

BEFORE THE
UNITED STATES NUCLEAR REGULATORY COMMISSION

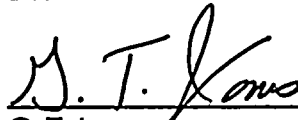
In the Matter of :
PENNSYLVANIA POWER & LIGHT COMPANY : Docket No. 50-387

PROPOSED AMENDMENT NO. 207
FACILITY OPERATING LICENSE NO. NPF-14
SUSQUEHANNA STEAM ELECTRIC STATION
UNIT NO. 1

Licensee, Pennsylvania Power & Light Company, hereby files proposed Amendment No. 207 to its Facility Operating License No. NPF-14 dated July 17, 1982.

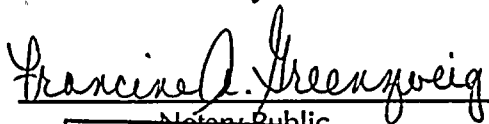
This amendment contains a revision to the Susquehanna SES Unit 1 Technical Specifications.

PENNSYLVANIA POWER & LIGHT COMPANY
BY:



G. T. Jones
Vice President - Nuclear Operations

Sworn to and subscribed before me
this 27th day of June, 1997.



Notary Public
NOTARIAL SEAL
FRANCINE A. GREENZWEIG, Notary Public
City of Allentown, Lehigh County, PA
My Commission Expires Oct. 29, 1998

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BEFORE THE
UNITED STATES NUCLEAR REGULATORY COMMISSION

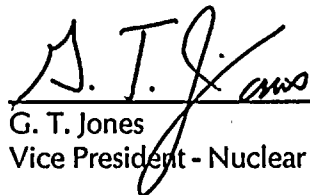
In the Matter of :
PENNSYLVANIA POWER & LIGHT COMPANY : Docket No. 50-388

PROPOSED AMENDMENT NO. 172
FACILITY OPERATING LICENSE NO. NPF-22
SUSQUEHANNA STEAM ELECTRIC STATION
UNIT NO. 2

Licensee, Pennsylvania Power & Light Company, hereby files proposed Amendment No. 172 to its Facility Operating License No. NPF-22 dated March 23, 1984.

This amendment contains a revision to the Susquehanna SES Unit 2 Technical Specifications.

PENNSYLVANIA POWER & LIGHT COMPANY
BY:



G. T. Jones
Vice President - Nuclear Operations

Sworn to and subscribed before me
this 27th day of June, 1997.



Notary Public
NOTARIAL SEAL
FRANCINEA. GREENZWEIG, Notary Public
City of Allentown, Lehigh County, PA
My Commission Expires Oct. 29, 1998

ATTACHMENT 1 TO PLA-4641

SAFETY ASSESSMENT

SAFETY ASSESSMENT

CLARIFICATION OF THE METHODOLOGY FOR LABORATORY TESTING OF CARBON SAMPLES

BACKGROUND

SSES Technical Specifications contain limiting conditions for operation (LCO) for SGTS and CREOASS. The associated SSES surveillance requirements require that laboratory analysis of carbon samples meet the laboratory testing criteria of Regulatory Guide 1.52, Revision 2, March 1978.

Regulatory position C.6.a.(3) of Regulatory Guide 1.52, Revision 2 requires that representative samples of used activated carbon pass the laboratory tests listed in Table 2 of the Guide. In Table 2, "Laboratory Tests for Activated Carbon," the applicable test for activated carbon bed depths of 4 inches or greater is test 5.b at a relative humidity of 70% for a methyl iodide penetration of less than 0.175%. A footnote for this test requirement directs the reader to Table 5-1 of ANSI N509-1976.

Table 5-1 of ANSI N509-1976 is entitled "Summary Table of New Activated Carbon Physical Properties Batch Tests to Be Performed on Finished Adsorbents." Test 5.b (as referenced in Regulatory Guide 1.52, Revision 2) in this table refers to a radioiodine removal efficiency qualification test for new activated carbon using methyl iodide at 80°C and 95% relative humidity. The acceptable test method is RDT-M16-1T, paragraph 4.5.3, except at 80°C and 95% relative humidity with the pre- and post-loading sweep medium at 25°C.

PP&L determined that the vendor's testing at 30°C and 95% relative humidity in accordance with ASTM D-3803-1979 was acceptable. However, PP&L did not identify the need to clarify the Technical Specification requirements to reflect the use of the ASTM D-3803-1979 standard in lieu of RDT-M16-1T, which was referenced as the "acceptable test method" in ANSI N509-1976, which in turn was referenced in Regulatory Guide 1.52, Revision 2.

In summary, the laboratory testing of activated carbon adsorbent for SSES is currently performed in accordance with ASTM D-3803-1979, which is identified in Table 5-1 of ANSI N509-1980. However, the referenced Technical Specification requirements currently cite the testing criteria of Regulatory Guide 1.52, Revision 2, which references ANSI N509-1976/RDT-M16-1T.

PP&L identified this discrepancy during a review of the specification used to purchase new activated carbon. A Condition Report was generated on June 19, 1997. The initial operability determination was based upon the fact that the current test procedure is actually an improvement over the test methodology referenced in ANSI N509-1976/RDT-M16-1T. PP&L's current testing methodology was determined to be conservative, such that the SGTS and CREOASS can perform their design basis functions as intended.

DESCRIPTION OF PROPOSED CHANGE

The proposed Unit 1 and Unit 2 Technical Specification changes clarify the methodology used to satisfy Technical Specification surveillance requirements for the laboratory analysis of activated carbon samples from SGTS and CREOASS. For both Unit 1 and Unit 2, SGTS Surveillance Requirements 4.6.5.3.b.2. and 4.6.5.3.c. and CREOASS Surveillance Requirements 4.7.2.b.2. and 4.7.2.c. are revised to insert an asterisk after "Regulatory Position C.6.a" which inserts the phrase "except that the test is performed at 30°C and 95% Relative Humidity and in accordance with ASTM D3803-79, Method A." (Note that the addition of the "and" in this sentence represents a change to the draft of the marked-up pages sent to the NRC via PP&L's written request for enforcement discretion. This added change represents more precise wording.) In addition, a typographical error in Unit 2 Surveillance Requirement 4.7.2.c. is corrected to indicate an acceptance criteria of less than 0.175%, rather than 0.75%. Markups of the affected Technical Specification pages are attached.

Specifically, the proposed changes are as follows:

2.1 Current Technical Specifications

Unit 1 and Unit 2 Surveillance Requirements 4.6.5.3.b.2 for SGTS requires the following:

"Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978 meets the laboratory testing criteria of Regulatory position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978 for a methyl iodide penetration of less than 0.175%,"

Unit 1 and Unit 2 Surveillance Requirements 4.6.5.3.c for SGTS requires the following:

"After every 720 hours of charcoal adsorber operation by verifying within 31 days that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978 meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978, for methyl iodide penetration of less than 0.175%."

Unit 1 and Unit 2 Surveillance Requirements 4.7.2.b.2 for CREOASS requires the following:

"Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978 meets the laboratory testing criteria of Regulatory position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978 for a methyl iodide penetration of less than 0.175%,"

Unit 1 and Unit 2 Surveillance Requirements 4.7.2.c for CREOASS requires the following:

“After every 720 hours of charcoal adsorber operation by verifying within 31 days that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978 meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978, for methyl iodide penetration of less than 0.75%.[#]”

2.2 Proposed Technical Specifications (emphases added only to illustrate changes)

It is proposed that Unit 1 and Unit 2 Surveillance Requirements 4.6.5.3.b.2 for SGTS read as follows:

“Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978 meets the laboratory testing criteria of Regulatory position C.6.a* of Regulatory Guide 1.52, Revision 2, March 1978 for a methyl iodide penetration of less than 0.175%;

* Except that the test is performed at 30°C and 95% relative humidity, and in accordance with ASTM D3803-79, Method A.

It is proposed that Unit 1 and Unit 2 Surveillance Requirements 4.6.5.3.c for SGTS read as follows:

“After every 720 hours of charcoal adsorber operation by verifying within 31 days that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978 meets the laboratory testing criteria of Regulatory Position C.6.a* of Regulatory Guide 1.52, Revision 2, March 1978, for methyl iodide penetration of less than 0.175%.”

* Except that the test is performed at 30°C and 95% relative humidity, and in accordance with ASTM D3803-79, Method A.

[#] Note that incorrect 0.75% reference appears only in Unit 2 specification.

It is proposed that Unit 1 and Unit 2 Surveillance Requirements 4.7.2.b.2 for CREOASS read as follows:

“Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978 meets the laboratory testing criteria of Regulatory position C.6.a* of Regulatory Guide 1.52, Revision 2, March 1978 for a methyl iodide penetration of less than 0.175%.”

* Except that the test is performed at 30°C and 95% relative humidity, and in accordance with ASTM D3803-79, Method A.

It is proposed that Unit 1 and Unit 2 Surveillance Requirements 4.7.2.c for CREOASS read as follows:

“After every 720 hours of charcoal adsorber operation by verifying within 31 days that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978 meets the laboratory testing criteria of Regulatory Position C.6.a* of Regulatory Guide 1.52, Revision 2, March 1978, for methyl iodide penetration of less than 0.175%.”

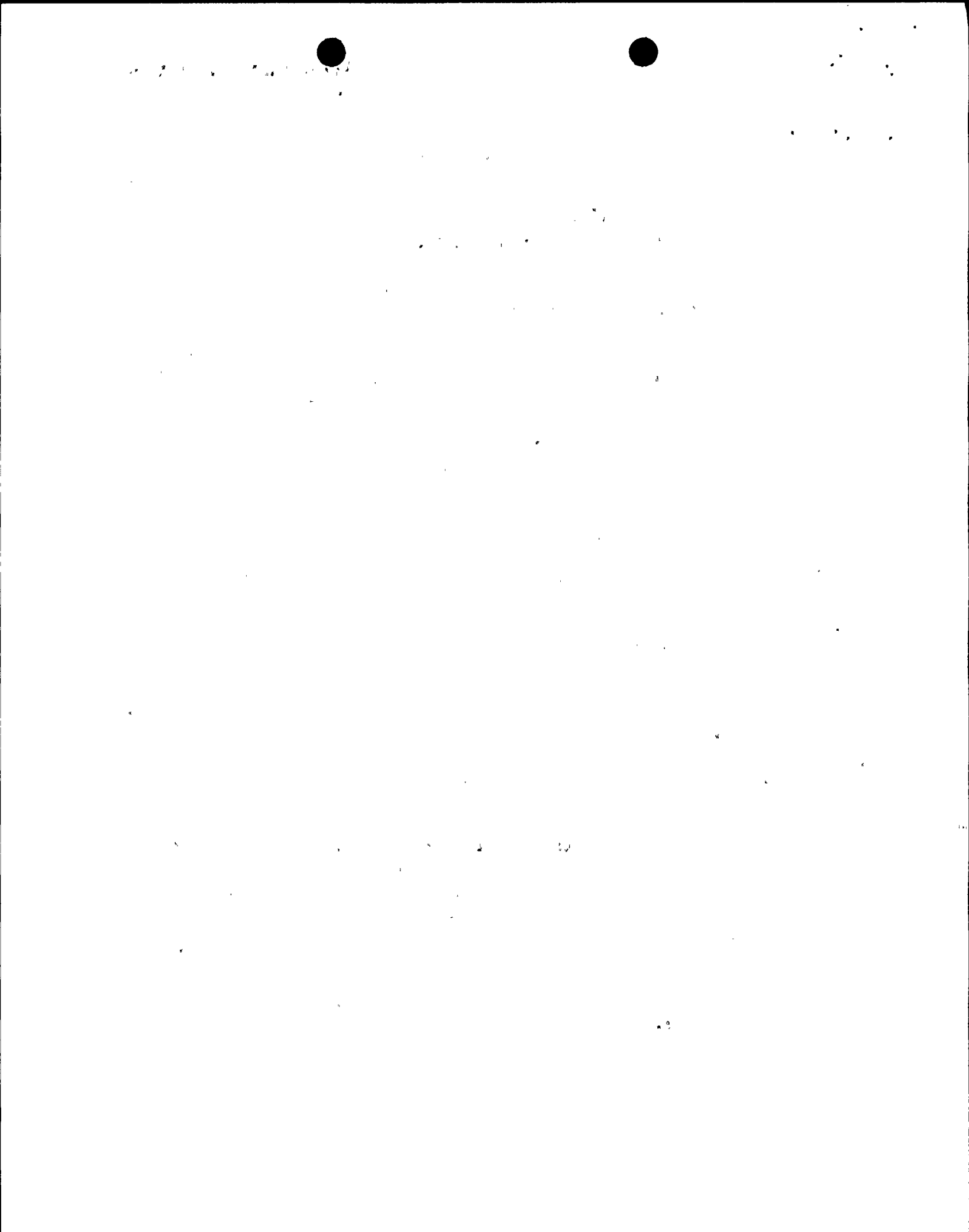
* Except that the test is performed at 30°C and 95% relative humidity, and in accordance with ASTM D3803-79, Method A.

SAFETY ANALYSIS

PP&L conducted a confirmatory, comparative analysis of the testing methodology referenced in the current Technical Specifications to the current testing methodology.

This evaluation addresses the differences in testing methodologies for used activated carbon between those specified in current Technical Specifications and the proposed changes, which reflect current testing practices. This testing is performed to verify that the removal efficiency for iodine activity by the Safety Related Standby Gas Treatment Subsystem (SGTS) and Control Room Emergency Outside Air Supply Subsystem (CREOASS) in the event of Design Basis Accidents would be consistent with the assumptions of the accident analyses. The safety-related elements of the change include the conditions under which carbon samples are prepared for testing and the conditions under which the carbon samples are challenged to determine their capability to retain organic iodine under design basis accident conditions.

These changes do not affect the margin of safety, since they do not change the acceptance criteria for methyl iodide penetration. The limit on methyl iodide penetration assures that the activated carbon in these safety-related systems will provide the iodine removal efficiencies assumed in the accident analyses. However, the method of testing can affect the results. Therefore, it is necessary



to demonstrate that the method proposed will generate results that are equivalent or more conservative than the method currently required by Technical Specifications (TS). Each of the differences between the current TS and the proposed TS test methodologies have been reviewed. The test parameters for the proposed TS change are equivalent to or more conservative than those currently specified. Therefore, there will be no degradation in the ability of the components to perform their design functions.

In summary, the differences between the current TS and the proposed TS change requirements for carbon testing are:

1. A loading temperature of 80°C versus 30°C;
2. Pre-load humidity equilibration at 70% Relative Humidity versus no pre-load humidity equilibration;
3. A pre-load equilibration of the test carbon at 25°C versus 30°C;
4. A 120 minute post-load sweep at 25°C versus a 240 minute post-load sweep at 30°C;
5. A test Relative Humidity of 70% versus 95%

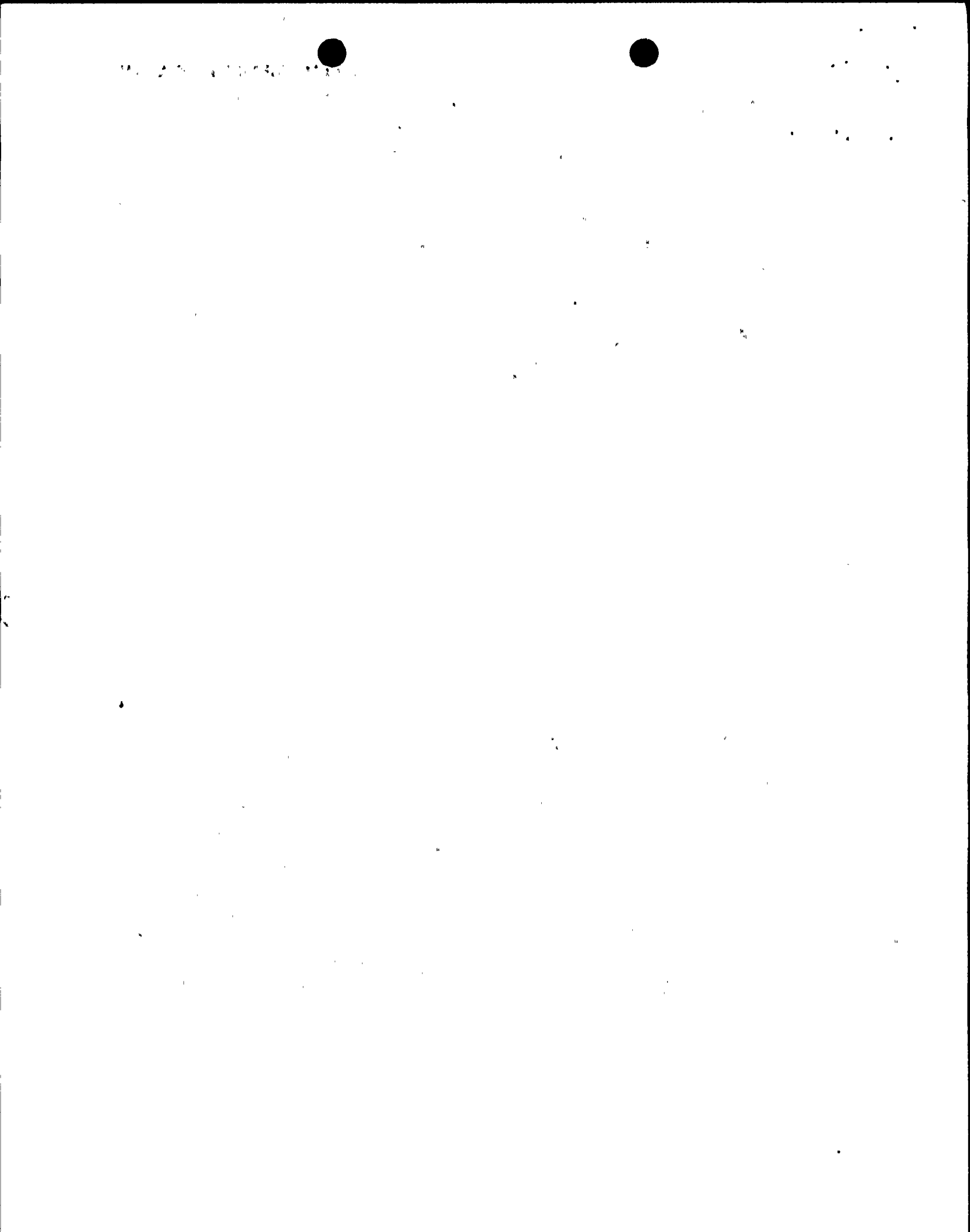
Each of these differences is addressed below.

1. 30 Degree Celsius Test Temperature Versus 80 Degrees Celsius

The quantity of water retained by charcoal (activated carbon) is dependent on temperature. Generally, the higher the temperature the less water is retained. The water retained by the carbon decreases the efficiency of the carbon to adsorb other contaminants. At 30°C and 95% Relative Humidity, carbon will retain significantly more weight percent water than at 80°C and 95% Relative Humidity. Thus, performing the test at 30°C, which is being proposed is more conservative.

2. No pre-test equilibration for humidity

Pre-load humidity equilibration is achieved by sweeping air of the appropriate humidity through the test carbon. This condition is for testing new carbon and until 1977 was also applied to the testing of used carbon. In 1977, RDT M16-1T, 1977 was released stating that for testing used carbon, "the material shall not be pre-equilibrated before testing". Reference 5 provides a basis by stating that "it is thought that the elimination of the pre-humidification is a better simulation of accident conditions since a carbon filter must be ready at all times....". It also states that "several investigators do not recommend any pre-treatment (of the carbon) in order to prevent a partial regeneration of the carbon which would increase the measured trapping efficiency". Therefore, by the release of the 1979 ASTM D 3803 standard, it was established that the better test method was not to pre-equilibrate the humidity of the carbon.



3. Pre-Equilibration of the Test Bed at 30°C Versus 25°C

The present TS requires the carbon to be equilibrated to 25°C and 70% Relative Humidity (pre-load sweep). The methyl iodide test medium would then be instantaneously introduced at 80°C. Carbon testing is not performed this way because this would cause condensation to form on the carbon. Condensation on the carbon itself ("wetting the bed") results in the test being invalid. This is supported by paragraph 12.4.1 of ASTM D3803-79, which states with respect to relative humidity of the test medium, that "tests at saturation or above give very erratic results". Because of this, the testing standards after 1976 (RDT M16-1T-1977, ASTM D3803-1979, and ANSI N509-1980) have been changed to include pre-load thermal equilibration at the test temperature. Therefore, since loading under ASTM D3803-79 Method A is performed at 30°C, the sample is pre-equilibrated at 30°C instead of 25°C.

4. 240 Minute Post-Load Sweep Versus 120 Minute Post-Load Sweep

The post-load sweep of the carbon is performed to evaluate the ability of the carbon to hold the adsorbate once it is captured. The current TS test specifies a 120 minute post-load sweep at 25°C. The proposed TS change will use a 240 minute post-load sweep at 30°C. The longer time is more conservative as more radioiodine would be swept off the charcoal. The impact of the difference in temperature used for the post-load sweep is not significant, based on discussion with the test vendor.

5. 95% Relative Humidity Versus 70% Relative Humidity

This was addressed earlier under item 3. The higher moisture content of the carbon results in lower adsorption of iodine. Reference 5 shows that at a constant temperature, the weight percent water adsorbed by the carbon increases with increasing relative humidity. Therefore, it is more conservative to test at a higher Relative Humidity.

CONCLUSIONS

The proposed change to SSES Unit 1 and Unit 2 Technical Specifications will clarify and reconcile the subject surveillance requirements with the current methodology used for laboratory analysis of carbon samples. The methodology currently used for this testing has been determined to be equivalent or more conservative than that referenced in the current Technical Specifications.



111. 4. 1971

REFERENCES

1. Regulatory Guide 1.52, Revision 2, "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," dated March 1978.
2. ANSI/ASME N509-1976, "Nuclear Power Plant Air Cleaning Units and Components."
3. ASTM D3803-79, "Standard Test Methods for Radio-iodine Testing of Nuclear-Grade Gas-Phase Adsorbents."
4. RDT M16-1T, "Gas-Phase Adsorbents for Trapping Radioactive Iodine and Iodine Compounds."
5. NUREG/CR-0771, "Effects of Weathering on Impregnated Charcoal Performance," dated May 10, 1979."

ATTACHMENT 2 TO PLA-4641

NO SIGNIFICANT HAZARDS CONSIDERATIONS

NO SIGNIFICANT HAZARDS CONSIDERATIONS AND ENVIRONMENTAL ANALYSIS

***CLARIFICATION OF THE METHODOLOGY FOR LABORATORY TESTING OF
CARBON SAMPLES***

NO SIGNIFICANT HAZARDS CONSIDERATIONS

Pennsylvania Power and Light Company has evaluated the proposed Technical Specification change in accordance with the criteria specified by 10 CFR 50.92 and has determined that the proposed change does not involve a significant hazards consideration. The criteria and conclusions of our evaluation are presented below.

- 1. The proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.**

The methods used to test charcoal samples do not increase the probability or consequences of an accident or malfunction of equipment important to safety as previously evaluated in the FSAR. The capability of the charcoal in SGTS and CREOASS to adsorb iodine is a consideration in assessing the consequences of an accident. The limit on methyl iodide penetration assures that the activated carbon in these safety-related systems will provide the iodine removal efficiencies assumed in the accident analyses. The charcoal testing methodology currently being used is equivalent or more conservative than that specified in Technical Specifications, and thus provides assurance that charcoal meeting the acceptance criteria will perform as designed. These changes do not affect the probability of event initiators or any ESF actuation setpoints or accident mitigation capabilities.

- 2. *The proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.***

Testing on carbon samples is performed offsite, and residual samples are not returned to the SGTS or CREOASS. Therefore, the testing methodology has no effect on system operation. No new or different accident scenarios, transient precursors, failure mechanisms or limiting single failures will be introduced as a result of these changes.

- 3. *The proposed change does not involve a significant reduction in the margin of safety.***

The limit on methyl iodide penetration assures that the activated carbon in these safety-related systems will provide the iodine removal efficiencies assumed in the accident analyses. Use of the ASTM D-3803-1979 methodology more accurately assures that the SGTS and CREOASS perform their intended design functions. This change will not affect system operation or performance. Therefore, there is no reduction in the margin of safety. Offsite and control room dose analyses are not affected by this change. All

offsite and control room doses will remain within the limits established in the accident analyses.

ENVIRONMENTAL ANALYSIS

An environmental assessment is not required for the proposed change because the requested change conforms to the criteria for actions eligible for categorical exclusion as specified in 10 CFR 51.22(c)(9). The requested change will have no impact on the environment. As discussed above, the proposed change does not involve a significant hazards consideration. The proposed change does not involve a significant change in the types or significant increase in the amounts of effluents that may be released offsite. In addition, the proposed change does not involve a significant increase in the individual or cumulative occupational radiation exposure.

This request is consistent with PP&L's current method of charcoal testing. Adequate compensatory actions are currently in place to ensure that the associated systems are capable of performing their intended functions. Therefore, no environmental consequences that have not been previously considered are anticipated.