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NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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MEMORANDUM FOR: D. G. Eisenhut, Director, Division of Licensing, NRR

THRU: R. L. Tedesco, Assistant Director for Licensing, DL
F. J. Miraglia, Chief, Licensing Branch No. 3, DL

FROM: ~~D. E. Sells, Project Manager, Licensing Branch No. 3, DL~~

SUBJECT: SUMMARY OF QUADREX REPORT - SOUTH TEXAS PROJECT

The following tabulation is a very brief summary of the Quadrex Report that deals with the engineering design status of the South Texas Project.

The study conducted by the Quadrex Corporation was not an in-depth analysis of Brown and Root's design effort to date. The study looked at eight specific areas:

1. Civil/Structural
2. Computer Codes
3. Electrical/Instrumentation and Control
4. HVAC
5. Mechanical
6. Nuclear/Mechanical Analysis
7. Piping and Support
8. Radiological Control

Within each area Quadrex placed each concern that was identified into one of the following categories:

- most serious - impacts licensing
- serious - impacts reliability
- noteworthy - contributes to project schedule and/or cost increases
- potential problem - may or may not be a problem, further investigation required.
- other-minor or not amenable to corrective action.

The attached table provides the number of concerns in each category for each area reviewed.

NUCLEAR REGULATORY COMMISSION

Docket No. STN 50-49802 Official Ex. No. CCANP 142

In the matter of _____

Staff _____ IDENTIFIED ☒

Applicant _____ RECEIVED ☒

Intervenor _____ REJECTED ☐

Gen'l Off'r _____

Contractor _____ DATE 8/13/85

Other _____ Witness _____

Reporter TATE

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In addition the Quadrex Report identified four problem areas with regard to Inservice-Inspection and cited 21 specific areas with regard to maintenance access engineering.

There were a total of 17 findings that were classified by Quadrex as generic. Pending the results of the Bechtel in-depth analysis it would be pre-mature to place great weight on the following laundry list excerpted from Section 3 of Volume 1 of the Quadrex Report:

1. No indication of an effective systems integration and overview function.
2. Input data not consistently reviewed with calculations containing errors verified as correct. Vendor submitted reports not consistent.
3. Thorough and consistent treatment of various plant operating modes and environmental conditions is not evident.
4. Distinction between Safety-Related and Non-Safety Related equipment and calculations is questionable.
5. No written guidelines exist for the conduct of failure mode and effects analysis.
6. No documented evidence that FSAR commitments are being met.
7. Little evidence of a well-thought-out and consistent basis for design.
8. Specific reliability requirements have not been established.
9. Nuclear-related analysis questionable.
10. Use of preliminary data permitted up to the point of fuel loading.
11. Inadequate consideration of plant operation criteria.
12. Ineffective use of natural plant symmetry.
13. Incomplete specification of valve closure rates.
14. Inadequate analysis concerning access for maintenance and in-service-inspection.
15. Test provisions do not appear to have been systematically considered and implemented.
16. Local temperatures during maintenance may not have been considered adequately.
17. Use of abnormally low seismic values for valve and pump end loads.

Volume I of the Report provides the results of the study and Volumes II and III provides the back-up information that was obtained in the brief time (3 months) that was devoted to gathering information by Quadrex.



Donald E. Sells, Project Manager
Licensing Branch No. 3
Division of Licensing

cc: See next page.

AREACATEGORY

	Most Serious	Serious	Noteworthy	Potential Problem	Other
1. Civil/Structural	7	0	5	9	8
2. Computer Codes	6	0	0	5	1
3. Electrical/Instrumentation & Control	15	0	2	11	1
4. HVAC	7	1	0	18	2
5. Mechanical	22	4	13	27	4
6. Nuclear/Mechanical Analysis	18	1	4	9	2
7. Piping and Support	17	4	7	12	1
8. Radiological Control	7	8	1	22	0
TOTALS	99	18	32	113	19