ARKANSAS POWER & LIGHT COMPANY

DOCKET NO. 50-313

ARKANSAS NUCLEAR ONE - UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 10
License No. DPR-51

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Arkansas Power & Light Company (the licensee) dated November 7, 1975, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations,

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. An environmental statement or negative declaration need not be prepared in connection with the issuance of this amendment.

2. Accordingly, the license is amended by a change to the Technical Specifications as indicated in the attachment to this license amendment.

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3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by:
Dennis L. Ziemann

Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Division of Operating Reactors

Attachment:
Changes to the
Technical Specifications

Date of Issuance: FEB 1 - 1976

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ATTACHMENT TO LICENSE AMENDMENT NO. 10

FACILITY OPERATING LICENSE NO. DPR-51

DOCKET NO. 50-313

Replace existing pages i, ii, 36, 37, 38, 39a, 59, 60, 73, 90, 91, 92, 98, 99, 107, 108, 109 and 110 of the Technical Specifications contained in Appendix A to the license with the attached revised pages bearing the same numbers and add pages 61, 66c, 66d, 66e, 66f, 66g, 66h, 109a, 109b, 110f and 110g. The changed areas on the revised pages are reflected by a marginal line. Also, pages 35, 59a, 89, 97 and 100 are enclosed as a matter of convenience in updating the Technical Specifications. There are no changes on these pages.

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Minimum volumes (including a 10% safety factor) of 550 ft^3 of 8700 ppm boron as boric acid solution in the boric acid addition tank or 16,000 gallons of 2270 ppm boron as boric acid solution in the borated water storage tank(3) will each satisfy this requirement. The specification assures that the two supplies are available whenever the reactor is critical so that a single failure will not prevent boration to a cold condition. The minimum volumes of boric acid solution given include the boron necessary to account for xenon decay.

The principal method of adding boron to the primary system is to pump the concentrated boric acid solution (8700 ppm boron, minimum) into the makeup tank using the 25 gpm boric acid pumps. Using only one of the two boric acid pumps, the required volume of boric acid can be injected in less than three hours. The alternate method of addition is to inject boric acid from the borated water storage tank using the makeup pumps. the required 16,000 gallons of boric acid can be injected in less than two hours using only one of the makeup pumps.

Concentration of boron in the boric acid addition tank may be higher than the concentration which would crystallize at ambient conditions. For this reason and to assure a flow of boric acid is available when needed this tank and its associated piping will be kept 10°F above the crystallization temperature for the concentration present. Once in the makeup system, the concentrate is sufficiently well mixed and diluted so that normal system temperatures assure boric acid solubility.

REFERENCES

(1) FSAR, Section 9.1; 9.2

(2) FSAR, Figure 6-2

(3) FSAR, Section 3.3

3.3 EMERGENCY CORE COOLING, REACTOR BUILDING COOLING AND REACTOR BUILDING SPRAY SYSTEMS

Applicability

Applies to the emergency core cooling, reactor building cooling and reactor building spray systems.

Objectivity

To define the conditions necessary to assure immediate availability of the emergency core cooling, reactor building cooling and reactor building spray systems.

Specification

3.3.1 The following equipment shall be operable whenever containment integrity is established as required by Specification 3.6.1:

(A) One reactor building spray pump and its associated spray nozzle header.

(B) Two reactor building cooling fans and associated cooling units.

(C) Two out of three service water pumps shall be operable, powered from independent essential buses, to provide redundant and independent flow paths.

(D) Two engineered safety feature actuated low pressure injection pumps shall be operable.

(E) Both low pressure injection coolers and their cooling water supplies shall be operable.

(F) Two BWST level instrument channels shall be operable.

(G) The borated water storage tank shall contain a minimum level of 35.9 feet (350,000 gallons) of water having a minimum concentration of 2270 ppm boron at a temperature not less than 40F. The manual valve on the discharge line from the borated water storage tank shall be locked open.

(H) The four reactor building emergency sump isolation valves to the LPI system shall be either manually or remote-manually operable.

(I) The engineered safety features valves associated with each of the above systems shall be operable or locked in the ES position.

3.3.2 In addition to 3.3.1 above, the following ECCS equipment shall be operable when the reactor coolant system is above 350F and irradiated fuel is in the core:

(A) Two out of three high pressure injection (makeup) pumps shall be maintained operable, powered from independent essential busses, to provide redundant and independent flow paths.

(B) Engineered safety features valves associated with 3.3.2.a above shall be operable or locked in the ES position.

3.3.3 In addition to 3.3.1 and 3.3.2 above, the following ECCS equipment shall be operable when the reactor coolant system is above 800 psig:

(A) The two core flooding tanks shall each contain an indicated minimum of 13 $\pm$ 0.4 feet (1040 $\pm$ 30 ft^3) of borated water at 600 $\pm$ 25 psig.

(B) Core flooding tank boron concentration shall not be less than 2270 ppm boron.

(C) The electrically operated discharge valves from the core flood tanks shall be open and breakers locked open and tagged.

(D) One of the two pressure instrument channels and one of the two level instrument channels per core flood tank shall be operable.

3.3.4 The reactor shall not be made critical unless the following equipment in addition to 3.3.1, 3.3.2, and 3.3.3 above is operable.

(A) Two reactor building spray pumps and their associated spray nozzle headers and four reactor building emergency cooling fans and associated cooling units.

(B) The sodium thiosulfate tank shall contain an indicated 31 ft of 30 wt% solution sodium thiosulfate (37,500 lb). The sodium hydroxide tank shall contain an indicated 31 ft. of 20 wt% solution sodium hydroxide (20,500 lb.).

(C) All manual valves in the main discharge lines of the sodium thiosulfate and sodium hydroxide tanks shall be locked open.

(D) Engineered safety feature valves and interlocks associated with 3.3.1, 3.3.2, and 3.3.3 shall be operable or locked in the ES position.

3.3.5 Maintenance shall be allowed during power operation on any component(s) in the high pressure injection, low pressure injection, service water, reactor building spray and reactor building cooling systems which will not remove more than one train of each system from service. Maintenance shall not be performed on components which would make the affected system train inoperable for more than 24 consective hours. Prior to initiating maintenance on any component of a train in any system, the redundant component of that system shall be demonstrated to be operable within 24 hours prior to the maintenance.

3.3.6 If the conditions of Specifications 3.3.1, 3.3.2, 3.3.3, 3.3.4 and 3.3.5 cannot be met except as noted in 3.3.7 below, reactor shutdown shall be initiated and the reactor shall be in hot shutdown condition within 36 hours, and, if not corrected, in cold shutdown condition within an additional 72 hours.

3.3.7 Exceptions to 3.3.6 shall be as follows:

(A) If the conditions of Specification 3.3.1(F) cannot be met, reactor operation is permissible only during the succeeding seven days unless such components are sooner made operable, provided that during such seven days the other BWST level instrument channel shall be operable.

(B) If the conditions of Specification 3.3.3(D) cannot be met, reactor operation is permissible only during the succeeding seven days unless such components are sooner made operable, provided that during such seven days the other CFT instrument channel (pressure of level) shall be operable.

Bases

The requirements of Specification 3.3.1 assure that below 350F, adequate long term core cooling is provided. Two low pressure injection pumps are specified. However, only one is necessary to supply emergency coolant to the reactor in the event of a loss-of-coolant accident.

The post-accident reactor building cooling and long-term pressure reduction may be accomplished by four cooling units, by two spray units or by a combination of two cooling units and one spray unit. Post-accident iodine removal may be accomplished by one of the two spray system strings. The specified requirements assure that the required post-accident components are available for both reactor building cooling and iodine removal. Specification 3.3.1 assures that the required ecuipment is operational.

The borated water storage tank is used for three purposes:

(A) As a supply of borated water for accident conditions.

(B) As a alternate supply of borated water for reaching cold shutdown.(2)

(C) As a supply of borated water for flooding the fuel transfer canal during refueling operation.(3)

REFERENCES

(1) FSAR, Section 14.2.5

(2) FSAR, Section 3.2

(3) FSAR, Section 9.5.2

(4) FSAR, Section 9.3.1

3.8.10 The reactor building purge isolation system, including the radiation monitors shall be tested and verified to be operable within 7 days prior to refueling operations.

3.8.11 Irradiated fuel shall not be removed from the reactor until the unit has been subcritical for at least 72 hours.

3.8.12 All fuel handling in the Auxiliary Building shall cease upon notification of the issuance of a tornado watch for Pope, Yell, Johnson, or Logan counties in Arkansas. Fuel handling operations in progress will be completed to the extent necessary to place the fuel handling bridge and crane in their normal parked and locked position.

3.8.13 No loaded spent fuel shipping cask shall be carried above or into the Auxiliary Building equipment shaft unless atmospheric dispersion conditions are equal to or better than those produced by Pasquill type D stability accompanied by a wind velocity of 2 m/sec. In addition, the railroad spur door of the Turbine Building shall be closed and the fuel handling area ventilation system shall be in operation.

Bases

Detailed written procedures will be available for use by refueling personnel. These procedures, the above specifications, and the design of the fuel handling equipment as described in Section 9.7 of the FSAR incorporating built-in interlocks and safety features, provide assurance that no incident could occur during the refueling operations that would result in a hazard to public health and safety. If no change is being made in core geometry, one flux monitor is sufficient. This permits maintenance on the instrumentation. Continuous monitoring of radiation levels and neutron flux provides immediate indication of an unsafe condition. The decay heat removal pump is used to maintain a uniform boron concentration.[1] The shutdown margin indicated in Specification 3.8.4 will keep the core subcritical, even with all control rods withdrawn from the core.[2] The boron concentration will be maintained above 1800 ppm. Although this concentration is sufficient to maintain the core $k_{eff} \leq 0.99$ if all the control rods were removed from the core, only a few control rods will be removed at any one time during fuel shuffling and replacement. The k_{eff} with all rods in the core and with refueling boron concentration is approximately 0.9. Specification 3.8.5 allows the control room operator to inform the reactor building personnel of any impending unsafe condition detected from the main control board indicators during fuel movement.

The specification requiring testing reactor building purge termination is to verify that these components will function as required should a fuel handling accident occur which resulted in the release of significant fission products.

Because of physical dimensions of the fuel bridges, it is physically impossible for fuel assemblies to be within 10 feet of each other while being handled.

Specification 3.8.11 is required as the safety analysis for the fuel handling accident was based on the assumption that the reactor had been shutdown for 72 hours.[3]

REFERENCES

(1) FSAR, Section 9.5

(2) FSAR, Section 14.2.2.3

(3) FSAR, Section 14.2.2.3.3

3.9 CONTROL ROOM EMERGENCY AIR CONDITIONING SYSTEM

Applicability

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

Objective

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

Specification

3.9.1 Two independent circuits of the control room emergency air conditioning 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.

3.9.2 If one circuit of the control room emergency air conditioning 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 Specifications 3.9.1 and 3.9.2 cannot be met the reactor shall be placed in the cold shutdown condition within 36 hours.

Bases

The control room emergency air conditioning system is designed to 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 air conditioning 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.

3.13 PENETRATION ROOM VENTILATION SYSTEM

Applicability

Applies to the operability of the penetration room ventilation system.

Objective

To ensure that the penetration room ventilation system will perform within acceptable levels of efficiency and reliability.

Specification

3.13.1 Two independent circuits of the penetration room ventilation 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 ($\pm$ 10%) on HEPA filters and charcoal adsorber banks shall show $\geq$ 99% DOP removal and $\geq$ 99% halogenated hydrocarbon removal.

b. The results of laboratory carbon sample analysis from the charcoal adsorber banks shall show $\geq$ 90% radioactive methyl iodide removal at a velocity within $\pm$ 20% of system design, 0.15 to 0.5 mg/m^3 inlet methyl iodide concentration, $\geq$ 95% R.H. and $\geq$ 190F.

c. Fans shall be shown to operate within $\pm$ 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 ($\pm$ 10%).

e. Air distribution shall be uniform within $\pm$ 20% across HEPA filters and charcoal adsorbers.

f. Each circuit of the system shall be capable of automatic initiation.

3.13.2 If one circuit of the penetration room ventilation 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.

3.13.3 If the requirements of Specifications 3.13.1 and 3.13.2 cannot be met, the reactor shall be placed in the cold shutdown condition within 36 hours.

Bases

The penetration room ventilation system is designed to collect and process potential reactor building penetration leakage to minimize environmental activity levels resulting from post accident reactor building leaks. The system consists of sealed penetration rooms, two redundant filter trains and two redundant fans discharging to the unit vent. The entire system is activated by a reactor building engineered safety features signal and initially requires no operator action. Each filter train is constructed with a prefilter, a HEPA filter and a charcoal adsorber in series. The design flow rate through each of these filters is 2000 scfm, which is significantly higher than the 1.25 scfm maximum leakage rate from the reactor building at a leak rate of 0.1% per day.

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 release of radioiodine to the environment. 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 10CFR100 guidelines for the accidents analyzed. 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 penetration room ventilation system is found to be inoperable, there is not an immediate threat to the containment system performance and reactor operation may continue for a limited period of time while repairs are being made.

3.14 HYDROGEN PURGE SYSTEM

Applicability

Applies to the operating status of the hydrogen purge system.

Objective

To ensure that the hydrogen purge system will perform within acceptable levels of efficiency and reliability.

Specification

3.14.1 Two independent circuits of the hydrogen purge 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 flows ($\pm$ 10%) on HEPA filters and charcoal adsorber banks shall show $\geq$ 99% DOP removal and $\geq$ 99% halogenated hydrocarbon removal.

b. The results of laboratory carbon sample analysis shall show $\geq$ 90% radioactive methyl iodide removal at a velocity within $\pm$ 20% of system design, 0.15 to 0.5 mg/m^3 inlet methyl iodide concentration, $\geq$ 70% R. H. and $\geq$ 190F.

c. Fans shall be shown to operate within $\pm$ 10% design flow.

d. The pressure drop across the combined HEPA filters and charcoal adsorber banks shall be less than 16 inches of water at system design flow rate ($\pm$ 10%).

e. Each system inlet heater shall be shown to operate at rated power.

f. Hydrogen concentration instruments shall be operable.

3.14.2 If one circuit of the hydrogen purge system is made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding thirty days provided that during such thirty days all active components of the other circuit shall be operable and shall be demonstrated operable every seven days.

3.14.3 If the requirements of Specifications 3.14.1 and 3.14.2 cannot be met, the reactor shall be placed in the cold shutdown condition within 36 hours.

Bases

The hydrogen purge system is designed to operate as necessary to limit the hydrogen concentration in the reactor building following an accident.

The system is composed of two redundant, 100% capacity, supply circuits and two redundant, 100% capacity, exhaust circuits. Each supply circuit consists of a blower, prefilter and associated piping and valves. Each exhaust circuit consists of a blower, HEPA filter and charcoal filter, dehumidifier, flowmeter, sample connection and associated piping and valves.

The blower is a rotary positive type. The dehumidifier consists of two redundant heating elements inserted in a section of ventilation duct. The function of the dehumidifier is to sufficiently increase the temperature of the entering air to assure 70 percent relative humidity entering the filter train with 100 percent saturated air entering the dehumidifier. The purpose of the dehumidifier is to assure optimum charcoal filter efficiency. Heating element control is provided by a thermoswitch. The filter train provides high efficiency particulate filtration and iodine filtration. Face velocity to the charcoal adsorber is low. The charcoal adsorber is composed of a module consisting of two inch deep double tray carbon cells. Both the purge flow to the unit vent and the purge sample flow are metered using rotometers. Both of these rotometers have an accuracy of ± two percent of full scale, and each has remote readout capability. The purge sample activities can be collected, counted and analyzed in the radio-chemistry laboratory.

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 10CFR100 guidelines for the accidents analyzed. 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 hydrogen purge system is found to be inoperable, there is not an immediate threat to the containment system performance and reactor operation may continue for a limited period of time while repairs are being made.

3.15 FUEL HANDLING AREA VENTILATION SYSTEM

Applicability

Applies to the operability of the fuel handling area ventilation system.

Objective

To ensure that the fuel handling area ventilation system will perform within acceptable levels of efficiency and reliability.

Specification

3.15.1 The fuel handling area ventilation system shall be in operation whenever irradiated fuel handling operations are in progress in the fuel handling area of the auxiliary building and shall have the following performance capabilities:

a. The results of the in-place cold DOP and halogenated hydrocarbon tests at design flows ($\pm$ 10%) on HEPA filters and charcoal adsorber banks shall show $\geq$ 99% DOP removal and $\geq$ 99% halogenated hydrocarbon removal.

b. The results of laboratory carbon sample analysis shall show $\geq$ 90% radioactive methyl iodide removal at a velocity within $\pm$ 20% of system design, 0.05 to 0.15 mg/m^3 inlet methyl iodide concentration, $\geq$ 70% R. H. and $\geq$ 125F.

c. Fans shall be shown to operate within $\pm$ 10% 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 ($\pm$ 10%).

e. Air distribution shall be uniform within $\pm$ 20% across HEPA filters and charcoal adsorbers.

3.15.2 If the requirements of Specification 3.15.1 cannot be met irradiated fuel movement shall not be started (any irradiated fuel assembly movement in progress may be completed).

Bases

The fuel handling area ventilation system is designed to filter the auxiliary building atmosphere during fuel handling operations to limit the release of activity should a fuel handling accident occur. The system consists of one circuit containing two exhaust fans and a filter train. The fans are redundant and only one is required to be operating. The filter train consists of a prefilter, a HEPA filter and a charcoal adsorber in series.

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 release of radioiodine to the environment. 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 10CFR100 guidelines for the accidents analyzed. Operation of the fans significantly different from the design flow will change the removal efficiency of the HEPA filters and charcoal adsorbers.

Table 4.1-2

Minimum Equipment Test Frequency

Item	Test	Frequency
1. Control Rods	Rod Drop Times of All Full Length Rods 1/	Each Refueling Shutdown
2. Control Rod Movement	Movement of Each Rod	Every Two Weeks Above Cold Shutdown Conditions
3. Pressurizer Code Safety Valves	Setpoint	One Within 2 Weeks Prior to or Following Each Refueling Shutdown
4. Main Steam Safety Valves	Setpoint	Four Within 2 Weeks Prior to or Following Each Refueling Shutdown
5. Refueling System Interlocks	Functioning	Start of Each Refueling Shutdown
6. Reactor Coolant System Leakage	Evaluate	Daily
7. Deleted		
8. Reactor Building Isolation Trip	Functioning	Each Refueling Shutdown
9. Service Water Systems	Functioning	Each Refueling Shutdown
10. Spent Fuel Cooling System	Functioning	Each Refueling Shutdown Prior to Use
11. Decay Heat Removal System Isolation Valve Automatic Closure and Isolation System	Functioning	Each Refueling Shutdown Prior to Repressurization at a pressure greater than 300 psig but less than 420 psig.

1/ Same as tests listed in section 4.7

The liner plate surveillance is based on the requirement to monitor the liner plate performance as a membrane to preserve the required leak tightness of the reactor building.

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4.5 EMERGENCY CORE COOLING SYSTEM AND REACTOR BUILDING COOLING SYSTEM PERIODIC TESTING

4.5.1 Emergency Core Cooling Systems

Applicability

Applies to periodic testing requirement for emergency core cooling systems.

Objective

To verify that the emergency core cooling systems are operable.

Specification

4.5.1.1 System Tests

4.5.1.1.1 High Pressure Injection System

(a) During each refueling period, a system test shall be conducted to demonstrate that the system is operable. A test signal will be applied to demonstrate actuation of the high pressure injection system for emergency core cooling operation.

(b) The test will be considered satisfactory if control board indication verifies that all components have responded to the actuation signal properly; all appropriate pump breakers shall have opened or closed and all valves shall have completed their travel.

4.5.1.1.2 Low Pressure Injection System

(a) During each refueling period, a system test shall be conducted to demonstrate that the system is operable. The test shall be performed in accordance with the procedure summarized below:

(1) A test signal will be applied to demonstrate actuation of the low pressure injection system for emergency core cooling operation.

(2) Verification of the engineered safeguard function of the service water system which supplies cooling water to the decay heat removal coolers shall be made to demonstrate operability of the coolers.

(b) The test will be considered satisfactory if control board indication verifies that all components have responded to the actuation signal properly; all appropriate pump breakers shall have opened or closed, and all valves shall have completed their travel.

Two service water pumps are normally operating. At least once per month operation of one pump is shifted to the third pump, so testing will be unnecessary.

The reactor building fans are normally operating, so testing is unnecessary.

Reference

FSAR, Section 6

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4.6 AUXILIARY ELECTRICAL SYSTEM TESTS

Applicability

Applies to the periodic testing and surveillance requirements of the auxiliary electrical system to ensure it will respond promptly and properly when required.

Specification

4.6.1 Diesel Generators

1. Each diesel generator shall be manually started each month and demonstrated to be ready for loading within 15 seconds. The signal initiating the start of the diesel shall be varied from one test to another (start with handswitch at control room panel and at diesel local control panel) to verify all starting circuits are operable. The generator shall be synchronized from the control room and loaded to full rated load and allowed to run until diesel generator operating temperatures have stabilized.

2. A test shall be conducted during each refueling outage to demonstrate that the emergency power system is available to carry load within 15 seconds of a simulated ES signal of the safety features system coincident with the loss of offsite power. The diesel generator shall be fully loaded and run for one hour after operating temperatures have stabilized.

3. Each diesel generator shall be given an inspection at least every refueling outage following the manufacture's recommendations for this class of standby service. The above tests will be considered satisfactory if all applicable equipment operates as designed.

4. During the monthly diesel generator test specified in Paragraph 1 above, the diesel starting air compressors shall be checked for operation and their ability to recharge the air receivers.

   Also monthly, the diesel oil transfer pumps shall be checked for operation and their ability to transfer oil to the day tank.

5. During each refueling outage, the capability of each starting air compressor to charge the air compressor to charge the air receivers from 0 to 225 psig within 2 hours shall be verified.

   Also at each refueling outage, the capacity of each diesel oil transfer pump shall be verified to be at least 10 gpm.

4.10 CONTROL ROOM EMERGENCY AIR CONDITIONING SYSTEM SURVEILLANCE

Applicability

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

Objective

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

Specification

4.10.1 At least once per refueling period (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 least once per refueling period (not to exceed 18 months) automatic initiation of the control room emergency air conditioning system shall be demonstrated.

4.10.3.a The tests and sample analysis of Specification 3.9.1.a,b, & c. shall be performed initially* and at least once per refueling period (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,

* Initial tests shall be performed within 90 days of the date of issuance of Amendment 10 to License No. DPR-51.

adhesive deterioration in the HEPA units; and unusual or excessive noise or vibration when the fan motor is running. 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.

The frequency of tests and sample analysis are necessary to show that the HEPA filters and charcoal adsorbers can perform as evaluated. The charcoal adsorber efficiency test procedures should allow for obtaining at least two samples. Each sample should be at least two inches in diameter and a length equal to the thickness of the bed. Tests of the charcoal adsorbers with DOP aerosol shall be performed in accordance with ANSI N510 (1975) " Standard for Testing of Nuclear Air Cleaning Systems." Any HEPA filters found defective shall be replaced with filters qualified according to Regulatory Position C.3.d. of Regulatory Guide 1.52. Radioactive methyl iodide removal efficiency tests shall be performed in accordance with RDT Standard M16-IT. If laboratory test results are unacceptable, all charcoal adsorbents in the system shall be replaced with charcoal adsorbent qualified according to Regulatory Guide 1.52.

Operation of the system for 1 hour every month will demonstrate operability of the filters and adsorber system. All dampers and other mechanical and isolation systems will be shown to be operable.

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 significant 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.

4.11 PENETRATION ROOM VENTILATION SYSTEM SURVEILLANCE

Applicability

Applies to the surveillance of the penetration room ventilation system.

Objective

To verify an acceptable level of efficiency and operability of the penetration room ventilation system.

Specification

4.11.1 At least once per refueling period (not to exceed 18 months) the following conditions shall be demonstrated:

a. The pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 6 inches of water at system design flow rate ($\pm$ 10%).

b. Air distribution is uniform within $\pm$ 20% across HEPA filters and charcoal adsorbers.

4.11.2 At least once per refueling period (not to exceed 18 months), automatic initiation of the penetration room ventilation system shall be demonstrated.

4.11.3a. The tests and sample analysis of Specification 3.13.1a,b, & c. shall be performed initially* and at least once per refueling period (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.

4.11.4 Each circuit shall be operated at least 1 hour every month. This test shall be considered satisfactory if control board indication verifies that all components have responded properly to the actuation signal.

* Initial tests shall be performed within 90 days of the date of issuance of Amendment 10 to License No. DPR-51.

Bases

The penetration room ventilation system is designed to collect and process potential reactor building penetration room leakage to minimize environmental activity levels resulting from post accident reactor building leaks. The system consists of a sealed penetration room, two redundant filter trains and two redundant fans discharging to the unit vent. The entire system is activated by a reactor building pressure engineered safety features signal and initially requires no operator action.

Since the system is not normally operated, a periodic test is required to show that the system is available for its engineered safety features function. During this test the system will be inspected for such things as water, oil, or other foreign material, gasket deterioration in the HEPA units, and unusual or excessive noise or vibration when the fan motor is running.

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 and air distribution should be determined at least once per operating cycle to show system performance capability.

The frequency of tests and sample analysis are necessary to show that the HEPA filters and charcoal adsorbers can perform as evaluated. The charcoal adsorber efficiency test procedures should allow for obtaining at least two samples. Each sample should be at least two inches in diameter and a length equal to the thickness of the bed. Tests of the charcoal adsorbers with halogenated hydrocarbon refrigerant and of the HEPA filter bank with DOP aerosol shall be performed in accordance with ANSI N510 (1975) "Standard for Testing of Nuclear Air Cleaning Systems." Any HEPA filters found defective shall be replaced with filters qualified according to Regulatory Position C.3.d. of Regulatory Guide 1.52. Radioactive methyl iodide removal efficiency tests shall be performed in accordance with RDT Standard M16-IT. If laboratory test results are unacceptable, all charcoal adsorbents in the system shall be replaced with charcoal adsorbents qualified according to Regulatory Guide 1.52.

Operation of the system each month for 1 hour will demonstrate operability of the active system components and the filter and adsorber system. 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 significant 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.

4.12 HYDROGEN PURGE SYSTEM SURVEILLANCE

Applicability

Applies to the surveillance of the hydrogen purge system.

Objective

To verify an acceptable level of efficiency and operability of the hydrogen purge system.

Specification

4.12.1 At least once per refueling period (not to exceed 18 months) the following conditions shall be demonstrated:

a. The pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 16 inches of water at system design flow rate ($\pm$ 10%).

b. Each system inlet heater unit operates at rated power.

4.12.2.a. The tests and sample analysis of Specification 3.14.1.a,b, & c. shall be performed initially* and at least once per refueling period (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 a 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 a charcoal adsorber bank or after any structural maintenance on the system housing.

4.12.3 Each circuit shall be operated at least 10 hours each month.

4.12.4 Hydrogen concentration instruments shall be calibrated at least once per refueling period (not to exceed 18 months) with proper consideration to moisture effect.

Bases

Since the hydrogen purge system is not normally operated, a periodic test is required to show that the system is available for hydrogen control following an accident. During this test the system will be inspected for such things as water, oil, or other foreign material, gasket deterioration in the HEPA units, and unusual or excessive noise or vibration when the fan motor is running.

* Initial tests shall be performed within 90 days of the date of issuance of Amendment 10 to License No. DPR-51.

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 and air distribution should be determined at least once per operating cycle to show system performance capability.

The frequency of tests and sample analysis are necessary to show that the HEPA filters and charcoal adsorbers can perform as evaluated. The charcoal adsorber efficiency test procedures should allow for obtaining at least two samples. Each sample should be at least two inches in diameter and a length equal to the thickness of the bed. Tests of the charcoal adsorbers with halogenated hydrocarbon refrigerant and of the HEPA filter bank with DOP aerosol shall be performed in accordance with ANSI N510 (1975) "Standard for Testing of Nuclear Air Cleaning Systems." Any HEPA filters found defective shall be replaced with filters qualified according to Regulatory Position C.3.d. of Regulatory Guide 1.52. Radioactive methyl iodide removal efficiency tests shall be performed in accordance with RDT Standard M16-IT. If laboratory test results are unacceptable, all charcoal adsorbents in the system shall be replaced with charcoal adsorbents qualified according to Regulatory Guide 1.52.

Operation of the hydrogen purge system each month for at least ten (10) hours will demonstrate operability of the filters and adsorber system including the heater and remove excessive moisture built up on the adsorber.

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 significant 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.

4.17 FUEL HANDLING AREA VENTILATION SYSTEM SURVEILLANCE

Applicability

Applies to the surveill ce of the fuel handling area ventilation system.

Objective

To verify an acceptable level of efficiency and operability of the fuel handling area ventilation system.

Specification

4.17.1 At least once per refueling period (not to exceed 18 months) 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 system design flow rate (± 10%).

b. Air distribution is uniform within ± 20% across HEPA filters and charcoal adsorbers.

4.17.2.a. The tests and sample analysis of Specification 3.15.1.a,b,& c. shall be performed within 720 system operating hours prior to irradiated fuel handling operations in the auxiliary building, and prior to irradiated fuel handling in the auxiliary building following significant painting, fire or chemical release in any ventilation zone communicating with the system.

b. Cold DOP testing shall also be performed prior to irradiated fuel handling in the auxiliary building after each complete or partial replacement of a HEPA filter bank or after any structural maintenance on the system housing.

c. Halogenated hydrocarbon testing shall also be performed prior to irradiated fuel handling in the auxiliary building after each complete or partial replacement of a charcoal adsorber bank or after any structural maintenance on the system housing.

4.17.3 The system shall be operated for at least 10 hours prior to initiation of irradiated fuel handling operations in the auxiliary building.

Bases

Since the fuel handling area ventilation system may be in operation when fuel is stored in the pool but not being handled its operability must be verified before handling of irradiated fuel. Operation of the system for 10 hours before irradiated fuel handling operations and performance of Specification 4.17.2 will demonstrate operability of the active system components and the filter and adsorber systems.

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 and air distribution should be determined at least once per refueling period to show system performance capability.

The frequency of tests and sample analysis are necessary to show that the HEPA filters and charcoal adsorbers can perform as evaluated. The charcoal adsorber efficiency test procedures should allow for obtaining at least two samples. Each sample should be at least two inches in diameter and a length equal to the thickness of the bed. Tests of the charcoal adsorbers with halogenated hydrocarbon refrigerant and of the HEPA filter bank with DOP aerosol shall be performed in accordance with ANSI N510 (1975) "Standard for testing of Nuclear Air Cleaning Systems." Any HEPA filters found defective shall be replaced with filters qualified according to Regulatory Position C.3.d. of Regulatory Guide 1.52. Radioactive methyl iodide removal efficency tests shall be performed in accordance with RDT Standard M16-IT. If laboratory test results are unacceptable, all charcoal adsorbents in the system shall be replaced with charcoal adsorbents qualified according to Regulatory Guide 1.52.