTM 3803-1979 and to resubmit a docketed letter revising all TS and TS Basis pages. In a letter dated November 1, 2000, the licensee committed to transmit the final revised TS request by December 8, 2000. BNL received the licensee letter dated December 7, 2000 in which the licensee resubmitted the TS change requests after incorporating all modifications requested by the staff.

We are enclosing the Final TER under Sub-task 2.e. If there are no further comments on this Final TER, we will assume that JCN J-2427, Task 8, is complete for the Surry Power Station - Units 1 and 2. We will be most pleased to answer any questions on this matter.

Sincerely yours,



Mano Subudhi
Engineer

MS

enclosure

c: J. Segala, NRC

w/o enclosure

D. Diamond

J. Higgins

W. Horak

**TECHNICAL EVALUATION REPORT
BROOKHAVEN NATIONAL LABORATORY
FOR THE OFFICE OF NUCLEAR REACTOR REGULATION
DIVISION OF SYSTEMS SAFETY AND ANALYSIS
PLANT SYSTEMS BRANCH
RELATED TO AMENDMENT TO FACILITY
OPERATING LICENSE NO. DPR-32 AND DPR-37
VIRGINIA ELECTRIC AND POWER COMPANY
SURRY POWER STATION - UNITS 1 AND 2
DOCKET NOS. 50 - 280 AND 50-281**

1.0 INTRODUCTION

By letter dated July 28, 1999 (99-339), Virginia Electric and Power Company (Dominion) submitted its response to the actions requested in Generic Letter (GL) 99-02, "Laboratory Testing of Nuclear-Grade Activated Charcoal," dated June 3, 1999, for the Surry Power Station Units 1 and 2. In a separate letter dated November 29, 1999 (99-339A), Virginia Electric and Power Company requested changes to the Technical Specifications (TS) Sections 4.12.A.6, 4.12.A.7, 4.12.A.8, 4.12.B.7, and 4.12 Basis for the "Auxiliary Ventilation Exhaust Filter Trains (AVEFT)," and 3.23 Basis, 4.20.A.7, 4.20.B.4, and 4.20 Basis for the "Control Room Air Filtration System (CRAFS)," for the Surry Power Station Units 1 and 2. In another letter dated December 7, 2000 (00-552), Dominion resubmitted requested changes to the above TS sections. The proposed changes would revise the TS surveillance testing to meet the requested actions of GL 99-02.

2.0 BACKGROUND

Safety-related air-cleaning units used in the engineered safety features (ESF) ventilation systems of nuclear power plants reduce the potential onsite and offsite consequences of a radiological accident by filtering radioiodine. Analyses of design basis accidents assume particular safety related charcoal adsorption efficiencies when calculating offsite and control room operator doses. To ensure that the charcoal filters used in these systems will perform in a manner that is consistent with the licensing basis of a facility, licensees have requirements in their TS to periodically perform a laboratory test (in accordance with a test standard) of charcoal samples taken from these ventilation systems.

In GL 99-02, the staff alerted licensees that testing nuclear-grade activated charcoal to standards other than American Society for Testing and Materials (ASTM) D3803-1989, "Standard Test Method for Nuclear-Grade Activated Carbon," does not provide assurance for complying with their current licensing bases with respect to the dose limits of General Design Criterion (GDC) 19 of Appendix A to Part 50 of Title 10 of the Code of Federal Regulations (10 CFR) and Subpart A of 10 CFR Part 100.

GL 99-02 requested that all licensees determine whether their TS reference ASTM D3803-1989 for charcoal filter laboratory testing. Licensees whose TS do not reference ASTM D3803-1989 were requested to either amend their TS to reference ASTM D3803-1989 or propose an alternative test protocol.

3.0 EVALUATION

3.1 Laboratory Charcoal Sample Testing Surveillance Requirements

The current and proposed laboratory charcoal sample testing TS surveillance requirements for the Auxiliary Ventilation Exhaust Filter Trains (AVEFT) and Control Room Air Filtration System (CRAFS) are shown in Table 1 and Table 2, respectively, for both Units 1 & 2.

The proposed use of ASTM D3803-1989 is acceptable because it provides accurate and reproducible test results. The proposed test temperature of 30°C with a relative humidity (RH) of 95% for both the AVEFT and CRAFS is acceptable because it is consistent with ASTM D3803-1989. This is consistent with the actions requested in GL 99-02.

By letter dated December 7, 2000, the credited removal efficiency for radioactive organic iodine for both systems is 70%. The proposed test penetration for radioactive methyl iodide for each system is less than 14%, allowing 1% bypass leakage. The proposed test penetration was obtained by applying a safety factor of 2 to the credited efficiency. The proposed safety factor of 2 for all systems is acceptable because it ensures that the efficiency credited in the accident analysis is still valid at the end of the surveillance interval. This is consistent with the minimum safety factor of 2 specified in GL 99-02.

The August 23, 1999 errata to GL 99-02 clarified that if the maximum actual face velocity is greater than 110% of 40 fpm, then the test face velocity should be specified in the TS. By letter dated November 29, 1999, the face velocities are 24.4 M/m (80 fpm) for the AVEFT and 18.3 M/m (60 fpm) for the CRAFS. By letter dated December 7, 2000, the proposed testing of the charcoal adsorbers for both systems will be performed in accordance with ASTM D3803-1989 and the TS specifies a test face velocity of 24.4 M/m (80 fpm). This is acceptable because it ensures that the testing will be consistent with the operation of the ventilation system during accident conditions. This is consistent with the errata to GL 99-02 dated August 23, 1999.

4.0 CONCLUSION

On the basis of its evaluation, BNL recommends that the NRC staff consider the proposed TS changes to be acceptable.

Principal Contributors: Anthony Fresco and Mano Subudhi
Date: January 12, 2001

SURRY POWER STATION - UNITS 1 AND 2

TABLE 1 - CURRENT TS REQUIREMENTS											
System Description						Current TS Requirements					
TS Section	System	Bed Thickness (inches)	Actual Charcoal		Credited Efficiency (%) ⁶	Test Penetration (%) ⁴	Safety Factor	Test Standard ¹	Test Temp (° C)	Test RH %	Test Face Velocity (meters/min)
			Res. Time (sec) ⁵	Face Velocity (M/m)							
4.12.A.6 4.12.A.7 4.12.A.8 4.12.B.7 4.12 Basis	Auxiliary Ventilation Exhaust Filter Trains (AVEFT)	2	0.125	24.4 (80 fpm)	70 MI 90 EI	<4 MI	Not stated (6) ²	ASTM D3803 (1979 version used) for used charcoal	30± 0.5	95±2	24.4 ³ (80 fpm)
3.23 Basis 4.20.A.7 4.20.B.4 4.20 Basis	Control Room Air Filtration System (CRAFS)	2	0.167	18.3 (60 fpm)	70 MI 90 EI	<4 MI	Not stated (6) ²	ANSI N509-1976 for new charcoal	30± 0.5	95±2	24.4 ³ (80 fpm)

MI = methyl iodide
EI = elemental iodine

NOTES

- 1 AVEFT has sample canisters and therefore, charcoal samples for these trains are tested as stated in the Technical Specification. CRAFS has no such sample canisters and therefore, in every test schedule period (i.e., 18 months) the charcoal is replaced with newly qualified charcoal.
- 2 The safety factor is calculated based on the MI credited efficiency, test penetration, and a 1% bypass leakage.
- 3 Calculated from the residence time of 0.125 sec specified in the TS and the 2 inch bed thickness.
- 4 With a methyl iodide concentration of 1.75±0.25 mg/m³.
- 5 Residence time given in letter dated December 7, 2000.
- 6 Fuel Handling Accident credited the maximum MI filter efficiency which is the most limiting accident with respect to filter efficiency requirements.

SURRY POWER STATION - UNITS 1 AND 2

TABLE 2 - PROPOSED TS REQUIREMENTS											
System Description					Proposed TS Requirements						
TS Section	System	Bed Thickness (inches)	Actual Charcoal		Credited Efficiency (%) ⁵	Test Penetration (%)	Safety Factor ²	Test Standard ¹	Test Temp (° C)	Test RH	Test Face Velocity (meters/min)
			Res. Time (sec) ⁴	Face Velocity (M/m)							
4.12.A.6 4.12.A.7 4.12.A.8 4.12.B.7 4.12 Basis	Auxiliary Ventilation Exhaust Filter Trains (AVEFT)	2	0.125	24.4 (80 fpm)	70 MI 90 EI	<14 MI	2	ASTM D3803-1989	30	95%	24.4 (80 fpm)
3.23 Basis 4.20.A.7 4.20.B.4 4.20 Basis	Control Room Air Filtration System (CRAFS)	2	0.167	18.3 (60 fpm)	70 MI 90 EI	<14 MI	2	ASTM D3803-1989	30	95%	24.4 ³ (80 fpm)

MI = methyl iodide
EI = elemental iodine

NOTES

- 1 AVEFT has sample canisters and therefore, charcoal samples for these trains are tested as stated in the Technical Specification. CRAFS has no such sample canisters and therefore, in every test schedule period (i.e., 18 months) the charcoal is replaced with newly qualified charcoal. The licensee confirmed that all new charcoals will be qualified in accordance to ASTM 3803-1989.
- 2 The safety factor is calculated based on the MI credited efficiency, test penetration, and a 1% bypass leakage.
- 3 Although the Control Room Air Filtration System has a nominal face velocity of 18.3 M/min, 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.
- 4 Residence time given in letter dated December 7, 2000.
- 5 Fuel Handling Accident credited the maximum MI filter efficiency which is the most limiting accident with respect to filter efficiency requirements.

**TABLE GL99-02 (SURRY POWER STATION - UNITS 1 AND 2)
(FOR NRC INFORMATION ONLY - 01/11/2001)**

INDUSTRY RESPONSES TO GENERIC LETTER (GL) 99-02 ON LABORATORY TESTING OF NUCLEAR-GRADE ACTIVATED CHARCOAL							
PLANT NAME	Surry Power Station - Units 1 and 2		DOCKET NUMBER(S)	50-280 and 50-281	UTILITY/LICENSEE	Virginia Electric and Power Company	
REACTOR TYPE	3-loop PWR		TAC NUMBER(S)	MA7867 - MA7868	NSSS/ARCH. ENGR.	Westinghouse/VEPCO & Stone and Webster	
ENGINEERED SAFETY FEATURES (ESF) VENTILATION SYSTEMS							
No.	VENTILATION SYSTEM	GL GROUP (1-4)	TECH SPEC SECTIONS	CURRENT STANDARDS	ACTUAL FACE VELOCITY (METERS/MIN)	COMMENTS	
1	Auxiliary Ventilation Exhaust Filter Trains	2	4.12.A.6 4.12.A.7 4.12.A.8 4.12.B.7	ASTM D3803 (1979 version is used)	24.4	Has sample canisters and charcoal samples tested every 18 months	
2	Control Room Air Filtration System	2	3.23 4.20.A.7 4.20.B.4	ASTM D3803 (1979 version is used)	18.3	Has no sample canisters and charcoal samples replaced with new charcoal every 18 months	
GENERIC LETTER REQUESTED ACTION ITEMS							
ITEM 1: Current Tech Spec (TS) Requirements for the Laboratory Testing of Charcoal Samples (Due by November 30, 1999)					July 28, 1999 and November 29, 1999		
No.	TEST PROTOCOL	TEST TEMPERATURE (°C)	TEST RELATIVE HUMIDITY (%)	TEST PENETRATION %	BED THICKNESS (INCHES)	RESIDENCE TIME/BED DEPTH (SEC)	COMMENTS
1	ASTM D3803-1979	30± 0.5 C	95± 2	<4% MI	2	0.125	
2	ASTM D3803-1979	30± 0.5 C	95± 2	<4% MI	2	0.125	

**TABLE GL99-02 (SURRY POWER STATION - UNITS 1 AND 2)
(FOR NRC INFORMATION ONLY - 01/11/2001)**

ITEM 4: Charcoal Test Performed After August 2, 1999	See Item 2 above	COMMENTS
TESTED IN ACCORDANCE WITH ASTM D3803-1989 ?	Yes	The licensee states: "The Surry accident analysis has a higher efficiency assumption for inorganic iodine than organic iodide. Therefore, additional testing for elemental iodine penetration, iaw ASTM D3803-1979, is required to validate efficiencies against accident analysis assumptions. The TS change request incorporates testing to ASTM D3803-1989 with qualification for methyl iodide penetration, and testing to ASTM D3803-1979 with qualification for elemental iodine penetration." *See Item 2, No. 2 above concerning replacement of charcoal for the Control Room Air Filtration System.
NEW CHARCOAL PROCURED TO ASTM D3803-1989 ?	Yes*	
CHARCOAL TEST RESULTS WITHIN ACCEPTABLE LIMITS WITH A SAFETY FACTOR OF 2 ?	Yes	
ITEM 5: Proposed Alternate Course of Action (Due by August 2, 1999)		Not Applicable
PLANS TO PURSUE A PROPOSED ALTERNATE COURSE OF ACTION		Not Applicable
SCHEDULE FOR SUBMITTING THE PROPOSED TEST PROTOCOL FOR NRC REVIEW (Due by November 30, 1999)		Not Applicable
BASIS FOR CONTINUED OPERATION OF AFFECTED SYSTEMS AND COMPONENTS		Not Applicable

**TABLE GL99-02 (SURRY POWER STATION - UNITS 1 AND 2)
(FOR NRC INFORMATION ONLY - 08/09/2000)**

ADOPTED CHARCOAL TEST PROTOCOL DATA (ASTM D3803-1989)													
SPECIFICATIONS :			PRE-EQUILIBRIUM (FIRST 16HOURS)		EQUILIBRIUM, CHALLENGE, & ELUTION (FINAL 4 HOURS)			COMMENTS					
TEST TEMPERATURE (°C)			30.0±0.4		30.0±0.2			30°C					
RELATIVE HUMIDITY (%) Without Humidity Control With Humidity Control			91.0 to 96.0 68.0 to 71.0		93.0 to 96.0 68.0 to 71.0			95%					
FACE VELOCITY (M/min)			12.2±0.6		12.2±0.3			24.4 (±tolerance to be per ASTM D3803-1989)					
ABSOLUTE PRESSURE (kPa)			101±5		101±5			Not stated					
BED DIAMETER AND DEPTH (mm)			50±1		50±1			Not stated					
ADSORBATE CONCENTRATION (mg/M ³)			Not Applicable		1.75±0.25			Not stated (current TS: 1.75±0.25)					
SUMMARY OF TECHNICAL SPECIFICATION DATA (CURRENT & PROPOSED)													
No.	VENTILATION SYSTEM	TECH SPEC SECTIONS	CREDITED EFFICIENCY (%)		TEST PENETRATION (%)		SAFETY FACTOR		TEST TEMPERATURE (°C)		TEST RELATIVE HUMIDITY (%)		COMMENTS
			CURR	PROP	CURR	PROP	CURR	PROP	CURR	PROP	CURR	PROP	
1	Auxiliary Ventilation Exhaust Filter Trains	4.12.A.6 4.12.A.7.c 4.12.A.8 4.12.B.7	70% MI (90% EI)	70% MI (90% EI)	<4% MI	<14% MI per ASTM D3803- 1989	Not stated (6)*	2	30± 0.5 C	30°C	95±2%	95%	
2	Control Room Air Filtration System	3.23 4.20.A.7 4.20.B.4	70% MI (90% EI)	70% MI (90% EI)	<4% MI	<14% MI per ASTM D3803- 1989	Not stated (6)*	2	30± 0.5 C	30°C	95±2%	95%	

TABLE GL99-02 (SURRY POWER STATION - UNITS 1 AND 2)
(FOR NRC INFORMATION ONLY - 08/09/2000)

CORRESPONDENCE/TELECONS WITH THE LICENSEE

July 6, 2000 phone call was held to discuss the responses to the RAIs. The licensee has satisfactorily addressed all concerns identified in the RAIs, except the following:

(1) The licensee proposes to test charcoal samples for MI penetration using D3803-1989 consistent with GL requirement and for EI penetration using D3803-1979. John Segala is supposed to check this with Ron Bellamy and test labs to determine if there is any correlation between the two test results (MI and EI penetrations). As far as the GL is concerned, the licensee has satisfied the requirement.

Because of this, the proposed TS changes on page TS 4.12-3 the licensee has indicated to follow "ASTM D3803" without any specific year mark. John Segala has some concern that the proposed TS changes still reference ASTM D3803-1979 for EI penetration testing.

The licensee proposes to change the frequency of testing for in-place cold DOP tests and for laboratory charcoal testing, , as identified for TS 4.12.A.8 in Insert 1 and for TS 4.20.A.7 in Insert 4, in the November 29, 1999 letter, Attachment 2B, "Mark-up of Technical Specifications Changes."

MI = methyl iodide

EI = elemental iodine

*Safety factor is calculated based on the MI credited efficiency, bypass leakage, and test penetration. The licensee is proposing to test simultaneously for both methyl iodide (MI) penetration according to ASTM D3803-1989 and elemental iodine (EI) penetration according to ASTM D3803-1979. This is to provide agreement with the licensee's FSAR analysis since both MI and EI filter removal efficiencies are identified in the FSAR.

BNL REQUEST FOR ADDITIONAL INFORMATION (RAI)
(5/10/2000)

PLANT NAME: SURRY POWER STATION - UNITS 1 AND 2

TAC: MA7867-MA7868

NRC TARGET COMPLETION DATE: 8/30/2000

The following questions refer to both systems, for both units, (1) Auxiliary Ventilation Exhaust Filter Trains, and (2) Control Room Air Filtration System, unless otherwise noted:

1. In the attachment to the July 28, 1999 letter, on page 1 of 3, it states:

"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."

Please indicate how the actual system face velocities are calculated.

The actual system face velocities can be calculated by dividing the maximum system flow rates specified in the technical specification (TS) (nominal + typically 10% upper value) by the total exposed surface area of the charcoal filter media. Per GL 99-02, if this value is >110% of 40 ft/min, then the TS should be revised to specify that value as the test face velocity. (The guidance on calculation of the residence times in ASME AG-1-1997, Division II, Sections FD and FE, Articles I-1000 or in ANSI N510-1975 can be used to calculate the actual system face velocities).

NOTE TO NRC:

- 2) In addition to a proposed methyl iodide (MI) test penetration of <14% for both systems, the licensee is ~~TS amendment~~ also ~~proposing~~proposes to test simultaneously to a proposed elemental iodine (EI) test penetration of <4%. This is to provide agreement with the licensee's FSAR analysis since both MI and EI filter removal efficiencies are identified in the FSAR. On pPage 2 of 13, Attachment 2A, of the November 29, 1999 letter, the licensee 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 iodine and 90% for elemental iodine for a fuel handling accident or a LOCA?
- b) GL 99-02 does not request that licensees perform an elemental iodine laboratory test of their charcoal filters because testing to organic iodine bounds testing to elemental iodine. This is due to the differences in the processes by which elemental and organic iodine are adsorbed by charcoal. As specified in GL 99-02, ASTM D3803-1979 does not provide accurate and reproducible results and should therefore not be used for testing charcoal. Article FF-5000 of ASME AG-1-1997, "Code on Nuclear Air and Gas Treatment," requires qualification and batch testing of new charcoal to ASTM D3803-1989 with elemental and methyl iodide. Please provide the basis for why ASTM D3803-1979 should be used for an elemental iodine test.
- 3) The TS Amendment proposes to revise Surveillance Requirements (SR) 4.12.A.6.c, 4.12.A.7.c, and 4.12.A.8.c to specify "during system operation." This is inconsistent with the staff position provided in the 9/11/97 letter to Entergy Operations, Inc. This letter specified that:
- "The staff considers that a painting, fire, or chemical release is not communicating with a ventilation system only if the ventilation system is not in operation and the isolation dampers for the system are closed and leak tight thereby preventing air from passing through the filters."
- Specifying "during system operation" ignores the idea that the isolation dampers for the system are closed and leak tight thereby preventing air from passing through the filters. Please provide the basis for why "during system operation" should be added to SRs 4.12.A.6.c, 4.12.A.7.c, and 4.12.A.8.c.
- 4) The proposed SR 4.12.B.7.b states that "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." To what standard will the new charcoal be tested?

CONTACT NAME/TELEPHONE: Wilkinson, Gene Henry

NRC MONITOR: John Segala, Steve Monarch

BNL ENGINEER: Mano

DATE: July 6, 2000, 10 am

RAI 1:

Original filters installed in 1968 and the residence time calculated in 1975. They used the actual flow divided by the design face area of the filter. NRC accepted the approach.

RAI 2:

(a) FHA limits the credited efficiency. FHA requires 70% MI efficiency while LOCA requires 30% MI efficiency.

(b) John will check with Ron Bellamy and charcoal test labs on the relationship between MI and EI test results. NRC will not accept D3803-79 for EI testing in the TS.

RAI 3:

The licensee claims that during system operation the ESF systems are isolated from normal system and therefore they do not communicate based on the system design. NRC accepted the answer.

RAI 4:

The new charcoal will be tested in accordance to ASTM D3803-89 requirements. The CR charcoal units do not have test sample canisters, therefore, they are replaced with new charcoal every 18 months. The Aux Vnt system has sample canisters and therefore, they are sent for lab test as necessary.