- 1. Allegation Category: QA/QC 2, Document Control
- 2. Allegation Number: AQ-111
- 3. <u>Characterization</u>: It is alleged that a group of Brown & Root (B&R) hanger location (BRHL) drawings was misused that drafters of these drawings were directed to perform tasks for which they were not qualified, and that unapproved hanger location drawings were released to the field and were used by the craft personnel to locate and install hangers.
- 4. Assessment of Safety Significance: In assessing this allegation, the NRC Technical Review Team (TRT) reviewed procedures governing design document control (as applied to hanger drawings), hanger location drawings, and as-built piping verification for conformance to ASME Code, 10 CFR Part 50, Appendix B, and ANSI N45.2 requirements (References 1 through 5). The TRT determined that the procedures complied with these requirements.

BRHL drawings were developed in response to the as-built verification program for nuclear plants under construction and in operation (as outlined in NRC IE Bulletin 79-14). The verification program entailed inspecting plant hardware in its as-built condition, comparing it to design documentation for compliance, and verifying that the seismic analysis conformed to the actual as-built configuration of safety-related hardware and systems.

Based upon interviews with B&R personnel, the TRT learned that B&R generated BRHL drawings to expedite the performance of the seismic stress analysis of piping hangers by consolidating hanger as-built location data. Without these drawings, the process of inputting hanger location data into the seismic stress analysis not only would have been time consuming, but would have required: (1) identifying hangers related to a piping isometric; (2) retrieving individual hanger drawings; (3) obtaining the location data; and (4) inputting the data into the analysis model to verify adequacy of the hanger design. Therefore, B&R engineering and quality control personnel devised a process, the BRHL drawings, by which the as-built verification of hanger locations could be accomplished while consolidating location data. Although there was not a specific detailed procedure for developing BRHL drawings, the general procedure, CP-EI-4.0-22, prescribed the methods for development, revision, approval, and distribution of the BRHL drawing.

The initial BRHL drawings were generated by modifying piping isometric drawings. At first, hangers identified on the BRHL drawings did not have dimensional data and were shown in relationship to pipe fittings and to components. Quality control (QC) inspectors used the drawings to account for installed hangers. Later, QC inspectors took actual as-built location measurements and revised the BRHL drawings accordingly. Subsequently, these dimensions were used as input to the seismic stress analysis verification program.

As part of the as-built program, the TRT inspected the physical locations of 42 hangers and found that all 42 were within the drawing tolerance permitted. Included in this inspection were six hangers identified on a

drawing which the alleger had checked and initialed. (The physical inspection technique used and results obtained are addressed in QA/QC Category 8, allegation AQ-50.)

B&R procedure CP-EI-4.0-22, Revision 7, "Design Document Control by TRMD," established the requirement that drafting personnel be qualified by education and/or experience to perform assigned tasks. This procedure also provided technical guidance for the preparation and updating of drawings, including BRHL drawings, by classification. Details of the job description, qualifications, and education requirements for drafters were described in the B&R wage and salary manual.

Based upon a review of the initial and subsequent revisions for selected BRHL drawings, the TRT found that the drawings were prepared, updated, checked, and approved in accordance with procedural direction. The TRT also assessed records documenting personnel qualification, experience, and education for those who drafted, checked, and approved the sampled drawings for adequacy. Each individual's qualifications, experience, and education were found to be in compliance with the B&R wage and salary manual's job classification requirements for drafters.

Conclusion and Staff Position: Based upon this assessment, the TRT con-5. cludes that allegations regarding the misuse of BRHL drawings and inadequate qualification of drafters cannot be substantiated. Accordingly, this allegation has no generic implications.

The source of this concern was not an alleger; therefore, no exit interview was conducted.

7. Attachments: None.

Reference Documents:

- 1.
- ASME Code Section III, "Nuclear Power Plant Components." 10 CFR 50, Appendix B, "QA Criteria for Nuclear Power Plants and Fuel 2. Reprocessing Plants."
- ANSI N 45.2, "QA Program Requirements for Nuclear Facilities." 3.
- 4. Brown & Root ASME QA Manual.
- Brown & Root Procedures: 5.

 - (a) CP-EI-4.0-22, Rev. 0, "Design Document Control by TSMD."
 (b) CP-EI-4.0-22, Rev. 1, "Design Document Control by TSMD."
 (c) CP-EI-4.5-1, Rev. 1, "General Program for As-Built Piping Program."
 - (d) CP-EI-4.5-10, "General Program for As-Built Piping Program."
 - (e) Brown & Root Drafting Guide No. 5, Rev. 0.

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- NRC Inspection Report 50-445/83-03 and 50-446/83-01. 7.
- IE Bulletin No. 79-14, "Seismic Analysis for Safety-Related Piping 8. System."
- Brown & Root Wage and Salary Manual, "Drafter Job Descriptions." 9.

8. This statement prepared by:

New ٧. Wenczel, GR

6/6/85 Date

Technical Reviewer

H. Livermore, Group Leader

6-7-85 Date

Approved by:

Reviewed by:

V. Noonan, Project Director

Date

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