

May 31, 1996

Mr. Richard W. Smedley
Manager, Licensing
Palisades Plant
27780 Blue Star Memorial Highway
Covert, MI 49043

SUBJECT: PALISADES PLANT - REQUEST FOR ADDITIONAL INFORMATION ON THE
RESOLUTION OF UNRESOLVED SAFETY ISSUE A-46 (TAC NO. M69468)

Dear Mr. Smedley:

By letter dated May 23, 1995, you submitted your seismic evaluation program summary report. The staff has reviewed the report and has determined that we require additional information to complete our review of your response to Unresolved Safety Issue (USI) A-46. Please provide a response to the enclosed questions within 60 days of the date of this letter. If you have any questions regarding this request, please contact me at 415-1312.

Sincerely,

Original Signed By:

Robert G. Schaaf, Project Manager
Project Directorate III-1
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Docket No. 50-255

Enclosure: Request for Additional Information

cc w/encl: See next page

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

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Sincerely,

A handwritten signature in black ink, appearing to read "Robert G. Schaaf".

Robert G. Schaaf, Project Manager
Project Directorate III-1
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Docket No. 50-255

Enclosure: Request for Additional Information

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PALISADES PLANT
DOCKET NO. 50-255
REQUEST FOR ADDITIONAL INFORMATION
REGARDING RESOLUTION OF UNRESOLVED SAFETY ISSUE A-46

1. In the proposed resolution for outliers provided in Table 9-1 of the summary report, the lengths of the cantilever impeller shafts of service water pumps P-7A, P-7B, and P-7C are indicated as 37 feet. The effects resulting from the exceedance of this impeller shaft length beyond the upper bound length of 20 feet was not addressed. Provide resolution for the potential misalignment and bearing damage due to excessive lateral loads, and damage to the impeller due to excessive deflection of the impeller drive shaft.
2. In the proposed resolution for outliers provided in Table 9-1, we agree that tightening of U-bolts on the wall brackets of jacket water surge tanks T-13A and T-13B might indeed enhance restraint on the tanks in the vertical and transverse directions. However, we don't believe that the proposed fix provides a positive longitudinal load path. Provide a discussion on the adequacy of the existing restraint configuration and, if necessary, provide an alternate approach for resolving the issue.
3. Describe the extent to which the seismic margin methodology in the EPRI NP-6041 procedure was used in the Palisades A-46 program, including resolution of outliers. Since this methodology is generally not acceptable for the A-46 program, provide justification for deviation from the GIP-2 guidelines in situations where the margin methodology is utilized.
4. For plant structures containing equipment in the USI A-46 scope:
 - a. Identify structures which have licensing-basis floor response spectra (5% critical damping) for elevations within 40-feet above effective grade which are higher in amplitude than 1.5 times the SQUG Bounding Spectrum.
 - b. Provide response spectra, designated according to height above effective grade as identified in Item 4.a. above, and a comparison to 1.5 times the Bounding Spectrum.
 - c. With respect to the comparison of equipment seismic capacity to seismic demand, indicate which method (Method A or Method B in Table 4-1 of GIP-2) was used to address the seismic adequacy of equipment installed on those floors as identified in Item 4.a. above.
5. Provide a comparison of demand and capacity response spectra at the top floor and ground elevations for the reactor and auxiliary buildings. This is to ensure a complete enveloping of the licensing-basis response spectra by the GIP spectra.

6. Provide resolution schedules for the outliers shown in Table 9-1 for which schedules were not provided. Provide an assessment of the impact on plant safety in consideration of the proposed schedules.
7. Provide a copy of the Peer Review Letter, referred to as Reference 20 in the submittal; and provide the peer reviewers' bases for concluding that the licensee's walkdowns have been performed in accordance with the plant walkdown procedure and have indeed revealed equipment as-built configurations.
8. Provide an explanation for why the accelerations of the reactor building shell at elevations 646.25 and 683.75 are lower than that at elevation 608.75 (Figs. B-6, B-7 and B-8), and for why the acceleration of the auxiliary building at elevation 601.0 is lower than that at elevation 590.0 (Figs. B-10 and B-11).
9. Section 4.1.3, Anchorage Adequacy, states that all significantly sized equipment was analyzed using the ANCHOR software package developed by Stevenson Associates. Provide a list of such equipment (if they are contained in the existing lists in the report, identify them) and a sample calculation indicating the input parameters, assumptions and other pertinent information together with the output.
10. It appears from your discussion in Section 4.1.3 that only expansion anchors are used and all the anchors for safety related equipment have been inspected. If this is the case, indicate the number of anchors inspected. Otherwise, indicate your criteria for selective inspection.
11. In Section 4.1.3 on page 4-5, at about the middle of the page, it is indicated that tightness checks and embedment checks will be documented in a separate report. Are these checks completed? If so, provide the report. Otherwise, indicate the planned dates for completion and submittal of the report.
12. On page 4-6 the formulae for pullout capacity and shear capacity are given, with various reduction factors for each. Provide an example for each case where the formulae are used.
13. On page 4-7 of Section 4.2, Outlier Resolution, a general discussion on how to resolve an outlier was presented. Provide a specific example of an outlier resolution.
14. In Section 6.1, Evaluation Methodology, most statements are verbatim repetitions of what is stated in Section 7.2 of the GIP. It is indicated that 19 tanks and heat exchangers were evaluated (Table 6-1 shows only 13) and 12 tanks and heat exchangers were declared outliers. How many tanks and exchangers are there in the safe-shutdown path at Palisades? How many tanks are vertical? How many are horizontal? Are any of the vertical tanks supported on skirts and structural legs?

15. Provide a sample evaluation for each type of vertical tank (flat bottom and supported on skirts and structural legs, if any) and horizontal tank, indicating the major simplifying assumptions made in the analyses. Even though GIP-2 indicates that buckling is only to be evaluated for vertical tanks, was the possibility of buckling in horizontal tanks evaluated? The evaluation of anchors which restrain tank movement should also be provided.

It is noted that you have used the EPRI Report NP-6041-SL guidelines in evaluating the flat bottom vertical tanks, which is known to render results with lower margins of safety than those obtained using the GIP-2 guidelines. Provide justification for deviation from the GIP-2 guidelines.

16. Indicate the criteria used in selecting 12 hanger supports for limited analytical review (LAR) as listed in Table 7-1.
17. Provide the sample analysis or resolution for the hangers listed as LARs No. 005, No. 007 and No. 012 in Table 7-1.
18. Provide an explanation of the critical interaction values, specifically how the various values in Table 7-2 are established and how they are used.
19. Section 8.2 indicates that because cinch anchors may have been used, a tightness check will be scheduled to determine the installation quality of these anchors. Please indicate whether the tightness check has been performed. If not, when will it be done?

Mr. Richard W. Smedley
Consumers Power Company

Palisades Plant

cc:

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