



South Texas Project Electric Generating Station P.O. Box 289 Wadsworth, Texas 77483

November 22, 2000  
NOC-AE-00000944  
File No.: G03.08  
10CFR50

U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555-0001

South Texas Project  
Units 1 and 2  
Docket Nos. STN 50-498, STN 50-499  
Response to Request for Additional Information Regarding Generic Letter 99-02,  
"Laboratory Testing of Nuclear-Grade Activated Charcoal"

Reference: Response to Generic Letter 99-02, "Laboratory Testing of Nuclear-Grade Activated Charcoal," T. J. Jordan to NRC Document Control Desk, dated November 29, 1999 (NOC-AE-000622)

Following review of the South Texas Project response to Generic Letter 99-02 (reference 1), Nuclear Regulatory Commission staff reviewers requested that additional information be provided regarding charcoal filters. The specific questions and their responses are as follows:

The following responses refer to the Control Room Makeup and Cleanup Filtration System, Fuel Handling Building Exhaust Air System (Modes 1, 2, 3, 4), and Fuel Handling Building Exhaust Air System (whenever irradiated fuel is in the spent fuel pool), unless otherwise noted:

- 1) Concerning the actual and test face velocities:
  - a) Please indicate how the actual system face velocities are calculated.

The actual system face velocities can be calculated by dividing the maximum system flow rates specified in the technical specification (TS) (nominal + typically 10% upper value) by the total exposed surface area of the charcoal filter media. Per GL 99-02, if this value is >110% of 40 ft/min, then the TS should be revised to specify that value as the test face velocity. (The guidance on calculation of the residence times in ASME AG-1-1997, Division II, Sections FD and FE, Articles I-1000, or in ANSI N510-1975 can be used to calculate the actual system face velocities).

**Response:** The actual system face velocities were not calculated by the South Texas Project. The purchase order to the vendor for the filter specified that the face velocity was to be no greater than 40 feet per minute. The charcoal filters are operated no higher than the specified flowrate on the purchase order, which ensures the face velocity is no higher than 40 fpm.

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- b) In Attachment 2, page 2, of the November 18, 1999 letter (NOC-AE-000623), it is stated that "Face velocity is no higher than 40 feet/minute, which is consistent with the limit specified in ASTM D3803-1989."

Please verify that the proposed test face velocities are to be  $12.2 \pm 0.3$  meters/min, equivalent to 40 fpm, which is the requirement of ASTM D3803-1989.

**Response: Per ASTM D3803-1989, the test face velocities are to be  $12.2 \pm 0.3$  meters/min, which bounds 40 fpm.**

- 2) The charcoal filter efficiencies credited in the FSAR are not explicitly stated in the submittal. We have calculated the efficiency for each system to be 95% based on the stated test penetration of 1% and a safety factor of 5. Please confirm that 95% is the efficiency (**sic**) credited efficiency for each system and that there is no change in the credited efficiency for each system, (and that although GL99-02 permits a safety factor as low as 2, since the charcoal filter bed depths are all 2 inches, the safety factor of 5 with a 1% allowable penetration is maintained in accordance with the guidance of Regulatory Guide 1.52, Revision 2, March 1978).

**Response: The efficiency credited for each system is 95%. There is no change in the credited efficiency for each system.**

**The safety factor of 5 with a 1% allowable penetration is maintained in accordance with the guidance of Regulatory Guide 1.52, Revision 2.**

**A copy of Table 15.6-10 from the South Texas Project Updated Final Safety Report has been submitted to the NRC staff reviewer to provide the parameters used in analysis of loss-of-coolant accident offsite doses. Similarly, Table 6.4-2 has been submitted to provide the factors used in control room dose analysis.**

- 3) Is the ventilation system that filters ECCS leakage credited in your accident analysis? If so, then why is it not being addressed with regards to GL 99-02?

**Response: The ventilation system that filters ECCS leakage is credited in the accident analyses for loss-of-coolant accidents and fuel handling accidents. This function is provided by the Fuel Handling Building HVAC systems. Engineered Safety Feature Filter Systems at the South Texas Project are:**

- **Fuel Handling Building Exhaust Subsystem (part of the Heating, Ventilating, and Air Conditioning [HVAC] System), and**
- **Main Control Room HVAC makeup and cleanup units.**

**These systems were addressed with regards to Generic Letter 99-02 in the previously submitted responses.**

- 4) The proposed TS for the Cleanup Filtration System has the testing being performed at 70 percent relative humidity. Your basis for that statement is that the air entering the Cleanup Filtration System is pre-conditioned and comes from the Makeup System (which has heaters) and the Control Room envelope (which controls the relative humidity below 70 percent). Did you perform a calculation showing that the relative humidity in the Control Room envelope will be below 70 percent? If so, was it reviewed and approved by NRC?

**Response:** Relative humidity was determined using the operating characteristics of the system. Once the air leaves the Control Room air-handling unit at saturated conditions, it passes through the supply fan, the envelope being supplied, and the return fan before it reaches the cleanup filter. These two fans together increase air temperature 9°F, which corresponds to 70% relative humidity. The effects of lighting, operating equipment, and people on temperature are not included in this determination; these heating effects will cause the relative humidity at the cleanup filter to be less than 70%. The supply and return fan add sufficient heat to the airstream to meet the requirement for a safety-related heat source to keep the relative humidity at the cleanup filter inlet below 70%.

Nuclear Regulatory Commission review and approval of the South Texas Project control room air makeup and cleanup system is documented in NUREG-0781, South Texas Project Safety Evaluation. As stated in Section 6.5.1.1 of NUREG-0781, the staff determined from the system description in the FSAR that the system is designed consistent with GDC 19, 61, and 64. The staff determined that the provisions for instrumentation, readout, and alarm were consistent with Standard Review Plan Table 6.5.1-1. Adequate indication and alarms are provided in the control room to ensure proper monitoring of system performance, per RG 1.52.

On the basis of its evaluation, the staff concluded that the control room makeup air and recirculation cleanup systems are adequately designed to control the concentration of radioactive materials and pressure within the control room in accordance with applicable regulations following a postulated design-basis accident.

If there are any further questions, please contact either Mr. P. L. Walker at (361) 972-8392 or me at (361) 972-7902.



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