

REVISED TECHNICAL SPECIFICATION PAGES
FOR STANDBY GAS TREATMENT SURVEILLANCE

Revised Pages

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Cooper Nuclear Station (CNS) Technical Specifications 4.7.B.2.a and 4.12.A.2.a requires that the tests and sample analysis on HEPA filters and charcoal absorber banks be performed once/year. In addition, Technical Specification 3.7.B.2 states the conditions at which the laboratory analysis should be conducted for the Standby Gas Treatment System. Also Technical Specifications Table 4.2.D requires that the Steam Jet Air Ejector (SJAE) Off-Gas Isolation Logic Test be performed once/year. NPPD is planning on operating Cooper Nuclear Station on a 18 month fuel cycle commencing with fuel cycle 14, currently scheduled to start May, 1990. As discussed below, the District requests permission to extend the surveillance intervals of certain surveillance tests to allow performance of these tests during a refueling outage, rather than while operating. Therefore, the District requests the following CNS Technical Specification revisions. It should also be noted that other minor changes have been made for clarification and simplification purposes.

1. On page 78, Table 4.2.D under Logic System, change the Steam Jet Air Ejector (SJAE) Off-Gas Isolation Functional Test frequency to once/18 months.
2. On page 165, rearrange the sentence structure of Specification 3.7.B.2.a for clarification and simplification purposes.
3. On page 165, change the velocity inlet condition of Specification 3.7.B.2.b to ≥ 27 FPM for the laboratory carbon sample analysis test.
4. On page 165, in Specification 4.7.B.2.a, change the test and sample analysis frequency of the Specification to be performed once every 18 months.
5. On page 183, replace "Table 1 of Regulatory Guide 1.52, Revision 2, March, 1978." with "Table 5.1 of ANSI N509-1980." for qualified charcoal adsorbent replacement.
6. On page 215, rearrange the sentence structure of Specification 3.12.A.2.a for clarification and simplification purposes.
7. On page 215, in Specification 4.12.A.2.a, change the test and sample analysis frequency of the Specification to be performed once every 18 months.

8. On page 215e, replace "Table 1 of Regulatory Guide 1.52." with "Table 5.1 of ANSI N509-1980." for qualified charcoal adsorbent replacement.

The proposed revisions to the CNS Technical Specifications can be broken down into four separate requests. 1) Change the frequency of the SJAE Off-Gas Isolation Functional Test. 2) Change the frequency of the Standby Gas Treatment System Testing (Specification 4.7.B.2.a). 3) Reduce the face velocity for the laboratory carbon sample analysis inlet condition to ≥ 27 FPM. 4) Change the frequency of the Main Control Room Ventilation Testing (Specification 4.12.A.2.a). The remaining changes are editorial in nature in that clearer direction or guidance is established with the revisions.

In the case of the SJAE Off-Gas Isolation change, the District requests that the functional test frequency of that logic system be revised to once every 18 months. This logic test isolates Valves OG-AO-254AV and AOG-AO-902AV which control Off-Gas process flow to the Elevated Release Point (ERP). These valves isolate (close) in response to specified radiation levels of the process flow or on a loss of the dilution fans. Performing this test isolates the off-gas system including the Augmented Off-Gas (AOG) which during operation removes its effluent reduction to the environment. By isolating the AOG system an increased release rate would exist. While the increased release rate would be well below the requirements established in 10CFR20, the added risk of online-testing would not be prudent. The District believes that changing the Technical Specification for the SJAE Off-Gas Isolation Test Frequency to once/18 months will provide greater scheduling flexibility and will allow this test to be conducted during shutdowns. Furthermore, this revision will make the CNS Technical Specifications consistent with BWR Standard Technical Specification 4.3.2.2 (NUREG 0123, Revision 3).

In the case of the Standby Gas Treatment System Testing, the District requests that the frequency of the DOP and Halogenated Hydrocarbon Leak and Laboratory Carbon Sample Analysis Test be revised to once every 18 months. CNS procedures 6.3.19.4.1 and 6.3.19.4.2 - SGT Charcoal Filter Leak and Fan Capacity Test performs the surveillance for this test and requires a full flow test. In order to perform the test the Reactor Building and RRMG set Heating and Ventilation (H&V) systems must be shutdown in order to verify the SGT fans reach the required flow rate of 1,780 cfm $\pm 10\%$ (T.S. 3.7.B.2.c requirement). If the RRMG set H&V system is shut down to perform this test during plant operation, the resulting temperature rise would trip the RRMG sets. With power fed to the recirculation pumps through the MG Sets, an RRMG set trip would result in a recirculation pump trip at power. This could, in turn increase the risk of operation in the instability region of the power to flow curve.

To avoid this possibility, the District is requesting to amend the CNS Technical Specifications to perform the testing and sample analysis of Specification 3.7.B.2 to once every 18 months. This revision will make the CNS Technical Specifications consistent with Specification 4.6.5.3 of the BWR Standard Technical Specification (NUREG 0123, Revision 3) and with the guidance given in Regulatory Guide 1.52, Revision 2, March, 1978, and ANSI N510-1980. With a surveillance interval of 18 months, the SGT Charcoal Filter Leak and Fan Capacity Test can be performed during scheduled outage periods, thus avoiding possible shutdowns or transients to plant equipment while operating.

In the case of the reduced velocity for the Laboratory Carbon Sample Analysis (Specification 3.7.B.2.b) the District requests that the face velocity for this test be revised (reduced) to ≥ 27 FPM. The face velocity setpoint is established by calculation and the existing face velocity of ≥ 42 FPM is derived from maximum allowed system flow (1780 CFM) divided by total face area of the charcoal adsorbers. The District recently added two new charcoal adsorbent trays in each SGT system train thus increasing the total charcoal adsorber face area. Therefore, by calculation the face velocity input condition to the Laboratory Carbon Sample Analysis test can be reduced to ≥ 27 FPM. All remaining inlet conditions will be unchanged and a ≥ 99 percent radioactive methyl iodine removal will still be achieved with a face velocity setpoint of ≥ 27 FPM.

In the case of the Main Control Room Ventilation Testing, the District requests that the in-place cold DOP and Halogenated Hydrocarbon test frequency be revised to once every 18 months. This test is performed to verify that the system satisfies the in-place penetration testing acceptance criteria of less than 1% following the guidance given in Reg. Guide 1.52, Revision 2, March 1978, and ANSI N509, while operating at system flow rate of 341 cfm. The District believes that changing the Technical Specifications for the Main Control Room Ventilation Test frequency will provide greater operational flexibility and will allow this test to be conducted during shutdowns. Furthermore, this revision will make CNS Technical Specifications consistent with BWR Standard Technical Specification 4.7.2.c (NUREG 0123, Revision 3).

As stated above, the remaining changes are editorial in nature in that clarification and simplification of some SGT sections of the Technical Specifications will be established with this amendment.

Evaluation of this Revision with Respect to 10CFR50.92

The proposed amendment involves four changes:

- Changing the frequency of the Steam Jet Air Ejector (SJAE) Off-Gas Isolation Test to an interval of once every 18 months.
- Changing the frequency of the Standby Gas Treatment System (SGT) in-place cold DOP and halogenated hydrocarbon leak tests to an interval of once every 18 months.
- Reduce the face velocity inlet condition for the Laboratory Carbon Sample Analysis Test to ≥ 27 FPM.
- Changing the frequency of the Main Control Room Ventilation in-place cold DOP and halogenated hydrocarbon leak tests to an interval of once every 18 months.

A. The enclosed Technical Specification change is judged to involve no significant hazards based on the following:

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

Evaluation:

- a. The proposed license amendment will change the logic system functional test of the SJAE Off Gas Isolation Test interval to once every 18 months. This proposed surveillance frequency is consistent with the guidance provided in the BWR Standard Technical Specifications. The SJAE Isolation is designed to initiate appropriate action in time to prevent exceeding short-term limits on the release of radioactive materials to the environs as a result of releasing the radioactivity contained in the air ejector offgas. The requirements for Radiation Monitoring operability remain unchanged and current accident analyses and their radiological consequences are as previously evaluated. The proposed license amendment does not involve a significant increase in the probability or consequence of an accident previously evaluated.
- b. The proposed amendment will extend the surveillance frequency of the Standby Gas Treatment System Charcoal Leak and Fan Capacity Test, by increasing the test interval to once every 18 months. This test establishes 99% removal of DOP and halogenated hydrocarbon from HEPA filters and charcoal bank respectively at design flow and pressure. Reliability of this test will not be reduced because the design input conditions do not change and the 99% efficiency of the test remains intact. By extending this test frequency the District will avoid the possibility of unnecessary transients to plant equipment during operation. Therefore, the proposed amendment would not increase the probability or consequences of an accident previously evaluated, but would decrease the possibility of the plant entering the instability region of the power to flow curve by not performing this test while the plant is in operation.
- c. The proposed change of reducing the face velocity to ≥ 27 FPM in no way increases accident occurrence or probabilities, the reduced FPM figure is derived directly from maximum allowed system flow and charcoal face area, by calculation. The filter testing is done off-site in a laboratory environment and verifies proper adsorbent operability. NPPD has increased the charcoal face area thereby decreasing the specific iodine loading that the SGT system charcoal adsorbers would experience following a DBA LOCA. As a result the possibility of fission product decay heating from induced radioiodine desorption is

reduced. It is the District's assessment that this change does not affect the probability or consequences of any accident previously evaluated.

- d. The proposed license amendment will extend the frequency of the Main Control Room Ventilation Test to once every 18 months. This test is designed to insure safe operation for personnel in the Main Control Room in the event of possible radioactive contamination intake from the outdoor air. No changes to the design flow rate or efficiency removal of the system are being pursued, only the time interval between testing is requested, which would be consistent with standard Technical Specification 4.7.2.c. Therefore, the District believes that the proposed license amendment would not increase the probability or consequences of an accident previously evaluated.

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

Evaluation:

- a. The proposed amendment will change the functional test interval of the SIAE Off Gas Isolation logic to once every 18 months and does not allow a new or different mode of reactor operation or containment requirements. The Air Ejector Offgas System performs no safety function in accident analysis as it is isolated by the Main Steam Isolation Valves (MSIV) and their attendant isolation signals. This proposed change does not alter any MSIV isolation setpoints therefore, no new or different accident is created by this revision. Also, the Elevated Release Point (ERP) Monitoring System acts as a backup to the Air Ejector Offgas System. The ERP Monitoring System can fulfill all requirements for monitoring and controlling the ERP release rate. The proposed surveillance interval is consistent with NRC guidance contained in NUREG 0123, Revision 3, and will not create the possibility for a new or different kind of accident previously evaluated.
- b. The proposed amendment would revise the surveillance frequency for Standby Gas Treatment (SGT) System DOP and Halogenated Hydrocarbon Leak and Laboratory Carbon Sample Analysis test to once every 18 months, which would provide more stable operation of the plant by not subjecting the plant to a possible unnecessary transient during normal operation. The test removes halogenated hydrocarbon and DOP from the charcoal banks and HEPA filters prior to discharging to the Elevated Release Point (ERP). The design volumetric flow and pressure setpoints are not changed. The SBT System must be established anytime secondary containment is required, and the design volumetric flow is the limiting condition of this test, because the filters and charcoal banks are constants. This proposed amendment will not change the operation or function of the SGT

system as described in the USAR. Therefore, the proposed amendment will not allow any new mode of plant operation or create the possibility of a new or different kind of accident from any accident previously evaluated.

- c. The proposed amendment does not introduce any new or different mode of reactor operation or any new containment requirements. The proposed change of reducing the inlet condition of the laboratory test to ≥ 27 FPM is a cascade effect due to the addition of two new charcoal absorbers in each SGT system train and will only affect the test conditions that are performed at the laboratory. Therefore, the proposed license amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated.
- d. The proposed amendment would extend the surveillance frequency of the Main Control Room Ventilation Test to once every 18 months but will not change operation or function of the system. This test removes halogenated hydrocarbon and DOP from the charcoal banks and HEPA filters associated with Control Room habitability to insure safe operation of personnel in the Control Room in the event of an accident. The proposed amendment will not introduce any new mode of plant operation with the extended surveillance frequency, or create the possibility of a new or different kind of accident from any previously evaluated.

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

Evaluation:

- a. The proposed amendment will extend the frequency of the logic system functional test for the SJAE Off Gas Isolation Test to once every 18 months. By extending the surveillance frequency of the SJAE to coincide with scheduled shutdowns the release of unnecessary radioactivity to the environs could be eliminated. Also by extending this surveillance frequency to once every 18 months CNS would be consistent with the guidelines set forth in NUREG 0123, Revision 3, BWR Standard Technical Specifications. Containment isolation is unaffected as the SJAE isolation occurs down stream of the MSIV's. The proposed amendment does not change any operating limits or trip setpoints in the Technical Specifications. Therefore, there is no reduction in the margin of safety.
- b. The proposed amendment will revise the surveillance frequency on the SGT system DOP and Halogenated Hydrocarbon Leak and Laboratory Carbon Sample Analyses Test but will not affect the ability of the Standby Gas Treatment System to perform its intended function during normal or accident conditions. This revision will make the CNS Technical Specifications consistent with BWR Standard Technical Specifications and Reg. Guide 1.52

and ANSI N510-1980. Therefore, the proposed amendment does not involve a significant reduction in the margin of safety.

- c. The proposed change does modify testing to verify charcoal adsorber filter effectiveness by reducing the face velocity of the Laboratory Carbon Sample Analysis Test to ≥ 27 FPM. However, this reduction in the face velocity parameter is appropriate due to an increase in the overall charcoal absorber face area. As a result, the charcoal absorber residence time will be .36 seconds, which easily exceeds the design minimum of .25 seconds. Therefore, the filter effectiveness of the SGT system is maintained and current safety analysis remain in effect. The proposed amendment does not involve a significant reduction in the margin of safety.
- d. The proposed amendment will revise the surveillance frequency of the Main Control Room Ventilation Test. The test insures Control Room habitability in the event of an accident and all design conditions of flow, pressure and removal efficiency remain the same. The amendment only changes testing interval. By extending the testing interval to once every 18 months CNS Technical Specifications would be consistent with BWR Standard Technical Specification 4.7.2.c (NUREG 0123, Revision 3) and with guidance provided in Reg. Guide 1.52, Revision 2, and ANSI-N510, 1980. The filter effectiveness of the Main Control Room Ventilation System is maintained and the current safety analysis remains in effect. The proposed amendment does not involve a significant reduction in the margin safety.

B. Additional Basis for the Proposed No Significant Hazards Consideration Determination.

The Commission has provided guidance concerning the application of the standards for determining whether a significant hazards consideration exists by providing certain examples (51FR7744). The examples include: "(vi) A change which...may reduce in some way a safety margin, but where the results of the change are clearly within all acceptable criteria..." The increase to a 18 month surveillance frequency, is within the scope of this example since this time interval is consistent with the BWR Standard Technical Specifications, Regulatory Guide 1.52, Revision 2, March, 78, and ANSI N510 - 1980.

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 TABLE 4.2.D
 MINIMUM TEST AND CALIBRATION FREQUENCIES FOR RADIATION MONITORING SYSTEMS

System	Instrument I.D. No.	Functional Test Freq.	Calibration Freq.	Instrument Check
<u>Instrument Channels</u>				
Steam Jet Air Ejector Off-Gas System	RMP-RM-150 A & B	(12)	(12)	(12)
Reactor Building Isolation and Standby Gas Treatment Initiation	RMP-RM-452 A & B	(12)	(12)	(12)
Liquid Radwaste Discharge Isolation	RMP-RM-1	(11)	(11)	(11)
Main Control Room Ventilation Isolation	RMV-RM-1	Once/Month (1)	Once/3 Months	Once/Day
Mechanical Vacuum Pump Isolation	RMP-RM-251, A-D		See Tables 4.1.1 & 4.1.2	
<u>Logic Systems</u>				
SJAE Off-Gas Isolation		Once/18 Months		
Standby Gas Treatment Initiation		Once/18 Months		
Reactor Building Isolation		Once/18 Months		
Liquid Radwaste Disch. Isolation		Once/6 Months		
Main Control Room Vent Isolation		Once/6 Months		
Mechanical Vacuum Pump Isolation		Once/Operating Cycle		

LIMITING CONDITIONS FOR OPERATION.

3.7 (cont'd.)

B. Standby Gas Treatment System

1. Except as specified in 3.7.B.3 below, both standby gas treatment systems shall be operable at all times when secondary containment integrity is required.
- 2.a. The results of the in-place cold DOP leak tests on the HEPA filters shall show $\geq 99\%$ DOP removal. The results of the halogenated hydrocarbon leak tests on the charcoal adsorbers shall show $\geq 99\%$ halogenated hydrocarbon removal. The DOP and halogenated hydrocarbon tests shall be performed at a Standby Gas Treatment flowrate of ≤ 1780 CFM and at a Reactor Building pressure of $\leq .25$ " Wg.
- b. The results of laboratory carbon sample analysis shall show $\geq 99\%$ radioactive methyl iodide removal with inlet conditions of: velocity ≥ 27 FPM, ≥ 1.75 mg/m³ inlet methyl iodide concentration, $\geq 70\%$ R.H. and $\leq 30^\circ\text{C}$.
- c. Each fan shall be shown to provide 1780 CFM $\pm 10\%$.
3. From and after the date that one standby gas treatment system is made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding seven days unless such system is sooner made operable, provided that during such seven days all active components of the other standby gas treatment system, and its associated diesel generator, shall be operable.

Fuel handling requirements are specified in Specification 3.10.E.

SURVEILLANCE REQUIREMENTS

4.7 (cont'd.)

B. Standby Gas Treatment System

1. At least once per operating cycle the following conditions shall be demonstrated.
 - a. Pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 6 inches of water at the system design flow rate.
 - b. Inlet heater input is capable of reducing R.H. from 100 to 70% R.H.
- 2.a. The tests and sample analysis of Specification 3.7.B.2 shall be performed at least once every 18 months for standby service or after every 720 hours of system operation and following significant painting, fire or chemical release in any ventilation zone communicating with the system.
 - b. Cold DOP testing shall be performed after each complete or partial replacement of the HEPA filter bank or after any structural maintenance on the system housing.
 - c. Halogenated hydrocarbon testing shall be performed after each complete or partial replacement of the charcoal adsorber bank or after any structural maintenance on the system housing.
 - d. Each system shall be operated with the heaters on at least 10 hours every month.
 - e. Test sealing of gaskets for housing doors downstream of the HEPA filters and charcoal adsorbers shall be performed at, and in conformance with, each test performed for compliance with Specification 4.7.B.2.a and Specification 3.7.B.2.a.
3. System drains where present shall be inspected quarterly for adequate water level in loop-seals.

4.7.B & 4.7.C BASES

with an adsorbent qualified according to Table 5.1 of ANSI N509-1980. The replacement tray for the adsorber tray removed for the test should meet the same adsorbent quality. Tests of the HEPA filters with DOP aerosol shall be performed in accordance to ANSI N510-1980. Any filters found defective shall be replaced with filters qualified pursuant to Regulatory Position C.3.d. of Regulatory Guide 1.52, Revision 2, March, 1978.

All elements of the heater should be demonstrated to be functional and operable during the test of heater capacity. Operation of the heaters will prevent moisture buildup in the filters and adsorber system.

With doors closed and fan in operation, DOP aerosol shall be sprayed externally along the full linear periphery of each respective door to check the gasket seal. Any detection of DOP in the fan exhaust shall be considered an unacceptable test result and the gaskets repaired and test repeated.

If system drains are present in the filter/adsorber banks, loop-seals must be used with adequate water level to prevent by-pass leakage from the banks.

If significant painting, fire or chemical release occurs such that the HEPA filter or charcoal adsorber could become contaminated from the fumes, chemicals or foreign material, the same tests and sample analysis shall be performed as required for operational use. The determination of significance shall be made by the operator on duty at the time of the incident. Knowledgeable staff members should be consulted prior to making this determination.

Demonstration of the automatic initiation capability and operability of filter cooling is necessary to assure system performance capability. If one standby gas treatment system is inoperable, the other system must be tested daily. This substantiates the availability of the operable system and thus reactor operation or refueling operation can continue for a limited period of time.

3.7.D & 4.7.D BASES

Primary Containment Isolation Valves

Double isolation valves are provided on lines penetrating the primary containment and open to the free space of the containment. Closure of one of the valves in each line would be sufficient to maintain the integrity of the pressure suppression system. Automatic initiation is required to minimize the potential leakage paths from the containment in the event of a loss-of-coolant accident.

The maximum closure times for the automatic isolation valves of the primary containment and reactor vessel isolation control system have been selected in consideration of the design intent to prevent core uncovering following pipe breaks outside the primary containment and the need to contain released fission products following pipe breaks inside the primary containment.

These valves are highly reliable, have a low service requirement, and most are normally closed. The initiating sensors and associated trip channels are also checked to demonstrate the capability for automatic isolation. The test interval of once per operating cycle for automatic initiation

LIMITING CONDITIONS FOR OPERATIONSURVEILLANCE REQUIREMENTS3.12 Additional Safety Related Plant CapabilitiesApplicability:

Applies to the operating status of the main control room ventilation system, the reactor building closed cooling water system and the service water system.

Objective:

To assure the availability of the main control room ventilation system, the reactor building closed cooling water system and the service water system upon the conditions for which the capability is an essential response to station abnormalities.

A. Main Control Room Ventilation

1. Except as specified in Specification 3.12.A.e below, the control room air treatment system, the diesel generators required for operation of this system and the main control room air radiation monitor shall be operable at all times when containment integrity is required.
- 2.a. The results of the in-place cold DOP leak tests on the HEPA filters shall show $\geq 99\%$ DOP removal. The results of the halogenated hydrocarbon leak tests on the charcoal adsorbers shall show $\geq 99\%$ halogenated hydrocarbon removal. The DOP and halogenated hydrocarbon tests shall be performed at a flowrate of ≤ 341 CFM.
- b. The results of laboratory carbon sample analysis shall show $\geq 99\%$ radioactive methyl iodide removal with inlet conditions of: velocity ≥ 22 FPM, ≥ 1.75 mg/m³ inlet iodide concentration, $\geq 95\%$ R.H. and $\leq 30^\circ\text{C}$.
- c. Each fan shall be shown to provide 341 CFM $\pm 10\%$.

4.12 Additional Safety Related Plant CapabilitiesApplicability:

Applies to the surveillance requirements for the main control room ventilation system, the reactor building closed cooling water system and the service water system which are required by the corresponding Limiting Conditions for Operation.

Objective:

To verify that operability or availability under conditions for which these capabilities are an essential response to station abnormalities.

A. Main Control Room Ventilation

1. At least once per operating cycle, the pressure drop across the combined HEPA filters and charcoal absorber banks shall be demonstrated to be less than 6 inches of water at system design flow rate.
- 2.a. The tests and sample analysis of Specification 3.12.A.2 shall be performed at least once every 18 months for standby service or after every 720 hours of system operation and following significant painting, fire or chemical release in any ventilation zone communicating with the system.
- b. Cold DOP testing shall be performed after each complete or partial replacement of the HEPA filter bank or after any structural maintenance on the system housing.
- c. Halogenated hydrocarbon testing shall be performed after each complete or partial replacement of the charcoal absorber bank or after any structural maintenance on the system housing.

3.12 BASES (cont'd)

heat exchanger. Valves are included in the common discharge header to permit the Seismic Class I service water system to be operated as two independent loops. The heat exchangers are valved such that they can be individually backwashed without interrupting system operation.

During normal operation two or three pumps will be required. Three pumps are used for a normal shutdown.

The loss of all a-c power will trip all operating service water pumps. The automatic emergency diesel generator start system and emergency equipment starting sequence will then start one selected service water pump in 30-40 seconds. In the meantime, the drop in service water header pressure will close the turbine building cooling water isolation valve guaranteeing supply to the reactor building, the control room basement, and the diesel generators from the one service water pump.

Due to the redundancy of pumps and the requirement of only one to meet the accident requirements, the 30 day repair time is justified.

D. Battery Room Ventilation

The temperature rise and hydrogen buildup in the battery rooms without adequate ventilation is such that continuous safe operation of equipment in these rooms cannot be assured.

4.12 BASES

A. Main Control Room Ventilation System

Pressure drop across the combined HEPA filters and charcoal adsorbers of less than 6 inches of water at the system design flow rate will indicate that the filters and adsorbers are not clogged by excessive amounts of foreign matter. Pressure drop should be determined at least once per operating cycle to show system performance capability.

Tests of the charcoal adsorbers with halogenated hydrocarbon refrigerant should be performed in accordance with ANSI N510-1980.

The frequency of tests and sample analysis are necessary to show that the HEPA filters and charcoal adsorbers can perform as evaluated. The test canisters that are installed with the adsorber trays should be used for the charcoal adsorber efficiency test. Each sample should be at least two inches in diameter and a length equal to the thickness of the bed. If test results are unacceptable, all adsorbent in the system shall be replaced with an adsorbent qualified according to Table 5.1 of ANSI N509-1980. The replacement tray for the adsorber tray removed for the test should meet the same adsorbent quality. Tests of the HEPA filters with DOP aerosol shall be performed in accordance to ANSI N510-1980. Any HEPA filters found defective shall be replaced with filters qualified pursuant to Regulatory Position C.3.d of Regulatory Guide 1.52.

Operation of the system for 10 hours every month will demonstrate operability of the filters and adsorber system and remove excessive moisture built up on the adsorber.