JAN 1 2 1976

Docket Nos. 50-269
50-270
and 50-287

Duke Power Company
ATTN: Mr. William O. Parker, Jr.
Vice President
Steam Production
Post Office Box 2178
422 South Church Street
Charlotte, North Carolina 28242

Gentlemen:

By letter dated December 6, 1974, we requested that you submit an application to your license that would change the Technical Specifications related to installed filter systems. This was considered necessary in order to ensure high confidence that the systems will function reliably, when needed, at a degree of efficiency equal to or better than that assumed in the accident analyses. Your reply of January 15, 1975, summarized your review of this subject and expressed the conclusion that the present Technical Specifications for the Oconee Nuclear Station are adequate to ensure the reliability and efficiency of the systems.

We have again reviewed the Oconee Technical Specifications for filter systems in light of your comments and those we have received from other licensees on this general subject. We find that these technical specifications do not provide the desired degree of assurance. In particular, the technical specifications for the Penetration Room Ventilation System and the Hydrogen Purge System are lacking in certain Limiting Conditions for Operation and surveillance requirements that we believe are necessary.

Regarding the Penetration Room Ventilation System, the following are examples of requirements not included in your present technical specifications:

1. Limiting Conditions for operation (LCO's) specifying the DOP or halogenated hydrocarbon removal efficiency of the HEPA filters and charcoal adsorber banks, respectively.

2. An LCO specifying the radioactive methyl iodide removal efficiency of a laboratory carbon sample analysis.

3. An LCO to verify system fan operation within $\pm 10\%$ of design flow.

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DATE ▶						

4. Surveillance requirements to perform cold DOP or halogenated hydrocarbon testing after each complete or partial replacement of a HEPA filter bank or charcoal adsorber bank, respectively.

With reference to the Hydrogen Purge System, the following are examples of requirements not included in your present technical specifications:

1. An LCO to require restoring the system to an operable status within a specified time period after the system is determined to be inoperable.
2. An LCO specifying the radioactive methyl iodide removal efficiency of a laboratory carbon sample analysis.
3. The requirement to operate the system, with the heater energized, at least 10 hours each month.

Enclosed are draft technical specifications for these systems, that incorporate all of the requirements we consider necessary to assure availability and efficient operation of the filter systems.

We request that you submit an application for amendment to your Technical Specifications, within 30 days of receipt of this letter, that will incorporate the requirements of the enclosed specifications.

Sincerely,

Original signed by:
Robert A. Purple

Robert A. Purple, Chief
Operating Reactors Branch #1
Division of Reactor Licensing

Enclosure:
Draft Technical Specifications

cc w/enclosure:
See next page

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cc: Mr. William L. Porter
Duke Power Company
P. O. Box 2178
422 South Church Street
Charlotte, North Carolina 28242

Mr. Troy B. Conner
Conner & Knotts
1747 Pennsylvania Avenue, NW
Washington, D. C. 20006

Oconee Public Library
201 South Spring Street
Walhalla, South Carolina 29691

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.

Objective

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 there is fuel in the reactor vessel and reactor coolant pressure is 350 psig or greater or reactor coolant temperature is 250°F or greater:

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

(b) Two low pressure service water pumps for Units 1 and 2, and two low pressure service water pumps for Unit 3. The valve in the discharge from the reactor building cooler (LPSW 108, 2LPSW 108, and 3LPSW 108) shall be locked open.

(c) A and B Engineered Safety Feature low pressure injection pumps shall be operable.

(d) Two low pressure injection coolers shall be operable.

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

(f) The borated water storage tank shall contain a minimum level of 46 feet of water having a mimimum concentration of 1,800 ppm boron at a temperature not less than 40°F. The manual valve, LP-28, on the discharge line from the borated water storage tank shall be locked open.

(g) The two reactor building emergency sump isolation valves shall be either manually or remote-manually operable.

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

(i) The Engineered Safety Features valves associated with each of the above systems shall be operable.

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

(a) Two high pressure injection pumps shall be maintained operable to provide redundant and independent flow paths.

(b) Engineered Safety Feature valves and interlocks associated with 3.3.2a above shall be operable.

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 a minimum of 13 $\pm$ .44 ft. (1040 $\pm$ 30 ft^3) of borated water at 600 $\pm$ 25 psig.

(b) Core flooding tank boron concentration shall not be less than 1,800 ppm boron.

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

(d) One pressure instrument channel and one level instrument channel 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 is operable.

(a) The other reactor building spray pump and its associated spray nozzle header.

(b) The remaining reactor building cooling fan and associated cooling unit.

(c) Engineered Safety Feature valves and interlocks associated with 3.3.4a and 3.3.4b shall be operable.

3.3.5 Except as noted in 3.3.6 below, tests or maintenance shall be allowed during power operation on any component(s) in the high pressure injection, low pressure injection, low pressure service water, reactor building spray or reactor building cooling systems which will not remove more than one train of each system from service, Components shall not be removed from service so that the affected system train is inoperable for more than 24 consecutive hours. If the system is not restored to meet the requirements of Specification 3.3.1, 3.3.2, 3.3.3, or 3.3.4, within 24 hours, the reactor shall be placed in a hot shutdown condition within 12 hours. If the requirements of Specification 3.3.1, 3.3.2, 3.3.3, or 3.3.4 are not met within an additional 48 hours, the reactor shall be placed in a condition below that reactor coolant system condition required in Specification 3.3.1, 3.3.2, 3.3.3, or 3.3.4 for the component degraded.

3.3.6 Exceptions to 3.3.5 shall be as follows:

(a) Both core flooding tanks shall be operational above 800 psig.

(b) Both motor-operated valves associated with the core flooding tanks shall be fully open above 800 psig.

(c) One pressure instrument channel and one level instrument channel per core flood tank shall be operable above 800 psig.

(d) One reactor building cooling fan and associated cooling unit shall be permitted to be out of service for seven days provided both reactor building spray pumps and associated spray nozzle headers are in service at the same time.

3.3.7 Prior to initiating maintenance on any of the components, the duplicate (redundant) component shall be tested to assure operability.

Bases

The requirements of Specification 3.3 assure that, before the reactor can be made critical, adequate engineered safety features are operable. Two high pressure injection pumps and two low pressure injection pumps are specified. However, only one of each is necessary to supply emergency coolant to the reactor in the event of a loss-of-coolant accident. Both core flooding tanks are required as a single core flood tank has insufficient inventory to reflood the core.(1)

The borated water storage tanks are used for two purposes:

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

(b) As a supply of borated water for flooding the fuel transfer canal during refueling operation.(2)

Three-hundred and fifty thousand (350,000) gallons of borated water (a level of 46 feet in the BWST) are required to supply emergency core cooling and reactor building spray in the event of a loss-of-core cooling accident. This amount fulfills requirements for emergency core cooling. The borated water storage tank capacity of 388,000 gallons is based on refueling volume requirements. Heaters maintain the borated water supply at a temperature to prevent freezing. The boron concentration is set at the amount of boron required to maintain the core 1 percent subcritical at 70^{o}F without any control rods in the core. This concentration is 1,338 ppm boron while the minimum value specified in the tanks is 1,800 ppm boron.

The spray system utilizes common suction lines with the low pressure injection system. If a single train of equipment is removed from either system, the other train must be assured to be operable in each system.

When the reactor is critical, maintenance is allowed per Specification 3.3.5 and 3.3.6 provided requirements in Specification 3.3.7 are met which assure operability of the duplicate components. Operability of the specified components shall be based on the results of testing as required by Technical Specification 4.5. The maintenance period of up to 24 hours is acceptable if the operability of equipment redundant to that removed from service is demonstrated immediately prior to removal. The basis of acceptability is a likelihood of failure within 24 hours following such demonstration.

It has been shown for the worst design basis loss-of-coolant accident (a 14.1 ft^2 hot leg break) that the reactor building design pressure will not be exceeded with one spray and two coolers operable. Therefore, a maintenance period of seven days is acceptable for one reactor building cooling fan and its associated cooling unit.(3)

In the event that the need for emergency core cooling should occur, functioning of one train (one high pressure injection pump, one low pressure injection pump, and both core flooding tanks) will protect the core and in the event of a main coolant loop severence, limit the peak clad temperature to less than 2,300°F and the metal-water reaction to that representing less tha 1 percent of the clad.

Three low pressure service water pumps serve Oconee Units 1 and 2 and two low pressure service water pumps serve Oconee Unit 3. There is a manual cross-connection on the supply headers for Units 1, 2, and 3. One low pressure service water pump per unit is required for normal operation. The normal operating requirements are greater than the emergency requirements following a loss-of-coolant accident.

REFERENCES

(1) FSAR, Section 14.2.2.3
(2) FSAR, Section 9.5.2
(3) FSAR, Supplement 13

3.14 PENETRATION ROOM VENTILATION SYSTEMS

Applicability

Applies to the penetration room ventilation systems.

Objective

To define the conditions necessary to assure immediate availability of the penetration room ventilation systems.

Specification

3.14.1 Two trains of the penetration room ventilation systems shall be operable at all times when containment integrity is required or the reactor shall be shutdown within 12 hours with the following exception:

> If one of two trains of a 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 all active components of the other train of the penetration room ventilation system shall be demonstrated to be operable within 24 hours and daily thereafter.

Bases

A single train of reactor building penetration room ventilation equipment retains full capacity to control and minimize the release of radioactive materials from the reactor building to the environment in post-accident conditions.

3.15 HYDROGEN PURGE SYSTEM

Applicability

Applies to the Reactor Building Hydrogen Purge System.

Objective

To define the conditions necessary to assure the availability of the Reactor Building Hydrogen Purge System.

Specification

If the Reactor Building Hydrogen Purge System should become inoperable, it shall be restored to an operable status within 7 days or the Oconee Units shall be shutdown within 36 hours.

Bases

The hydrogen purge system is composed of a portable purging station and a portion of the Penetration Room Ventilation System. The purge system is operated as necessary to maintain the hydorgen concentration below the control limit. The purge discharge from the Reactor Building is taken from one of the Penetration Room Ventilation System penetrations and discharged to the unit vent. A suction may be taken on the Reactor Building via isolation valve PR-7 (Figure 6-5 of the FSAR) using the existing vent and pressurization connections.

The analysis to determine the effect on the incremental doses at the site boundary, resulting from purging hydrogen from the reactor building following a postulated LOCA, requires that the purge be started at 460 hours (19.2 days) following the LOCA to limit hydrogen concentration to 4% by volume. If the Hydrogen Purge System is determined to be inoperable, the requirement to restore the system to an operable status within 7 days will provide reasonable assurance of its availability in the event of a LOCA.

4.4.3 HYDROGEN PURGE SYSTEM

Applicability

Applies to the Reactor Building Hydrogen Purge System.

Objective

To verify that the Reactor Building Hydrogen Purge System is operable.

Specification

4.4.3.1 Operating Tests

An in-place system test shall be performed annually. This test shall consist of a visual inspection, hook-up of the system to one of the three reactor buildings, a flow measurement using flow instruments in the portable purging station and pressure drop measurements across the filter banks. This test shall demonstrate th t under simulated emergency conditions the system can be taken from storage and placed into operation within 48 hours. The annual test shall insure the following:

Pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 6 inches of water at the system design flow rate (+10%).

Operability of the heater at rated power when tested in accordance with ANSI N510-1975.

Additional testing requirements are as follows:

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.

Halogenated hydrocarbon testing shall be performed after each complete or partial replacement or the charcoal adsorber bank or after any structural maintenance on the system housing.

The results of the in-place cold DOP and halogenated hydrocarbon tests at design flows on HEPA filters and charcoal adsorber banks shall show $\geq$99% DOP removal and $\geq$99% halogenated hydrocarbon removal when tested in accordance with ANSI N510-1975.

The results of laboratory carbon sample analysis from the hydrocarbon purge system carbon shall show $\geq$90% radioactive methyl iodine removal when tested in accordance with ANSI N510-1975 (130^{o}C, 95% R.H.).

The System shall be operated with the heaters on at least 10 hours every month.

Fans shall operate within $\pm 10\%$ of design flow when tested in accordance with ANSI N510-1975.

In addition to the annual testing requirement, the tests and analyses shall be performed following painting, fire or chemical release in any ventilation zone communicating with the system.

Bases

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. A test frequency of once per year establishes system performance capability.

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. Bypass leakage for the charcoal adsorbers and particualte removal efficiency for HEPA filters are determined by halogenated hydrocarbon and DOP respectively. The laboratory carbon sample test results indicate a radioactive methyl iodide removal efficiency for expected accident conditions. Operation of the fans significantly different from the design flow will change the removal efficiency of the HEPA filters and charcoal adsorbers. If the performances are as specified, the calculated doses would be less than the guidelines stated in 10 CFR 100 for the accidents analyzed.

The frequency of tests and sample analysis are necessary to show that the HEPA filters and charcoal adsorbers can perform as evaluated. Replacement adsorbent should be qualified according to the guidelines of Regulatory Guide 1.52. The charcoal adsorber efficiency test procedures should allow for the removal of one adsorber tray, emptying of one bed from the tray, mixing the adsorbent thoroughly and 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. If the iodine removal efficiency test results are unacceptable, all adsorbent in the system should be replaced. Any HEPA filters found defective should be replaced with filters qualified pursuant to Regulatory Position C.3.d of Regulatory Guide 1.52.

Operation of the system every month will demonstrate operability of the filters and adsorber system. Operation for 10 hours is used to reduce the moisture built up on the adsorbent.

If painting, fire or chemical release occurs such that the HEPA filter or charcoal adsorber could become contaminated from the fumes, chemicals or foreign materials, the same tests and sample analysis should be performed as required for operational use.

4.5.3 PENETRATION ROOM VENTILATION SYSTEM

Applicability

Applies to testing of the Penetration Room Ventilation System.

Objective

To verify that the Penetration Room Ventilation System is operable.

Specification

4.1.2.1.1 At least once per operating cycle, or once every 18 months, whichever occurs first, 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 (±10%).

b. Automatic initiation of each branch of each penetration room ventilation system.

c. Manual operability of the bypass valve for filter cooling.

4.1.2.1.2 The tests and analysis for the penetration room ventilation system shall be performed at least once per operating cycle, or once every 18 months whichever occurs first, or after every 720 hours of system operation of following painting, fire or chemical release in any ventilation zone communicating with the system.

Cold DOP testing shall be performed after each complete or partial replacement of a HEPA filter bank or after any structural maintenance on the system housing.

Halogenated hydrocarbon testing shall be performed after each complete or partial replacement of a charcoal adsorber bank or after any structural maintenance on the system housing.

The results of the in-place cold DOP and halogenated hydrocarbon tests at design flows on HEPA filters and charcoal adsorber banks shall show $\geq$99% DOP removal and $\geq$99% halogenated hydrocarbon removal respectively when tested in accordance with ANSI N510-1975.

The results of laboratory carbon sample analysis shall show $\geq$90% radioactive methyl iodide removal when tested in accordance with ANSI N510-1975 (130°C, 95% R.H.).

Fans shall be shown to operate within ±10% design flow when tested in accordance with ANSI N510-1975.

Each circuit shall be operated at least 15 minutes every month.

Bases

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. A test frequency of once per operating cycle establishes system performance capability.

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. Bypass leakage for the charcoal adsorbers and particulate removal efficiency for HEPA filters are determined by halogenated hydrocarbon and DOP respectively. The laboratory carbon sample test results indicate a radioactive methyl iodide removal efficiency for expected accident conditions. Operation of the fans significantly different from the design flow will change the removal efficiency of the HEPA filters and charcoal adsorbers. If the performances are as specified, the calculated doses would be less than the guidelines stated in 10 CFR 100 for the accidents analyzed.

The frequency of tests and sample analysis are necessary to show that the HEPa filters and charcoal adsorbers can perform as evaluated. Replacement adsorbent should be qualified according to the guidelines of Regulatory Guide 1.52. The charcoal adsorber efficiency test procedures should allow for the removal of one adsorber tray, emptying of one bed from the tray, mixing the adsorbent thoroughly and 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. If the iodine removal efficiency test results are unacceptable, all adsorbent in the system should be replaced. Any HEPA filters found defective should be replaced with filters qualified pursuant to Regulatory Position C.3.d of Regulatory Guide 1.52.

Operation of the system every month will demonstrate operability of the filters and adsorber system. Operation for 15 minutes demonstrates operability and minimizes the moisture build up during testing.

If painting, fire or chemical release occurs such that the HEPA filter or charcoal adsorber could become contaminated from the fumes, chemicals or foreign materials, the same tests and sample analysis should be performed as required for operational use.

Demonstration of the automatic initiation capability is necessary to assure system performance capability.