

July 30, 1993

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MEMORANDUM FOR: James M. Taylor
 Executive Director for Operations

FROM: Edward L. Jordan, Director
 Office for Analysis and Evaluation
 of Operational Data

SUBJECT: STAFF ACTIONS RESULTING FROM THE DIAGNOSTIC EVALUATION AT
 SOUTH TEXAS PROJECT

In accordance with NRC Management Directive 8.7, "NRC Diagnostic Evaluation Program," recommendations for NRC staff actions resulting from the diagnostic evaluation of South Texas Project are forwarded for your information and action. These staff actions have been reviewed with the respective offices responsible for implementation. A draft memorandum, to transmit these staff actions is contained in the enclosure.

If I can provide any additional information or clarification regarding these staff actions, please contact me.

Original Signed by:
 E. L. Jordan

Edward L. Jordan, Director
 Office for Analysis and Evaluation
 of Operational Data

Enclosure:
 As stated

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File D912	MTaylor	

*See Previous Concurrence

OFFICE:	DEIIB:DOA	DEIIB:DOA	DOA:AEOD	AEOD	AEOD
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DATE:	07/2/93	07/3/93	07/15/93	07/ /93	07/30/93

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555-0001

MEMORANDUM FOR: Thomas E. Murley, Director, NRR
James L. Milhoan, Regional Administrator, RIV
Edward. L. Jordan, Director, AEOD

FROM: James M. Taylor
Executive Director for Operations

SUBJECT: STAFF ACTIONS RESULTING FROM THE DIAGNOSTIC EVALUATION AT
SOUTH TEXAS PROJECT

A copy of the report for the subject evaluation and the proposed staff actions were transmitted to you by previous memoranda. The report documents performance deficiencies and probable root causes, together with findings and conclusions which form the basis for identifying followup actions.

The purpose of this memorandum is to identify and assign responsibility for generic and plant-specific actions resulting from the diagnostic evaluation at South Texas Project. You are requested to resolve each of the items in your area of responsibility and, if appropriate, identify additional staff actions or revisions to the identified actions based on your review of the report. Based on briefings on the diagnostic evaluation results, I recognize that actions to address some of these issues may already have been initiated by the staff.

In view of the importance of this subject, your offices should monitor and track the status of each assigned action item until final resolution. Within 90 days, please provide a written summary of the schedule and status of each item within your area of responsibility, as identified in the enclosure, or that you have additionally identified. Further, I request that you provide a written status report on the disposition of your items (and anticipated actions for uncompleted items) by the end of January each calendar year, until all items are resolved. Every effort should be made to resolve these issues promptly. Copies of all status reports should be forwarded to Stuart Rubin (Branch Chief, DEIIB, AEOD) to facilitate AEOD's responsibility for independent verification.

If there are any questions regarding individual action items, please contact Stuart Rubin (492-4147).

James M. Taylor
Executive Director for Operations

Enclosure:
As stated

Enclosure

NRC STAFF ACTIONS: SOUTH TEXAS PROJECT

1. ISSUE: A number of operator workload issues were raised as a result of the diagnostic evaluation at STP. Given the conditions that were prevalent at STP, the design of the facility, and operator workarounds, the scope of responsibilities and administrative work of the operating staff was excessive. For example, the team concluded that operator staffing, although it exceeded TS minimum requirements, was strained in accomplishing the complex tasks for a scenario involving shutdown from outside the control room.

ACTIONS: (a) Assess operating staff workload issues at STP and the management actions to resolve them.

RESPONSIBLE OFFICE: Region IV

- (b) Assess the generic implications of assigning conflicting multiple responsibilities to the operating staff for response to resource-intensive accidents such as fire brigade responsibilities plus support for shutdown from outside the control room.

RESPONSIBLE OFFICE: NRR

2. ISSUE: The capability of the essential chilled water (ECW) system to perform its safety function during a design basis accident under low heat load conditions was never demonstrated, either through system testing or engineering analysis. The system design cooling capacity of 450 tons per train exceeds the requirements for the highest expected heat load, and greatly exceeds the expected heat load for cold weather conditions. The licensee has experienced surging and vibration of chillers, particularly when throttling ECW flow because of cool weather conditions. If an accident occurred during cold weather and all chillers operated as designed, in response to an engineered safety feature actuation, the chillers would be significantly under-loaded, potentially causing surging and failure. Failure of the chillers would result in loss of ECW system cooling of safety-related equipment. The piping design configuration did not allow the system to be tested with heat loads representative of those anticipated during accident conditions. The licensee indicated that the existing analysis did not adequately address the issue of

@chiller operation during a design basis accident under low heat load conditions, and agreed to perform an engineering analysis by September 1993.

ACTIONS: (a) Assess the licensee's engineering analysis for chiller operation under low heat load accident conditions.

RESPONSIBLE OFFICE: NRR

(b) Assess the need and scope of baseline testing of the ECW system that would more closely simulate design basis accident heat load conditions and validate operability. Issue generic correspondence as appropriate.

RESPONSIBLE OFFICE: NRR

(c) Assess the need and scope of periodic testing of the ECW system to ensure that it can perform its safety function. Issue generic correspondence as appropriate.

RESPONSIBLE OFFICE: NRR

3. ISSUE: A limited review of the fire protection area identified deficiencies at STP associated with: the fire protection computer alarm system and operator training on the system, a large backlog of service requests on fire protection systems, control of transient combustibles in the plant, and fire brigade leader qualification. STP management did not oversee and direct the efforts to resolve the above deficiencies in a timely manner.

ACTION: Conduct a followup inspection of the fire protection deficiencies at STP.

RESPONSIBLE OFFICE: Region IV with NRR assistance

4. ISSUE: At STP collapse of the HVAC ductwork would prevent cooling of safety-related components and systems. To protect the HVAC ductwork from collapse during a tornado, the outside ventilation intake dampers are designed to close automatically within .25 seconds, at a differential pressure of 3 psi. Thirty dampers had not been tested to verify that they would operate as designed. An STP

preventive maintenance action was scheduled on a ten year frequency, but had not yet been performed. STP agreed to motion test the dampers to verify operability.

ACTIONS: (a) Evaluate the licensee's surveillance test procedures and results.

RESPONSIBLE OFFICE: NRR

(b) Assess the extent and frequency of damper motion testing at licensed facilities. Evaluate the need to establish technical specification damper motion testing requirements, and subsequent motion testing of ventilation dampers affecting safety-related equipment. Issue requirements as appropriate.

RESPONSIBLE OFFICE: NRR

(c) Assess the need and scope of periodic testing of the dampers to ensure that they can perform their safety function. Issue guidance as appropriate.

RESPONSIBLE OFFICE: NRR

5. ISSUE: STP has a unique design feature called "the rapid refueling system." This system was designed with a "one-lift concept" in which the missile shield, reactor vessel head, upper core-support structure, and rod cluster control assemblies would be removed as a single unit. One feature of this design was to withdraw all of the rod cluster control assemblies into the head and upper internals package where they would be held for the duration of the refueling process. This feature was called "rod lockout" and was usually performed with the plant in mode 5. However, the licensee has documentation from Westinghouse (dated June 17, 1992) that indicated that the safety analysis for the boron dilution event did not address the condition with the control rods fully out in mode 5. Additionally, there were no TS requirements governing mode restrictions for this operation.

ACTIONS: (a) Evaluate the adequacy of the safety analysis associated with the rapid refueling method at STP with the control rods "locked out."

RESPONSIBLE OFFICE: NRR

- (b) Evaluate the adequacy of the STP TS during rapid refueling activities. Take licensing action as appropriate.

RESPONSIBLE OFFICE: NRR

6. ISSUE: At STP nine failures of standby diesel generator (SDG) high pressure fuel injection pump hold down studs occurred from 1987 through 1993. Each time a failure occurred, the SDG was declared inoperable. Subsequent licensee operability reviews determined that failure of the fuel injector hold down studs would render the associated cylinder inoperable, but would not render the SDG inoperable. The licensee received correspondence from Cooper-Bessemer indicating that as many as 2 cylinders could be out of service and the SDG would still be operable. However there was no analysis available for team review.

The licensee attributed the failures to various root causes such as, faulty material, use of improper installation tools and improper lubrication of the hold down studs prior to torquing. Preliminary indications from the licensee also indicated that other utilities with Cooper-Bessemer SDGs have experienced fuel injector hold down stud failures. However, to date no formal industry notification has been issued by the licensee or the vendor.

- ACTIONS: (a) Evaluate the licensee's SDG operability analysis for various scenarios involving multiple inoperable cylinders during accident conditions.

RESPONSIBLE OFFICE: NRR

- (b) Evaluate the need to provide additional generic regulatory correspondence for multiple fuel injector hold down stud failures. Issue guidance as appropriate.

RESPONSIBLE OFFICE: NRR

7. ISSUE: The standard TS guidance regarding overtime appears to have been developed based on a normal 8-hour shift. The licensee was on site-wide 12-hour shifts. As a result, any need to hold an operator over resulted in exceeding the TS overtime guidance by working more than 24 hours in

a 48 hour period. This situation had occurred relatively frequently, largely because of minimally staffed shift crews.

ACTION: Evaluate the applicability of TS overtime requirements for plants on 12-hour shifts. Issue additional guidance as appropriate.

RESPONSIBLE OFFICE: NRR

8. ISSUE: In the transmittal letter forwarding the diagnostic evaluation report, HL&P was requested to review the report and respond within 60 days describing actions they intend to take to address root causes of identified weaknesses.

ACTION: Review and evaluate the licensee's response to the diagnostic evaluation report for completeness. Prepare an appropriate reply for EDO signature.

RESPONSIBLE OFFICE: Region IV, with assistance from NRR and AEOD

DATE: 8/11/93

TO: JAMES A. NORBERG, EMEB/BC
FROM: KENNETH C. DEMPSEY, EMEB
THROUGH: PATRICIA CAMPBELL FOR E. J. SULLIVAN, EMEB/SC
SUBJECT: HVAC DAMPER TESTING: SOUTH TEXAS 1&2 DET FOLLOWUP
STAFF ACTION # 4 WORK REQUEST

The outside ventilation intake dampers are designed to close within 0.25 seconds, at a differential pressure of 3 psi, to protect the HVAC ductwork from collapse during a tornado. Cooling of safety related components and systems would be compromised if the ductwork collapses. At STP, 30 dampers had not been tested to verify operability. An STP preventive maintenance action was scheduled on a ten year frequency, but had not yet been performed. STP agreed to motion test the dampers to verify operability.

Action 4.(a) states: "Evaluate the licensee's surveillance test procedures and results." In order to perform this evaluation, we would need the following information for the safety related dampers at STP:

- (1) surveillance test procedures and results.
- (2) preventative maintenance procedures for the safety related dampers.
- (3) analyses which document the dampers' design basis requirements.
- (4) a copy of the DET report.
- (5) requirements and guidance for safety related dampers testing at licensed facilities, as addressed in Actions 4.(b) and (c).

*ok - Admin
category of reqs / STP
5/14/93*

Of these, the licensee can provide the first three. Item (5) would require some research and development, possibly requiring a contractor. Actions 4.(b) and (c) are generic in nature and require assessing the extent and frequency of damper motion testing at licensed facilities and the need for technical specification requirements and guidance.

We may be able to provide a preliminary review report on Action 4.(a) by the 10/15/93 due date; however, the requirements and guidance for safety related damper testing would have to be developed as part of Actions 4.(b) and (c) before the review can be considered complete.

The schedule for completion of these actions will have to be developed as requested in the work request.

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