

UNION ELECTRIC COMPANY

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June 3, 1983

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Mr. W. A. Little, Chief
Project Engineering Branch
U.S. Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, IL 60137

ULNRC- 631

Dear Mr. Little:

INSPECTION REPORT NO. 50-483/82-20

Ref: ULNRC-618, 4/13/83

This reply is in response to your letter of March 15, 1983 which transmitted the report of the inspection conducted at Callaway Plant during the period of December 13-14, 1982 and January 5-7, 1983 and at the Bechtel Gaithersburg Power Division on February 8, 1983. Our responses to the items of noncompliance, except for Item 82-20-01, involving design control, were provided in the reference. Our response to Item 82-20-01 is presented below.

None of the material in the inspection report or in this response is considered proprietary by Union Electric Company.

(50-483/82-20-01a) SEVERITY LEVEL V VIOLATION

10 CFR 50, Appendix B, Criterion III, states, in part, that "Measures shall be established to assure that applicable...design basis...for those structures, systems, and components...are correctly translated into specifications, drawings, procedures, and instructions."

10 CFR 50, Appendix B, Criterion V, states, in part, that "Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished."

Standard Nuclear Unit Power Plant System (SNUPPS) "QA Program for Design and Construction", Revision 4 dated December 1981, Paragraph 17.1.3 states, in part, that "The SNUPPS utilities quality assurance program requires that the design of the safety-related structures, systems, equipment, and components of the SNUPPS nuclear power plants be controlled so that applicable regulatory requirements and design bases are properly translated into specifications and drawings. The SNUPPS utilities require that the major contractors

JUN 10 1983

Mr. W. A. Little
June 3, 1983
Page Two

(50-483/82-20-01a) SEVERITY LEVEL V VIOLATION (Continued)

identify sequential review requirements and assignments for each function throughout the design and engineering process, such as: conceptual and preliminary design and development of drawings, specifications and supporting calculations."

Contrary to the above, the architect engineer's design control relative to the piping suspension systems was considered to be deficient in the following areas:

- a. The program lacked design critieria that would ensure piping seismic movement was sufficient to allow snubber lock-up and compression to reach its full load capacity. Several of the observed snubber installations had not been evaluated to ensure their functionability.

Corrective Action Taken And The Results Achieved:

As discussed with the NRC inspector during his February 8, 1983 meeting with Bechtel, all piping seismic analyses performed on the SNUPPS project have been examined to identify snubber applications in close proximity to equipment nozzles in which cases snubbers could be ineffective or piping could be overstressed. The review encompassed 364 stress problems containing approximately 1300 snubber applications. The objective of the review was to isolate those snubber attachment locations which were predicted to exhibit a piping SSE movement equal to or less than the maximum rated snubber total lost motion (0.040 in). The criterion utilized to perform the review was based on associated pipe size and relative distance to equipment connections.

Of the 364 stress problems reviewed, seventeen problems were identified to contain thirty potentially nonfunctioning snubbers in close proximity to equipment nozzles. These seventeen problems were selected for further examination as described below.

Of the seventeen stress problems identified in the previous paragraph, six were selected at random to be reanalyzed in detail to determine snubber operability. The six problems were modified by removing the suspect snubber(s) from the system model and re-analyzed to determine the effects of an SSE on the associated piping. The problems reanalyzed were:

Mr. W. A. Little
June 3, 1983
Page Three

Stress Problem Number	System	Qty. of Snubbers	Pipe Size
32	CVCS	3	3" to 4"
24B1	Component Cooling Water Sys.	4	16" to 30"
147	CVCS	1	3"
24B3	Component Cooling Water Sys.	2	18"
*63	High Pressure Chemical Injection System	2	4"
*61	High Pressure Chemical Injection System	1	6"

*NOTE: These problems were previously addressed during the February 8, 1983 meeting with the Inspector at Bechtel Gaithersburg Power Division.

The following parameters were then evaluated to determine the functionability of the snubbers in question:

- o The magnitude of calculated SSE pipe motion at the snubber location without the snubber installed.
- o Resultant stresses in piping and loading at equipment nozzles as compared to established stress allowables.
- o The actual measured total lost motion of the specific snubbers shipped to the SNUPPS jobsites.
- o The potential for the use of higher stress allowables for piping and equipment nozzles.

The results of the analysis are as follows and as depicted in the attached matrix.

Problems 32 and 24B1

The calculated seismic movement was significantly greater than maximum rated total snubber lost motion (.040 in) and the nozzle allowable loads were exceeded. Therefore, the seven affected snubbers would function and are essential for system safety.

Problems 147, 24B3, and 61

The calculated seismic motion was less than maximum rated snubber lost motion. On that basis, the snubbers could potentially not activate and restrict piping seismic motion. Resultant piping and equipment nozzles were within acceptable stress limits even if snubber did not activate. Therefore,

Mr. W. A. Little
June 3, 1983
Page Four

failure of all of the four affected snubbers to activate would not have a detrimental effect on the piping system and no unresolved safety concern would result.

Problem 63

The calculated seismic motion was less than the maximum rated snubber lost motion. On that basis, the snubbers could potentially not activate to restrict piping seismic motion. The associated reactions at the equipment nozzle would exceed manufacturer's allowables. However, an evaluation of the two snubbers shipped to both SNUPPS jobsites (Callaway and Wolf Creek) indicates that actual measured snubber lost motion is significantly less than the calculated piping seismic motion. Therefore, the snubbers in question would function under an SSE condition and no safety concern would result.

Corrective Action To Be Taken To Avoid Further Noncompliance:

Based on a 43% sampling (13 snubbers out of 30) of all potentially nonfunctioning snubbers, it can be concluded that the snubber application in the vicinity of equipment nozzles on the SNUPPS Project is acceptable. As such, no redesign or rework of SNUPPS pipe restraint systems is deemed necessary.

Bechtel, however, acknowledges that previous design criteria were too general. For further applications of snubbers, the design criteria have been modified such that snubber locations in the general vicinity of equipment nozzles will be evaluated for potential pipe motion. A procedure change was issued by Bechtel on March 10, 1983.

The Date When Full Compliance Will Be Achieved:

March 10, 1983

(50-483/82-20-01b) SEVERITY LEVEL V VIOLATION

- b. The inspection instructions for the stiff reinforced pipe clamps provided by the architect engineer were not adequate to ensure sufficient critical load bearing surfaces were achieved to maintain overall snubber design structural assembly spring stiffness.

Mr. W. A. Little
June 3, 1983
Page Five

Corrective Action Taken And The Results Achieved:

Bechtel is currently in the process of revising the pipe clamp installation criteria to provide increased installation requirements concerning clamp bearing contact surface. The criteria will apply to all stiffened clamps previously installed and all subsequent pipe clamp installations. The revised criteria will further elaborate on the location of clamp contact and will ensure acceptable installations. The revised criteria will be issued by June 15, 1983. It is currently felt that most present clamp installations will satisfy the revised criteria, however, this will be confirmed by examination for retrofit considerations.

Corrective Action To Be Taken To Avoid Further Noncompliance:

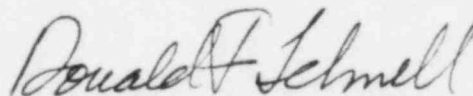
See response to corrective action taken and the results to be achieved above.

The Date When Full Compliance Will Be Achieved:

Confirmation of installation will be completed by November 1, 1983.

If you have any questions regarding this response or if additional information is required, please let me know.

Very truly yours,



Donald F. Schnell

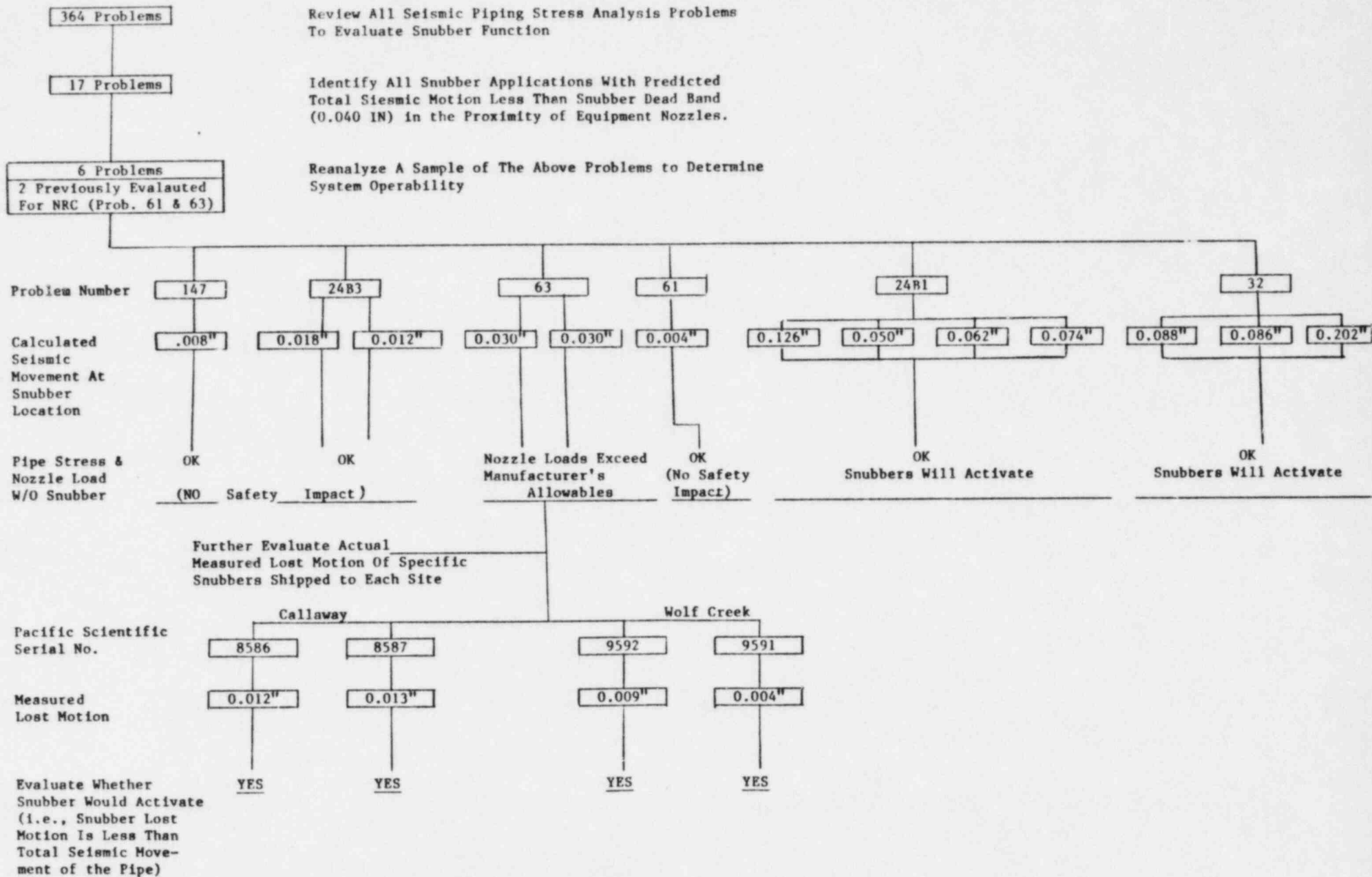
RPW/sla

Attachment

cc: Mr. H. M. Wescott, NRC Region III w/a
NRC Resident Inspector, Callaway Plant w/a
Missouri Public Service Commission

Mr. W. A. Little
June 3, 1983
Page Six

bcc: D. F. Schnell
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R. J. Schukai
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A. C. Passwater
D. E. Shafer
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J. J. Stoecklin
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J. R. Veatch
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J. H. Smith
R. W. Bradford
C. C. Wagoner
W. R. Bird (Consumers Power) w/a
D. Dedrick (Public Service Indiana) w/a
DFS/Chrono
QA Date
N. Date
AC:55B38 w/a



Therefore, Snubber Would Resist Seismic Motion and Equipment Nozzle Would Not Be Overstressed.