



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

*Designated original  
CMT Trammell*

MAR 25 1986

Docket Nos.: 50-445/50-446

MEMORANDUM FOR: Larry C. Shao, Manager, Comanche Peak Task Force

FROM: David Terao, Piping & Supports Leader, Comanche Peak Task Force

SUBJECT: SUMMARY OF SITE AUDIT ON AS-BUILT PIPING PENETRATIONS

On March 11-12, 1986, the NRC staff and its consultants from Teledyne Engineering Services (TES) conducted an audit at the Comanche Peak site. The purpose of the audit was to gain an understanding of the adequacy of the piping penetration as-built data used by Stone & Webster Engineering Corporation (SWEC) for their piping reanalysis effort. Previously, the staff audited the SWEC piping reanalysis for a portion of the residual heat removal (RHR) system at the SWEC New York office and identified several items related to the piping penetration data used by SWEC for the piping analytical model. Consequently, the staff determined a need to review (1) how the penetration data was developed, (2) the completeness of the penetration data for use in piping analysis, and (3) the accuracy of the penetration data. A list of personnel contacted during the site audit is included in Attachment 1 to this memorandum.

The staff discussed with the applicant, the process used to establish the data in the penetration seal schedule (PSS). The staff found that Southwest Research Institute (SWRI) had been contracted by the applicant for establishing the penetration program. SWRI reviewed all physical plant drawings to locate penetrations through floors, walls, and slabs. All penetrations including piping, HVAC, electrical (Cable tray and conduit), instrument/tubing, tornado vent, plumbing lines, and seismic gaps were identified. SWRI performed a plant walkdown of penetrations to verify the penetration data. The data was compiled in a penetration seal schedule (PSS) which provides a computerized listing of the penetrations and associated data. The PSS are available in various formats depending on their use. The staff reviewed the listing for the mechanical (piping) penetrations (PEN-DESC) which is sorted by pipe line number. The staff noted that ungrouted piping penetrations are not required to be listed in the PSS. Accordingly, the PSS may or may not list an ungrouted piping penetration. A copy of the guideline for interpreting the computer data reports was provided to the staff and is included in Attachment 2 to this memorandum.

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A concern was raised regarding the QA document control associated with the PSS reports. The staff will continue its review of this item as part of its overall review of the adequacy of the as-built piping verification activities.


The staff reviewed the completeness of the as-built penetration data used by SWEC for proper modelling of the piping. The as-built information provided by TUGCO to SWEC includes by (1) the penetration seal schedule (PEN-DESC), (2) sleeve take-off sheets, (3) piping isometric drawings (BRPs), and (4) penetration detail drawings for developing the piping analytical model. The PSS report provides the penetration identification number, location, type, size, sealant required, temperature, and other pertinent information about the penetration. The sleeve take-off sheets shows the as-built clearances between the outside pipe wall and the penetration sleeve. The piping isometric (BRP) drawings show the piping penetrations for all safety-related piping systems. The penetration detail drawings provide the physical details of typical penetration sleeves and sealing arrangements. In addition, the staff reviewed a copy of SWEC Project Memorandum No. 14 dated January 8, 1986 which provides to the piping analysts the stiffnesses to be used for modelling the sealant materials in the pipe sleeves.

For a sample verification walkdown, the staff selected several piping stress problems at random and included stress problem 1-042B from the residual heat removal system. The staff had previously audited the piping analysis results for stress problem 1-042B at the SWEC New York office and the walkdown of this stress problem was considered a continuation of that effort. The purpose of the staff walkdown was to verify the accuracy of the as-built penetration data used by SWEC. The staff focused on the accuracy of the penetration data provided in the penetration seal schedule and in the piping isometric (BRP) drawings compared to the actual installed condition. The results of the staff walkdown will be documented in an audit report currently being prepared by TES.

A total of 36 hours were involved in this audit.

*David Terao*

David Terao  
Comanche Peak Task Force

cc: V. Noonan  
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A. Vietti-Cook  
G. Mizuno  
S. Hou  
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R. Stuart, TES

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Attachment 1

Attendance List

March 11-12, 1986 CPSES Site Audit (Penetrations)

<u>Name</u>	<u>Company</u>
John Burgess	TUGCO
John Oliver	SWEC
Kim Anger	TUGCO
Roger Stuart	TES
Steve Superson	TES
David Terao	NRC