



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

July 23, 2002
NOC-AE-02001343
File No.: G25
10CFR50.90

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
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11555 Rockville Pike
Rockville, MD 20852

South Texas Project
Units 1 and 2
Docket Nos. STN 50-498, STN 50-499
Response to Request for Additional Information –
Containment Purge Valve Test Interval Proposed Amendment

Reference: Letter from J. J. Sheppard to NRC Document Control Desk, "Proposed Amendment to Technical Specification 3/4.6.1.7, 'Containment Ventilation System,' for Containment Purge Valve Operability Test Interval," dated February 18, 2002 (NOC-AE-02001237)

The South Texas Project submits the attached information in response to the NRC request for additional information regarding our request to extend the interval between containment purge valve tests to 18 months. The extension request is applicable to South Texas Project Unit 1 and Unit 2.

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

I state under penalty of perjury that the foregoing is true and correct.

Executed on July 23, 2002.

T. J. Jordan
Vice President,
Engineering & Technical Services

PLW

Attachment: Response to Request for Additional Information –
Containment Purge Valve Test Interval Proposed Amendment

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**South Texas Project
Units 1 and 2
Response to Request for Additional Information -
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Question (1)

The staff noted a previous South Texas Project proposed license amendment related to frequency of leakage rate testing of the normal and supplementary containment purge valves was submitted by the licensee on May 1, 1996. At that time, the staff denied this proposed license amendment as documented in a letter to the licensee dated August 13, 1996.

Provide a technical justification that demonstrates a significant improvement in current purge valves' test performance when compared to the previous purge valve test performance results submitted in May of 1996.

Response (1)

The South Texas Project noted in Section 5.2 that criteria other than Option B of Appendix J are applied to purge valves with resilient seals. A portion of the proposed license amendment submitted on May 1, 1996, was disapproved by the NRC because the test intervals were not consistent with the findings of Generic Issue B-20, "Containment Leakage Due to Seal Degradation."

South Texas Project purge valve test data are provided in the attached Tables 1 and 2. Unit 1 experienced seven test failures from various causes over the eight years of plant operation prior to May 1996, compared with only two in the subsequent six years. Similarly, Unit 2 has had six failures prior to 1996, and none since. This indicates a substantial improvement in component reliability since submittal of the initial license amendment request in 1996.

Question (2)

By letter dated February 18, 2002, the licensee documented the containment penetration test results with unacceptable seat leakage. Provide a technical justification demonstrating improved performance that supports the current proposed license amendment when compared to testing results utilized in the previously referenced May 1996 submittal. The technical justification should include the following:

- Analysis of containment valve leakage data relative to limits in the technical specifications.
- Analysis of containment valve leakage data relative to maintenance and administrative limits.
- Analysis of why containment purge valves' leakage test performance has improved when compared to the South Texas historical results.

Response (2)

Technical Specification leakage limits for normal and supplementary containment purge valves are given as 0.05 La and 0.01 La, respectively. Actual test limits for normal and supplementary purge valves are 25,872 sccm and 6,000 sccm for administrative limits, and 37,920 sccm and 7,584 sccm for Technical Specification limits.

The attached Tables 1 and 2 list the various valve test failures and how the test results compare with Administrative and Technical Specification limits.

Test performance of purge valves has improved due to understanding previous failures and implementation of effective corrective actions. Past failures were primarily caused by incorrect limit switch settings. Resilient seals have not been a significant source of test leakage since early in the plant operating history. Since 1996, the only test failure involving a resilient seal penetration was M-41 in Unit 1, which occurred in April 1999.

Application of lessons learned from experience with previous test failures is the greatest contributing factor for the improvement in test performance.

Question (3)

Provide technical justification in support of the South Texas proposed license amendment by demonstrating improved reliability of the normal containment and supplementary containment purge inboard and outboard valves since commercial operation. The licensee's technical justification should include a comparison of industry operating experience for similar containment purge valves in comparable service that supports current leakage test performance.

Response (3)

Test data for the South Texas Project purge valves are provided in the response to Question 1. From 1988 to 1996 there were 13 purge valve test failures for both Units, and only two such failures from 1996 to the present. The test data trend indicates improving reliability of the containment purge valves.

Licensee Event Reports addressing purge valves were reviewed for instances of degraded resilient seals. Fermi 2 reported mechanical degradation of a resilient seal in a Licensee Event Report dated October 25, 1999. The reported event involved a 24-inch butterfly valve subjected to quarterly testing, compared to the 48-inch (semi-annual testing) and 18-inch (quarterly testing) butterfly valves used at the South Texas Project. Containment purge valve resilient seals have not been a significant source of problems reported in Licensee Event Reports.

Question (4)

Provide an analysis of all corrective actions associated with the normal and supplementary containment purge valves including use of a corrective action cause determination (i.e., root or apparent cause) process linked to corrective actions to prevent recurrence. Assessment of effectiveness of action to prevent recurrence should demonstrate current and sustained test performance improvements in support of the proposed amendment request.

Response (4)

Where containment purge valves do not meet test result acceptance criteria, condition reports are prepared to ensure that the issue is tracked until corrective measures are implemented. Tables 3 and 4 identify the corrective actions taken in response to unsatisfactory normal and supplementary purge valve test results, and their effectiveness.

Table 1

UNIT 1 CONTAINMENT PURGE VALVE TEST FAILURE RESULTS				
Valve	Valve Application	Date of Test Failure	Administrative Limit Failure (sccm) (Normal = 25,872 Supplementary = 6,000)	Tech Spec Limit Failure (sccm) (Normal = 37,920 Supplementary = 7,584)
M-41	Normal Purge Exhaust	08/14/89	Could not obtain test pressure	N/A
		04/12/99	Could not obtain test pressure	N/A
M-42	Normal Purge Supply	11/30/93	Could not obtain test pressure	N/A
		07/06/94	Could not obtain test pressure	N/A
M-43	Supplementary Purge Supply	01/14/88*	N/A	49,000
		07/19/89	Could not obtain test pressure	N/A
		11/06/90	Could not obtain test pressure	N/A
		07/13/99	N/A	18,860
M-44	Supplementary Purge Exhaust	04/12/88	Could not obtain test pressure	N/A

*** The Unit 1 operating license was not issued until March 22, 1988.**

Table 2

UNIT 2 CONTAINMENT PURGE VALVE TEST FAILURE RESULTS				
Valve	Valve Application	Date of Test Failure	Administrative Limit Failure (scm) (Normal = 25,872 Supplementary = 6,000)	Tech Spec Limit Failure (scm) (Normal = 37,920 Supplementary = 7,584)
M-41	Normal Purge Exhaust	04/13/94	Could not obtain test pressure	N/A
M-42	Normal Purge Supply	11/29/88*	Could not obtain test pressure	N/A
		03/18/94	Could not obtain test pressure	N/A
M-43	Supplementary Purge Supply	04/15/94	Could not obtain test pressure	N/A
		12/19/94	Could not obtain test pressure	N/A
M-44	Supplementary Purge Exhaust	11/29/88*	Could not obtain test pressure	N/A

*** The Unit 2 operating license was not issued until March 30, 1989.**

Table 3

UNIT 1 CONTAINMENT PURGE VALVE TEST FAILURE ASSESSMENT						
Valve	Valve Application	Date of Test Failure	Failure	Cause	Corrective Action	Effectiveness
M-41	Normal Purge Exhaust	08/14/89	Valve failed to close completely	Limit switch out of adjustment	Adjusted limit switch	No recurrence
		04/12/99	Incomplete seal	T-Ring	Replaced T-Ring	No recurrence
M-42	Normal Purge Supply	11/30/93	Valve failed to close completely	Limit switch, torque switch	Re-worked limit switch/torque switch	No recurrence
		07/06/94	Valve failed to close completely	Unknown	Closed disc by hand	No recurrence
M-43	Supplementary Purge Supply	01/14/88*	Incomplete seal	Valve seat	Replaced valve	Not Applicable
		07/19/89	Incomplete seal	Valve disc stem assembly and seat	Replaced stem assembly and seat	No recurrence for disc stem assembly
		11/06/90	Incomplete seal	Valve seat	Replaced valve seat	No recurrence
		07/13/99	Valve failed to close completely	Adjustment screw	Adjusted screw	No recurrence
M-44	Supplementary Purge Exhaust	04/12/88	Incomplete seal	Valve seat and gasket	Replaced seat and gasket	No recurrence

* The Unit 1 operating license was not issued until March 22, 1988.

Table 4

UNIT 2 CONTAINMENT PURGE VALVE TEST FAILURE ASSESSMENT						
Valve	Valve Application	Date of Test Failure	Failure	Cause	Corrective Action	Effectiveness
M-41	Normal Purge Exhaust	04/13/94	Valve failed to close completely	Limit switch out of adjustment	Adjusted limit switch	No recurrence
M-42	Normal Purge Supply	11/29/88*	Valve failed to close completely	Valve actuator out of adjustment	Adjusted valve actuator	No recurrence
		03/18/94	Valve failed to close completely	Limit switch out of adjustment	Adjusted limit switch	No recurrence
M-43	Supplementary Purge Supply	04/15/94	Valve failed to close completely	Limit switch	Adjusted limit switch and stop nuts	No recurrence
		12/19/94	Valve failed to close	Packing leaks, spring adjustment, seat repair/replacement.	Replaced valve	Not Applicable
M-44	Supplementary Purge Exhaust	11/29/88*	Incomplete seal	Dirt buildup on valve disc	Replaced seat ring and gaskets	No recurrence

* The Unit 2 operating license was not issued until March 30, 1989.