ATTACHMENT 1

NEW TECHNICAL SPECIFICATION PAGE

REMOVE PAGE:	ADD PAGE:
4.5-7	4.5-7

4.5.4 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

4.5.4.1 Operational and Performance Testing

a. Monthly, each train of the Penetration Room Ventilation System shall be operated for at least 15 minutes at design flow ±10%.

b. Every 18 months, it shall be demonstrated that:

1. The Penetration Room Ventilation System fans operate at design flow (± 10%) when tested in accordance with ANSI N510-1975. *

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

3. Each branch of the Penetration Room Ventilation System is capable of automatic initiation.

4. The bypass valve for filter cooling is manually operable.

c. Leak tests using DOP or halogenated hydrocarbon, as appropriate shall be performed on the Penetration Room purge filters:

1. Every 18 months;

2. After each complete or partial replacement of a HEPA filter bank or charcoal adsorber bank;

3. After any structural maintenance on the system housing;

4. After painting, fire, or chemical release in any ventilation zone communicating with the system.

d. The results of the DOP and halogenated hydrocarbon tests on HEPA filters and charcoal adsorber banks shall show ≥99% DOP removal and ≥99% halogenated hydrocarbon removal, respectively, when tested in accordance with ANSI N510-1975.

* A temporary noncompliance with this surveillance requirement is allowed until August 30, 1998, to complete necessary modifications to enable flow testing in accordance with ANSI N510-1975.

Amendment No. _____ (Unit 1)
Amendment No. _____ (Unit 2)
Amendment No. _____ (Unit 3)

ATTACHMENT 2

MARKED UP CURRENT TECHNICAL SPECIFICATION PAGE

4.5.4 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

4.5.4.1 Operational and Performance Testing

a. Monthly, each train of the Penetration Room Ventilation System shall be operated for at least 15 minutes at design flow ±10%.

b. Every 18 months, it shall be demonstrated that:

1. The Penetration Room Ventilation System fans operate at design flow (± 10%) when tested in accordance with ANSI N510-1975.(*)

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

3. Each branch of the Penetration Room Ventilation System is capable of automatic initiation.

4. The bypass valve for filter cooling is manually operable.

c. Leak tests using DOP or halogenated hydrocarbon, as appropriate shall be performed on the Penetration Room purge filters:

1. Every 18 months;

2. After each complete or partial replacement of a HEPA filter bank or charcoal adsorber bank;

3. After any structural maintenance on the system housing;

4. After painting, fire, or chemical release in any ventilation zone communicating with the system.

d. The results of the DOP and halogenated hydrocarbon tests on HEPA filters and charcoal adsorber banks shall show ≥99% DOP removal and ≥99% halogenated hydrocarbon removal, respectively, when tested in accordance with ANSI N510-1975.

* A temporary noncompliance with this surveillance requirement is allowed until August 30, 1998, to complete necessary modifications to enable flow testing in accordance with ANSI N510-1975.

ATTACHMENT 3

TECHNICAL JUSTIFICATION

I. SUMMARY OF PROPOSED CHANGE(S):

Technical Specification 4.5.4.1.b.1 will be revised to include a note to allow a temporary noncompliance with this surveillance requirement until August 30, 1998, to complete necessary modifications to enable flow testing in accordance with ANSI N510-1975.

II. BACKGROUND:

During a Safety System Engineering Inspection at Oconee for the Control Room Ventilation System (CRVS) and Penetration Room Ventilation System (PRVS), the NRC identified a violation which indicated that the PRVS fans were not tested in accordance with the Technical Specifications and ANSI N510-1975 (Reference 1).

Currently, Technical Specification 4.5.4.1.b.1 requires the following:

> "Every 18 months, it shall be demonstrated that 1) the Penetration Room Ventilation System fans operate at design flow (+/- 10%) when tested in accordance with ANSI N510-1975."

Per UFSAR Section 9.4.7.2, the design flow rate of an individual PRVS train is 1000 cfm. This design flow rate assures that proper vacuum can be maintained within the penetration rooms and proper residence time exists within the charcoal filters.

ANSI N510-1975 requires that a pitot-tube velocity-traverse be used in accordance with Section 9 of the American Conference of Government Industrial Hygienists (ACGIH) Industrial Ventilation (Reference 2). The traverse should be made at a point in the duct where velocity is 1000 fpm or more, and if possible, where velocity measurements can be made at least 7.5 duct diameters downstream of any airflow disturbance.

In a letter dated June 4, 1998, Duke denied the violation based on the belief that the use of orifice plates to measure flow from the PRVS fans met the requirements of the plant Technical Specifications and ANSI N510-1975. However, as part of the review of this issue, Duke was unable to locate the original calibration sheets for the QA-1 orifices. As such, Duke indicated that efforts were underway to measure the PRVS airflow with a pitot-tube array to make a qualitative comparison with the flows indicated by the orifice plates. A pitot-tube array was chosen because the array was the only measurement alternative that could be quickly and temporarily positioned in the inlet to the PRVS without performing piping modifications to the system. The pitot array testing was completed in June 1998. The following information summarizes the test results.

On June 8th, 9th, and 10th, testing was conducted on the PRVS to perform a qualitative check of the installed orifice flow meter measurements using a pitot-tube array.

The tests were conducted on Oconee Units 1 and 2 on June 8th and Oconee Unit 3 was tested on June 9th. The test results were:

	Pitot array (CFM)	Orifice Plate (CFM)	Lower than pitot by (%)
PRVS 1A	1096	1000	8.7
PRVS 1B	1184	1025	13.4
PRVS 2A	1225	1090	11.0
PRVS 2B	1266	1060	16.3
PRVS 3A	1096	995	9.2
PRVS 3B	1119	1030	8.0

Difficulties were encountered during the data collection that brought into question the quality of this intitial measurement approach. After a review of the data and an assessment of the difficulties, the flow test was repeated on the Oconee Unit 2 PRVS on June 10th with the purpose to determine if repeatable data could be obtained. Below is the data obtained for this retest:

	Pitot array (CFM)	Orifice Plate (CFM)	Lower than pitot by (%)
PRVS 2A	1304	1090	16.4
PRVS 2B	1266	1060	16.3

The pitot-tube array for the 2B train achieved repeatable results; however, the pitot-tube array in the 2A train did not provide repeatable results. The data did show general agreement with the orifice flow rate.

As a conservative measure, to assess operability of the PRVS at that time, consideration was given to the potential effects on the carbon filters in the PRVS if the increased flow rates measured with the pitot-tube array were considered actual. Based on a correlation from ASTM D3803-1989, and the latest carbon filter testing results, a 20% increase in flow would not degrade the carbon filter efficiencies by more than one or two percent. Therefore, there was no operability concern regarding the carbon filter efficiency even if the pitot-tube array data was used.

Following a review of the information which was provided by the Duke denial, the NRC indicated, in a letter dated July 6, 1998, that the denial of the violation was not acceptable and the violation would not be rescinded.

As a result, Duke immediately acted on the staff's position with respect to the operability of the PRVS for Oconee Units 1, 2, and 3. The Operations Shift Manager was briefed on July 6, 1998, regarding the fact that surveillance requirements for the PRVS flow were not literally satisfied for Oconee Units 1, 2, and 3. The OSM declared both trains of PRVS inoperable at 1330 hours on July 6, 1998. Technical Specification 3.0 was entered and required Oconee Units 1, 2, and 3 to be in hot shutdown within 12 hours. In addition, a one-hour non-emergency 10CFR50.72 report was made to the NRC for this event. Accordingly, Duke will submit a licensee event report in accordance with 10CFR50.73 to address this event.

Therefore, on July 6, 1998, via a Request for Enforcement Discretion, Oconee requested prompt support from the staff

to avoid the operational risks associated with an unnecessary shutdown of Oconee Units 1, 2, and 3. Oconee requested enforcement discretion to apply to Oconee Units 1, 2, and 3 until a license amendment could be submitted and approved by the staff. The license amendment would allow time for modifications to be completed to permit pitot-tube measurements in accordance with ANSI N510-1975. Enforcement discretion was granted by the NRC staff at 1735 hours on July 6, 1998 and Technical Specification 3.0 was exited. The staff granted enforcement discretion with commitments that Duke submit the license amendment by July 8, 1998 and conduct the necessary pitot-tube traverse measurements on all three units by August 30, 1998. This submittal contains the subject license amendment.

III. EVALUATION OF ACCEPTABILITY OF TEMPORARY NONCOMPLIANCE:

III. A. System Design Summary:

The PRVS is a QA Condition 1 (QA-1) system which is required to filter reactor building leakage which enters the East and West Penetration Rooms. The PRVS consists of two trains. Each train takes suction on the penetration room, routes it through a particulate-absolute-charcoal (PAC) filter, flow orifice, flow control valve, fan, to a common discharge pipe, and then out to the exhaust stack.

The system design flow rate is 1000 cfm (± 10%). System flow requirements are maintained to assure that proper vacuum can be maintained within the penetration rooms, and proper residence time exists within the carbon filters. If the flow in the system is too low, the penetration room may not be maintained at a vacuum with respect to the surrounding areas. If the flow in the system is too high, the carbon filter efficiency may be degraded below technical specification requirements.

III. B. Nature of Noncompliance:

The PRVS fans are currently periodically tested by measuring system flow rate using sharp-edged orifice plates and a

permanently mounted gauge. For this application, ANSI N510-1975, Section 8.3.1.3, states:

> "Make a pitot-tube velocity-traverse in accordance with Section 9 of ACGIH Industrial Ventilation. The traverse should be made at a point in the duct where airflow velocity is 1000 fpm or more, and, if possible, where velocity measurements can be made at least 7.5 duct diameters downstream of any airflow disturbance. If there is no place where the airflow is greater than 1000 fpm, use one of the other methods as described in Section 9 of the ACGIH Industrial Ventilation."

Since Oconee does not currently meet this ANSI N510-1975 requirement, Duke is proposing that Technical Specification 4.5.4.1.b.1 be revised to include a note to allow a temporary noncompliance with this surveillance requirement until August 30, 1998, to complete flow testing in accordance with ANSI N510-1975. In order to complete the flow testing in accordance with ANSI N510-1975, modifications must be performed to the PRVS piping to permit use of pitot-tube measuring devices. The pitot-tube traverse testing will be completed on all three units by August 30, 1998.

III. C. Assessment of PRVS Operability:

Duke has completed an assessment of the capability of the PRVS to perform its intended safety function. Duke has assessed the worst-case low and high flows which could exist in the PRVS based on existing surveillances and surveillance methodologies. These assessments are provided below.

III. C. 1. Assessment of Low Flows in PRVS:

If the flow in the system is too low, the penetration room may not be maintained at a negative pressure with respect to the surrounding areas. Duke conducted a review to ensure that the system is tested appropriately to meet the design requirement specified in Technical Specification 5.2.3. Technical Specification 5.2.3 requires that "when the system is in operation, a slight negative pressure will be

maintained in the penetration room to assure inleakage." Oconee test procedure PT/1,2,3/A/0110/010 is performed on an 18 month frequency to verify that the PRVS can perform this safety function. This test verifies that negative pressure requirements can be met by the PRVS. Travel stops on the throttle valves assure that flow does not decrease below the tested flow value following the test. This prevents degradation of PRVS vacuum capability due to decreases in system flow rate. Travel stop positions are also verified monthly by PT/1,2,3/A/0170/005. Results from the past two surveillances for each unit verify that the PRVS fans maintain an appropriate negative pressure in the penetration rooms. Administrative controls are also in place to assure that the penetration room seal boundary is maintained.

A review of the impact of low flow on the operability of the PRVS filters was conducted which focused on the need for sufficient cooling flow. Natural circulation on the outside of the carbon filter housing is sufficient to remove the heat generated by fission products to assure that filter ignition will not occur. Therefore, low flows have no adverse impacts on the capability of the filters to perform their filtering function.

As a result, the above testing, irrespective of the indicated flow, verifies that the PRVS can perform its intended safety function of maintaining a negative pressure in the penetration rooms.

III. C. 2. Assessment of High Flows in PRVS:

If the flow in the system is too high, the carbon filter efficiency may be degraded below Technical Specification requirements. High flow rates must be bounded to assess operability of the carbon filters in the system. Carbon filter efficiency is determined by laboratory testing performed in accordance with ASME D3803-1989 at a laboratory flow rate of 40 feet per minute which corresponds to a PRVS flow rate of 1000 CFM. If actual flow rates in the PRVS are higher than 1000 CFM, the filter efficiency will be less than the results of the laboratory testing.

An inspection of two of the six PRVS orifice plates in 1991 provided assurance that dimensions of the orifice plate

matched the vendor supplied documents. Specifically, the PRVS design is a 7.15" diameter orifice plate installed in a 12" diameter duct.

Equation 9.10 in Section 9.5.1 of the Industrial Ventilation Manual provides a correlation between orifice pressure drop and flow rate for a given orifice size. Using this correlation, Duke has verified that the pressure drop versus flow rate information used in the PRVS flow calibration procedure is correct for the orifice installed in the PRVS.

The Industrial Ventilation Manual Section 9.5.1 states that an assumed error of ± 5% can be used for uncalibrated orifice plates installed in an adequate length of straight duct. However, the piping configuration for the PRVS does not meet these ideal conditions. Duke has conservatively assumed an error of 50% in the orifice flow measurement to clearly bound the potential in situ effects on the accuracy of these flow measurement devices. Qualitative testing performed with a pitot tube array provides further assurance that this is a conservative assumption in that the array showed general agreement with the orifice plate readings within +/- 20%.

Applying this 50% error to the Technical Specification limit of 1100 cfm results in a maximum actual flow of 1650 cfm. The upper bound flow of 1650 cfm is used to conservatively evaluate the impact on carbon filter efficiency.

Based on the results of the latest PRVS carbon filter lab testing, the least efficient of the carbon samples taken from the six PRVS filter trains had a tested penetration of 0.41% at the laboratory test flow rate of 1000 CFM. Using Equation (1) of ASME D3803-1989 and the 0.41% penetration, a system flow rate of 1650 CFM would result in a penetration of less than 4%. This results in an efficiency of 96%, which is well above the Technical Specification limit of 90%. Since the PRVS is only briefly in service for testing each month, there is no significant degradation which could occur over the next two months which could result in the filter efficiency being reduced to below the Technical Specification limit of 90%.

High flows also have the potential to impact the structural integrity of the filters. PT/1,2,3/0170/005, PRVS Monthly Test, verifies that the pressure drop across the filters does

not exceed 2.0" w.g. for the HEPA filters and 1.2" w.g. for the carbon filters. This is well below the 6.0" w.g. limit for the combined dP across both filters as required by Technical Specification 4.5.4.a.b.2. Therefore, there are no structural integrity concerns due to high flow in the PRVS.

In summary, the above evaluation demonstrates that the PRVS can perform its intended filtering function even assuming flow rates well in excess of the Technical Specification limit.

CONCLUSION:

Revising Technical Specification 4.5.4.1.b.1 to include a note to allow a temporary noncompliance with this surveillance requirement until August 30, 1998, to complete flow testing in accordance with ANSI N510-1975, does not adversely affect the ability of the PRVS to perform its intended safety function. The use of the orifice plates to measure the PRVS flow until the requirements of ANSI N510-1975 can be met will provide adequate assurance of PRVS operability. As a result, it is concluded that this proposed amendment does not impact public health and safety.

REFERENCES:

1) ANSI N510-1975, Testing of Nuclear Air Cleaning Systems, American Society of Mechanical Engineers, New York, NY, Approved December 7, 1976.

2) Industrial Ventilation, 20th Edition, Manual of Recommended Practice, American Conference of Governmental Industrial Hygienists (ACGIH), 1988.

ATTACHMENT 4

NO SIGNIFICANT HAZARDS CONSIDERATION EVALUATION

Pursuant to 10 CFR 50.91, Duke Power Company (Duke) has made the determination that this amendment request involves a No Significant Hazards Consideration by applying the standards established by the NRC regulations in 10 CFR 50.92. This ensures that operation of the facility in accordance with the proposed amendment would not:

(1) **Involve a significant increase in the probability or consequences of an accident previously evaluated:**

This proposed change does not increase the probability of an accident evaluated in the SAR because:

This evaluation addresses the potential impact of revising Technical Specification 4.5.4.1.b.1 to include a note to allow a temporary noncompliance with this surveillance requirement until August 30, 1998, to complete the necessary modifications to enable flow testing in accordance with ANSI N510-1975.

As described in the technical justification (Attachment 3), the use of orifice plates in the Oconee Units 1, 2, and 3 Penetration Room Ventilation Systems (PRVSs) to measure the flow from the PRVS fans, in lieu of ANSI N510-1975 requirements, does not increase the probability of an accident evaluated in the SAR because this condition is not an accident initiator. There is no physical change to any plant structures, systems, or components (SSCs) or operating procedures. Neither electrical power systems, nor important to safety mechanical SSCs will be adversely affected. The PRVS has been evaluated as operable for normal and accident conditions. There are no shutdown margin, reactivity management, or fuel integrity concerns. There is no increase in accident initiation likelihood, therefore analyzed accident scenarios are not impacted.

This proposed change does not increase the probability of a malfunction of equipment important to safety evaluated in the SAR because:

As described in the technical justification, the use of orifice plates which are currently used in Oconee Units 1, 2, and 3 to measure the flow from the PRVS fans, in lieu of ANSI N510-1975 requirements, does not increase the probability of a malfunction of equipment important to safety. This activity does not physically change or modify any plant system, structure, or component. The PRVS is QA condition 1 (QA-1) and is required to filter reactor building leakage which enters the East and West Penetration Rooms. This activity does not change any test procedures. Nothing is being done to inhibit the integrity or function of the PRVS. No valve manipulations, electrical alignments, or system configurations are required.

This change does not increase the consequences of an accident evaluated in the SAR because:

This activity will not adversely affect the ability to mitigate any SAR described accidents. The PRVS flow is within the system design limits as measured by the orifice plates. In addition, Duke has performed bounding analyses which demonstrate that the carbon filter efficiency is still within the Technical Specification limits at higher flow rates. Therefore, Oconee Units 1, 2, and 3 will meet system design requirements for the PRVS. There is no adverse impact on containment integrity, radiological release pathways, fuel design, filtration systems, main steam relief valve setpoints, or radwaste systems.

This change does not increase the consequences of a malfunction of equipment important to safety evaluated in the SAR because:

No safety related or important to safety equipment necessary to place or maintain the plant in safe shutdown condition will be impacted by allowing a temporary noncompliance with this surveillance requirement until August 30, 1998, to complete flow testing in accordance with ANSI N510-1975. As described in the technical justification, the use of orifice plates which are currently used in Oconee Units 1, 2, and 3 to measure the flow from the PRVS fans, in lieu of ANSI N510-1975 requirements, does not increase

the consequences of a malfunction of equipment important to safety. The PRVS flow is within the system design limits as measured by the orifice plates. In addition, Duke has performed bounding analyses which demonstrate that the carbon filter efficiency is still within the Technical Specification limits at higher flow rates. Therefore, Oconee Units 1, 2, and 3 will meet system design requirements for the PRVS. There is no adverse impact on containment integrity, radiological release pathways, fuel design, filtration systems, main steam relief valve setpoints, or radwaste systems.

(2) **Create the possibility of a new or different kind of accident from any kind of accident previously evaluated:**

This change does not create the possibility for an accident of a different type than any evaluated in the SAR because:

There is no increased risk of unit trip, or challenge to the Reactor Protection System (RPS) or other safety systems. There is no physical effect on the plant, i.e. none on Reactor Coolant System (RCS) temperature, boron concentration, control rod manipulations, core configuration changes, and no impact on nuclear instrumentation. There is no increased risk of a reactivity excursion. No new failure modes or credible accident scenarios are postulated from this activity.

This change does not create the possibility for a malfunction of a different type than any evaluated in the SAR because:

There is no physical change to the plant SSCs or operating procedures. This change does not involve any plant changes, electrical lineups, or valve manipulations. Analyses have been performed which demonstrate that the PRVS can perform its intended safety function relying on the orifice plates to measure flow. No new equipment or components were installed. No credible new failures are postulated.

(3) **Involve a significant reduction in a margin of safety.**

This change does not involve a significant reduction in the margin of safety because:

No function of any important to safety SSC will be adversely affected or degraded as a result of continued operation. No safety parameters, setpoints, or design limits are changed. There is no adverse impact to the nuclear fuel, cladding, RCS, or required containment systems.

Duke has concluded, based on the above, that there are no significant hazards considerations involved in this amendment request.

ATTACHMENT 5

ENVIRONMENTAL IMPACT ANALYSIS

Pursuant to 10 CFR 51.22 (b), an evaluation of the proposed amendment has been performed to determine whether or not it meets the criteria for categorical exclusion set forth in 10 CFR 51.22 (c) 9 of the regulations. The proposed amendment does not involve:

1) A significant hazards consideration.

   This conclusion is supported by the No Significant Hazards Consideration evaluation that is contained in Attachment 4.

2) A significant change in the types or significant increase in the amounts of any effluents that may be released offsite.

   The proposed amendment will not significantly change the types or amounts of any effluents that may be released offsite.

3) A significant increase in the individual or cumulative occupational radiation exposure.

   The proposed will not significantly increase the individual or cumulative occupational radiation exposure.

In summary, the proposed amendment request meets the criteria set forth in 10 CFR 51.22 (c) 9 of the regulations for categorical exclusion from an environmental impact statement.