



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

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

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

Pursuant to Generic Letter 99-02, the South Texas Project provides the requested information regarding testing of charcoal used in Engineered Safety Feature ventilation systems. The attached report addresses: (1) the current requirements for laboratory testing of charcoal samples; (2) submittal of a Technical Specification amendment request to require testing to the ASTM D3803-1989; and (3) implementation of charcoal tests in accordance with ASTM D3803-1989. The South Texas Project does not propose to use an alternate test protocol in place of ASTM D3803-1989.

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

T. J. Jordan
Manager,
Systems Engineering

PLW

Attachment: Response to Generic Letter 99-02, "Laboratory Testing of Nuclear-Grade Activated Charcoal"

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PDR ADDA 05000498

cc:

Ellis W. Merschoff
Regional Administrator, Region IV
U. S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-8064

Thomas W. Alexion
Project Manager, Mail Code 13H3
U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Cornelius F. O'Keefe
Sr. Resident Inspector
c/o U. S. Nuclear Regulatory Commission
P. O. Box 910
Bay City, TX 77404-0910

J. R. Newman, Esquire
Morgan, Lewis & Bockius
1800 M. Street, N.W.
Washington, DC 20036-5869

M. T. Hardt/W. C. Gunst
City Public Service
P. O. Box 1771
San Antonio, TX 78296

A. Ramirez/C. M. Canady
City of Austin
Electric Utility Department
721 Barton Springs Road
Austin, TX 78704

Jon C. Wood
Matthews & Branscomb
One Alamo Center
106 S. St. Mary's Street, Suite 700
San Antonio, TX 78205-3692

Institute of Nuclear Power
Operations - Records Center
700 Galleria Parkway
Atlanta, GA 30339-5957

Richard A. Ratliff
Bureau of Radiation Control
Texas Department of Health
1100 West 49th Street
Austin, TX 78756-3189

D. G. Tees/R. L. Balcom
Houston Lighting & Power Co.
P. O. Box 1700
Houston, TX 77251

Central Power and Light Company
ATTN: G. E. Vaughn/C. A. Johnson
P. O. Box 289, Mail Code: N5012
Wadsworth, TX 77483

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

**South Texas Project
Units 1 and 2
Response to Generic Letter 99-02,
“Laboratory Testing of Nuclear-Grade Activated Charcoal”**

1. Submit a written response to the NRC describing the current TS requirements for the laboratory testing of charcoal samples for each ESF ventilation system including the specific test protocol, temperature, RH, charcoal bed thickness, total residence time per bed depth, and penetration at which the TS require the test to be performed.

Response:

The South Texas Project Technical Specifications describe requirements for laboratory testing of charcoal samples for each Engineered Safety Feature ventilation system:

- TS 4.7.7 Control Room Makeup and Cleanup Filtration System
- TS 4.7.8 Fuel Handling Building (FHB) Exhaust Air System (Modes 1, 2, 3, 4)
- TS 4.9.12 Fuel Handling Building (FHB) Exhaust Air System (Whenever irradiated fuel is in the spent fuel pool)

Laboratory analysis of a representative carbon sample is performed after every 720 hours of charcoal adsorber operation. Laboratory analysis of a representative carbon sample is also to be performed at least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire, or chemical release in any ventilation zone communicating with the system. The Technical Specifications state that operability is demonstrated by:

- Obtaining a representative carbon sample in accordance with Regulatory Position C.6.b of RG 1.52, Revision 2; and
- Verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained meets the laboratory testing criteria of Regulatory Position C.6.a of RG 1.52, Revision 2, for a methyl iodide penetration of less than 1.0% when tested at a temperature of 30°C and a relative humidity of 70%.

Compliance with Regulatory Guide 1.52, Revision 2, is discussed in the South Texas Project UFSAR. The South Texas Project has taken exception to some of the requirements, as specified in UFSAR Table 6.5-1, “Comparison of Engineered Safety Feature Filter Systems with Regulatory Guide 1.52, Rev. 2 Requirements.” For testing requirements only, the following standards are used in conjunction with Regulatory Guide 1.52 in lieu of ANSI N509-1976 and ANSI N510-1975:

- ANSI N509 - 1980 (Nuclear Power Plant Air Cleaning Units and Components - for design, construction and testing)
- ANSI N510 - 1980 (Testing of Nuclear Air-Cleaning Systems - for field testing)
- ASTM D3803 - 1979 (Standard Test Methods for Radioiodine Testing of Nuclear-Grade Gas Phase Adsorbents - for laboratory testing)

The charcoal filters for the listed Engineered Safety Feature HVAC systems at the South Texas Project have been tested against the criteria given in ASTM D3803-1979.

The charcoal is tested at 70% relative humidity as specified in ASTM D3803-1989. Electric heaters and cooling coils are provided in the Control Room Makeup System and in the Fuel Handling Building Exhaust Air System to reduce the relative humidity to less than 70% to protect and maintain the efficiency of the carbon filters. The Cleanup Filtration System is used to filter the outside makeup air from the makeup filter units and part of the return air, but does not include equipment to reduce the relative humidity. The air entering the Cleanup Filtration System is pre-conditioned and comes from the Makeup System and the Control Room envelope. Air supplied from both sources has a relative humidity controlled to a level below 70%.

The South Texas Project uses charcoal beds having a thickness of two inches. The total residence time per bed depth is calculated based on system configuration, giving a residence time of 0.25 second.

2. If you choose to adopt the ASTM D3803-1989 protocol, submit a TS amendment request to require testing to this protocol within 180 days of the date of this generic letter. The request should contain the test temperature, RH, and penetration at which the proposed TS will require the test to be performed and the basis for these values. If the system has a face velocity greater than 10 percent of 0.203 m/s [40 ft/min], then the revised TS should specify the face velocity. Also, indicate when the next laboratory test is scheduled to be performed.

Response:

The South Texas Project will submit a Technical Specification amendment request by November 30, 1999, to revise test requirements to the ASTM D3803-1989 protocol. In the interim, the South Texas Project will test Engineered Safety Feature charcoal filters in accordance with ASTM D3803-1989 as directed by Generic Letter 99-02.

The South Texas Project understands that the listed limit of 10 percent should be given as 110 percent. Face velocity at the South Texas Project does not exceed the specified limit; consequently, face velocity will not be specified in the Technical Specifications. Test temperature, relative humidity, and penetration are already included.

Laboratory testing of HVAC charcoal filters under the new protocol began in August, 1999. Testing of the remaining charcoal under the new protocol is expected to be completed by December, 2000.

3. If you are proposing an alternate test protocol, address the attributes discussed below and submit a TS amendment request to require testing to this alternate protocol within 180 days of the date of this generic letter.

Response:

This is not applicable to the South Texas Project.

4. At the next required laboratory surveillance test of a charcoal sample that is 60 or more days after the date of this generic letter, test your charcoal samples in accordance with ASTM D3803-1989 or replace all of the charcoal with new charcoal that has been tested in accordance with ASTM D3803-1989. In all cases, the results should meet the acceptance criterion that is derived from applying a safety factor as low as 2 (see the Note in Enclosure 2) to the charcoal filter efficiency assumed in your design-basis dose analysis and the charcoal samples should continue to be tested in accordance with ASTM D3803-1989, in lieu of the current TS-required laboratory testing, until the TS amendment is approved by the NRC.

Response:

Beginning in August 1999, the South Texas Project tests charcoal samples in accordance with ASTM D3803-1989. The acceptance criteria are derived from applying a safety factor of 5 to the charcoal filter efficiency assumed in the design-basis dose analysis.

5. Addressees who choose not to do the above actions are requested to notify the NRC in writing of their decision, as soon as a decision is reached but no later than 60 days from the date of this generic letter.

Response:

This is not applicable to the South Texas Project.