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RBG - 21,675
File No. G9.5, G9.8.6.2

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 (Attachment 1) is Gulf States Utilities' supplemental justification for deviations from Branch Technical Position CMEB 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants." This additional information is provided to support GSU's previous submittals of May 17, 1985 (RBG-21036) and June 28, 1985 (RBG-21416) as requested in discussions with your Staff. Also provided herein (Attachment 2) are responses to recent staff questions concerning construction completion items noted in GSU's submittal of June 13, 1985 (RBG 21,602).

Sincerely,

J. E. Booker

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

JEB/WJR/ERG/kt

Enclosure



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ATTACHMENT 1

A. Supplemental Information For BTP Deviations

1. Hose station hose length to 150 feet (9.5.1.2.4, 9A.3.6.3.5)

Although the BTP states "standpipes with hose connections (should be) equipped with a maximum of 100 feet of 1-1/2-inch woven-jacket, lined fire hose." RBS has seven areas with 150 feet of hose - in the control building at elevation 70'-0" (fire area C-11), elevation 116'-0" and elevation 136'-0" (outside the main control room); in the fuel building at elevation 70'-0" on the east wall; in the G tunnel at elevation 70'-0"; in the radwaste building at elevation 70'-0". Sufficient system pressure exists such that a 30 foot hose stream is assured with the 150 foot hose length, assuming operation of an associated sprinkler system.

The seventh area to be provided with 150 feet of hose length is inside the drywell. On elevation 113'-0" of the fuel building, the fire brigade locker contains an additional 75 foot length of hose to insure that areas of the drywell (i.e. through the containment access airlock) can be reached with an effective hose stream. Additionally, the prefire strategies for the reactor building drywell fire area addresses the need for and use of this additional hose length. Sufficient space is available in each of these areas to assure accessibility and use of the fire hose in close proximity to the hose station.

2. Cable tray water suppression systems

The BTP states that to meet guidelines, "one of the means of ensuring that one of the redundant trains is free of fire damage" would be the "enclosure of cable and equipment and associated circuits of one redundant train in a fire barrier having a 1-hour rating. In addition, fire detectors and an automatic fire suppression system should be installed in the fire area." River Bend Station (RBS) uses 1-hour barriers and cable tray water spray suppression systems activated by cross-zoned smoke detectors, in lieu of area-wide suppression systems, to provide the protection required within the following areas:

ET-1 - Electrical Tunnel
PT-1 - Pipe Tunnel
AB-7 - Auxiliary Building Piping and Electrical Tunnel
C-2A - Control Building Cable Chases
C-2B - Control Building Cable Chases
C-2C - Control Building Cable Chases

ATTACHMENT 1 Cont'd.

C-6 - Control Building, Elev. 70

Combustible loading, other than cable, in these areas is negligible. The one hour barriers and suppression system provide protection from fires affecting a single train of equipment that is sufficient to allow response and action of the fire brigade to prevent damage to redundant safety components.

3. Combustible Radiation Shield

The BTP states "radiation shielding materials, ...should be noncombustible." At RBS, a material used for radiation shielding, Permali JN, is combustible. This material is utilized in isolated instances and its contribution to the combustible loading in the area is small.

The Permali JN material is used in eight location as follows:

1. Fire Area RC-1 (Az. 225°, El. 95'-9")
   The containment side of the drywell equipment hatch.
2. Fire Area RC-3, Zone Z-4 (Az. 40°, El. 95'-9")
   In a removable plug inside a drywell wall sleeve.
3. Fire Area RDW-1 (Az. 312°, El. 125'-6")
   To shield drywell penetration Z57B (inside drywell).
4. Fire Area RDW-1 (Az. 62°, El. 143'-2")
   To shield drywell penetration Z32 (inside drywell).
5. Fire Area RC-3, Zone Z-4 (Az. 48°, El. 132'-0")
   To shield drywell penetration Z107 (outside drywell).
6. Fire Area RC-3, Zone Z-4 (Az. 170°, El. 115'-6")
   To shield drywell penetration Z57A (outside drywell).
7. Fire Area RC-3, Zone Z-3 (Az. 293°, El. 134'-6")
   To shield drywell penetration Z112 (outside drywell).
8. Fire Area RC-3, Zone Z-3 (Az. 322°, El. 135'-10")
   To shield drywell penetration Z34 (outside drywell).

The item 1 material is located within the drywell hatch opening, between the equipment hatch and the drywell shield door. The item 2 material is encased within a steel wall sleeve with cover plates at each end. The items 3 through 8 material are completely encased in steel box-like containers. Thus, in all cases, the Permali JN material is isolated from ignition sources by steel enclosure.

4. Conduit Penetration Seals

The BTP states that "Openings inside conduit...should be sealed at the barrier...". The RBS requirements dictate that conduits penetrating fire rated barriers be sealed at the barrier or at the first opening on both sides of the barrier with a fire rated seal material, regardless of conduit size or distances to the first openings from the barrier. These requirements are provided in the installation specifications and have been restated in FSAR Section 9A.3.5.1.10 as provided in our letter of June 28, 1985

ATTACHMENT 1 Cont'd.

(RBG-21,416). Test results summarized in "B." below indicate that the RBS method for sealing conduits passing through fire-rated floor and wall penetrations is technically acceptable and meets the requirements of ANI/MAERP and ASTM E-119.

ATTACHMENT 1 Cont'd.

B. Summary of Testing of Conduit Penetration Seals

Testing of conduit seals was performed (Ref. 6) in accordance with the test procedure of Ref. 1 to demonstrate adequacy of the RBS configuration in meeting the requirements of ANI/MAERP and ASTM E-119. The test utilized RBS cable and conduit and was sealed per site practice as directed by the specifications (References 3 & 4).

At the 3-hour mark in the test (test conclusion), there was no evidence of cable burning on the protected side of the conduit seal. The highest temperatures measured at the test conclusion were on the conduit immediately outside the blockout seal (see Figure 1) with 701°F recorded at the conduit-to-seal interface, and 649.7 F on the conduit 2 in. from the interface. Cable jacket temperature measured at the cable exit from the conduit seal was 157°F.

The maximum temperature of 701°F on the surface of the conduit is insufficient to cause ignition of cables which may be in contrast with the exterior of the conduit on the protected side. Test results obtained during the Regulatory Guide 1.75 test program conducted by Wyle Laboratories of Ref. 2 (propietary to GSU) demonstrated that cables would only ignite at temperatures higher than those experienced during conduit seal tests. During the RG 1.75 test program faulted cables were subjected to continuous high-ampere current until the faulted cables either ignited or open circuited. The fault cables generally ignited at termperatures greater than 1000°F, ranging from 799°F to 1593°F. The lower ignition temperature for a faulted cable inside a conduit and another cable parallel to the conduit and between 0 in. to 1/4 in. away from the conduit. The adjacent cable was undamaged and was able to conduct rated current and maintain adequate Insulation Resistance (IR) values.

At no time during the 180 minute heating period was there any sign of smoke issuing through the internal seal in any of the through-penetration fire stops. One fire stop did not contain an internal seal, but at no time was there any smoke observed issuing through the 2 in. diameter pipe penetration.

References

1. B&B Promatec Test Procedure
   CTP-1092 dated 5/10/85, and data derived therefrom
2. Wyle Laboratories Test Report
   No. 47618-02 dated 4/12/85
3. Stone & Webster Specification 228.410 for River Bend Station
4. Stone & Webster Specification 248.000,
   "Electrical Installation" for River Bend Station
5. Coorespondence from N.R. Stamp of SWRI to L. C. Spriggs of
   B&B Promatec dated July 25, 1985
6. SWRI Project Report No. 01-8305-040a (attached)

ATTACHMENT 2

As discussed with the NRC Staff, the following additional information is provided with regard to fire wrap installation for (a) the standby service water system and (b) the spent fuel pool cooling system.

(a) In the event that pumps 1SWP*2B, C and D are not available due to a fire, pump 1SWP*2A is capable of providing all cooling water required for safe shutdown from 5% power. Fire zones C2A, B and C have fire detection and suppression. A fire watch will be established until the fire wrapping is completed in accordance with Technical Specifications. This fire wrap will be installed prior to exceeding 5% power.

(b) The completion of fire wrapping for the Division I and II cabling for the spent fuel pool cooling system is currently scheduled to be completed prior to full power operations. This is well in advance of any anticipated off-loading of spent fuel from the reactor. Therefore the fire protection requirements for wrapping will be completed in advance of the need for the spent fuel pool cooling system. Should there be some unforeseen reason to off-load in irradiated fuel prior to achieving full power operation (and prior to completing the installation of the wrap), then a fire watch will be implemented in accordance with the Technical Specifications until the wrapping is complete.