



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

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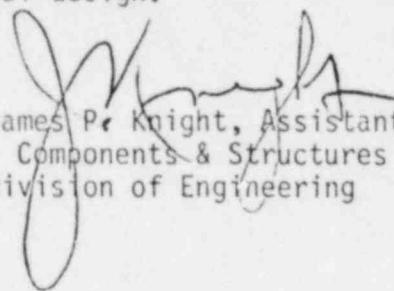
MEMORANDUM FOR: Thomas M. Novak, Assistant Director for  
Licensing, DL

FROM: James P. Knight, Assistant Director for  
Components & Structures Engineering

SUBJECT: REVIEW OF LASALLE FINAL REPORT FOR  
INDEPENDENT HVAC REVIEW

- References: 1) Letter from A. J. Kempiak (C. F. Braun) to B. R. Shelton (CECo), dated October 27, 1982 w/attachment (four volumes)
- 2) Memorandum from D. Eisenhut to R. Vollmer, et al, dated

The Mechanical Engineering Branch has completed its review of the "Independent HVAC Review Final Report - LaSalle Station", dated October 27, 1982 (four volumes) performed by C. F. Braun. Attached is our SER input addressing the area of mechanical design.

  
James P. Knight, Assistant Director for  
Components & Structures Engineering  
Division of Engineering

Attachment: As stated

cc: R. Vollmer, DE  
E. Sullivan, DE  
R. Bosnak, DE  
A. Schwencer, DL  
A. Bournia, DL  
H. Brammer, DE  
D. Terao, DE

**XA Copy Has Been Sent to PDR**

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**XA**

## ATTACHMENT

The staff has reviewed the LaSalle independent HVAC review final report dated October 27, 1982 by C. F. Braun. As stated in the report, the primary objective of the design review was to provide verification that the HVAC installation by the Zack Company was in accordance with the Sargent & Lundy design. However, because the Sargent & Lundy design was not in question, the scope of work did not include a review of the Sargent & Lundy design. From a mechanical design standpoint, the primary concern would be if significant as-built design changes were found. The final report stated that if the C. F. Braun review resulted in safety concerns involving significant as-built design changes, then the as-built changes would be evaluated against the Sargent & Lundy design documents.

The staff reviewed the final report and noted that three findings (QC-2-50, QC-2-88, and QC-2-89) involved significant deviations from the design documents and required a review of the Sargent & Lundy design documents to resolve the potential safety concerns.

In QC-2-50, the finding indicated that the installed HVAC duct hanger S-1382 on drawing M-1538-42 Rev. E was missing two vertical structural members as shown in the design drawing. The discrepancy was resolved in a letter from D. C. Haan (S&L) to B. R. Shelton (CECo) dated October 5, 1982 which found that the error was in the drawing and not in the installation. S&L had previously performed a calculation per a field change request which was based on the support design without the two vertical members. The field change request was approved but because of a misinterpretation by the draftsman, the design drawing was not changed. The drawing was subsequently revised to properly indicate the installed configuration. The staff believes that from a design standpoint this finding has been properly resolved and does not affect the safety of the plant.

The two findings, QC-2-88 and QC-2-89 also involved a discrepancy between the installed condition and the design drawings for an HVAC support. The C. F. Braun site review team discovered two supports (S-2065 and S-2049) which had specified a 4 x 4 x  $\frac{1}{2}$  TS member (tubular steel with  $\frac{1}{2}$  inch thickness required). The installed members were found to be 3/16 inch thick. Thus, C. F. Braun believed that this condition should be considered a generic problem and the structural adequacy of all 4 x 4 TS members should be verified. The internal review committee concurred with the finding and felt that it was a significant deviation from the design documents.

Sargent & Lundy responded to the finding and subsequently reviewed all LaSalle HVAC hangers using 4 x 4 x  $\frac{1}{2}$  TS members. The maximum stress was recalculated using 4 x 4 x 3/16 TS For the 4 x 4 TS hanger with the largest loading. It was determined that the maximum stress was 14,267 psi which is less than the S&L design allowable stress value of 18,000

psi. For tubular steel sizes of 4 x 4, thicknesses greater than  $\frac{1}{4}$  inch are not specified for HVAC duct supports. C. F. Braun stated in the final report that they concurred with Sargent & Lundy's justification and, thus, the finding was considered resolved.

Based on our review of the independent HVAC review final report, the staff feels that an extensive review was performed by C. F. Braun to verify that the HVAC installation was in accordance with the specified design documents. The staff also believes that C. F. Braun exercised reasonable judgement in resolving potential safety concerns identified in their findings. The staff further feels that C. F. Braun has satisfied their commitments to evaluate significant as-built design changes that had the potential to result in safety concerns, against the design documents. Thus, the staff concludes that from a mechanical design standpoint, the independent design review provides further assurance that the LaSalle HVAC systems are installed in accordance with the specified design requirements.