Florida Power & Light Company, 6351 S. Ocean Drive, Jensen Beach, FL 34957

July 19, 2000

L-2000-147
10 CFR 50.90
10 CFR 50.4

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Re: St. Lucie Unit 1
Docket No. 50-335
Proposed License Amendment Supplement
GL 99-02 Charcoal Adsorber Test Protocol

Pursuant to 10 CFR 50.90, Florida Power & Light Company (FPL) requests to amend Facility Operating License DPR-67 for St. Lucie Unit 1 by incorporating the attached Technical Specifications (TS) revisions. The amendment will revise the St. Lucie Unit 1 TS to require laboratory testing of activated charcoal samples for applicable engineered safety feature (ESF) ventilation systems using the ASTM D3803-1989 protocol. In addition the proposed changes revise the TS test criteria for methyl iodide removal efficiency to be consistent with the guidance of NRC Generic Letter 99-02.

The affected Unit 1 TS are the shield building ventilation system (SBVS), TS 4.6.6.1; control room emergency ventilation system (CREVS), TS 4.7.7.1; emergency core cooling system (ECCS) area ventilation system, TS 4.7.8.1; and fuel pool ventilation system – fuel storage, TS 4.9.12. It is requested that the proposed amendment, if approved, be issued by January 15, 2001, to support testing prior to St. Lucie Unit 1 refueling outage (SL1-17) currently scheduled to begin in March 2001.

This letter is a complete replacement for the proposed Unit 1 TS amendment previously submitted by FPL letter L-99-241 on November 17, 1999. This revised amendment request increases the TS required removal efficiency of the Unit 1 SBVS, ECCS area ventilation system, and CREVS charcoal adsorbers to 97.5% when tested in accordance with ASTM D3803-1989 at 30^0C, 70% relative humidity (RH). The revised testing requirements align the TS acceptance criteria and methodology with the Unit 1 accident analysis assumptions and GL 99-02 recommendations.

Attachment 1 is the revised evaluation of the proposed TS changes. Attachment 2 is the revised *Determination of No Significant Hazards Consideration*. Attachment 3 contains revised copies of the appropriate TS pages marked-up to show the proposed changes. The St. Lucie Facility Review Group and the FPL Company Nuclear Review Board have reviewed the proposed amendment. A copy of this submittal is being forwarded to the State Designee for the State of Florida in accordance with 10 CFR 50.91 (b)(1).

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In the event that the staff does not approve the proposed license amendment by January 15, 2001, FPL is hereby requesting the NRC grant enforcement discretion in accordance with the guidance provided in GL 99-02 and the technical basis described in this submittal. Please issue the amendment to be effective on date of issuance and to be implemented within 60 days of receipt by FPL.

In summary, this submittal states clearly FPL's intent to test to ASTM D3803-1989 if the TS are approved, otherwise enforcement discretion is required from the NRC to allow St. Lucie to test to the ASTM D3803-1989 standard for the upcoming charcoal adsorber testing in the spring 2001.

Please contact us if there are any questions about this submittal.

Very truly yours,

Rajiv S. Kundalkar
Vice President
St. Lucie Plant

RSK/GRM

Attachments

cc: Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, St. Lucie Plant
Mr. W. A. Passetti, Florida Department of Health and Rehabilitative Services

STATE OF FLORIDA)
) ss.
COUNTY OF ST. LUCIE)

Rajiv S. Kundalkar being first duly sworn, deposes and says:

That he is Vice President, St. Lucie Plant, for the Nuclear Division of Florida Power & Light Company, the Licensee herein;

That he has executed the foregoing document; that the statements made in this document are true and correct to the best of his knowledge, information and belief, and that he is authorized to execute the document on behalf of said Licensee.

Rajiv S. Kundalkar

STATE OF FLORIDA

COUNTY OF ST. LUCIE

Sworn to and subscribed before me

this 19 day of July, 2000
by Rajiv S. Kundalkar, who is personally known to me.

Name of Notary Public - State of Florida

GEORGE R. MADDEN
Notary Public - State of Florida
My Commission Expires Jun 17, 2004
Commission # CC931387

(Print, type or stamp Commissioned Name of Notary Public)

ATTACHMENT 1

EVALUATION OF PROPOSED TS CHANGES

EVALUATION OF PROPOSED TS CHANGES

1.0 Introduction

The proposed amendment to Facility Operating License DPR-67 for St. Lucie Unit 1 will revise the Unit 1 license requirements for laboratory testing to demonstrate the ability of activated charcoal samples to remove radioactive methyl iodide (organic iodine form) when the sample is tested in accordance with ASTM D3803-1989 requirements for the following ventilation systems:

Table 1 – Unit 1 Ventilation Systems with TS Requirements for Activated Charcoal Adsorber Testing	
Shield Building Ventilation System (SBVS)	TS 4.6.6.1
Control Room Emergency Ventilation System (CREVS)	TS 4.7.7.1
ECCS Area Ventilation System	TS 4.7.8.1
Fuel Handling Building Ventilation System (FHBVS)	TS 4.9.12

On June 3, 1999, the NRC issued Generic Letter (GL) 99-02, *Laboratory Testing of Nuclear-Grade Activated Charcoal*. This GL was issued to alert licensees of the NRC determination that testing nuclear-grade activated charcoal to standards other than American Society of Testing and Materials (ASTM) D3803-1989, *Standard Test Method for Nuclear-Grade Activated Carbon*, does not provide assurance for complying with the current licensing basis as it relates to the dose limits of General Design Criteria (GDC) 19 of 10 CFR 50, Appendix A, or 10 CFR 100 Subpart A.

The GL also requested that all licensees determine whether their Technical Specifications (TS) reference ASTM D3803-1989 for charcoal laboratory testing. Licensees, whose TS do not reference this standard, should either amend the TS to reference the standard or propose an alternative test protocol. The St. Lucie Unit 1 TS do not currently reference this standard for the test protocol.

St. Lucie Unit 1 has been testing charcoal samples in accordance with the TS referencing the ANSI N510-1975. The St. Lucie Unit 1 TS do not reference R.G. 1.52 for testing. GL 99-02 action 2 requested licensees to submit TS amendment requests within 180 days of June 3, 1999. FPL letter L-99-241 dated November 17, 1999 fulfilled this request. However, during the NRC review the need to change the removal efficiency was identified. The amendment request should adopt the ASTM D3803-1989 test protocol and should contain the test temperature, relative humidity (RH), and penetration at which the proposed TS will require the test to be performed and the basis for these values.

2.0 Background

Safety related air-cleaning units used in plant ventilation systems reduce the potential onsite and offsite consequences of radiological accidents by adsorbing radioiodine. Analyses of design bases accidents assume particular safety related charcoal adsorption efficiencies when calculating offsite and control room operator doses. Licensees then test the charcoal to determine whether the adsorber efficiency is greater than that assumed in the design basis accident analysis. To ensure that the charcoal adsorbers will perform in a manner that is consistent with the licensing basis, most licensees have requirements in their TS to periodically test samples of activated charcoal used in safety related ventilation systems.

The industry and NRC position on the appropriate laboratory tests for nuclear-grade charcoal has evolved over the years since the issuance of Regulatory Guide (RG) 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*, which is referenced in many plant TS. It was initially assumed that high-temperature/high-relative-humidity conditions were the most severe. Later, it became clear that the most conservative test is at low temperature and high humidity. The use of outdated test protocols or inappropriate test conditions can lead to an overestimate of the ability of the charcoal to adsorb radioiodine following an accident.

GL 99-02 classified the nuclear plants in four categories based on NRC sponsored surveys:

1. Plants in compliance with their TS that test in accordance with ASTM D3803-1989,
2. Plants in compliance with their TS that test in accordance with test protocols other than ASTM D3803-1989,
3. Plants not in compliance with their TS that test in accordance with ASTM D3803-1989, and
4. Plants not in compliance with their TS that test in accordance with test protocols other than ASTM D3803-1989.

The St. Lucie Unit 1 has been testing charcoal samples in accordance with the TS referencing the standard ANSI N510-1975. Therefore, St. Lucie Unit 1 fits the GL 99-02 Category 2 designation. The St. Lucie Unit 1 TS do not reference RG 1.52 for testing. However, the unit was designed to RG 1.52 requirements as stated in the Updated Final Safety Analysis Report (UFSAR).

The shield building ventilation system (SBVS) has been designed to provide fission product removal capacity during design basis accident conditions. The SBVS consists of two full capacity redundant fan and filter subsystems, which share a common shield building duct intake and a common plant vent. Each filter subsystem consists of demisters, electric-heating coils, high efficiency particulate air (HEPA) filters, and charcoal adsorbers enclosed in a common casing.

The control room emergency ventilation systems (CREVS) has been designed to limit airborne radioactivity in the control room following a loss of coolant accident (LOCA) by recirculating control room air through charcoal adsorbers. This is required so that airborne radiological doses experienced by control room personnel following a design basis accident (DBA) do not exceed limits imposed by GDC 19. The CREVS consists of split system air conditioners (i.e., indoor and outdoor sections), a ducted air intake and air distribution system, and a filter train with HEPA filters and charcoal adsorbers with two redundant booster centrifugal fans.

The emergency core cooling system (ECCS) area ventilation system is designed to provide post-LOCA filtration and adsorption of fission products in the exhaust air. Also, it limits the post-accident radiological doses below the 10 CFR 100 guidelines from areas of the reactor auxiliary building which contain the following equipment:

a) Containment isolation valves,
b) Low pressure safety injection pumps,
c) High-pressure safety injection pumps,

d) Containment spray pumps,
e) Shutdown heat exchangers, and
f) Piping which contains recirculating containment sump water following a LOCA.

This ventilation system consists of two redundant centrifugal exhaust fans, HEPA and charcoal adsorbers, and associated ductwork, dampers, and controls. The exhausted air is vented to the outside atmosphere.

The fuel handling building ventilation system (FHBVS) serves the spent fuel pool areas. The FHBVS is designed to reduce plant personnel doses by preventing the accumulation of airborne radioactivity in the fuel handling building (FHB) due to diffusion of fission products from the spent fuel pool. This system is also designed to ventilate the spent fuel cooling equipment contained within the fuel handling building. This ventilation system consists of two separate supply systems and two separate exhaust systems. Each supply system consists of a hooded wall intake, an air handling unit with filters, a fan section, and a duct distribution system. One system supplies air to the fuel pool area and the other system supplies air to the lower areas. The fuel pool area air is exhausted through air inlets around the periphery of the fuel pool. Air is discharged by two 100 % capacity centrifugal fans to the atmosphere through a prefilter, HEPA filter bank, charcoal adsorbers and out the FHB vent stack. Air exhaust from the lower areas is passed through a prefilter and a HEPA filter bank before being discharged by a centrifugal fan to the atmosphere through the FHB vent stack.

3.0 Description of Proposed TS Changes and Basis

A. St. Lucie Unit 1 Shield Building Ventilation System Page 3/4 6-28:

1. Surveillance Requirement 4.6.6.1.b.3 – Change the removal efficiency from ≥ ***90%*** to ≥ ***97.5%*** and ***ANSI N510-1975 (130^{0}C, 95% R.G.)*** to ***ASTM D3803-1989 (30^{0}C, 70% RH)***.

2. Surveillance Requirement 4.6.6.1.c.1 – Change the removal efficiency from ≥ ***90%*** to ≥ ***97.5%*** and ***ANSI N510-1975 (130^{0}C, 95% R.H.)*** to ***ASTM D3803-1989 (30^{0}C, 70% RH)***.

3. Surveillance Requirement 4.6.6.1.c.2 – Change the removal efficiency from ≥ ***90%*** to ≥ ***97.5%*** and ***ANSI N510-1975 (130^{0}C, 95% R.H.)*** to ***ASTM D3803-1989 (30^{0}C, 70% RH)***.

B. St. Lucie Unit 1 Control Room Emergency Ventilation System Pages 3/4 7-21 and 3/4 7- 22:

1. Surveillance Requirement 4.7.7.1.c.3 - Change the removal efficiency from ≥ ***90%*** to ≥ ***97.5%*** and ***ANSI N510-1975 (130^{0}C, 95% R.H.)*** to ***ASTM D3803-1989 (30^{0}C, 70% RH)***.

2. Surveillance Requirement 4.7.7.1.d.1 - Change the removal efficiency from ≥ ***90%*** to ≥ ***97.5%*** and ***ANSI N510-1975 (130^{0}C, 95% R.H.)*** to ***ASTM D3803-1989 (30^{0}C, 70% RH)***.

3. Surveillance Requirement 4.7.7.1.d.2 - Change the removal efficiency from ≥ ***90%*** to ≥ ***97.5%*** and ***ANSI N510-1975 (130^{0}C, 95% R.H.)*** to ***ASTM D3803-1989 (30^{0}C, 70% RH)***.

C. St. Lucie Unit 1 ECCS Area Ventilation System Page 3/4 7-25:

1. Surveillance Requirement 4.7.8.1.b.3 - Change the removal efficiency from ≥ ***90%*** to ≥ ***97.5%*** and ***ANSI N510-1975 (130^{0}C, 95% R.H.)*** to ***ASTM D3803-1989 (30^{0}C, 70% RH)***.

2. Surveillance Requirement 4.7.8.1.c.1 - Change the removal efficiency from ≥ ***90%*** to ≥ ***97.5%*** and ***ANSI N510-1975 (130^{0}C, 95% R.H.)*** to ***ASTM D3803-1989 (30^{0}C, 70% RH)***.

3. Surveillance Requirement 4.7.8.1.c.2 - Change the removal efficiency from ≥ ***90%*** to ≥ ***97.5%*** and ***ANSI N510-1975 (130^{0}C, 95% R.H.)*** to ***ASTM D3803-1989 (30^{0}C, 70% RH)***.

D. St. Lucie Unit 1 Fuel Pool Ventilation System – Spent Fuel Page 3/4 9-13:

1. Surveillance Requirement 4.9.12.b.3 - Change the removal efficiency from ≥ ***70%*** to ≥ ***85%*** and ***ANSI N510-1975 (130^{0}C, 95% R.H.)*** to ***ASTM D3803-1989 (30^{0}C, 95% RH)***.

2. Surveillance Requirement 4.9.12.b.3 – Change ***elemental iodide*** to ***methyl iodide***.

The current charcoal adsorber testing protocol used for Unit 1 per ANSI N510-1975 is performed in accordance with Table 4 of RDT M16-1T[1]. According to this table, charcoal testing for radioactive methyl iodide at 130°C and 95% relative humidity is performed as follows:

> *The test sample is pre-equilibrated with air at the above conditions until the temperature differential across the test bed is less than 1°C. With continuing air flow, steam is injected adjusting it to maintain partial pressure of air at 20 +/- 2 psia and steam at 95 +/- 1% of the saturated water pressure at the measured test temperature. The challenge gas (methyl iodide) is injected for 1.5 hrs. After iodine injection is stopped, steam-air injection is continued for another 1.5 hrs. Then, the test bed is allowed to cool, removed, and count tested to calculate efficiency.*

The proposed charcoal adsorber testing protocol (ASTM D3803-1989), which will be incorporated for St. Lucie Unit 1, will be performed as follows:

> *The test sample is exposed to air at 30°C and 70% RH for systems with humidity control or 95% RH for systems without humidity control (1 atmosphere) for a pre-equilibrium period of 16 hours, followed by airflow at equilibrium for 2 hours. During the challenge period, methyl iodide is injected at a fixed mass*

[1] U.S. AEC, Division of Reactor Research and Development, RDT Standard M16-1T, "Gas-Phase Adsorbents for Trapping Radioactive Iodine and Iodine Compounds," October 1973.

> *concentration for 1-hour. This is followed by injection of humid air only for another hour (elution period). Throughout the entire test the effluent from the sample bed passes through two backup beds containing carbon having a known high efficiency for methyl iodide. The beds trap all methyl iodide that passes the test bed and provide a differential indication of their efficiency. At the end of the elution period, the I-131 gamma activity is measured and the percent of adsorbate penetrating the test bed is determined.*

The results of the ASTM D3803-1989 test protocol provide a conservative estimate of the performance of nuclear-grade activated charcoals used in all nuclear power plant ventilation systems for the removal of iodine. Also, according to this standard, the 30°C, 70% RH for systems with humidity control or 95% RH for systems without humidity control methyl iodide test is the most reliable test protocol to establish the methyl iodide removal efficiency of any adsorbent. The NRC has agreed with these conclusions as demonstrated by the fact that the ASTM D3803-1989 protocol is accepted and endorsed by the NRC in GL 99-02. Additionally, the Committee on Nuclear Air and Gas Treatment (CONAGT) and NRC-INEL discussions have concluded that the humidity pre-equilibration at 30°C for used charcoals results in a more conservative test than the non pre-equilibration required by previous versions of ASTM D3803. It is then concluded that the new proposed testing protocol, per ASTM D3803-1989 at 30°C, 70% RH for systems with humidity control or 95% RH for systems without humidity control with different pre-equilibration, testing, and elution techniques which is now endorsed by the NRC and results in more conservative results than other test methods, is an acceptable methodology for the St. Lucie Unit 1 safety related engineered safety features (ESF) ventilation systems charcoal testing.

Table 1 of this attachment provides a summary of the applicable system values for the ESF filtration systems, specifically: SBVS, CREVS, ECCS area ventilation, and FHBVS and includes the existing TS test criteria. Table 2 of this attachment provides a summary of the system design values and the proposed TS test criteria.

The NRC Safety Evaluation Report[2] (SER) for Unit 1 Operating License stated that adsorber efficiencies of 90% for the removal of elemental and particulate iodine and 70% for removal of organic iodine are justified and assumed in the Atomic Energy Commission's (now NRC) Chapter 15 accident calculations for all ESF filter systems. The ESF systems included were: SBVS, CREVS, ECCS area ventilation, FHBVS, and hydrogen purge system. The NRC SER required charcoal efficiency testing for all ESF ventilation systems, except the latter. It is for this reason that the above ESF ventilation systems are required to be tested for charcoal efficiency as described in the TS. According to Chapter 15 Section 15.3.2 of the NRC SER, the NRC assumed in the fuel handling accident charcoal efficiencies of 90% for elemental and 70% for organic iodine.

Unit 1 Control Room Emergency Ventilation System

The testing criteria for the Unit 1 CREVS were changed as a result of License Amendment No. 38 submitted by FPL letter L-80-124 dated April 18, 1980, and approved by NRC Safety Evaluation (SE) dated February 25, 1981.

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[2] St. Lucie Unit 1 Safety Evaluation Report, U.S. Atomic Energy Commission, Nov. 8, 1974.

According to UFSAR Section 15.4.1.8, Item d, the original loss of coolant accident (LOCA) control room dose calculation assumed a charcoal efficiency of 70% for organic methyl iodide removal corresponding to a high relative humidity. These values are consistent with the current TS surveillance 4.7.7.1.c.3 charcoal removal efficiency of 90% at 95% relative humidity, with a safety factor of 3 (equal to 30% accident assumed penetration value divided by 10% penetration TS testing criteria).

According to the License Amendment No. 38, calculations estimating whole body and thyroid doses from a postulated LOCA were revised. The revised analysis uses a more conservative two-compartment containment release model. This model takes into account the difference in iodine scrubbing effectiveness between the regions of the containment that receive or do not receive spray coverage. In the process of developing the revised LOCA dose calculations, it was determined that the TS leak testing criteria could be made less restrictive. The previous specifications set a 12% limit on unfiltered secondary containment bypass leakage and a 100 cfm limit on control room in-leakage. The revised LOCA analysis justified a bypass leakage of up to 27% and a control room in-leakage of up to 450 cfm. According to NRC letter to FPL (R.A. Clark to R.E. Uhrig), dated February 25, 1981, the design of the system is such that with maximum control room value of in-leakage, plus the control room air conditioning system assures that the relative humidity of the air at the inlet of the control room's charcoal filters is less than 70%. Therefore, the relative humidity is maintained below this value so that the charcoal efficiency of 95% for organic iodine can be obtained. Based on this information, the analyzed accident analysis efficiency for the CREVS charcoal adsorbers is 95% at a relative humidity of less than or equal to 70%. Humidity control is provided by the control room air conditioners.

Unit 1 Shield Building and ECCS Room Ventilation Systems

In 1977, the NRC conducted control room dose analyses as a result of FPL's request for a change in the control room leak test TS. This TS required pressurization of the control room to 1/8 inches of water gage (w.g.) once every 18 months to demonstrate admission of air at a rate no greater than 100 cfm, as required by the Unit 1 NRC Safety Evaluation Report. The proposed change consisted of replacing the fixed leakage limit of 100 cfm with a variable limit dependent upon the measured values of containment leak rate and secondary containment bypass leakage fraction found in the latest containment leak rate test plus 33% margin. This change request was denied by the NRC and, as part of the NRC analysis the control room dose, was reanalyzed. The new dose analysis assumed inclusion of heaters to the SBVS and ECCS room ventilation adsorbers to meet Regulatory Guide 1.52, and addition of sodium hydroxide (NaOH) to the containment spray system (CSS). The new calculated doses with these modifications were considered acceptable, and were reported in Chapter 15 of Supplement 1 to the St. Lucie Unit 1 SER, as the "Modified" case. The organic iodine removal efficiencies for the SBVS and ECCS area ventilation system were assumed to be 95% with humidity control (less than or equal to 70% relative humidity).

The heaters were provided for the SBVS adsorbers and NaOH was added to the CSS. As discussed in Supplements 1 and 2 of the Unit 1 Operating License Safety Evaluation Report and UFSAR Appendix 6B Section 4.2.1, an exception was granted to FPL by the NRC related to the use of heaters for the ECCS room ventilation system. The heaters are not needed for this system since the heat rejected by the CSS pump motors and other components is sufficient to provide humidity control without the addition of the heaters. The analysis provided by the NRC in NRC Letter to FPL (K.R. Goller to R.E. Uhrig), dated August 1, 1977, for the plant with the above improvements remained valid

with the assumptions used for the License Amendment 38. Based on this information and the UFSAR descriptions, the analyzed accident analysis efficiency for the SBVS and ECCS room ventilation system charcoal adsorbers is 95% at a relative humidity of less than or equal to 70%. Humidity control is provided by the SBVS heaters and ECCS pumps/equipment.

From above, it is clear that the penetration values proposed by this amendment are the same as or more conservative than the values correlated to a safety factor of 2 which is the minimum value allowed by GL 99-02. Safety factor is defined as the ratio between the penetration value assumed in the accident analysis to the allowable testing value. The proposed penetration values are equivalent to charcoal adsorber efficiencies provided above and in the TS markups (Attachment 3).

Unit 1 Fuel Handling Building Ventilation System

For the Unit 1 FHBVS, the proposed maximum allowable penetration value basis is discussed below. Since methyl iodide testing criteria are currently not provided for the FHBVS for Unit 1 (existing TS only tests for elemental iodine), a penetration value for methyl iodide testing is being proposed for this specification. The accident analysis assumptions shown in UFSAR Table 15.4.3-2 and the 1974 NRC SER assumed no filtration. The proposed penetration value is based on the 30% penetration value in accordance with the recommendations of NRC Safety Guide 25 and applying a safety factor of 2, the minimum value allowed by GL 99-02. Therefore, a penetration testing criteria of 15% will be incorporated into the TS for this system, equivalent to charcoal adsorber efficiency of 85%.

The testing temperature for the proposed TS will be 30°C instead of the current value of 130°C, to be consistent with the recommendations provided in GL 99-02.

In addition to the proposed Technical Specification changes from above, the requirement to perform elemental iodine testing will be removed from applicable TS to be consistent with GL 99-02 guidance that requires only methyl iodide testing for charcoal adsorber efficiency.

There is no safety significance associated with implementing a more conservative charcoal testing protocol than previous tests. The new testing methodology will eliminate the potential for having overestimation of the charcoal bed efficiency. Therefore, testing at lower temperatures provides a more conservative approach for the charcoal to react to the plant conditions existing during design basis accidents. There are no modifications to safety related equipment or adverse effects imposed by the new testing methodology. Therefore, all safety related structures, systems, and components remain unaffected and still capable of performing their design basis functions. St. Lucie Unit 1 complies with 10 CFR 50 Appendix A, GDC 19, and 10 CFR 100, Subpart A.

4.0 Conclusion

Based on review of the licensing bases documentation and evaluation presented above, the new testing protocol and testing conditions proposed by this evaluation provide a more conservative approach to laboratory testing of charcoal adsorbers for safety related ventilation systems. The requirements of GDC 19 and 10 CFR 100 Subpart A are maintained. The proposed new testing methodology will ensure the design basis (relative to methyl iodide removal) is maintained and that safety analysis assumptions remain valid.

TABLE 2 - ST. LUCIE 1 CURRENT CHARCOAL TESTING REQUIREMENTS

System Description						Existing TS Test Requirements				
HVAC System Service	Tech Spec Section	Bed Thickness	Residence Time	Face Velocity	Credited Efficiency	Test Penetration	Test Standard	Test Temp	Test Relative Humidity	Test Efficiency
Shield Building Ventilation System (SBVS) with humidity control	4.6.6.1	2"	0.25 Sec	40 fpm	95% @70%RH	10% for methyl iodide	ANSI N510-1975	130 °C	95% R.H.	90%
Control Room Emergency Ventilation System (CREVS) with humidity control	4.7.7.1	2"	0.25 Sec	40 fpm	95% @70%RH	10% for methyl iodide	ANSI N510-1975	130 °C	95% R.H.	90%
ECCS Area Ventilation System with humidity control	4.7.8.1	2"	0.25 Sec	40 fpm	95% @70%RH	10% for methyl iodide	ANSI N510-1975	130 °C	95% R.H.	90%
Fuel Handling Building Ventilation System (FHBVS) without humidity control	4.9.12	2"	0.25 Sec	40 fpm	70% @95%RH	30% for elemental iodide	ANSI N510-1975	130 °C	95% R.H.	70%

TABLE 3 - ST. LUCIE 1 PROPOSED CHARCOAL TESTING REQUIREMENTS

System Description						Proposed TS Test Requirements					
HVAC System Service	Tech Spec Section	Bed Thickness	Residence Time	Face Velocity	Credited Efficiency	Test Penetration	Safety Factor	Test Standard	Test Temp	Test Relative Humidity	Test Efficiency
Shield Building Ventilation System (SBVS) with humidity control	4.6.6.1	2"	0.25 Sec	40 fpm	95% @70%RH	2.5% for methyl iodide	2	ASTM D3803-1989	30 °C	70% R.H.	97.5%
Control Room Emergency Ventilation System (CREVS) with humidity control	4.7.7.1	2"	0.25 Sec	40 fpm	95% @70%RH	2.5% for methyl iodide	2	ASTM D3803-1989	30 °C	70% R.H.	97.5%
ECCS Area Ventilation System with humidity control	4.7.8.1	2"	0.25 Sec	40 fpm	95% @70%RH	2.5% for methyl iodide	2	ASTM D3803-1989	30 °C	70% R.H.	97.5%
Fuel Handling Building Ventilation System (FHBVS) without humidity control	4.9.12	2"	0.25 Sec	40 fpm	70% @95%RH	15% for methyl iodide	2	ASTM D3803-1989	30 °C	95% R.H.	85%

ATTACHMENT 2

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION

Description of amendment request:

The amendment will revise the St. Lucie Unit 1 Technical Specifications (TS) to require laboratory testing of activated charcoal samples for applicable engineered safety feature (ESF) ventilation systems using the ASTM D3803-1989 protocol. The proposed changes increase the TS required removal efficiency to establish a safety factor of two for the assumptions in the accident analysis. The affected TS are the Unit 1 shield building ventilation system, TS 4.6.6.1; control room emergency ventilation system, TS 4.7.7.1; ECCS area ventilation system, TS 4.7.8.1; and fuel pool ventilation system - fuel storage, TS 4.9.12.

Pursuant to 10 CFR 50.92, a determination may be made that a proposed license amendment involves no significant hazards consideration if operation of the facility in accordance with the proposed amendment would not: (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety. Each standard is discussed as follows:

(1) Operation of the facility in accordance with the proposed amendment would not involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed amendment does not involve a significant increase in the probability or consequences of any accident previously evaluated. The new charcoal testing protocol is performed offsite on samples extracted from the safety related ventilation systems. Therefore, there is no impact on any accident initiator and results in no changes in the probability. The proposed testing protocol is more conservative than previous tests; therefore, the efficiency of charcoal for the affected safety related systems would not be overestimated. With the new testing protocol, more conservative testing results are expected since the temperature at which testing is performed is lower and the charcoal retention capability is more consistent with actual accident conditions. The proposed change thus ensures that the charcoal in service will comply with the penetration requirements to meet the design basis accident conditions.

Therefore, operation of the facility in accordance with the proposed amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated.

(2) Operation of the facility in accordance with the proposed amendment would not create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed amendment will not create the possibility of a new or different kind of accident from any accident previously evaluated. The proposed charcoal testing protocol only affects surveillance testing requirements for safety related ventilation systems. The functions of these systems remain unchanged and unaffected. No new system interactions have been introduced by the proposed amendment, which

would create a new or different type of accident than previously analyzed. No physical changes are being made to any structure, system, or component. The operation of the facility will not be altered by the proposed amendment. The systems involved are not initiators of any accidents as previously evaluated.

The proposed amendment will not change the physical plant or the modes of operation defined in the facility license. The changes do not involve the addition of new equipment or the modification of existing equipment, nor do they alter the design of St. Lucie Unit 1 systems. Therefore, operation of the facility in accordance with the proposed amendment would not create the possibility of a new or different kind of accident from any accident previously evaluated.

(3) Operation of the facility in accordance with the proposed amendment would not involve a significant reduction in a margin of safety.

The proposed amendment does not involve a reduction in the margin of safety. The margin of safety of the Technical Specifications, its Bases, the Updated Final Safety Analysis Report, the Safety Evaluation Report or in any other design document has been increased by the use of a safety factor of two for the TS affected by the proposed amendment. The change provided in this proposed amendment is related to introducing an improved testing protocol for the activated charcoal in safety related ventilation systems. The change consists of testing the charcoal with a new testing protocol, higher efficiencies, and with lower test temperatures to more closely reflect accident conditions and to eliminate potential overestimation of charcoal efficiency.

Therefore, operation of the facility in accordance with the proposed amendment would not involve a significant reduction in a margin of safety.

Based on the discussion presented above and on the supporting evaluation of proposed TS changes, FPL has concluded that the proposed license amendment involves no significant hazards consideration.

Environmental Consideration

The proposed license amendment changes requirements with respect to surveillance requirements. The amendment involves no significant increase in the amounts and no significant change in the types of any effluents that may be released offsite, and no significant increase in individual or cumulative occupational radiation exposure. FPL has concluded that the proposed amendment involves no significant hazards consideration and meets the criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). FPL has determined pursuant to 10 CFR 51.22(b), that an environmental impact statement or environmental assessment need not be prepared in connection with issuance of the amendment.

ATTACHMENT 3

ST. LUCIE UNIT 1 MARKED-UP TECHNICAL SPECIFICATION PAGES

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CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

3. Verifying that a laboratory analysis of a carbon sample from either at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers demonstrates a removal efficiency of ≥ ~~90%~~ for radioactive methyl iodide when the sample is tested accordance with ~~ANSI N510-1975 (130°C, 95% R.G.)~~. The carbon samples not obtained from test canisters shall be prepared by either:

   a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

   b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed.

4. Verifying a system flow rate of 6000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1975.

c. After every 720 hours of system operation by either:

1. Verifying that a laboratory analysis of a carbon sample obtained from a test canister demonstrates a removal efficiency of ≥ ~~90%~~ for radioactive methyl iodide when the sample is tested in accordance with ~~ANSI N510-1975 (130°C, 95% R.H.)~~; or

2. Verifying that a laboratory analysis of at least two carbon samples demonstrate a removal efficiency of ≥ ~~90%~~ for radioactive methyl iodide when the samples are tested in accordance with ~~ANSI N510-1975 (130°C, 95% R.H.)~~ and the samples are prepared by either:

   a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

   b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed.

ASTM D3803-1989 (30°C, 70% RH)

97.5%

PLANT SYSTEMS

SURVEILLANCE REQUIREMENTS

4.7.7.1 The control room emergency ventilation system shall be demonstrated OPERABLE:

a. At least once per 12 hours by verifying that the control room air temperature is ≤ 120°F.

b. At least once per 31 days by:

1. Initiating flow through the HEPA filter and charcoal adsorber train and verifying that each booster fan operates for at least 15 minutes.

2. Starting (unless already operating) each air conditioning unit and verifying that it operates for at least 8 hours.

c. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housing, or (2) following painting, fire or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the charcoal adsorbers remove ≥ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the ventilation system at a flow rate of 2000 cfm ± 10%.

2. Verifying that the HEPA filter banks remove ≥ 99% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the ventilation system at a flow rate of 2000 cfm ± 10%.

3. Verifying that a laboratory analysis of a carbon sample from either at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers demonstrates a removal efficiency of ≥ ~~90%~~ 97.5% for radioactive methyl iodide when the sample is tested in accordance with ASTM D3803-1989 (30°C, 70% RH) ~~ANSI N510-1975 (130°C, 95% R.H.)~~. The carbon samples not obtained from test canisters shall be prepared by either:

a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

SURVEILLANCE REQUIREMENTS (Continued)

b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed.

4. Verifying a system flow rate of 2000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1975.

d. After every 720 hours of system operation by either:

1. Verifying that a laboratory analysis of a carbon sample obtained from a test canister demonstrates a removal efficiency of ≥ ~~90%~~ for radioactive methyl iodide when the sample is tested ~~in accordance with ANSI N510-1975 (130°C, 95% R.H.)~~; or

97.5%

2. Verifying that a laboratory analysis of at least two carbon samples demonstrate a removal efficiency of ≥ ~~90%~~ for radioactive methyl iodide when the samples are tested in accordance with ~~ANSI N510-1975 (130°C, 95% R.H.)~~ and the samples are prepared by either:

ASTM D3803-1989 (30°C, 70% RH)

a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed.

Subsequent to reinstalling the adsorber tray used for obtaining the carbon sample, the system shall be demonstrated OPERABLE by also:

a) Verifying that the charcoal adsorbers remove ≥ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the ventilation system at a flow rate of 2000 cfm ± 10%, and

b) Verifying that the HEPA filter banks remove ≥ 99% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the ventilation system at a flow rate of 2000 cfm ± 10%.

PLANT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

3. Verifying that a laboratory analysis of a carbon sample from either at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers demonstrates a removal efficiency of ≥ ~~90%~~ for radioactive methyl iodide when the sample is tested in accordance with ~~ANSI N510-1975 (130°C, 95% R.H.)~~. The carbon samples not obtained from test canisters shall be prepared by either:

   a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

   b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed.

4. Verifying a system flow rate of 30,000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1975.

c. After every 720 hours of system operation by either:

1. Verifying that a laboratory analysis of a carbon sample obtained from a test canister demonstrates a removal efficiency of ≥ ~~90%~~ for radioactive methyl iodide when the sample is tested in accordance with ~~ANSI N510-1975 (130°C, 95% R.H.)~~; or

2. Verifying that a laboratory analysis of at least two carbon samples demonstrate a removal efficiency of ≥ ~~90%~~ for radioactive methyl iodide when the samples are tested in accordance with ~~ANSI N510-1975 (130°C, 95% R.H.)~~ and the samples are prepared by either:

   a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

   b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed.

ASTM D3803-1989 (30°C, 70% RH

97.5%

REFUELING OPERATIONS

SURVEILLANCE REQUIREMENTS (Continued)

1. Verifying that the charcoal adsorbers remove ≥ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the ventilation system at a flow rate of 10,350 cfm ± 10%.

2. Verifying that the HEPA filter banks remove ≥ 99% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the ventilation system at a flow rate of 10,350 cfm ± 10%.

3. Verifying that a laboratory analysis of a carbon sample from either at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers demonstrates a removal efficiency of ≥ ~~70%~~ for radioactive ~~elemental~~ iodide when the sample is tested in accordance with ~~ANSI N510-1975 (T30°C, 95% R.H.)~~. The carbon samples not obtained from test canisters shall be prepared by either:

   a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

   b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed.

4. Verifying a system flow rate of 10,350 cfm ± 10% during system operation when tested in accordance with ANSI N510-1975.

methyl

85%

ASTM D3803-1989 (30°C, 95% RH)