3.9 CONTROL ROOM EMERGENCY AIR CONDITIONING AND ISOLATION SYSTEM

Applicability

Applies to the operability of the control room emergency air conditioning and isolation system.

Objective

To ensure that the control room emergency air conditioning and isolation system will perform within acceptable levels of efficiency and reliability.

Specification

3.9.1 Two independent circuits of the control room emergency air conditioning and isolation system shall be operable whenever reactor building integrity is required with the following performance capabilities:

a. The results of the in-place cold DOP and halogenated hydrocarbon tests at design flow (± 10%) on HEPA filters and charcoal adsorber banks shall show ≥ 99% DOP removal and ≥99% halogenated hydrocarbon removal.

b. The results of laboratory carbon sample analysis from the charcoal adsorber banks shall show ≥ 90% radioactive methyl iodide removal at a velocity within ± 20% of system design, 0.05 to 0.15 mg/m^3 inlet iodide concentration, ≥ 95% R. H. and ≥ 125F.

c. Fans shall be shown to operate within ± 10% of design flow.

d. The pressure drop across the combined HEPA filters and charcoal adsorber banks shall be less than 6 inches of water at system design flow rate (± 10%).

e. One circuit of the system shall be capable of automatic initiation.

f. The dampers shall isolate the control room within 10 seconds after receipt of a high radiation signal.

3.9.2 If one circuit of the control room emergency air conditioning and isolation system is made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding seven days provided that during such seven days all active components of the other circuit shall be operable.

3.9.3 If the requirements of Specification 3.9.1.f cannot be met, either close the isolation dampers or disable the supply fan.

3.9.4 If the requirements of Specifications 3.9.1 and 3.9.2 cannot be met the reactor shall be placed in the cold shutdown condition within 36 hours.

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Bases

The control room emergency air conditioning and isolation system is designed to isolate the control room and filter the control room atmosphere during control room isolation conditions. One circuit is designed to automatically start upon control room isolation and the other circuit to be manually started on failure of the first circuit.

High efficiency particulate air (HEPA) filters are installed before the charcoal adsorbers to prevent clogging of the iodine adsorbers. The charcoal adsorbers are installed to reduce the potential intake of radioiodine to the control room. The in-place test results should indicate a system leak tightness of less than 1 percent bypass leakage for the charcoal adsorbers and a HEPA efficiency of at least 99 percent removal of DOP particulates. The laboratory carbon sample test results should indicate a radioactive methyl iodide removal efficiency of at least 90 percent for expected accident conditions. If the efficiencies of the HEPA filters and charcoal adsorbers are as specified, the resulting doses will be less than the allowable levels stated in Criterion 19 of the General Design Criteria for Nuclear Power Plants, Appendix A to 10 CFR Part 50. Operation of the fans significantly different from the design flow will change the removal efficiency of the HEPA filters and charcoal adsorbers.

If one circuit of the control room emergency air conditioning and isolation system is found to be inoperable, there is not an immediate threat to the control room and reactor operation may continue for a limited period of time while repairs are being made.

If the control room isolation dampers are made or found to be inoperable, continued reactor operation is allowed provided the potential for outside air flow is removed as provided by Specification 3.9.3. The 10 second closure time requirement is far below that required to support accident dose calculations and is therefore conservative.

4.10 CONTROL ROOM EMERGENCY AIR CONDITIONING AND ISOLATION SYSTEM SURVEILLANCE

Applicability

Applies to the surveillance of the control room emergency air conditioning and isolation system.

Objective

To verify an acceptable level of efficiency and operability of the control room emergency air conditioning and isolation system.

Specification

4.10.1 At intervals not to exceed 18 months, the pressure drop across the combined HEPA filters and charcoal adsorber banks shall be demonstrated to be less than 6 inches of water at system design flow (± 10%).

4.10.2 At intervals not to exceed 18 months, automatic initiation of the control room emergency air conditioning and isolation system shall be demonstrated to meet the requirements of Specification 3.9.

4.10.3.a. The tests and sample analysis of Specification 3.9.1.a,b, & c, shall be performed at intervals not to exceed 18 months 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 also 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 also be performed after each complete or partial replacement of the charcoal adsorber bank or after any structural maintenance on the system housing.

4.10.4 Each circuit shall be operated at least 1 hour every month.

Bases

The purpose of the control room filtering system is to limit the particulate and gaseous fission products to which the control area would be subjected during an accidental radioactive release in or near the Auxiliary Building. The system is designed with 100 percent capacity filter trains which consist of a prefilter, high efficiency particulate filters, charcoal adsorbers and a fan.

Since the system is not normally operated, a periodic test is required to insure operability when needed. During this test the system will be inspected for such things as water, oil, or other foreign material; gasket deterioration,