SYSTEMATIC PIPE SUPPORTS INSPECTION

FOR

RANCHO SECO NUCLEAR GENERATING STATION

SACRAMENTO MUNICIPAL UTILITY DISTRICT

SACRAMENTO, CALIFORNIA

REVISION 1

INCLUDED IN CIDR

MC-197

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L. R. Keilman, Manager
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David Abbott
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Control Number _____

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1.0 PURPOSE

This document provides the procedures and guide lines for a walkdown inspection of piping supports for assuring conformance with the approved design documents.

2.0 SCOPE

The scope of this document is limited to pipe supports installed since 1980 under the ASME section III, ANSI B31.7, and B31.1 which are classified under the project classifications 11, 11N1, 11N2, and 11N3. The inspection of piping supports will be carried to a structural anchor or a set of supports so that the effect of non-seismic section on seismic section of the piping is accurately covered.

Inspection of concrete expansion bolts for proper embedment depth and torquing is excluded from the scope of this procedure.

3.0 BACKGROUND

A crack was developed on the RCS vent line very close to the OTSG nozzle (E-205B). This failure was attributed to a deficiency in the supports of this piping system. It was, therefore, decided to have a walkdown inspection of all quality class 1 systems installed since 1980. This will assure a safe operation of the plant under all modes of operation.

4.0 DEFINITIONS

4.1 Satisfactory (SAT)

This term is used in the Walkdown Checklist of Appendix A. "SAT" shall be used to indicate that the configuration meets the requirements of the design documents including design tolerances.

4.2 Minor Discrepancy (MD)

Any discrepancy of minor nature such as loose bolts, missing or damaged cotter pins, corrosion, brackets added for construction or maintenance purposes which do not change the structural behavioral of the support, etc. is categorized as a minor discrepancy. During walkdown, the appropriate stress/pipe support engineer shall determine whether any discrepancy is minor or a nonconformance.

4.3 Nonconformance (NC)

Any configuration difference from design documents which is outside the design tolerances and is not a minor discrepancy.

4.4 Major Discrepancy

Any nonconformance (NC), the dispositioning of which requires hardware changes to maintain system operability. SMUD, Rancho Seco Technical Specification defines a component or system to be operable if it is "...capable of performing its intended function" within the required range.

5.0 PROCEDURE

The as-built walkdown inspection consists of three (3) parts:

Part 1 - Preparation of all the necessary documents.
Part 2 - Walkdown inspection of the pipe supports.
Part 3 - Reporting of walkdown findings.
a) NCR
b) AP22

5.1 Part 1 - Walkdown Inspection Documents

The following information constitutes a walkdown inspection package:

1. The latest support drawings with all outstanding DCNs attached.
2. Piping stress isometrics that locate all pipe supports.
3. Pipe stress summary sheet(s).

5.2 Part 2 - Walkdown Inspection

5.2.1 Inspection Checklist

See Appendix A

5.2.2 In reviewing each Walkdown Checklist, the engineer may encounter the following possibilities:

All items on Walkdown Checklist are "SAT". The component, as-built, is in full compliance with the design documents. The calculation file should be marked as such and no further action is required for this component.

One (or more) item(s) is a minor discrepancy (MD). The stress/pipe support engineer accompanying the walkdown team is the primary decision maker as to whether this discrepancy should have been identified as minor or a nonconformance. Engineering need not make any further review of MD's. All correctable MD's observed should be reported in a Work Request form to Construction & Maintenance for their corrective action immediately. Aside from the MD which will be corrected through a WR, the component is generally in compliance with the design documents and no other action is required.

One (or more) of the as-built items is in nonconformance (NC) with the design documents, i.e., the discrepancy falls outside the allowed tolerances. This situation warrants issuance of a Non-Conformance Report (NCR) which shall be evaluated by Engineering. It is recommended that NCR's be issued on system basis: i.e., once a system is walked down, one NCR will be issued to cover all the NCs for that system. This procedure releases the inspection team from any other reporting requirements normally enforced per SMUD QC regulations. Engineering evaluation of the NCR and the as-built configuration reveals one of the following results:

(a) Acceptable stress levels and design configuration; in this case, Engineering should update the necessary design drawings to reflect the as-built condition per SMUD QA procedures. In this phase, no physical hardware change is involved.

(b) Unacceptable stress levels and/or design configurations; for this situation, the engineer should delete all the unnecessary conservatism and if necessary perform a more rigorous computer analysis & design to show compliance of as-built with the design criteria without the need for hardware modifications. If this is not attainable, when the plant is not operating, the component should be modified and the documentation revised. While the plant is in operation, this should be immediately brought up to the attention of the Principal Project Engineer for determination of appropriate action.

5.2.3 Each drawing contained in the walkdown package with mark-ups will serve as the as-built condition and shall be stamped, "AS-BUILT', and be signed "BY" & "CHECKED" and dated by the walkdown team members. The System & Support number should also be identified on the drawing.

5.2.4 It is intended that all measurements be made using a measuring device such as a non-metallic tape, ruler, etc. If, because of possible radiation or accessibility, this cannot be performed, a visual dimensional check may be performed provided that confidence in accuracy is high. When visual dimensional checks are used inlieu of actual measurement, it should be documented as such.

5.2.5 Any minor discrepancies noted outside the scope of this walkdown (i.e., loose bolts, missing or damaged cotter pins, corrosion, etc.) should be reported on the walkdown checklist under MD column. The plant operations and maintenance or Nuclear Engineering construction should be made aware of these items through a Work Request immediately for corrective maintenance.

5.2.6 If any component or component support is discovered in a condition that could seriously affect its operability, it shall be immediately reported per AP22. This information shall be identified on the walkdown drawings. The resolution of the discrepancy shall be included in the evaluation package.

5.2.7 Each item on the Walkdown Checklist (Appendix A) should be addressed by the walkdown engineer as Satisfactory (SAT), Minor Discrepancy (MD), Non-Conformance (NC), or Not Applicable (N/A). All NCs and MDs shall be associated with remark numbers. Pages of remarks to sufficiently describe the nature of the nonconformity for effective evaluation of the deficiency by engineering, or of the minor deviation for corrective maintenance, shall be added to the checklist. The remarks should be enhanced by the use of sketches, comments, drawings, mark-ups, photographs, etc.

5.2.8 It is being anticipated that there will be components that are inaccessible for size measurement and/or visual inspection. The items shall be listed, and the nature of their inaccessibility shall be documented.

In general, the above procedure, is limited to checking the as-built drawing of the pipe supports against the as-built condition in the plant. It is not intended to substitute, supersede, nor duplicate the work performed during, and after, the installation of the pipe supports.

5.3 Part 3 - Reporting of Walkdown Findings

The NCRs and AP22 reporting has been addressed in Sections 5.2.2, 5.2.6, and 5.2.7.

6.0 PERSONNEL AND TRAINING

6.1 Inspection Team

The inspection team shall consist of one stress/support engineer, one engineering personnel from the QC group and one additional engineering person to assist in taking measurements.

6.2 Personnel Training

All the personnel working on tasks within the scope of this instruction shall be trained on the instructions herein related to their specific activity and the overall purpose and goal of this project. This training shall be documented. The personnel involved in the walkdown have been selected based on their knowledge and experience in the area of piping and supports, and weld inspection. The resumes of their qualifications will be placed in record.

6.3 Responsibilities

The pipe support/stress engineer shall be the leader of the inspection team. He shall assure total compliance of the inspection to this procedure.

The QC engineer is responsible for inspection and measurement of all the welds only

7.0 ACCEPTANCE CRITERIA

7.1 The walkdown team shall perform their inspection based on the design tolerances given on the design documents. Any item within the above tolerances should be checked as "SAT" on the Walkdown Checklist. Any item which is not a minor discrepancy and falls outside the tolerances authorized by design documents is a Non-Conformance (NC) for which a Non-Conformance Report (NCR) should be issued.

7.2 Appendix B tolerances shall be used in conjunction with the design documents to inspect each support.

7.3 Non-NF fillet weld inspection will be in accordance with AWS D1.1-80 paragraph 8.15.1.7

8.0 EVALUATION OF DATA

All findings designated as Non-Conformances and Major Deficiencies shall be evaluated for their effect on the operability of the plant system immediately after the walk down is completed. SMUD, Rancho seco Technical Specification defines a component or system to be operable if it is "....capable of performing its intended function" within the required range.

APPENDIX "A"
WALKDOWN CHECKLIST
PIPE SUPPORTS

SUPPORT NO./REV.: INSPECTED BY: DATE:
SYSTEM: CKD. BY(LEAD ENGR): DATE:
BLDG. LOCATION: NUMBER OF PAGES ATTACHED _____
OTHER DESIGN DOCUMENTS REVIEWED/REV.:

Check the compliance of the following "As-Built" items with the "As-Designed" documents, i.e., Walkdown vs. Design Documents:

ITEM	SAT	MD	NC	N/A	REMARK NO.
A. GENERAL SUPPORT INFORMATION:					
1. Location					
2. Type					
3. Orientation					
4. Gap/Clearance					
B. SPECIFIC SUPPORT INFORMATION:					
1. Structural Members					
a. Type					
b. Size					
2. Welds (as-painted)					To be initialed by QC Inspector.
a. Configuration					
b. Size/Length					
3. Base Plates					
a. Plate Size					
b. Anchor Bolt Size, Spacing					
c. Bolt Edge Distances					
4. Bolts/Clamps/Rods					
a. Size					
b. Installation					
5. Springs & Snubbers					
a. Cold Setting					
b. Size					
6. Snubbers & Struts					
a. Pin-to-Pin Distance					
7. Thermal Offset if Shown on Pipe Drawings					
8. Pipe Attachment					
a. Type					
b. Size					
9. Other Observations (explain)					