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

November 17, 1999

L-99-241
10 CFR 50.90
10 CFR 50.4

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

Re: St. Lucie Units 1 and 2
Docket Nos. 50-335 and 50-389
Proposed License Amendments
GL 99-02 Charcoal Adsorber Test Protocol

Pursuant to 10 CFR 50.90, Florida Power & Light Company (FPL) requests to amend Facility Operating Licenses DPR-67 and NPF-16 for St. Lucie Unit 1 and Unit 2, respectively, by incorporating the attached Technical Specifications (TS) revisions. The amendments will revise the St. Lucie Unit 1 and 2 TS to require laboratory testing of activated charcoal samples for applicable engineered safety feature (ESF) ventilation systems using the ASTM D3803-1989 protocol.

The affected TS are Units 1 and 2 shield building ventilation system, TS 4.6.6.1; Unit 1 ECCS area ventilation system, TS 4.7.8.1; Unit 1 control room emergency ventilation system, TS 4.7.7.1; Unit 2 control room emergency air cleanup system, TS 4.7.7; and Unit 1 fuel pool ventilation system - fuel storage, TS 4.9.12. It is requested that the proposed amendments, if approved, be issued by February 15, 2000 to support testing prior to St. Lucie Unit 2 refueling outage (SL2-12) currently scheduled to begin in April, 2000.

Attachment 1 is an evaluation of the proposed TS changes. Attachment 2 is the "Determination of No Significant Hazards Consideration." Attachments 3 and 4 contain 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 amendments. 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).

This letter implements the TS portion of GL 99-02 requested action 2 as committed in FPL letter L-99-232. FPL committed to submit the GL 99-02 requested license amendments by November 30, 1999. With this submittal, FPL satisfies the enforcement discretion guidance of GL 99-02. In the event that the staff does not approve the proposed license amendments by February 15, 2000, FPL is hereby requesting the NRC grant enforcement discretion in

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accordance with the guidance provided in GL 99-02 and the technical basis described in this submittal

In summary, this submittal states clearly FPL's intent to test to ASTM D3803-1989 if the TS are approved, otherwise enforcement discretion is expected from the NRC to allow St. Lucie to test to the ASTM D3803-1989 standard for the upcoming charcoal adsorber testing in the spring 2000.

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

Very truly yours,

J. A. Stall
Vice President
St. Lucie Plant

JAS/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)

J. A. Stall 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.

J. A. Stall

STATE OF FLORIDA

COUNTY OF St. Lucie

Sworn to and subscribed before me

this 17 day of November, 1999

by J. A. Stall, who is personally known to me.

Signature of Notary Public-State of Florida

Leslie J. Whitwell
MY COMMISSION # CC646183 EXPIRES
May 12, 2001
BONDED THRU TROY FAIN INSURANCE, INC.

Name of Notary Public (Print, Type, or Stamp)

ATTACHMENT 1

EVALUATION OF PROPOSED TS CHANGES

EVALUATION OF PROPOSED TS CHANGES

1.0 Introduction

The proposed amendments to Facility Operating Licenses DPR-67 for St. Lucie Unit 1 (PSL1) and NPF-16 for St. Lucie Unit 2 (PSL2) will revise the Unit 1 and 2 license requirements for laboratory testing 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 – Ventilation Systems with TS Requirements for Activated Charcoal Adsorber Testing	
Unit 1	**Unit 2**
Shield Building Ventilation System (SBVS), TS 4.6.6.1	Shield Building Ventilation System(SBVS), TS 4.6.6.1
Control Room Emergency Ventilation System (CREVS), TS 4.7.7.1	Control Room Emergency Air Cleanup System (CREACS), TS 4.7.7
ECCS Area Ventilation System, TS 4.7.8.1	N/A For Unit 2, no credit for the ECCS Area filtration and cleanup systems in the accident analysis.
Fuel Handling Building Ventilation System (FHBVS), TS 4.9.12	N/A For Unit 2, the SBVS performs the filtration function

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 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 and Unit 2 TS do not currently reference this standard for the test protocol.

The St. Lucie units have been testing charcoal samples in accordance with the TS referencing the following standards: ANSI N510-1975 for Unit 1, and ANSI N510-1980 for Unit 2. The St. Lucie Unit 1 and Unit 2 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. 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 these 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 charcoal ability 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 units have been testing charcoal samples in accordance with the TS referencing the following standards: ANSI N510-1975 for Unit 1, and ANSI N510-1980 for Unit 2. Therefore, St. Lucie fits the GL 99-02 Category 2 designation. The St. Lucie Unit 1 and Unit 2 TS do not reference Regulatory Guide (RG) 1.52 for testing. However, both units were designed to RG 1.52 requirements as stated in the Updated Final Safety Analysis Report (UFSAR).

The shield building ventilation systems for both units have 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, HEPA filters, and charcoal adsorbers enclosed in a common casing.

The control room emergency ventilation systems for both units have been designed to limit airborne radioactivity in the control room following a 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 General Design Criterion 19. The control room ventilation system in both units are similar and they consist of split system air conditioners (i.e., indoor and outdoor section), 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 Unit 1 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 guidelines of 10 CFR 100 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 (FHB) ventilation systems for both units serve the spent fuel pool areas. The Unit 1 FHB ventilation system is designed to reduce plant personnel doses by preventing the accumulation of airborne radioactivity in the fuel handling building 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 percent capacity centrifugal fans to the atmosphere through a prefilter, HEPA filter bank, charcoal absorbers and out the FHB vent stack. Air exhaust from the lower areas is passed through a prefilter and HEPA filter bank before being discharged by a centrifugal fan to the atmosphere through the FHB vent stack.

The portion of Unit 2 FHB ventilation system for the spent fuel pool ventilation is interconnected with the SBVS. In the event of a high radiation signal, the fuel pool area is exhausted to the plant vent via the SBVS filters.

3.0 Proposed TS Changes: Description and Basis

A. St. Lucie Unit 1 Shield Building Ventilation System:

1. Surveillance Requirement 4.6.6.1.b.3 – Change ***ANSI N510-1975 (130°C, 95% R.G.)*** to ***ASTM D3803-1989 (30°C, 95% RH)***.

2. Surveillance Requirement 4.6.6.1.c.1 – Change ***ANSI N510-1975 (130°C, 95% R.H.)*** to ***ASTM D3803-1989 (30°C, 95% RH)***.

3. Surveillance Requirement 4.6.6.1.c.2 – Change ***ANSI N510-1975 (130°C, 95% R.H.)*** to ***ASTM D3803-1989 (30°C, 95% RH)***.

B. St. Lucie Unit 1 Control Room Emergency Ventilation System:

1. Surveillance Requirement 4.7.7.1.c.3 - Change ***ANSI N510-1975 (130°C, 95% R.H.)*** to ***ASTM D3803-1989 (30°C, 95% RH)***.

2. Surveillance Requirement 4.7.7.1.d.1 - Change ***ANSI N510-1975 (130°C, 95% R.H.)*** to ***ASTM D3803-1989 (30°C, 95% RH)***.

3. Surveillance Requirement 4.7.7.1.d.2 - Change ***ANSI N510-1975 (130°C, 95% R.H.)*** to ***ASTM D3803-1989 (30°C, 95% RH)***.

C. St. Lucie Unit 1 ECCS Area Ventilation System:

1. Surveillance Requirement 4.7.8.1.b.3 - Change ***ANSI N510-1975 (130°C, 95% R.H.)*** to ***ASTM D3803-1989 (30°C, 95% RH)***.

2. Surveillance Requirement 4.7.8.1.c.1 - Change ***ANSI N510-1975 (130°C, 95% R.H.)*** to ***ASTM D3803-1989 (30°C, 95% RH)***.

3. Surveillance Requirement 4.7.8.1.c.2 - Change ***ANSI N510-1975 (130°C, 95% R.H.)*** to ***ASTM D3803-1989 (30°C, 95% RH)***.

D. St. Lucie Unit 1 Fuel Pool Ventilation System – Spent Fuel:

1. Surveillance Requirement 4.9.12.b.3 - Change ***ANSI N510-1975 (130°C, 95% R.H.)*** to ***ASTM D3803-1989 (30°C, 95% RH)***.

2. Surveillance Requirement 4.9.12.b.3 – Change removal efficiency of $\geq$ ***70%*** to $\geq$ ***85%*** and change ***elemental iodide*** to ***methyl iodide***.

E. St. Lucie Unit 2 Shield Building Ventilation System:

1. Surveillance Requirement 4.6.6.1.c - Change ***ANSI N510-1980 (130°C, 95% R.H.)*** to ***ASTM D3803-1989 (30°C, 95% RH)***.

2. Surveillance Requirement 4.6.6.1.c – Delete the following phrase ***and ≥ 99% for radioactive elemental iodine***.

F. St. Lucie Unit 2 Control Room Emergency Air Cleanup system (CREACS):

1 Surveillance Requirement 4.7.7.d - Change ***ANSI N510-1980 (130°C, 95% R.H.)*** to ***ASTM D3803-1989 (30°C, 95% RH)***.

The current charcoal adsorber testing protocol used for Unit 1 per ANSI N510-1975 is performed in accordance with Table 4 of RTD M 16-1[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 current charcoal adsorber testing protocol used for Unit 2 per ANSI N510-1980 is performed in accordance with ASTM D3803 (1979). According to this standard, charcoal testing for radioactive methyl iodide at 130°C and 95% relative humidity is performed as follows:

> *The conditions are maintained for an equilibrium period of at least two hours, or until the temperature differential across the bed is less than 2°C. These conditions are continued during the challenging period when a specific amount of methyl iodide is added to the test gas flow for one hour. After this period, the flow conditions are maintained for a 240-minute elution period without the addition of the methyl iodide. A substantial amount of condensed water is collected during the test, and any radioactivity contained in it is assumed to have penetrated the carbon bed. For tests of used charcoal, the carbon sample*

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

> *is not exposed to humid airflow for a pre-equilibration period. Instead, the bed is brought to the test temperature without airflow, followed by the challenging period.*

According to GL 99-02, studies by EG&G reported that this standard (ASTM D3803-1979) had unacceptable test parameter tolerances and instrument calibration requirements, and that the standard was non-conservative in not requiring humidity pre-equilibration of used charcoals.

The proposed charcoal adsorber-testing protocol (ASTM D3803-1989), which will be incorporated for both units per the proposed amendments, will be performed as follows:

> *The test sample is exposed to air at 30°C and 95% RH (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 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, 95% RH 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, 95% RH 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 safety related ESF ventilation system charcoal testing.

The UFSAR discusses the need for charcoal testing of the safety related ventilation systems as defined in Table 1 of this attachment, and with the conservative methyl iodide penetration requirements stated in the Technical Specifications. However, testing of the Unit 2 ECCS ventilation system charcoal beds is not required from a licensing point of view as concluded in the NRC Initial Operating License Safety Evaluation Report (NUREG-0843). Also, the Unit 2 fuel pool ventilation system is interconnected to the SBVS, and during accident conditions, airflow from the fuel handling building is routed through the SBVS. For these reasons, the

Unit 2 ECCS and FHB ventilation systems are not required to be tested for methyl iodide penetration.

Based on the above information, the assumed accident analysis penetration values for each ESF ventilation system along with FPL proposed penetration values for methyl iodide testing, based on a minimum safety factor value of 2 is shown below:

Table 2 Allowable Values				
ESF Ventilation System	**Assumed Accident Analysis Penetration**	**GL 99-02 Maximum Allowable Penetration with SF = 2**	**Proposed Maximum Allowable Penetration**	**Proposed TS Minimum Allowable Efficiency**
Unit 1 SBVS	30%	15%	10%	90%
Unit 1 ECCS Area Ventilation System	30%	15%	10%	90%
Unit 1 CREVS	30%	15%	10%	90%
Unit 1 FHBVS	30%	15%	15%	85%
Unit 2 SBVS	50%	25%	10%	90%
Unit 2 CREACS	1%	0.5%	0.175%	99.825%

From above, it is clear that the penetration values proposed by this proposed 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 (Attachments 3 and 4). The maximum allowable penetration values in the proposed TS will be kept the same as the values currently provided in the TS for all the systems except the Unit 1 FHBVS. This will provide additional conservatism. For the Unit 1 FHBVS the proposed maximum allowable penetration value basis is discussed below. The decision to maintain the same penetration values was based on maintaining the same level of conservatism currently established while providing operating flexibility. According to the charcoal testing vendor, for the most limiting case shown above (Unit 2 CREACS) which has a higher safety factor than 2, this translates into a charcoal adsorber availability for several years without being changed out. This is based on testing of charcoal adsorbers from other facilities similar to St. Lucie.

Since a methyl iodide testing criteria is currently not provided for the fuel handling building ventilation for Unit 1 (existing TS only test for elemental iodine), a penetration value for methyl iodide testing is being proposed for this specification. The proposed penetration value is based on the 30% penetration assumed in the accident analysis 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 Technical Specifications for this system, equivalent to charcoal adsorber efficiency of 85%.

With regards to the proposed testing relative humidity (95%), this value is also more conservative than the value assumed in the accident analysis. Normally, a relative humidity (RH) of 70% is maintained at all times (including post-accident) by the SBVS in both units. This is achieved by redundant electrical heaters provided for each train of SBVS. For the other ESF ventilation systems located outside containment, the UFSARs assume that based on system configurations, it is not expected that the relative humidity for charcoal adsorbers will be higher than 70% even without the use of heaters. The proposed RH value (95%) is much larger than 70% and it is more conservative because increasing the RH of the test generally decreases the efficiency of methyl iodide removal by activated carbon.

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 for 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. The St. Lucie plant complies with 10 CFR 50 Appendix A, General Design Criterion 19 and 10 CFR 100, Subpart A.

4.0 Environmental Consideration

The proposed license amendments change requirements with respect to surveillance requirements. The amendments involve 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 amendments involve no significant hazards consideration and meet 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 amendments

5.0 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 General Design Criterion 19 and 10 CFR 100 Subpart A are maintained. The proposed new testing methodology will ensure the design basis of each plant (relative to

methyl iodide removal) is maintained and that safety analysis assumptions remain valid.

ATTACHMENT 2

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION

Description of amendment request:

The amendments will revise the St. Lucie Unit 1 and 2 TS to require laboratory testing of activated charcoal samples for applicable engineered safety feature (ESF) ventilation systems using the ASTM D3803-1989 protocol. The affected TS are Units 1 and 2 shield building ventilation system, TS 4.6.6.1; Unit 1 ECCS area ventilation system, TS 4.7.8.1; Unit 1 control room emergency ventilation system, TS 4.7.7.1; Unit 2 control room emergency air cleanup system, TS 4.7.7; and Unit 1 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 therefore, no changes on 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 new charcoal testing protocol only affects surveillance testing requirements for 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 has not been altered by the proposed amendment. The systems involved are not considered to initiate 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 plant 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 Final Safety Analysis Report, the Safety Evaluation Report or in any other design document has not been 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 and with lower test temperatures to resemble more closely 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 these proposed license amendments involve no significant hazards consideration.

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, 95% RH)

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% for radioactive methyl iodide when the sample is tested in accordance with ~~ANSI N510-1975 (130°C, 95% R.H.)~~ ASTM D 3803-1989 (30°C, 95% RH). 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

PLANT SYSTEMS

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

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.

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%.

(ASTM D3803-1989 (30°C, 95% RH))

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, 95% RH)

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 ≥ 90% for radioactive ~~elemental~~ 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 10,350 cfm ± 10% during system operation when tested in accordance with ANSI N510-1975.

methyl

≥ 85%

ASTM D3803-1989 (30°C, 95% RH)

ATTACHMENT 4

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CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

2. Performing airflow distribution to HEPA filters and charcoal adsorbers in accordance with ANSI N-510-1980. The distribution shall be ± 20% of the average flow per unit.

3. Verifying that the charcoal adsorbers remove ≥ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in place in accordance with ANSI N-510-1980 while operating the system at a flow rate of 6000 cfm ± 10%.

4. Verifying that the HEPA filter banks remove ≥ 99.825% of the DOP when they are tested in place in accordance with ANSI N-510-1980 while operating the system at a flow rate of 6000 cfm ± 10%.

5. Verifying a system flow rate of 6000 cfm ± 10% during system operation when tested in accordance with ANSI N-510-1980.

c. After every 720 hours of charcoal adsorber operation by verifying within 31 days after removal that a 2-inch laboratory sample from the installed sample canisters demonstrates a removal efficiency of ≥ 90% for radioactive methyl iodide ~~and ≥ 99% for radioactive elemental iodine~~ when tested in accordance with ~~ANSI N-510-1980 (130°C, 95% R.H.)~~ ASTM D3803-1989 (30°C, 95% RH).

d. At least once per 18 months by:

1. Verifying that the pressure drop across the demisters, electric heaters, HEPA filters, and charcoal adsorber banks is less than 8.5 inches Water Gauge (WG) while operating the system at a flow rate of 6000 cfm ± 10%.

2. Verifying that the system starts on a Unit 2 containment isolation signal and on a fuel pool high radiation signal.

3. Verifying that the filter cooling makeup and cross connection valves can be manually opened.

4. Verifying that each system produces a negative pressure of greater than or equal to 2.0 inches WG in the annulus within 99 seconds after a start signal.

5. Verifying that the main heaters dissipate 30 ± 3 kW and the auxiliary heaters dissipate 1.5 ± 0.25 kW when tested in accordance with ANSI N-510-1980.

PLANT SYSTEMS

SURVEILLANCE REQUIREMENTS

4.7.7 Each control room emergency air cleanup system shall be demonstrated OPERABLE:

a. At least once per 12 hours by verifying that the control room air temperature is less than or equal to 120°F.

b. At least once per 31 days by (1) initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the system operates for at least 15 minutes and (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 housings, or (2) following painting, fire or chemical release in any ventilation zone communicating with the system by:

1. Performing a visual examination of CREACS in accordance with ANSI N-510-1980.

2. Performing air flow distribution to HEPA filters and charcoal adsorbers in accordance with ANSI N-510-1980. The distribution shall be ± 20% of the average flow per unit.

3. Verifying that the charcoal adsorbers remove ≥ 99.95% of a halogenated hydrocarbon refrigerant test gas when they are tested in accordance with ANSI N-510-1980 while operating the system at 2000 cfm ± 10%.

4. Verifying that the HEPA filters remove ≥ 99.95% of DOP when they are tested in accordance with ANSI N-510-1980 while operating the system at 2000 cfm ± 10%.

5. Verifying a system flow rate of 2000 cfm ± 10%.

d. After every 720 hours of charcoal adsorber operation by verifying within 31 days after removal that a 4-inch laboratory sample from the installed sample canisters demonstrates a removal efficiency of ≥ 99.825% for methyl iodide when tested in accordance with ~~ANSI N-510-1980 at 130°C, 95% R.H.~~ ASTM D3803-1989 (30°C, 95% RH)

e. At least once per 18 months by:

1. Verifying that the pressure drop across the combined prefilters, HEPA filters and charcoal adsorber banks is less than 7.4 inches Water Gauge while operating the system at a flow rate of 2000 cfm ± 10%.