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Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Denton:

River Bend Station-Unit 1
Docket No. 50-458

Enclosed for your review (Enclosure 2) are revisions to the River Bend Station Final Safety Analysis Report (FSAR) Section 1.8. Enclosure 1 provides a discussion of each of these revisions including their effect on the Safety Evaluation Report. No impact is expected on the Technical Specifications. These revisions will be included in a future FSAR amendment.

Sincerely,

J. E. Booker
Manager-Engineering,
Nuclear Fuels & Licensing
River Bend Nuclear Group

JEB/ERG/kt

Enclosure

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ENCLOSURE 1

Enclosure 2 provides revisions to the River Bend Station positions on Regulatory Guides 1.52 and 1.140. These position revisions affect the allowable air leakage for ductwork and the pressure at which duct leak testing and duct pressure testing are performed. While these revisions may affect the SER discussions on Pages 6-47 through 6-49 and pages 9-27, and 9-32 through 9-34; no effect is expected on the proposed Technical Specifications.

A. Allowable Air Leakage

Portions of system ductwork may not meet ANSI-N509. In these cases, the total system leakage allowables are met and the health physics concerns associated with the ductwork leakage are evaluated. The main control room is an exception to this criteria as it is a positive pressure area and leakage is not a concern.

B. Duct Pressure and Leak Testing

This testing was not accomplished at peak fan pressures per ANSI-N509. However, a sample prototype duct section was field "pressure tested" to demonstrate the installed ducts can with stand their fan peak pressures. Also calculations were performed to show that if these ducts were "leak tested" at fan peak pressure, no significant impact would result due to additional air leakage.

TABLE 1.8-1 (Cont)

12. Paragraph C.6.a - The following exception is taken to the requirement that "new activated carbon meets the physical property specifications given in Table 5.1 of ANSI N509-1976 (Ref.1)." The charcoal adsorbent now commercially available does not meet the requirements of ANSI N509-1976 but does meet those requirements of ANSI N509-1980. 16 9
13. Paragraphs C.2.1 and C.3.n - The following exceptions are taken to Section 4.12 of ANSI N-509-1980 for maximum allowable leakage for air cleaning effectiveness and duct and housing quality requirements. 20 21 16 21
- HVAC duct/filter system air leakage in excess of the allowable leakage for a particular section of ductwork could occur at equipment (e.g., dampers, shafts, and fan shafts through their housing penetration, etc).
- In areas or sections of systems where leakage is in excess of Section 4.12 requirements, an analysis or tests are performed to demonstrate that system functional criteria and radiation protection concerns are met. However, the total allowable leakage for the entire system will not be exceeded.
- HVAC systems within the control room pressure boundary (CRPB) are leak tested to minimize air leakage to reasonably achievable levels. Air cleaning effectiveness, duct and housing quality requirements, and health physics requirements leak rates are not applicable to HVAC systems within the CRPB as discussed below. 21
- The CRPB is maintained at a positive pressure relative to its surroundings, thus precluding infiltration of potentially contaminated air. Air in ductwork upstream of the filtration units is at a negative pressure relative to the CRPB thus ensuring inleakage and filtration of air. Air leaving the filtration units is clean and will be ultimately discharged into the control room environment via registers. Thus, leakage of

TABLE 1.8-1 (Cont)

air from ductwork downstream of the filters will be clean air.

The CRPB ventilation system will satisfy the intent of air cleaning effectiveness, duct and housing quality, and health physics requirements by verifying through tests that the flows are balanced, CRPB positive pressure is achieved, and filter effectiveness is maintained.

14. Paragraphs C.2.1 and C.3.n - The following exception is taken to Section 5.10.8.2 of ANSI N509-1980, Fan Pressure Test:

Certain isolatable portions of HVAC ductwork associated with the fuel building (HVF), control building (HVC), and the standby gas treatment (GTS) charcoal filtration systems were field pressure tested at pressures less than their fan peak pressure.

The HVF was tested at 15.5 in W.G., but the system fan peak is 19.4 in W.G. The HVC was tested at 20.0 in W.G., but the system fan peak is 23.5 in W.G. The GTS was tested at 15.5 in W.G., but the system fan peak is 22.6 in W.G.

The ductwork fabrication characteristics (i.e., sheet metal gauge, reinforcement angles, and welding) are the same for these pressure ranges and encompass both the actual tested pressures and the fan peak pressure.

A prototype sample duct section representing the weakest duct spool within the three systems (i.e., longest duct section with minimum reinforcement) was field shop tested at a pressure greater than 23.5 in W.G. This additional test, conducted at a pressure greater than the highest pressure of all three systems will ensure that the structural integrity of those portions of the HVF, HVC, and GTS duct sections can be maintained if their fan peak pressure occurs.

TABLE 1.8-1 (Cont)

15. Paragraphs C.2.1 and C.3.n - The following exception is taken to Section 5.10.8.1 of ANSI N509-1980, Air Leakage Test:

Air leakage tests were conducted in the field to determine the allowable air leakage on the isolatable portions of ductwork for the fuel building (HVF), control building (HVC), and the standby gas treatment (GTS) charcoal filtration systems. This quantitative leak testing was performed at pressures less than their fan peak pressure.

Some portions of the HVF ducts were pressure tested at 2.3 in W.G. and other portions at 15.5 in W.G., but the system fan peak pressure is 19.4 in W.G. Some portions of the HVC ducts were pressure tested at 2.0 in W.G. and other portions at 20.0 in W.G., but the system fan peak pressure is 23.5 in W.G. One small portion of the GTS ducts were pressure tested at 0.1 in W.G. and other portions at 18.1 in W.G., but the system fan peak pressure is 22.6 in W.G.

An analysis was performed using the actual field test results (i.e., the volume of air leaked and the pressures they were tested at) in conjunction with each systems' fan peak pressure. This mathematical analysis established what the volume of air leakage would have been had the systems been tested at their respective fan peak pressure.

A comparison between the actual tested leakage and the calculated leakage was performed and analyzed with regard to radiation protection concerns. It has been determined that the calculated leakages are below the leakage necessary to ensure safe operation of equipment and personnel as required by Sections 4.12, Pressure Boundary Leakage, and 4.12.2, Health Physics Requirements, of ANSI N509-1980.

16. Regulatory Guide 1.25, as referenced by⁹ |¹⁶ Paragraphs C.1.b and C.1.c, and Regulatory Guides 1.32, 1.89, 1.100, and 1.118, as

RBS FSAR

TABLE 1.8-1 (Cont)

referenced by Paragraph C.2.h, are addressed in separate compliance statements.

FSAR Sections - 6.2.3, 6.4.2, 6.4.5, 6.5.1, 6.5.3, 9.4.1, 9.4.2, 9.4.5, 12.3.3.

TABLE 1.8-1 (Cont)

Turning vanes are provided only where a uniform air distribution can not be achieved.

It is not necessary to provide turning vanes for filter units where a uniform air flow distribution is demonstrated by testing.

6. Paragraph C.3.1 - Exception is taken to Section 5.9 of | 11
ANSI N509-1976:

- a. Dampers are not designed to the specifications of ANSI B31.1.
- b. Butterfly valves are not used.
- c. Class B leakage rates are determined for one damper of each type instead of for every damper.
- d. Dampers with shaft lengths ≤ 24 in. have a minimum shaft diameter of $1/2$ in. Dampers with shaft lengths > 24 in. and ≤ 48 in. have a minimum shaft diameter of $3/4$ in.

Systems and components are designed to preclude uncontrolled releases of radioactivity. This satisfies the intent of Section 5.9 of ANSI N509-1976. Shaft sizes for small dampers are based on Manufacturer's Standards.

NOTE: Items a and b do not pertain to containment penetrations.

7. Paragraphs C.2.f and C.3.f - The following exceptions are taken to Section 4.12 of ANSI N509-1980 for maximum allowable leakage for air cleaning effectiveness and duct and housing quality requirements. | 20

HVAC duct/filter system air leakage in excess of the allowable leakage for a particular section of ductwork could occur at equipment (e.g., damper shafts and fan shafts through their housing penetrations, etc). | 21

In areas or sections of systems where leakage is in excess of Section 4.12 requirements, an analysis or tests are performed to demonstrate that system functional criteria and radiation protection concerns

TABLE 1.8-1 (Cont)

are met. However, the total allowable leakage for the entire system will not be exceeded.

8. Paragraphs C.2.f and C.3.f - The following exception is taken to Section 5.10.8.2 of ANSI N509-1980, Fan Pressure Test:

Certain isolatable portions of HVAC ductwork associated with the turbine building (HVT) and containment purge (HVR) charcoal filtration systems were field pressure tested at pressures less than their fan peak pressure.

The HVT was tested at 15.5 in W.G., but the system fan peak is 18.8 in W.G. The HVR was tested at 15.0 in W.G., but the system fan peak is 18.5 in W.G.

The ductwork fabrication characteristics (i.e., sheet metal gauge, reinforcement angles, and welding) are the same for these pressure ranges and encompass both the actual tested pressures and the fan peak pressure.

A prototype sample duct section representing the weakest duct spool within the HVT and HVR systems (i.e., longest duct section with no reinforcement) was field shop tested at a pressure greater than 18.8 in W.G. This additional test, conducted at a pressure greater than the highest pressure of the two systems, will ensure that the structural integrity of the HVT and HVR duct sections can be maintained if their fan peak pressure occurs.

9. Paragraphs C.2.f and C.3.f - The following exception is taken to Section 5.10.8.1 of ANSI N509-1980, Air Leakage Test:

Air leakage tests were conducted in the field to determine the allowable air leakage on the isolatable portions of ductwork for the turbine building (HVT) and containment purge (HVR) charcoal filtration systems. This quantitative leak testing was performed at pressures less than their fan peak pressures.

Some portions of the HVT ducts were pressure tested at 4.64 in W.G. and other portions at 11.83 in W.G., but the system fan peak pressure is 18.8 in W.G. Some portions of the HVR ducts were pressure tested at 4.0 in W.G., and other portions at 12.0 in W.G., but the fan peak pressure is 18.5 in W.G.

TABLE 1.8-1 (Cont)

An analysis was performed using the actual test results (i.e., the volume of air leaked and the pressures they were tested at) in conjunction with each systems' fan peak pressure. This mathematical analysis established what the volume of air leakage (in cfm) would have been had the systems been tested at their respective fan peak pressures.

A comparison between the actual tested leakage and the calculated leakage was performed and analyzed with regard to radiation protection concerns. It has been determined that the adjusted pressures are below the leakages necessary to ensure safe operation of equipment and personnel as required by Sections 4.12, Pressure Boundary Leakage, and 4.12.2, Health Physics Requirements, of ANSI N509-1980.

21

FSAR Section - 9.4

TABLE 6.5-1 (Cont)

In addition, exceptions are taken to the following:

1. Class B leakage rates are determined for one damper of each type instead of every damper.
2. Minimum diameter of the damper shaft length 24 in and under is 1/2 in, and 3/4 in for shafts between 25 and 48 inches in length.

Note 10: Exception is taken to full compliance with Section 2.3.8 (C-4.a) of ERDA 76-21⁽²⁾. RBS does not use any communication system, decontaminated areas and showers are not nearby, filters are not used at duct inlets, and duct inspection hatches are not provided.

Note 11: ESF filter systems are run a minimum of 10 hr per (C-4.d) month. However, if field data confirm that it is unnecessary to run the trains 10 hr per month to reduce the amount of moisture present on the filters, this decision will be reconsidered.

Note 12: Exception is taken to the requirement that new activated (C-6.a) carbon meets the physical property specifications given (C-6.b) in Table 5.1 of ANSI N509-1976. The charcoal adsorbent now commercially available does not meet the requirements of ANSI N509-1976, but does meet those requirements of ANSI N509-1980.

Note 13: Exception is taken to the amount of allowable air (C-2.1) leakage in HVAC ESF charcoal filtration systems set by ANSI N509-1980. See Table 1.8-1, Regulatory Guide 1.52 position.

TABLE 9.4-6 (Cont)

Paragraph No.	Radwaste Building Tank Exhaust Filtration System	Containment Purge Filtration System	Air Removal Hogging Pump System
C-6 "Laboratory Testing Criteria for Activated Carbon"			
6.a	In compliance	In compliance	In compliance
6.b	In compliance	In compliance	In compliance
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(1)Exception is taken to the amount of allowable air leakage in HVAC non-ESF charcoal filtration systems set by ANSI N509, 1980. See Table 1.8-1, Regulatory Guide 1.140 position.			16 21
(2)For HEPA filters and adsorber mountings, requirements of ANSI N509-1980 Section 5.6.3 are complied with except for the tolerance requirements. Tolerances for HEPA filters and adsorber mounting frames are sufficient to pass the bank leak tests of paragraphs 5.c and 5.d of the guide.			16
(3)Bed depths of charcoal adsorber units at RBS are 4 in, with a minimum residence time of 0.5 sec. Verification of filter efficiency is the objective; thus HEPA filters are tested in the shop and in the field for efficiency. Upon installation, and periodically thereafter, the filters are DOP tested in accordance with ANSI N510-1980.			11 16
(4)Exception is taken to Section 5.2.2.4 of ANSI N509-1980 which calls for a means of compaction to uniform density. Where uniform compaction can be demonstrated, compacting means are not required.			16
(5)1. System resistances are determined in accordance with Section 5.7.1 of ANSI N509-1980 except that fan inlet and outlet losses are not calculated in accordance with AMCA 201.			16
2. Exception is taken to Section 5.7.2 of ANSI N509-1980. Copies of fan ratings or test reports are not necessary when certified fan performance curves are furnished.			16
3. Exception is taken to Section 5.7.3 of ANSI N509-1980. Balancing techniques specified need not be followed. Maximum permissible vibration velocity level method need not be complied with.			16
4. Exception is taken to Section 5.7.5 of ANSI N509-1980. Where AMCA certification ratings are submitted, documentation is not furnished.			16
(6)Airflow distribution is within ± 20 percent of the average airflow as tested in accordance with ANSI N510-1980. Turning vanes are provided only where a uniform air distribution cannot be achieved.			16