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Joseph E. Venable
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W3F1-2003-0044

September 12, 2003

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

SUBJECT: License Amendment Request NPF-38-248
Relaxation of Ventilation System Heater Surveillance Acceptance Criteria
Waterford Steam Electric Station, Unit 3
Docket No. 50-382
NPF-38

Dear Sir or Madam:

Pursuant to 10 CFR 50.90, Entergy Operations, Inc. (Entergy) hereby requests the following amendment for Waterford Steam Electric Station, Unit 3 (Waterford 3). The proposed amendment is the relaxation of the heater acceptance criteria contained in surveillance requirements (SR) 4.6.6.1d.5, 4.7.6.1d.3, and 4.7.7d.4 for the shield building ventilation, control room ventilation, and controlled ventilation area systems, respectively. These SRs are performed to verify the heat dissipated by the heaters is within a given band. The requested change is to increase the upper limit of the acceptance criteria from rated capacity plus 5% to rated capacity plus 10%. No change is proposed for the lower limit of the band of rated capacity minus 10%. The proposed change is consistent with the similar requirement of Administrative Technical Specification (TS) 5.5.11.e, Ventilation Filter Test Program, of NUREG-1432, *Standard Technical Specifications Combustion Engineering Plants*. The NUREG suggests a band of ± 10%.

The proposed changes have been evaluated in accordance with 10 CFR 50.91(a)(1) using criteria in 10 CFR 50.92(c) and it has been determined that this change involves no significant hazards considerations. The bases for these determinations are included in Attachment 1. The proposed change does not include any new commitments.

Entergy requests approval of the proposed amendment by May 1, 2004. Once approved, the amendment shall be implemented within 60 days. Although this request is neither exigent nor emergency, your prompt review is requested.

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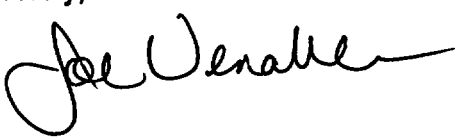
If you have any questions or require additional information, please contact Jerry Burford at 601-368-5755.

I declare under penalty of perjury that the foregoing is true and correct. Executed on September 12, 2003.

Sincerely,



J. E. Venable
Vice President, Operations
Waterford Steam Electric Station, Unit 3

JEV/DBM/cbh

Attachments:
1. Analysis of Proposed Technical Specification Change
2. Proposed Technical Specification Changes (mark-up)

cc: Thomas P. Gwynn, NRC Region IV
N. Kalyanam, NRC-NRR
J. Smith
N.S. Reynolds
NRC Resident Inspectors Office
Louisiana DEQ/Surveillance Division
American Nuclear Insurers

Attachment 1

W3F1-2003-0044

Analysis of Proposed Technical Specification Change

1.0 DESCRIPTION

This letter is a request to amend Operating License NPF-38 for Waterford Steam Electric Station, Unit 3 (Waterford 3).

Waterford 3 proposes to revise the Operating License to relax the heater capacity acceptance criteria contained in surveillance requirements (SR) 4.6.6.1d.5, 4.7.6.1d.3, and 4.7.7d.4 for the shield building ventilation, control room ventilation, and controlled ventilation area systems, respectively.

2.0 PROPOSED CHANGE

The proposed change is to increase the upper band of the heater acceptance criteria in SRs 4.6.6.1d.5, 4.7.6.1d.3, and 4.7.7d.4 from rated capacity plus 5% to rated capacity plus 10%. The SRs currently state:

Shield Building Ventilation System - SR 4.6.6.1d.5

> "Verifying that the heaters dissipate 60 + 3.0, -6.0 kW when tested in accordance with ANSI N510-1975."

Control Room Ventilation System - SR 4.7.6.1d.3

> "Verifying that the heaters dissipate 10 (+ 0.5, -1.0) kW when tested in accordance with ANSI N510-1975."

Controlled Ventilation Area System - SR 4.7.7d.4

> "Verifying that the heaters dissipate 20 + 1.0, -2.0 kW when tested in accordance with ANSI N510-1975."

The proposed SRs would read:

Shield Building Ventilation System - SR 4.6.6.1d.5

> Verifying that the heaters dissipate 60 + 6.0, -6.0 kW when tested in accordance with ANSI N510-1975.

Control Room Ventilation System - SR 4.7.6.1d.3

> Verifying that the heaters dissipate 10 + 1.0, -1.0 kW when tested in accordance with ANSI N510-1975.

Controlled Ventilation Area System - SR 4.7.7d.4

> Verifying that the heaters dissipate 20 + 2.0, -2.0 kW when tested in accordance with ANSI N510-1975.

The proposed acceptance criteria is consistent with that suggested in NUREG-1432, *Standard Technical Specifications Combustion Engineering Plants*, Technical Specification (TS) 5.5.11.e.

3.0 BACKGROUND

On May 22, 2003 Waterford 3 personnel were performing the B train shield building ventilation system (SBVS) heater capacity test in accordance with SR 4.6.6.1d.5. The SR acceptance criterion for rated heater capacity is 60 +3.0, -6.0 kW (i.e., 54-63 kW.) The rated capacity determined during the surveillance test is normalized to 480V and was determined to be 65.1 kW. SBVS train B was declared inoperable at 1534 on May 22, 2003 and a condition report was initiated to investigate and correct the situation. With one shield building ventilation system inoperable, TS 3.6.6.1 requires restoration of "the inoperable system to operable status within 7 days or be in at least hot standby within the next 6 hours and in cold shutdown within the following 30 hours." Approximately half of the heating coils were replaced over the following two days and the system was restored to operable status following a successful retest. The redundant train (SBVS train A) was operable during this time period.

The SR is performed by obtaining voltage and amperage readings for the heaters being tested. The amperage readings are obtained via a clamp-on ammeter. The data obtained using this ammeter is sensitive to the positioning and orientation of the device when collecting data. A review of historical information shows that the B train SBVS heater test results have varied over a range of approximately 4%. This is believed to be due to a lack of precision and consistency in performing the test. The historical data also shows that the test results for both the A and B trains have traditionally trended near the upper limit of the SR acceptance criteria. To avoid similar entries into TS action statements in the future and the possibility of unnecessary replacement of plant components, a decision was made to seek NRC approval to relax the heater test acceptance criteria for all TS SRs requiring such a test.

3.1 System Description

The affected heaters are in systems that contain engineered safety feature (ESF) air filtration units to mitigate the consequences of a postulated design basis accident. These systems are described in the Waterford 3 Final Safety Analysis Report (FSAR) Section 6.5.1. Additional information can also be found in FSAR Sections 6.2.3, 6.4.2, 7.3.1.1.8, and 9.4.1 and Figures 6.4-2 and 9.4-7. The systems are designed to accomplish the following functions:

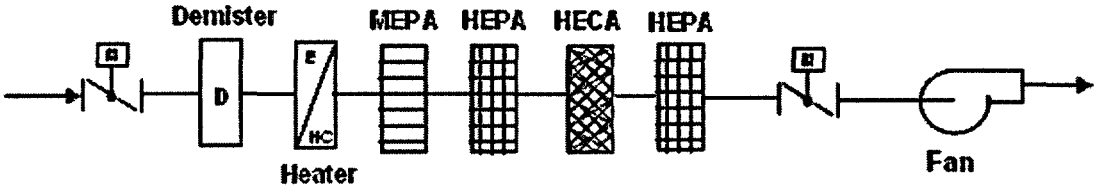
Control room air conditioning system (HVC): Ensure that the radiation exposure to main control room personnel, throughout the duration of any one of the postulated accidents discussed in FSAR Chapter 15, does not exceed the limits of 10 CFR 50, Appendix A, General Design Criterion 19.

Controlled ventilation area system (CVAS): Provide high efficiency particulate filtration and iodine adsorption for air exhausted from the controlled ventilation area (including the penetration and ECCS pump room areas) and the post accident sampling cabinets following a design basis accident (e.g., LOCA), such that it, in conjunction with other ESF systems, the post accident radiological releases are below the guidelines of 10 CFR 100.

Shield building ventilation system (SBVS): Provide high efficiency particulate filtration and iodine adsorption for air exhausted from the Reactor Building annulus following a design basis accident (e.g., LOCA), such that, in conjunction with other ESF systems, the post accident radiological releases are below the guidelines of 10 CFR 100.

3.2 ESF Air Filtration Unit System Components

The CVAS and SBVS filtration units include demisters, electric heating coils, medium efficiency particulate (MEPA) filters, high efficiency particulate (HEPA) filters and charcoal filter beds (HECA). The HVC filtration units include the same components except for the demisters.



3.3 Electric Heating Coils

The electric heating coils are capable of reducing the relative humidity of the inlet air from 100% to 70% or below. The reduction in relative humidity enhances the iodine adsorption efficiency of the downstream charcoal filter beds. In conjunction with the demisters (except for the HVC units), the heaters also help prevent excessive moisture buildup in the charcoal filter beds. Accumulated moisture in the charcoal can create acidic conditions which could damage the charcoal and support structure.

3.4 Electric Heating Coil Controls

The heating coils are energized via a differential pressure (DP) switch which detects air flow though the heaters when the associated filtration unit exhaust fan is started. When the associated fan is secured or a low air flow condition occurs, the DP switch will automatically de-energize the heater.

The heaters are also controlled by three temperature switches. Two of the temperature switches, wired in series, automatically cycle the heating coils on and off to maintain the temperature of the heating elements at less than or equal to 260°F. Should these temperature switches malfunction, the third temperature switch will de-energize the heating coils if the heating elements reach a temperature of 325°F. If this occurs, it is necessary to manually reset the unit.

4.0 TECHNICAL ANALYSIS

The following provides the technical justification for raising the heater capacity upper SR acceptance criteria from +5% to +10% for the HVC, CVAS, and SBVS systems. The justification evaluates the impact on ESF air filtration system operation and electrical loading on the emergency diesel generators.

4.1 Filtration System Operation

4.1.1 Humidity Control

The minimum allowable heater capacity is not being changed from the current rated minus 10%. The lower operational limit for heater capacity ensures that the humidity of the incoming air is

reduced to 70% relative humidity or less for various possible inlet air conditions. Based on the heater sizing calculations, the current calculated minimum heater capacity required for humidity control is less than the current minimum allowable heater capacity.

4.1.2 Charcoal Protection

The maximum allowable heater capacity is being increased from rated plus 5% to rated plus 10%. The impact of increasing the upper operational limit for heater capacity was evaluated to ensure charcoal function is maintained. Air temperatures exceeding 300°F could result in the release of captured radioactive iodine from the charcoal filter beds. As discussed above in Section 3.4, the heater control circuits include two redundant switches that cycle the heaters on and off to maintain the heating elements at less than or equal to 260°F. This will ensure the air temperature does not exceed 300°F.

4.1.3 Heater Capacity Trending

The new operational limits will not adversely affect the ability to detect a degraded heater since the heater capacity is measured every 18 months. Waterford 3 also operates the systems during the staggered monthly 10-hour runs and trends heater performance during these periods. If a degraded trend in heater capacity is observed, appropriate corrective actions are taken.

4.1.4 Charcoal Efficiency

The efficiency of the charcoal filter beds will not be adversely affected by the new operational limits due to the fact that the outlet humidity will be maintained at or below the 70% relative humidity requirement. This assumes the heater capacity is at the minimum allowable of 10% below rated capacity, the air flow is at the maximum allowable value, and the inlet air temperature and relative humidity are at the maximum expected post-accident values.

4.1.5 HVAC Heat Load

The potential extra heat load from the heaters at rated capacity plus 10% will not adversely affect the heat load calculations for the areas served by the SBVS, CVAS or the HVC air filtration units. This is due to the fact that the extra heat load is minimal when compared to the total heat loads in the affected areas.

4.2 Emergency Diesel Generator (EDG) Loading

4.2.1 EDG Loading and Fuel Consumption Calculation

Engineering Calculation EC-E90-006 "EDG Loading and Fuel Oil Consumption" evaluates the fuel oil consumption of the EDG during postulated accident scenarios. EC-E90-006 also evaluates the maximum expected electrical loading of an EDG assuming a single failure of the redundant EDG. The ESF filtration unit heaters are resistive loads. The load current and hence the output KW will vary according to the terminal voltage on the heater.

Calculation EC-E90-006 uses 480 volts for the ESF filtration unit heater capacities. This voltage value is conservative as the heater terminal voltage during a LOCA coupled with loss of offsite power will be less than 480V. Calculation EC-E90-006 considers the maximum electrical load

on the EDG if all the connected loads were operating at their maximum brake horsepower or nameplate rated values. This calculation concludes that under maximum postulated loading conditions, the electrical capability of each EDG is not exceeded. The peak electrical load of 4447 KW for EDG "A" and 4394 for EDG "B" occur at 30 minutes into an event and last for a duration of 45 minutes. This change to the TS would allow up to 4.5KW. This is well within the EDG capability which is 4840 KW for 2 hours in any 24 hour period.

4.3 Heater Manufacture

Only the upper limit for the ESF filtration unit heater capacity SR acceptance criteria is being changed. No physical change to any of the ESF filtration unit heaters is being made. The acceptance criteria for heater output currently stated in the TS SRs are consistent with the vendor technical manual. The technical manual states that a tolerance of +5% to -10% is in accordance with the National Electric Code, which is specified by the Waterford 3 construction procurement specification for electric heating coils. This tolerance is a manufacturing tolerance and not an operational tolerance.

As discussed in Section 3.0, the primary reason for relaxing the upper acceptance criteria limit is to remove an overly restrictive upper limit for heater capacity that was based on manufacturing requirements rather than operational requirements. The ratings of the heaters will remain the same. The increased tolerance band will provide additional operating flexibility and avoid the possibility of unnecessary replacement of plant components, and will help to avoid unnecessary entry into the TS action statements. The proposed tolerance is consistent with industry practice (i.e., NUREG 1432) and has been demonstrated to satisfy the design safety functions of the system.

4.4 Conclusions

The proposed TS SR acceptance criteria of rated wattage ±10% is acceptable based on the following:

- The lower SR limit is not being changed by this license amendment request. Thus the relative humidity of the incoming air will continue to be reduced to 70% relative humidity or below. Therefore, the efficiency of the charcoal adsorber will not be adversely affected.

- The maximum air temperature is thermostatically-controlled and will not reach the ignition temperature of the charcoal adsorber. The proposed tolerance band does not impact the maximum air temperature.

- The proposed SR limits will not adversely affect the ability to detect a degraded heater since degradation is expected to be in the decreasing kW direction and the lower limit is not being changed.

- EDG fuel oil consumption is not adversely affected.

- EDG loading remains within the capability of the EDGs.

5.0 REGULATORY ANALYSIS

5.1 Applicable Regulatory Requirements/Criteria

The control room air conditioning system (HVC) is part of the overall control room design that provides a safe working environment in accordance with 10 CFR 50 Appendix A General Design Criterion (GDC) 19 – Control Room. The proposed change to relax the Engineered Safety Feature (ESF) filtration unit heater capacity acceptance criteria does not impact this ability.

The shield building ventilation system (SBVS) is one of the systems that satisfy GDC 41 - Containment Atmosphere Cleanup, and therefore consists of two full capacity redundant fan and filter systems that reduce the concentration and quantity of fission products released to the environment following postulated accidents. The SBVS has suitable redundancy to assure that for onsite electrical power system operation only, or for offsite electrical power system operation only, the safety function can be accomplished, assuming a single failure. The proposed change to relax the ESF filtration unit heater capacity acceptance criteria does not impact this ability.

The SBVS meets GDC 42 – Inspection of Containment Atmosphere Cleanup Systems, in that it can be inspected. The portions of the system in the shield building can be inspected during shutdown. The remainder of the system is in the auxiliary building, where it is accessible for physical inspection. The proposed change to relax the ESF filtration unit heater capacity acceptance criteria does not impact this ability.

The SBVS meets GDC 43 – Testing of Atmosphere Cleanup Systems, in that it is designed and constructed to permit periodic pressure and functional testing. The proposed change to relax the ESF filtration unit heater capacity acceptance criteria does not impact this ability.

Entergy has determined that the proposed changes do not require any exemptions or relief from regulatory requirements, other than the TS, and do not affect conformance with any General Design Criterion (GDC) (e.g., Criterion 19, 41, 42, and 43) differently than described in the Final Safety Analysis Report (FSAR.)

5.2 No Significant Hazards Consideration

The proposed amendment is the relaxation of the Engineered Safety Feature (ESF) filtration unit heater capacity acceptance criteria in surveillance requirements (SR) 4.6.6.1d.5, 4.7.6.1d.3, and 4.7.7d.4. These SRs are performed to verify the heat dissipated by the heaters is within a given band for the shield building ventilation, control room ventilation, and controlled ventilation area systems, respectively. The requested change is to increase the upper limit of the acceptance criteria from rated capacity plus 5% to rated capacity plus 10%.

Entergy Operations, Inc. (Entergy) has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of Amendment," as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

   Response: No.

   The relaxation of the SR acceptance criteria to increase the operating band does not alter the way plant equipment is designed or operated. The ESF filtration unit heating coils will continue to reduce the humidity of the incoming air to 70% relative humidity or below. In addition, the air temperature will continue to be controlled such that additional iodine will not be released into the environment. Thus the charcoal adsorber will continue to meet its design basis and its efficiency will not be adversely affected. The effect of the higher heat dissipation has also been evaluated and the ignition temperature of the charcoal adsorbers is not approached with flow through the systems. In addition, the impact of the new acceptance criterion was determined not to impact the loading or fuel consumption of the emergency diesel generators.

   Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

   Response: No.

   The relaxation of the SR acceptance criteria to increase the operating band does not alter the way plant equipment is designed, operated, or tested. No possibility for a new or different accident or failure mode is introduced by modifying the SR acceptance criteria. The proposed change does not affect the functional capability of safety-related equipment.

   Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

   Response: No.

   The ESF filtration unit heating coils will continue to reduce the humidity of the incoming air to 70% relative humidity or below. Thus, the efficiency of the charcoal adsorber will not be adversely affected. In addition, the impact of the new acceptance criterion was determined not to impact the loading or fuel consumption of the emergency diesel generators. Therefore, the systems have the same capabilities to mitigate accidents as they had prior to the SR acceptance criteria change.

   Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, Entergy concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

5.3 Environmental Considerations

The proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

Attachment 2

W3F1-2003-0044

Proposed Technical Specification Changes (mark-up)

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

1. Verifying that the ventilation system satisfies the in-place testing acceptance criteria and uses the test procedures of Regulatory Positions C.5.a, C.5.c, and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978, and the system flow rate is 10,000 cfm ± 10%.

2. 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, shows the methyl iodide penetration less than 0.5% when tested in accordance with ASTM D3803-1989 at a temperature of 30°C and a relative humidity of 70%.

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

c. After every 720 hours of charcoal adsorber operation by 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, shows the methyl iodide penetration less than 0.5% when tested in accordance with ASTM D3803-1989 at a temperature of 30°C and a relative humidity of 70%.

d. At least once per 18 months by:

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 7.8 inches water gauge while operating the system at a flow rate of 10,000 cfm ± 10%.

2. Verifying that the system starts on a safety injection actuation test signal.

3. Verifying that the filter cooling bypass valves can be manually cycled.

4. Verifying that each system produces a negative pressure of greater than or equal to 0.25 inch water gauge in the annulus within 1 minute after a start signal.

5. Verifying that the heaters dissipate 60 (+6.0, -6.0) kW when tested in accordance with ANSI N510-1975.

PLANT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

2. 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, shows the methyl iodide penetration less than 0.5% when tested in accordance with ASTM D3803-1989 at a temperature of 30°C and a relative humidity of 70%.

3. Verifying a system flow rate of 4225 cfm ±10% during train operation when tested in accordance with ANSI N510-1975.

c. After every 720 hours of charcoal adsorber operation by 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, shows the methyl iodide penetration less than 0.5% when tested in accordance with ASTM D3803-1989 at a temperature of 30°C and a relative humidity of 70%.

d. At least once per 18 months by:

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 7.8 inches water gauge while operating the train at a flow rate of 4225 cfm ±10%.

2. Verifying that on a safety injection actuation test signal or a high radiation test signal, the train automatically switches into a recirculation mode of operation with flow through the HEPA filters and charcoal adsorber banks.

3. Verifying that heaters dissipate 10 ~~±0.6~~ +1.0 -1.0 kW when tested in accordance with ANSI N510-1975.

e. After each complete or partial replacement of a HEPA filter bank by verifying that the HEPA filter banks remove greater than or equal to 99.95% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the train at a flow rate of 4225 cfm ±10%.

f. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorbers remove greater than or equal to 99.95% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the train at a flow rate of 4225 cfm ±10%.

PLANT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

c. After every 720 hours of charcoal adsorber operation by 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, shows the methyl iodide penetration less than 0.5% when tested in accordance with ASTM D3803-1989 at a temperature of 30°C and a relative humidity of 70%.

d. At least once per 18 months by:

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 7.8 inches water gauge while operating the system at a flow rate of 3000 cfm ± 10%.

2. Verifying that the system starts on a Safety Injection Actuation Test Signal and achieves and maintains a negative pressure of ≥ 0.25 inch water gauge within 45 seconds.

3. Verifying that the filter cooling bypass valves can be manually cycled.

4. Verifying that the heaters dissipate 20 + 1.0 (2.0) -2.0 kW when tested in accordance with ANSI N510-1975.

e. After each complete or partial replacement of a HEPA filter bank by verifying that the HEPA filter banks remove greater than or equal to 99.95% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the system at a flow rate of 3000 cfm ± 10%.

f. After each complete or partial replacement of a charcoal absorber bank by verifying that the charcoal adsorbers remove greater than or equal to 99.95% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the system at a flow rate of 3000 cfm ± 10%.