PACIFIC GAS & ELECTRIC COMPANY

DIABLO CANYON NUCLEAR POWER PLANT

INDEPENDENT DESIGN VERIFICATION PROGRAM

INTERIM TECHNICAL REPORT NO. 38

REVISION 2

FINAL REPORT ON CONSTRUCTION QUALITY ASSURANCE EVALUATION

OF

WISMER & BECKER

PERFORMED BY

STONE & WEBSTER ENGINEERING CORPORATION

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DIABLO CANYON NUCLEAR POWER PLANT - UNIT I

INDEPENDENT DESIGN VERIFICATION PROGRAM

INTERIM TECHNICAL REPORT

FINAL REPORT ON CONSTRUCTION QUALITY ASSURANCE EVALUATION
OF
WISMER & BECKER

This is revision 2 of the thirty-eighth of a series of Interim Technical Reports prepared by the DCNPP-IDVP for the purpose of providing a status report of the program.

This reports the recommendations and conclusions of the IDVP with respect to the initial sample.

As IDVP Program Manager, Teledyne Engineering Services, (TES), has approved this ITR including the conclusions and recommendations presented. The methodology followed by TES in performing this review and evaluation is described by Appendix H to this report.

ITR Reviewed and Approved
IDVP Program Manager
Teledyne Engineering Services

D. C. Stratouly
Assistant Project Manager

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SECTION 1

INTRODUCTION

Stone & Webster Engineering Corporation (SWEC) was engaged by Teledyne Engineering Services (TES) to perform evaluations and verifications of the quality related activities of Wismer & Becker (W&B) who performed installation of NSSS piping, and G.F. Atkinson (GFA) who performed civil/structural work in the containment building at the Diablo Canyon Nuclear Power Plant (DCNPP) - Unit 1.

SWEC has performed the evaluation and verification in accordance with the Independent Design Verification Program (IDVP), Program Plan, Revision 1, Adjunct Program for Evaluation of Construction Quality Assurance, dated October 1, 1982, issued by TES as IDVP Program Manager (see Appendix C).

This report concentrates on the work performed by W&B which consisted primarily of (1) final setting of the major NSSS components (reactor vessel, steam generators, etc), and (2) installation of the reactor coolant piping, pressurizer surge line piping, bottom mounted instrumentation (BMI) tubing, piping and tubing supports, and reactor vessel flange seal leak detection tubing. A separate report has been issued with respect to GFA.

The review was conducted at the site from September 28, 1982, through November 5, 1982, according to the objectives of the evaluation defined in Section 2.0, Paragraph 2.1 of the IDVP Plan. The subsequent evaluation was structured to assess whether the construction of the DCNPP was performed in

accordance with quality requirements appropriate for the time of plant construction.

The Quality Assurance Program Evaluation was performed by a team of engineers experienced in various aspects of nuclear power plant construction quality assurance. The Site Quality Assurance Team consisted of a Senior Field Quality Control Representative and nine auditors/inspectors. Their qualifications are identified in Appendix D.

The Quality Assurance Program Evaluation was performed by individuals certified as Auditors by SWEC in accordance with approved procedures and ANSI-N45.2.23. The construction verification was performed by individuals certified as Inspectors in the appropriate discipline by SWEC in accordance with approved procedures and ANSI-N45.2.6.

A Findings Review Committee (FRC) was established, in accordance with Section 3.4, Appendix C, to review each Potential Finding Report (PFR) developed by Field Auditors/Inspectors for definition and accuracy and to assess its impact on the adequacy of the plant. The FRC consisted of five senior personnel experienced in Nuclear Power Plant Engineering and Design, Quality Assurance, Construction, and Testing. The members of the FRC are identified in Section 5.3.1 of Appendix E, and their qualifications are presented in Appendix F.

After initial review of each PFR, the FRC conducted a site visit on November 16 and 17, 1982. During this site inspection, each PFR was physically/visually reviewed by one or more members of the FRC.

Each PFR was evaluated by the FRC according to the review criteria listed in Attachment 3.8 of Appendix E which resulted in the issuance of 25 Open Item Reports. Each PG&E response to Open Item Reports was reviewed by the FRC which resulted in recommendations of classifications to TES as follows: 1 Finding, 19 Observations, and 5 Invalids. TES concurred with the FRC's recommended classifications.

SECTION 2

DEFINITION OF ITEMS REVIEWED

An appropriate sample for evaluation was selected from the work of this contractor to provide evidence of his quality practices in each area of activity.

2.1 EVALUATION OF CONSTRUCTION QUALITY ASSURANCE PROGRAM

Task A

Consisted of a review of contractor's quality assurance programs to determine if adequate controls and practices were evident to assure the quality of construction and the incorporation of essential design features into the completed plant and to determine if controls were consistent with applicable regulatory requirements at the time the work was performed.

2.2 VERIFICATION OF PHYSICAL INSTALLATION

Task B

Consisted of an evaluation to determine if the physical installation of selected components of safety systems and structures conform to the requirements of design drawings and specifications and whether required inspections were performed.

SECTION 3

DESCRIPTION OF REVIEW

3.1 EVALUATION OF CONSTRUCTION QUALITY ASSURANCE PROGRAM

The evaluation was conducted using a prepared checklist (see Appendix G1) that was derived from requirements contained in the following documents:

- PG&E Specification 8752, "Installation of the Nuclear Steam Supply Systems for Units 1 and 2 - Diablo Canyon Site," May 3, 1972
- Wismer & Becker QA/QC Manual, June 6, 1973
- Applicable drawings.

Records obtained from the permanent plant file were reviewed, on a random basis, for objective evidence that requirements were met in a satisfactory manner. The type of records reviewed included ASME III Certificates of Authorization, Certified Material Test Reports (CMTRs), Code Data Reports, Operation Process Sheet Travelers (installation and inspection documentation), drawings, welding procedures, welder qualification records, weld data sheets, welding electrode control records, nondestructive examination (NDE) procedures, personnel qualifications and reports, hydrostatic test procedures reports, audit reports, and nonconformance reports (NCRs).

3.2 VERIFICATION OF PHYSICAL INSTALLATION

Checklists (see Appendix G2) were prepared based on design drawings, specification requirements, reported as-built conditions, and other appropriate design data (i.e., flow diagrams) for conducting the physical verification of construction practices of the following systems:

- Reactor coolant piping
- Pressurizer surge line piping
- Bottom mounted instrumentation tubing
- Reactor vessel leak detection line
- Pipe and tubing supports for the four items above

Inspections were performed utilizing prepared checklists consisting of 53 pre-selected attributes extracted from specifications, drawings, and quality assurance/quality control procedures.

All accessible welds in systems described above were visually examined to verify that fabrication, examination and documentation were performed to approved procedures. All insulation was removed for the inspection.

The entire reactor coolant piping system was examined by individual spool and welds. Welds were visually examined for evidence of undercut, slag, porosity, weld profile, weld identification, radiographic markers, and welder's symbol.

Piping was verified against PG&E drawings and W&B fabrication records. The W&B Quality Assurance Manual, PG&E drawings, Southwest Fabricating and Welding Company drawings, Westinghouse drawings, and ASME and ANSI codes and standards were referred to as necessary.

Welding was verified utilizing W&B weld procedures (approved by PG&E), W&B fabrication records, welder qualification records and weld rod issue records. Radiograph interpretation sheets were examined, but no film was reviewed as part of the physical verification.

Reactor coolant piping weld records consisted of fabrication processes sheets broken down by loop, weld, and quadrant (4 loops, 8 welds per loop, 4 quadrants per weld) and included documentation of preheat, interpass temperatures, ferrite content, filler material, current and voltage used during welding, visual inspection results, NDE reports, and PG&E representative signoff at pre-selected hold points.

Weld maps included in the documentation packages indicated welders assigned to each weld or part of a weld, a record of arc strike repairs and lug removal. NDE records were also part of the weld documentation package.

The records were reviewed to determine whether the results recorded were in accordance with program and procedure requirements.

An inspection of internal surfaces of reactor coolant piping was one attribute on the checklist. Due to clean conditions restrictions in the

reactor cavity area and the vessel being partly flooded, it was only possible to perform internal inspection of the hot and cold legs of loop 3.

Internal surfaces of pipe and welds on loop 3 were visually inspected for cleanliness, surface condition, weld spatter, arc strikes, weld profile, undercut, correct reinforcement, correct grinding, porosity, slag, and correct root preparation.

BMI tubing records consisted of two packages which contained the documentation of all 350 welds. These records were examined for evidence of correct documentation of:

- Correct weld identification
- Assignment of qualified welder
- Correct preheat
- Correct electrical characteristics
- Visual inspections
- NDE
- Repair data.

Since the Reactor Vessel was partly flooded and subject to restricted access due to cleanliness restrictions, the reactor vessel leak detection system could not be completely physically examined. The accessible portion was verified using PG&E drawings for orientation, identification, location, piping configuration, and correct material.

Supports in each system were visually examined for weld quality, and that location, orientation, and installation conformed to specification and drawing requirements.

PG&E and Westinghouse drawings, W&B weld procedures, weld rod issue records and W&B fabrication process sheets were reviewed.

Welds on supports were examined for evidence of slag, porosity, undercut, weld spatter, and correct weld profile.

All bolts were examined for correct material identification, location, orientation, bolt and nut seating, and thread engagement.

Support components were examined for evidence of correct identification, location, orientation, fabrication, installation and repair records.

Steam generator snubbers were examined to determine if location and orientation agreed with PG&E drawings. Pin-to-pin measurements were recorded for all 16 snubbers, and any deviations from PG&E drawings were noted.

Visual inspections were performed using PG&E drawings to verify that components (i.e., reactor vessel, steam generators, pressurizer, etc) were correctly identified and properly oriented.

In conjunction with the physical verification, supporting documentation (i.e., welder qualification, weld procedure approvals, NDE qualifications,

and other inspection reports) were reviewed for compliance to specification and program requirements for the time of construction.

SECTION 4

SUMMARY OF REVIEW RESULTS

4.1 EVALUATION OF CONSTRUCTION QUALITY ASSURANCE PROGRAM

It was found that W&B was in compliance with requirements for the majority of the attributes that were evaluated. In accordance with specification requirements, the contractor's Quality Assurance Program was submitted to and approved by PG&E. In addition, the contractor was a holder of the ASME, Section III, Certification of Authorization for installation of nuclear piping. The required Code Data Reports were properly signed and certified by the Authorized Nuclear Inspector (ANI). Travelers, specifications, drawings, and procedures were approved by PG&E prior to work being performed; the travelers, which included inspection and test requirements, were completed as work was performed including the signoff at designated hold points by the contractor's inspector and the ANI. Further examples of activities which were found to be in compliance with the source documents and associated codes and standards are as follows:

- Installation operations (setting, shimming, alignment, etc) of NSSS major components

- Cleanliness and cleaning and flushing operations in accordance with procedures approved by PG&E

- Qualification of welding procedures and approval by PG&E and the ANI

- Selection of proper welding process (GTAW, SMAW)

- Control of welding electrodes

- Control of interpass temperatures

- Repair of reported weld defects in accordance with procedures approved by PG&E

- Approval of NDE procedures and NDE personnel qualifications by PG&E and the ANI

- Performance of required NDE

- Performance of audits

- Control of reported nonconformances, including the approval of dispositions by PG&E.

A total of 3,528 documents was reviewed. As a result of the review, 16 Open Item Reports were issued to document findings which required resolution. Most of these items can be characterized as omissions or as an inspection activity which had to be evaluated to determine its impact on the physical installation.

4.2 VERIFICATION OF PHYSICAL INSTALLATION

It was found that W&B was in compliance with program requirements for the majority of the attributes that were verified. The configuration, cleanliness, surface finish of welds, and overall workmanship were in compliance with drawings and specifications with some exceptions noted in the report. Of 2,298 items inspected, 9 Open Item Reports were issued. The items identified primarily demonstrate either a conflict between a drawing requirement and the installation or apparent field changes that may not have been properly documented.

SECTION 5

EOI REPORTS ISSUED

Twenty-five EOI files have been opened for the Construction Quality Assurance evaluation of the work performed by Wismer & Becker and the major subcontractors on the Containment Building at the DCNPP-1. The status of these files is tabulated in Appendix A and detailed in Appendix B.

SECTION 6

EVALUATION OF REVIEW RESULTS

6.1 EVALUATION OF CONSTRUCTION QUALITY ASSURANCE PROGRAM

The documentation reviewed provides evidence that an effective quality control program existed and was enforced to assure work was performed in accordance with the PG&E specification and W&B's Quality Assurance Program. Records were logically filed, easily retrievable, and detailed in their coverage. Deficiencies identified by the contractor during the performance of work were documented on NCRs and corrective actions were effectively implemented. PG&E played an active role in the resolution of nonconformances and performed periodic audits of subcontractors to assure program adherence.

6.2 VERIFICATION OF PHYSICAL INSTALLATION

The physical verification indicated that W&B performed work as specified and in accordance with its programs. Other than the items identified in the Open Item Reports (OIRs) discussed in Section 5, "EOI Reports Issued," all work which was accessible for inspection was performed in accordance with the approved drawings and PG&E Specification 8752.

SECTION 7

CONCLUSIONS

It is the conclusion of the FRC that in the area reviewed, the Reactor Coolant System, the work performed in constructing DCNPP-1 is satisfactory. The FRC found that adequate controls and practices were used by Wismer & Becker and PG&E to assure the quality of construction. Further, to the extent reviewed, the as-constructed physical installation meets the intent of the requirements of design drawings and specifications, and the required inspections were performed and appropriately documented. The FRC considers the number and significance of the observations to be consistent with expectations for the extensive review performed for both hardware and documentation. The installation is considered to be acceptable, and no additional verification is recommended.

APPENDIX A

EOI FILES

APPENDIX A

DCNPP IDVP STATUS REPORT

	REV.0	LATEST REVISION				ACTION	
FILE NO.	DATE	REV.	DATE	BY	STATUS	MODS	SUBJECT
9001	821102	0	821102	SWEC	OIR		Workmanship on welds on BMI supports
9001	821102	1	830211	SWEC	PER/C		Workmanship on welds on BMI supports
9001	821102	2	830222	TES	ER/C		Workmanship on welds on BMI supports
9001	821102	3	830222	TES	CR	NO	Workmanship on welds on BMI supports
9002	821102	0	821102	SWEC	OIR		Weld lengths on BMI supports
9002	821102	1	830204	SWEC	PER/C		Weld lengths on BMI supports
9002	821102	2	830209	TES	ER/C		Weld lengths on BMI supports
9002	821102	3	830209	TES	CR	NO	Weld lengths on BMI supports
9003	821102	0	821102	SWEC	OIR		Bottom mounted instrument tubing
9003	821102	1	830112	SWEC	PER/C		Bottom mounted instrument tubing
9003	821102	2	830117	TES	ER/C		Bottom mounted instrument tubing
9003	821102	3	830117	TES	CR	NO	Bottom mounted instrument tubing
9004	821102	0	821102	SWEC	OIR		UT inspection of BMI tubes
9004	821102	1	830112	SWEC	PER/C		UT inspection of BMI tubes
9004	821102	2	830117	TES	ER/C		UT inspection of BMI tubes
9004	821102	3	830117	TES	CR	NO	UT inspection of BMI tubes
9005	821102	0	821102	SWEC	OIR		Reactor coolant weld procedures
9005	821102	1	830112	SWEC	PPRR/CI		Reactor coolant weld procedures
9005	821102	2	830117	TES	PRR/CI		Reactor coolant weld procedures
9005	821102	3	830117	TES	CR	NO	Reactor coolant weld procedures
9006	821102	0	821102	SWEC	OIR		Seal leak detection tubing
9006	821102	1	830211	SWEC	PER/C		Seal leak detection tubing
9006	821102	2	830222	TES	ER/C		Seal leak detection tubing
9006	821102	3	830222	TES	CR	NO	Seal leak detection tubing
9007	821102	0	821102	SWEC	OIR		BMI couplings
9007	821102	1	830225	SWEC	PER/C		BMI couplings
9007	821102	2	830226	TES	ER/C		BMI couplings
9007	821102	3	830226	TES	CR	NO	BMI couplings
9009	821102	0	821102	SWEC	OIR		Radiograph-reactor coolant sys.(Thimble Guide Tubes)
9009	821102	1	830112	SWEC	PPRR/CI		Radiograph-reactor coolant sys.(Thimble Guide Tubes)
9009	821102	2	830117	TES	PRR/CI		Radiograph-reactor coolant sys.(Thimble Guide Tubes)
9009	821102	3	830117	TES	CR	NO	Radiograph-reactor coolant sys.(Thimble Guide Tubes
9010	821102	0	821102	SWEC	OIR		Welding procedures-reactor coolant system
9010	821102	1	830112	SWEC	PPRR/CI		Welding procedures-reactor coolant system

APPENDIX A (CONT)

DCNPP IDVP STATUS REPORT

	REV.0	LATEST REVISION				ACTION	
FILE NO.	DATE	REV.	DATE	BY	STATUS	MODS	SUBJECT
9010	821102	2	830117	TES	PRR/CI		Welding procedures-reactor coolant system
9010	821102	3	830117	TES	CR	NO	Welding procedures-reactor coolant system
9011	821102	0	821102	SWEC	OIR		NSSS-piping traveler review
9011	821102	1	830112	SWEC	PER/C		NSSS-piping traveler review
9011	821102	2	830117	TES	ER/C		NSSS-piping traveler review
9011	821102	3	830117	TES	CR	NO	NSSS-piping traveler review
9012	821102	0	821102	SWEC	OIR		NSSS-weld procedures
9012	821102	1	830112	SWEC	PER/C		NSSS-weld procedures
9012	821102	2	830117	TES	ER/C		NSSS-weld procedures
9012	821102	3	830117	TES	CR	NO	NSSS-weld procedures
9013	821102	0	821102	SWEC	OIR		Installation of BMI supports
9013	821102	1	830211	SWEC	PER/C		Installation of BMI supports
9013	821102	2	830222	TES	ER/C		Installation of BMI supports
9013	821102	3	830222	TES	CR	NO	Installation of BMI supports
9014	821102	0	821102	SWEC	OIR		Halogen content-reactor cooling piping welding
9014	821102	1	830112	SWEC	PPRR/CI		Halogen content-reactor cooling piping welding
9014	821102	2	830117	TES	PRR/CI		Halogen content-reactor cooling piping welding
9014	821102	3	830117	TES	CR	NO	Halogen content-reactor cooling piping welding
9017	821102	0	821102	SWEC	OIR		Bolt material-reactor coolant system
9017	821102	1	830112	SWEC	PER/CI		Bolt material-reactor coolant system
9017	821102	2	830117	TES	ER/C		Bolt material-reactor coolant system
9017	821102	3	830117	TES	CR	NO	Bolt material-reactor coolant system
9018	821102	0	821102	SWEC	OIR		Welder's qualification
9018	821102	1	830112	SWEC	PER/C		Welder's qualification
9018	821102	2	830117	TES	ER/C		Welder's qualification
9018	821102	3	830117	TES	CR	NO	Welder's qualification
9019	821102	0	821102	SWEC	OIR		Operation description for welds
9019	821102	1	830218	SWEC	PER/C		Operation description for welds
9019	821102	2	830225	TES	ER/C		Operation description for welds
9019	821102	3	830225	TES	CR	NO	Operation description for welds

APPENDIX A (CONT)

DCNPP IDVP STATUS REPORT

	REV.0	LATEST REVISION				ACTION	
FILE NO.	DATE	REV.	DATE	BY	STATUS	MODS	SUBJECT
9020	821102	0	821102	SWEC	OIR		Radiographic inspection report information
9020	821102	1	830112	SWEC	PER/C		Radiographic inspection report information
9020	821102	2	830117	TES	ER/C		Radiographic inspection report information
9020	821102	3	830117	TES	CR	NO	Radiographic inspection report information
9022	821110	0	821110	SWEC	OIR		Weld procedure-BMI tubing
9022	821110	1	830204	SWEC	PER/C		Weld procedure-BMI tubing
9022	821110	2	830210	TES	ER/C		Weld procedure-BMI tubing
9022	821110	3	830210	TES	CR	NO	Weld procedure-BMI tubing
9023	821110	0	821110	SWEC	OIR		Weld procedure-reactor coolant system
9023	821110	1	830112	SWEC	PER/C		Weld procedure-reactor coolant system
9023	821110	2	830117	TES	ER/C		Weld procedure-reactor coolant system
9023	821110	3	830117	TES	CR	NO	Weld procedure-reactor coolant system
9024	821110	0	821110	SWEC	OIR		Ferrite readings-reactor coolant system
9024	821110	1	830211	SWEC	PER/C		Ferrite readings-reactor coolant system
9024	821110	2	830222	TES	ER/C		Ferrite readings-reactor coolant system
9024	821110	3	830222	TES	CR	NO	Ferrite readings-reactor coolant system
9025	821110	0	821110	SWEC	OIR		BMI tubing supports
9025	821110	1	830204	SWEC	PER/C		BMI tubing supports
9025	821110	2	830211	TES	ER/C		BMI tubing supports
9025	821110	3	830211	TES	CR	NO	BMI tubing supports
9026	821110	0	821110	SWEC	OIR		Attachments-reactor coolant system piping
9026	821110	1	830211	SWEC	PER/A		Attachments-reactor coolant system piping
9026	821110	2	830222	TES	ER/A		Attachments-reactor coolant system piping
9026	821110	3	830225	TES	OIR		Attachments-reactor coolant system piping
9026	821110	4	830308	SWEC	PPRR/CI		Attachments-reactor coolant system piping

APPENDIX A (CONT)

DCNPP IDVP STATUS REPORT

	REV.0	LATEST REVISION				ACTION	
FILE NO.	DATE	REV.	DATE	BY	STATUS	MODS	SUBJECT
9026	821110	5	830309	TES	PRR/CI		Attachments-reactor coolant system piping
9026	821110	6	830309	TES	CR	NO	Attachments-reactor coolant system piping
9027	821110	0	821110	SWEC	OIR		Welds-BMI tubing
9027	821110	1	830112	SWEC	PER/C		Welds-BMI tubing
9027	821110	2	830117	TES	ER/C		Welds-BMI tubing
9027	821110	3	830117	TES	CR	NO	Welds-BMI tubing
9028	821119	0	821119	SWEC	OIR		Weld documentation-BMI supports
9028	821119	1	830112	SWEC	PPRR/CI		Weld documentation-BMI supports
9028	821119	2	830117	TES	PRR/CI		Weld documentation-BMI supports
9028	821119	3	830117	TES	CR	NO	Weld documentation-BMI supports
9029	821119	0	821119	SWEC	OIR		Reactor coolant system-weld deficiencies
9029	821119	1	830218	SWEC	PER/C		Reactor coolant system-weld deficiencies
9029	821119	2	830225	TES	ER/C		Reactor coolant system-weld deficiencies
9029	821119	3	830225	TES	CR	NO	Reactor coolant system-weld deficiencies

APPENDIX B

DETAILED DESCRIPTION OF EOI FILES

APPENDIX B

PREFACE

The Findings Review Committee evaluated all the Potential Findings issued by the Site Team and issued the Open Item Reports (OIRs) that are detailed on the following pages. Potential Finding Reports (PFRs) that required more information to perform a review were referred to the Site Team for additional information.

The FRC considered all information supplied by the Site Team, PG&E, and its subcontractors, as well as consulting with the SWEC Technical Division for technical evaluation of data and information. The review included a full discussion of the following considerations as minimum:

- Is the observation programmatic in nature or is it hardware-related?
- Would it have an impact on plant adequacy?
- Is it an individual failure to follow procedures?
- Does it appear to identify the symptom of a problem of generic nature?
- Were procedures inadequate to prevent the observation?
- Are personnel aware of requirements?

- Has a Code or Standard been violated?

- What may reasonably be considered the effect on the plant if left undetected?

- Is there a potential for end product deviations or deficiencies?

- Were there subsequent tests or inspections to confirm the adequacy of the item?

- Are the possible adverse effects of the potential finding likely to affect the operability or safety of the plant?

APPENDIX B

EOI 9001

1. Review of the Potential Finding Report No. 9008, dated October 14, 1982, displayed generally poor workmanship in the production of fillet welds on supports 9, 10, and 11. Exhibited were incomplete fillet, short weld length, undercut weld, spatter, arc strikes, and unremoved slag. One splice was welded instead of bolted.

2. A site visit was made on November 16, 1982, by the FRC to visually inspect the BMI supports. The extent and severity of the reported weld conditions was determined.

3. These concerns were determined by the FRC to be valid and Open Item Report EOI File No. 9001 was issued.

4. PG&E responded that only a fraction of "as-built" welding of 3/16-inch by 3/4-inch bars are needed for transferring the maximum tensile load of 800 lb. The minimum fillet weld leg dimension is 1/8 inch and length of weld is 1/2 inch. The welded splice is adequate and actually stronger than the bolted splice of Drawing No. 443248. Based on consulting with SWEC technical groups and its site visit, the FRC was in agreement with the PG&E response. Previous inspections were documented by drawing as opposed to individual weld. The conditions reported constituted a small percentage of the total work performed in the BMI area which was in a confined space and were unique to the rest of the W&B scope

of work. PG&E has issued a nonconformance report to disposition this item.

5. The FRC concluded and TES agreed that based on document evaluation and its visual inspection, there is no safety significance from the reported weld conditions. No physical modifications were required and TES recommended closing this file.

EOI 9002

1. Potential Finding Report No. 9006 indicated that the weld lengths on BMI supports 10 and 11 were less than the lengths required by Drawing No. 443248.

2. In response to the request for additional information, PG&E emphasized the very low stresses to which these supports are subjected even when exposed to the peaks of the controlling DDE spectra.

3. The concern of the weld lengths being less than the required length of 3/16-inch fillet on both sides of the bar at the anchors was valid and Open Item Report EOI File No. 9002 was issued.

4. PG&E reported, by reference to design assumptions and calculations, that the minimum weld length was less than the installed conditions and committed to revise Drawing No. 443248 to reflect the minimum acceptable weld length. A technical review by SWEC concurred with the PG&E position. The FRC reviewed the PG&E response and concurred that the weld was acceptable. PG&E has issued a nonconformance report to disposition this item.

5. The FRC recommended and TES agreed with the conclusion that there is no safety significance regarding this item. No physical modifications were required and TES recommended closing this file.

EOI 9003

1. Review of the Potential Finding Report No. 9012 indicated that 58 fillet welds at the BMI tubing seal table did no meet the leg dimension requirements of W&B Weld Procedure WB3500-2.

2. The 58 fillet welds did meet the Westinghouse Drawing No. 685J702 requirement for the leg dimension.

3. Since all 58 subject fillet welds did not meet the W&B weld procedure size requirement, Open Item Report EOI File No. 9003 was issued.

4. Investigation revealed that the W&B procedure referenced required a larger fillet weld than required by drawings. Westinghouse established the weld size based upon design requirements for adequate strength and had a technical representative following the work which was apparently performed to satisfy the drawing requirements. While the W&B weld procedure was not met, there was no violation of the Westinghouse design requirements.

5. The FRC concluded and TES agreed that the welds met the design requirement for support of the tubing and for minimum potential for seal table distortion. No physical modifications were required and TES recommended closing the file.

EOI 9004

1. Review of the Potential Finding Report No. 9003 indicated that the Vendor had not fully performed the ultrasonic testing required on some SS Tubing by Westinghouse Drawing No. 685J702, Revision 4.

2. Additional clarification was requested and received from PG&E that the ultrasonic test requirements stated on the Westinghouse drawing were not a requirement of the Contractor installing the material but were a requirement of the Contractor supplying the material. PG&E also supplied documentation that the material supplier, Westinghouse, had verified that the material manufacturer had satisfactorily performed all of the ultrasonic testing required by Westinghouse's Procurement Documents.

3. The FRC recommended and TES agreed that based on the clarification provided by PG&E, the material in question satisfied the design requirements and that no significant safety issue existed. No physical modifications were required, and TES concurred with the FRC recommendation to close out this file.

EOI 9005

1. Review of the Potential Finding Report No. 9005 indicated there was no evidence that two of the reactor coolant weld procedures were reviewed.

2. This welding procedure concern was determined by the FRC to be valid and an Open Item Report EOI File No. 9005 was issued.

3. Discussion with PG&E and visual site inspection by the FRC confirmed that a subsequent review (100 percent) of the W&B "Welding Electrode Control Sheets" indicated that the welding procedures in question were <u>not used</u> for work on Unit No. 1.

4. The FRC recommended and TES agreed that based on the provided information, there is no safety significance regarding this item. No physical modifications were required. TES recommended closing this file.

EOI 9006

1. Review of the Potential Finding Report No. 9007 indicated that the CMTR for installed Seal Leak Detection Tubing does not identify the material as being soft annealed, as required by Specification No. 8752. Additionally, the information on the CMTR differed from the material description listed on the ASME Code Data Report.

2. The tubing concern was determined by the FRC to be valid and Open Item Report EOI File No. 9006 was issued.

3. Additional information received from PG&E indicated that the specified tubing had been installed correctly but was identified incorrectly. A nonconformance was issued and processed which resulted in the tubing and the supporting documentation being corrected to reflect the proper identification. The nonconformance has been closed. Previous inspections determined the installation to meet drawing requirements and was acceptable.

4. Review of the PG&E information by the FRC, as well as onsite verification, confirmed that the tubing installed met the specification requirements.

5. The FRC recommended and TES agreed that based on the provided information and the technical considerations, there is no safety significance regarding this item. No physical modifications were required. TES recommended closing this file.

EOI 9007

1. Review of the Potential Finding Report No. 9011 indicated that most fillet welds at BMI couplings do not meet the dimension requirements of the W&B Weld Procedure or Westinghouse Drawing No. 685J702.

2. The fillet weld(s) concerns were determined by the FRC to be valid and an Open Item Report EOI File No. 9007 was issued.

3. In their response, PG&E indicated compliance with the requirements of minimum wall thickness, pressure ratings, and Westinghouse Process Specification PWR 82127JM (fillet shall blend in the maximum diameter of the tube). In addition, a review was performed and documented by Westinghouse which found the welds to be acceptable. PG&E has issued a nonconformance report to disposition this item.

4. Based on information provided by PG&E, including evaluation by Westinghouse, the welds are considered acceptable as is.

5. The FRC recommended and TES agreed that based on the information provided and technical considerations, there is no safety significance regarding this item. No physical modifications were required. TES recommended closing this file.

1. Review of the Potential Finding Report No. 9004 indicates that Westinghouse Drawing No. 685J702 requires all connections at the vessel to be radiographed (RT) for clearance between ends of the thimble guide tube and vessel penetration for verification of gap. Of the 58 RT reports reviewed, one record, weld 1-25A, did not identify the status (accept/reject) of the weld.

2. The remaining documentation concern was determined by the FRC to be valid and Open Item Report EOI File No. 9009 was issued.

3. Additional information was requested and received from PG&E and Pullman Power Company indicating the following:

   - The radiograph for weld 1-25A was confirmed to have been acceptable.

   - The radiograph film jacket shows acceptance on the outside of the jacket.

   - Review of the radiograph by the Pullman Power Company Level II Operator indicated results to be acceptable.

4. Based on the information provided by PG&E and Pullman Power Company, the original Potential Finding Report was cancelled by the Construction QA Evaluation Team. Based on the considerations mentioned, it has been

determined there is no safety significance regarding this item. TES recommended closing the file.

EOI 9010

1. Review of the Potential Finding Report No. 9000 indicated there was not evidence that two of the reactor coolant weld procedures were reviewed.

2. This welding procedure concern was determined by the FRC to be valid and an Open Item Report EOI File No. 9010 was issued.

3. Discussions with PG&E and visual site inspection by the FRC confirmed that a subsequent review (100 percent) of the W&B "Welding Electrode Control Sheets" indicated that the welding procedures in question were not used for work on Unit No. 1.

4. The FRC recommended and TES agreed that based on the provided information, there is no safety significance regarding this item. No physical modifications were required. TES recommended closing this file.

1. Review of the Potential Finding Report No. 9002 indicated that the Contractor had not fully complied with the specification governing the installation of the Nuclear Supply Systems (Specification No. 8752). Specifically, no indication was evident on the Contractor's Weld Traveler Document stating that a visual examination of welds on the Seal Leak Detection Tubing and some of the welds on the Reactor Coolant System had been performed as required by Paragraph 7.41 on Page 3.20 of Specification No. 8752.

2. Additional clarification was requested and received from PG&E to the following effect:

   - For the Reactor Coolant Piping Welds, (Item 3A of Potential Finding Report No. 9002), although the weld traveler does not identify it, the complete documentation package for each weld contains the visual inspection documentation which verifies that the visual examination was performed and the approved procedure to which it was examined.

   - For the Seal Leak Detection Tubing Welds, (Item 3B of Potential Finding Report No. 9002), the complete documentation package for the system contains the verification that each weld was visually examined and found acceptable as part of the system hydro-test procedure. In addition, all welds in

the Seal Leak Detection Line were visually inspected and determined to be acceptable by the Site Team.

3. The FRC recommended, and TES agreed, that based on the clarification provided by PG&E, the requirements of Paragraph 7.41 of Specification No. 8752 had been satisfied for the welds identified in Potential Finding Report No. 9002, and that no safety issue existed. No physical modifications were required and TES concurred with the FRC recommendation to close this file.

EOI 9012

1. Review of the Potential Finding Report No. 9001 indicated that requirements of Specification No. 8752, Installation of Nuclear Supply Systems, were not met. Of 14 weld procedures reviewed, 8 did not address the method and material used to monitor interpass temperature.

2. Additional information was requested and received from PG&E that indicated the following:

   - The primary intent of interpass temperature control for austenitic stainless steel welding is to minimize carbide precipitation in pressure boundary welds. Specification No. 8752 specifies a maximum interpass temperature and requires that interpass temperature measurement methods be included in the welding procedure.

   - Industry practice is to impose interpass temperature measurements only on austenitic stainless steel pressure boundary welds with multiple passes. Interpass temperature measurements are not required on nonpressure boundary welds which will function in an environment such as the containment.

3. The welding procedures in question were determined by the FRC to be valid and an Open Item Report EOI File No. 9012 was issued.

4. Discussion with PG&E, the appropriate SWEC Technical Division, and visual site inspection by the FRC confirmed the following:

   - Four procedures were not used in Unit 1.
   - Two procedures were not used for pressure boundary welds.
   - Two procedures were used to perform single pass welds.

5. The FRC recommended and TES agreed that based on the provided information and the technical considerations, there is no safety significance regarding this item. No physical modifications were required. TES recommends closing this file.

EOI 9013

1. Review of the Potential Finding Report No. 9009 indicated eight types of discrepancies from BMI Tube Supports, PG&E Drawing Nos. 443247 and 443248.

2. Since there were various discrepancies between installation performance and drawing requirements, it appeared that numerous undocumented changes were made without engineering approval, and Open Item Report EOI File No. 9013 was issued.

3. The PG&E response addressed each of the types of technical discrepancies individually.

   a. The actual spacing of anchor bolts met the spacing requirements of PG&E Standard Drawing No. 054162-3.

   b. Since anchor bolts are loaded in shear only and stress ratios are less than 0.4, they do not rely on a full bolt head.

   c. Anchor angle sections transmit an 800 lb load to a single anchor bolt capable of resisting 800 lb.

   d. Since full penetration weld splices have the same strength as unspliced sections and actual stress ratios are less than 0.25, these splices are acceptable on the basis of visual examination.

e. A flare bevel weld provides a throat area at least equivalent to the specified 1/4-inch fillet weld.

f. The anchor bolt whose washer appeared to be masking an oversize hole could be eliminated with the load still readily accommodated.

g. The subject plate stiffeners shown on the preliminary drawing were not essential, but since they were also not detrimental, no steps were taken to delete them. PG&E updated the drawings accordingly.

The subject drawings and the other information were reviewed by SWEC technical divisions to provide a further evaluation of the significance of the above discrepancies. PG&E has issued a nonconformance report to disposition this item.

4. The FRC recommended and TES agreed that based on the drawing information and technical considerations, there is no safety significance of these items either separately or collectively. Since all areas of installation work performed by Wismer & Becker were inspected, the incidence of undocumented minor deviations from drawings was considered to be isolated to this BMI support area. No physical modifications are required and TES recommended closing this file.

EOI 9014

1. Review of the Potential Finding Report No. 9019 indicated for the Reactor Coolant Piping Welding, a lack of documentation that certifies that the Halogen content of Penetrant Lot No. 2E034 meets the specification requirements.

2. Additional information was requested and received from PG&E that indicated the missing document which shows compliance with specification requirements was obtained.

3. The concern over lack of documentation was determined by the FRC to be valid and Open Item Report EOI File No. 9014 was issued.

4. The FRC confirmed that the documentation has been obtained certifying the Halogen content of Penetrant Lot No. 2E034 which shows that specification requirements have been met.

5. The FRC recommended and TES agreed that based on the provided information and the technical considerations, there is no safety significance regarding this item. No physical modifications were required. TES recommended closing this file.

1. Review of the Potential Finding Report No. 9022 indicates that on the Reactor Coolant System, A490 bolts were used in lieu of A307 bolts and A325 bolts were used in lieu of A490 bolts. Flat washers were listed in lieu of lock washers at the locations where lock washers were specified.

2. The washers and bolts in question were determined by the FRC to be valid and an Open Item Report EOI File No. 9017 was issued.

3. Additional information was requested and received from PG&E that indicated the strength of the bolt material provided (A490) is higher than the bolt material required (A307) and (A325) is equal in strength to (A490). Drawing No. 438271 has been revised to reflect the as-built condition (bolt material and flat washers in lieu of lock washers) in accordance with engineering telecon approval, previously provided.

4. Discussions with the appropriate SWEC technical division and review by the FRC confirmed that the substitution bolts are acceptable, and documented approval had been given to use flat washers in lieu of lock washers.

5. The FRC recommended and TES agreed that based on the provided information and the technical considerations, there is no safety

significance regarding this item. No physical modifications were required. TES recommended closing this file.

1. Review of Potential Finding Report No. 9023 indicates that the manufacturer's record of welder performance qualification tests for welder "J" did not meet ASME IX requirements. The welder had passed the SMAW test but failed the GTAW test. The report also indicates that no objective evidence could be found that Westinghouse's requirement for use of mock-ups during qualification was met for a number of welders.

2. The welding concerns were determined by the FRC to be valid and Open Item Report File No. 9018 was issued.

3. Additional information was requested and received from PG&E and Westinghouse as follows:

   - The 1971 Edition of ASME Section IX required that each welder be qualified for the particular welding process he will use. Welder "J" took a combination test and PG&E and Wismer & Becker considered that since welder "J" did pass the SMAW portion during the qualification test, he could be considered as qualified to that method. Welder "J" performed two pipe welds. Both had been radiographed and found satisfactory.

- Although objective evidence could not be found that all welders were qualified using mock-ups, NDE found all the welds in question were acceptable. ASME IX requirements do not require use of mock-ups for welder qualification. This requirement is imposed by Westinghouse for BMI tubing. Subsequent review of the Westinghouse representative field notes provide evidence that the mock-ups were in fact produced and used.

4. Discussion with PG&E, appropriate SWEC divisions, and visual site inspection(s) confirmed the following points:

   - Although the method of qualification of welder "J" is subject to interpretation, it was an isolated incident. Furthermore, the specific welds were later radiographed and found acceptable.

   - The mockups were used as required.

5. The FRC recommended and TES agreed that based on the provided information and the technical consideration, there is no safety significance regarding this item. TES recommended closing the file.

1. Review of the Potential Finding Report No. 9025 indicated that welding of some specific carbon steel materials and certain full penetration welds did not have records available that documented compliance with two of the welding requirements in Specification No. 8752. These two requirements were revised in Specification Change Notice No. 22 to substitute visual examination on approval by the Engineer. Documentation of subsequent approval by the Engineer to substitute visual examination was not available.

2. The welding concern was determined by the FRC to be valid and Open Item Report EOI File No. 9019 was issued.

3. Additional information received from PG&E indicated the full penetration welds in question had been visually examined and based on the function of the welds (i.e., structural vs. pressure boundary), project engineering approved the examination as appropriate for the conditions.

4. Review of all the pertinent documentation and site inspection by the FRC confirmed that the specification requirements were originally written for the pressure boundary portion of the Wismer & Becker scope of work. The specification was changed to consider the revised scope. Non-destructive examination of this type would not normally be specified for the welds in question. The intent of Change Notice No. 22, which was approved by the

engineer, was to delete the NDE requirements for these welds and subsequent approval by the engineer was not intended.

5. The FRC recommended and TES agreed that based on the provided information and the technical considerations, there is no safety significance regarding this item. No physical modifications were required. TES recommended closing this file.

EOI 9020

1. Review of the Potential Finding Report No. 9018 indicated that certain parameters on radiographic inspection reports required by Specification No. 8752 may not conform with radiographic procedural standards.

2. This finding was considered valid by the FRC and Open Item Report EOI File No. 9020 was issued.

3. Additional information in the form of calculations performed by PG&E was reviewed by the appropriate SWEC Technical Division and the FRC. These calculations considered the specific parameters in question under the circumstances identified in the radiographic inspection reports.

4. The SWEC review confirmed that the radiographic results shown in the inspection reports were acceptable to procedural standards, and no violation of code or procedure existed.

5. The FRC recommended and TES agreed that based on the information provided by PG&E and the technical considerations, there is no safety significance regarding this item. No physical modifications were required. TES recommended closing this file.

EOI 9022

1. Review of the Potential Finding Report No. 9017 indicated that for a number of welds the voltage and amperage readings did not remain within the limits called for in the approved welding procedure.

2. Additional clarification was requested and received from PG&E which stated that for the particular weld procedure in question the voltage and amperage parameters are nonessential variables and, therefore, should not affect weld quality. In addition, PG&E performed Non-destructive Examinations (NDE) on some of the affected welds which originally did not require NDE tests. The results of the additional NDEs verified that the quality of the welds was acceptable.

3. At the request of the FRC, the SWEC Materials Engineering Division reviewed the actual voltage and amperage data for the welds in question and concurs that weld quality should not have been affected.

4. PG&E has issued a nonconformance report to disposition this item.

5. The FRC recommended and TES agreed that based on the clarification provided by PG&E, the quality of the welds in question is acceptable and that no significant safety issues existed. No physical modifications are requested and TES concurred with the FRC recommendation to close out this file.

1. Review of the Potential Finding Report No. 9027 indicated that voltage/amperage requirements of Weld Procedure 3500-1 involving the Reactor Coolant System were not met. Of the 32 full penetration welds, the weld records for 20 welds document amperage and voltage readings outside the range of the weld procedure requirements (both high and low).

2. Additional information was requested and received from PG&E that indicates the following:

   - Manual GTAW and SMAW are self-limiting in terms of excessive heat input, although restrictions on heat input were not a part of the specification.

   - The welding procedure, as written, was too restrictive for the voltage ranges listed for GTAW. The procedure should have been revised to reflect a higher acceptable voltage range for this ASME Section IX nonessential variable.

3. After review of all the actual weld data by the SWEC Materials Engineering Division, the FRC determined that none of the deviations are of such magnitude that unacceptable welds would result. The final nondestructive examination confirms that acceptable weld quality was achieved. PG&E has issued a nonconformance report to disposition this item.

4. The FRC recommended and TES agreed that based on the provided information and the technical considerations, there is no safety significance regarding this item. No physical modifications were required. TES recommended closing this file.

1. Review of the Potential Finding Report No. 9028 indicates that weld records for the Reactor Coolant Piping, Pressurized Surge Line Piping, and Bottom Mounted Instrumentation (BMI) Tubing were reviewed for evidence that delta ferrite checks were made where required. This check was not recorded for several welds and the recorded values for two welds were less than the required minimum 5 percent.

2. Additional information from PG&E indicated the following:

   - Austenitic stainless steel filler metal was purchased to meet a 5-15 percent ferrite level.

   - Of all the welds which were checked, only two indicated a ferrite level below 5 percent and these were just slightly below at 4 percent and 4.5 percent, respectively.

   - All the welds in question were eventually tested and found satisfactory.

3. FRC review and discussion with SWEC Technical Division(s) determined the following:

- Ferrite readings were recorded for 26 of 35 welds on the Reactor Coolant System and pressurized surge line piping, and all welds checked had acceptable ferrite readings.

- The specification contained adequate requirements to control ferrite content of weld filler metal, and all weld filler metal for these applications was procured to the same requirements.

- The same weld procedures were used for all welds.

- Current thinking is that ferrite content of 3 percent or greater will produce acceptable welds and is reflected in later code editions. All welds checked had ferrite readings above 3 percent.

- A sufficient number of welds was checked to show that the process produced welds having ferrite readings above the acceptable minimum.

- The intent of the specification was met.

4. The FRC recommended and TES agreed that based on the provided information and the technical considerations, there is no safety significance regarding this item. TES recommended closing this file.

1. BMI Tubing Support 6 had 19 unused 5/16-inch diameter holes drilled through the 2-inch legs of the 2-inch by 12-foot - 0-inch channel. (Drawings Nos. 443247 and 443248). The holes appeared to be misdrilled in preparation for erection.

2. The PG&E response stated design forces were calculated using peaks of the controlling DDE spectra. Stresses in members sized to limit deflections to 1/8 inch are low. Ratios of actual to allowable stresses are less than 0.25. Support reactions of channel sections supporting the tubes are less than 3,500 lb. Maximum tension in tube support flat bars is less than 800 lb (Reference: Calculation File No. 1.2883, Set No. 2 DCM C-17, DCM C-25 and DCM C-30). A SWEC technical review concurs with the noted response. PG&E has issued a nonconformance report to disposition this item.

3. The FRC recommended and TES agreed that based on the provided information and on technical consideration, there is no safety significance regarding this item. No physical modifications were required, and TES recommended closing this file.

1. The Site Review Team reported to the FRC that documentation was not available to assure that liquid penetrant inspection of lug removal areas on the reactor coolant piping had been performed as required. The FRC reviewed the PFR and concurred that the inspection was required and the potential finding was valid. EOI File 9026 was issued.

2. PG&E reported that its review had not located the documentation and Pullman Power Company had been retained to perform the inspection (early 1983).

3. The FRC reviewed the results of the Pullman Power Company inspection, including the NDE procedures used. The documentation was complete and showed that the lug removal areas were inspected, indications removed where required, and thickness measurements taken where grinding was performed. All lug removal areas were acceptable to Pullman Power Company procedures with the exception of one linear indication which was not allowed by Pullman's acceptance criteria. Information on that area was supplied by PG&E. Qualified project personnel performed a liquid penetrant exam to PG&E's procedure utilizing the acceptance criteria from the Westinghouse procedure and the applicable code and accepted the indication.

4. The FRC determined that an independent LP exam should be performed by a SWEC Level III Examiner witnessed by a member of the FRC. The examination was performed and a determination was made that the examina-

tions by both Pullman Power Company and PG&E were valid, and the indication was considered acceptable per the Code and within the PG&E inservice inspection requirements.

5. The FRC concurred with the corrective action taken by PG&E and concluded with TES agreement, that, based on the action taken by PG&E, review of the facts by the FRC, and the independent examination performed for the FRC, the Code and specification requirements were met and there are no safety concerns. This is the only reported item to be classified as a finding. Since the review verified the performance of all other required inspections and this was the only exception, it is considered to be a unique occurrence. No physical modification is required and TES recommended closing this file.

1. Review of the Potential Finding Report No. 9032 indicated that the Contractor had not fully complied with the requirements of Specification No. 8752. Specifically, the specification (Paragraph 7.42) states that all stainless steel finished weld surfaces shall be liquid penetrant examined. The Contractor did not liquid penetrant examine the stainless steel attachment welds of the tubing to the seal table.

2. Additional clarification was received from PG&E in the form of the Westinghouse System Installation Drawing No. 685J702. Note No. 4 on the Westinghouse drawing specifically states that penetrant testing of the tube-to-seal table weld is not required. The liquid penetrant requirement in Specification No. 8752 was intended for the pressure boundary portion of the W&B scope and did not apply to the welds in question.

3. The FRC recommended and TES agreed that based on the clarification provided by PG&E, and since the welds in question are not pressure retaining welds, the examinations performed on these welds did not violate Specification No. 8752 requirements and no safety issue existed. The appropriate SWEC Division has concurred with the FRC resolution and recommendations. No physical modifications were required, and TES concurred with the FRC recommendation to close out the file.

1. Review of the Potential Finding Report No. 9010 indicates that weld documentation does not identify welder to specific welds as required by Specification No. 8752.

2. Additional information received from PG&E indicated the following:

   - The bottom-mounted instrument supports were installed in accordance with Field Change Order 25. Field Change Order 25 directed installation in accordance with drawings which did not require identification of weld numbers or welder identification numbers.

   - Change Notice 18 to Specification No. 8752 revised requirements for weld numbers and welder identification numbers to be as applicable per codes, specifications, drawings, or construction direction.

3. Information provided by PG&E indicates that Change Notice 18 to Specification No. 8752 revised requirements for weld numbers and welder identification numbers to be as applicable per codes, standards, specifications, drawings, or construction direction. These documents did not include this requirement; therefore, there was no violation of Specification No. 8752.

4. The FRC recommended and TES agreed to close the file based on the provided information.

1. Review of the Potential Finding Report No. 9034 indicates numerous deficient conditions (i.e., arc strikes, weld spatter, rusting and pitting, overgrinding and paint spatter) noted on Reactor Coolant and Surge Line Piping.

2. Additional information in the form of test reports, test data, diagrams, checklists, logs, etc. was requested and received from PG&E indicating the following:

   - Specification No. 8752 was an installation specification containing the original contract requirements. Wismer & Becker completed installation of the Nuclear Steam Supply System (NSSS) in early 1976. Documentation exists to show that, at the time of completion, the piping surface conditions had been addressed and found acceptable.

   - The reported deficiencies were identified more than 6 years after installation completion by Wismer & Becker. Some of the reported deficiencies are very minor and could possibly have been accepted during the final inspection in 1976.

   - An assessment of the deficiencies by a qualified metallurgist concludes that the observed conditions caused no technical concern.

- Although there are no apparent technical deficiencies, PG&E committed to correct the surface conditions by (1) removal of paint, rust, and spatter; and (2) removal of arc strikes and evaluation of casting pits and grind areas.

3. Review by appropriate SWEC Technical Division(s) and visual site inspections by the FRC, PG&E, and Westinghouse confirmed the following points:

   - No surface cracks existed nor were any areas of less than minimum wall thickness identified.

   - Subsequent technical evaluation of the conditions noted during inspection indicates the concerns are minor and will not compromise safe operation of the plant.

   - The program PG&E proposes to return the Reactor Coolant System to the initial conditions is reasonable.

4. The FRC recommended and TES agreed that based on the provided information and the technical considerations, there is no safety significance regarding this item. TES recommended closing the file.

APPENDIX C

INDEPENDENT DESIGN VERIFICATION PROGRAM,
PROGRAM PLAN, REVISION 1, ADJUNCT PROGRAM
FOR EVALUATION OF CONSTRUCTION QUALITY
ASSURANCE, DATED OCTOBER 1, 1982

TELEDYNE
ENGINEERING SERVICES

DIABLO CANYON NUCLEAR POWER PLANT

INDEPENDENT DESIGN VERIFICATION PROGRAM

PROGRAM PLAN

REVISION 1

ADJUNCT PROGRAM FOR EVALUATION

OF CONSTRUCTION QUALITY ASSURANCE

OCTOBER 1, 1982

PREPARED BY

TELEDYNE ENGINEERING SERVICES

AS PROGRAM MANAGER, TES PROJECT 5511

Docket No. 50-275
License No. DPR-76

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ADJUNCT PROGRAM FOR EVALUATION OF CONSTRUCTION QUALITY ASSURANCE

OCTOBER 1, 1982

1.0 INTRODUCTION

This Program Plan defines the management and technical aspects of an evaluation of construction Quality Assurance being conducted by the Diablo Canyon Nuclear Power Plant (DCNPP) Independent Design Verification Program (IDVP) as an adjunct* to the Phase II Program. The Pacific Gas and Electric Company (PG&E) advised the Nuclear Regulatory Commission-Nuclear Reactor Regulation (NRC-NRR) of their intent to proceed with such an evaluation by letter of September 7, 1982, Reference 1. The objective is to complete the evaluation and issue an interim report prior to mid-November 1982 and to issue a final report prior to mid-December 1982.

The "Adjunct Program for Evaluation of Construction Quality Assurance" is a programmatic Quality Assurance audit of a representative sample of construction activities. It is termed as "Adjunct Program" to the Phase II Program because it is to be performed under the direction of the IDVP Program Manager, Teledyne Engineering Services (TES); by an organization which is participating in the IDVP, Stone and Webster Engineering Corporation (SWEC); in accordance with the applicable portions of the Phase II Program Management Plan, Reference 2; in the general time frame of the Phase II Program; but, is not design related nor required by the NRC Order or Letter so it is not an essential part of the IDVP Phase II Program. This construction Quality Assurance Program was voluntarily proposed by PG&E at an NRC-PG&E-IDVP meeting of September 1, 1982 to "Lay this unwarranted public concern to rest, and to avoid further delay in the licensing of Diablo Canyon,..." (Tr, Pg. 11, 13-15).

The Program Management Plans for the performance of an Independent Design Verification Program (IDVP) for the Diablo Canyon Nuclear Power Plant Unit 1 (DCNPP-1) are intended to respond to an NRC "Order" and "Letter," respectively. The program is being conducted in two phases, corresponding to the NRC requirements for restoration of the low-power license ("Order") and for operation above 5% power ("Letter"), respectively. These NRC requirements relate to the design efforts performed internally by the PG&E, or on behalf of PG&E by service-related contractors, on safety-related structures, systems, and components. Phase I is restricted to seismic-related efforts of PG&E and of their service contracts performed prior to June 1, 1978. Phase II includes non-seismic service-related contracts performed prior to June 1978, PG&E internal design activities, and all service-related contracts post-January 1978.

*Webster: "Something joined or added to another thing but not essentially a part of it."

Each IDVP phase is conducted in accordance with a Program Management Plan which includes a number of Program Procedures as appendices. For each phase, the corresponding procedure provides an Engineering Program Plan which defines the technical work to be performed. The text of the Phase II Program Management Plan itself, separate from the appendices, includes the following sections:

1.0 Introduction (references NRC Order and Letter)
2.0 Background and Objectives (NRC requirements, general organization and participant scopes)
3.0 Engineering Program Plan (summarizes methodology, criteria and performance guidelines)
4.0 TES Methodology and Project Organization (identifies senior individuals and summarizes technical and management assignments)
5.0 PG&E Actions (summarizes PG&E Internal Technical Program, relationships with IDVP)
6.0 Reporting (defines the types of reports including the Open Item Report System)
7.0 Documentation (requires that all results be documented and based upon documented information)

The "Adjunct Program for Evaluation of Construction Quality Assurance" (CQA) is to be performed in accordance with the technical "CQA Program Plan" which is defined by 3.0 of this document in accordance with the objectives defined in 2.0. The remainder of this document, 4.0 through 7.0 invokes and supplements, the similarly numbered sections of the Phase II Program Management Plan for management of the CQA.

2.0 OBJECTIVES AND ORGANIZATION

2.1 Objectives

This review is intended to assess whether the construction of Diablo Canyon was performed in accordance with quality requirements appropriate for the time of plant construction. The approach is to evaluate the work of two of the principal contractors which performed work important to safety at the plant. The review is structured to provide reasonable confirmation that the construction quality program meets the applicable standards for the time of nuclear power plant construction.

The review will start with an evaluation of whether the construction documentation gives confidence that the construction work correctly incorporates essential design features. To confirm this, samples of actual construction will be used to verify that the facilities were correctly built and that other construction requirements were met.

2.2 Organization

In addition to the TES and SWEC scopes defined in 2.3 and 2.4, of Reference 2:

a. TES shall perform the additional scope defined in 4.0 of this document.

b. SWEC shall perform the CQA scope of work defined in 3.0, shall report the work in accordance with 6.0 and document the work in accordance with 7.0 to satisfy the objectives of 2.1. All cited numbers being those contained in this document.

3.0 CONSTRUCTION QUALITY ASSURANCE (CQA) PLAN

3.1 Scope

Construction work of two major construction contractors has been selected as the subject area for the evaluation. The contractors and the work performed by them, to be covered by the review, are as follows:

- Guy F. Atkinson Co. (GFA) -- civil/structural work on the containment building
- Wismer and Becker (W-B). -- installation of NSSS piping.

An appropriate sample for evaluation will be selected from the work of each contractor to provide evidence of his quality practices in each major area of activity. The sample shall be submitted for approval to TES prior to use.

This review will be conducted in accordance with the applicable provisions of Stone & Webster "Standard Nuclear Quality Assurance Program -SWSQAP 1-74A". However, the documents to be used during this review, in determining the extent of compliance with the requirements, will be those applicable to the contractors when their work was performed. Rev.1

Detailed descriptions of tasks A through D included in this program are in the following subsections. The SWEC procedures for tasks A and B will be provided to TES for comments. Potential Findings, as identified in Tasks A and B will be processed in Task C and reported as required by Task D. Rev.1

3.2 Task A - Quality Assurance

3.2.1 Objective

Evaluate the two designated contractors' quality programs to determine if adequate controls and practices to assure the quality of construction and the incorporation of essential design features into the completed plant were evident and to determine if controls were consistent with applicable NRC requirements at the time the work was performed.

3.2.2 Subtasks

a. Develop procedures and checklists, as appropriate, to:

- Evaluate each contractor's quality program and procedures to determine if practices adequate to assure that construction requirements (i.e. drawings, instructions, specifications) were met by those responsible for the construction activity.
- Evaluate each contractor's quality program to determine if practices covering audits and inspections were adequate.
- Evaluate each contractor's quality program to determine if practices governing the identification, control and dispositioning of construction nonconformances were adequate.

b. Conduct the specified evaluations utilizing experienced auditors qualified and certified in accordance with ANSI N45.2.23. Areas and items examined and the results of the examination shall be identified and documented on checklists so as to be repeatable.

c. All Potential Findings identified in conjunction with the accomplishment of Task A shall be processed and reported in accordance with Tasks C and D, respectively.

3.3 Task B - Construction Verification Review

3.3.1 Objective

Evaluate if physical installation of selected components of safety system and structures conforms to the requirements of design drawings and specifications; and that required inspections were performed.

3.3.2 Subtasks

a. Develop procedures and checklists as appropriate to:

- Verify that construction of selected components reflects essential design features.
- Verify that appropriate documentation was provided to record variations, and, where required, as-constructed conditions.

b. Choose items for physical verification of key elements from work of the contractors and specify these in a walkdown list. The list of items and attributes to be verified will be sufficiently representative to permit conclusions to be drawn as to the adequacy of installation work.

c. Conduct the specified walkdowns and verifications utilizing experienced personnel certified in accordance with ANSI N45.2.6 in the discipline being examined. Areas and items examined and the results of the examination shall be identified and documented so as to be repeatable. The walkdown shall be primarily a visual verification of component installation to provide confidence that dimensional requirements have been met.

d. All Potential Findings identified in conjunction with the accomplishment of Task B shall be processed and reported in accordance with Task C and D, respectively.

3.4 Task C - Processing of Findings

3.4.1 Objectives

Review all Potential Findings identified during the review and provide for evaluating and classifying the significance of Potential Findings.

3.4.2 Subtasks

a. SWEC will establish a Findings Review Committee composed of several senior SWEC personnel with broad experience in nuclear power plant engineering, quality assurance and construction management and a similar TES employee.

b. The Committee shall define criteria for determining the degree of impact that Potential Findings have on plant adequacy for DCNPP-1.

c. The Committee shall establish a procedure to process Potential Findings. This procedure shall provide an opportunity for PG&E to comment on the definition and accuracy of Potential Findings.

d. The committee shall review each Potential Finding for definition and accuracy and will assess its impact on the adequacy of the plant. The committee shall recommend classification of Potential Findings to TES in accordance with the following:

Committee Determination	Classification
1. Finding accurate and has potential for significant impact on adequacy of Diablo Canyon Unit 1 (DCNPP-1)	Finding
2. Finding accurate but does not have potential for significant impact on adequacy of DCNPP-1	Observation
3. Finding not accurate	Invalid

3.5 Task D Report

Reports shall be prepared in accordance with 6.0.

4.0 TES METHODOLOGY AND PROJECT ORGANIZATION

4.1 TES Methodology

In addition to the contents of the similarly numbered section of Reference 2, TES shall assure that the CQA Program is performed in a technically competent, independent and timely manner which is consistent with its objectives.

4.2 Project Organization

In addition to the contents of the sections 4.2 through 4.7 of Reference 2:

a. Dr. W. E. Cooper, as Project Manager for TES shall review the recommendations of the Findings Review committee for compliance with established criteria and, when criteria have been properly applied and documented, he shall declare the Potential Finding as a Finding or Observation as recommended by the Findings Review Committee and transmit and report the item in accordance with this plan. In addition, he shall be responsible for the verification of PG&E Corrective Action taken in response to a Finding and the reporting of resolutions.

b. Mr. L. C. Noriega's scope is increased to include the efforts of SWEC in performance of their CQA activities.

c. Mr. J. A. Flaherty will serve as the TES employee on the Findings Review Committee. This will be Mr. Flaherty's only IDVP assignment and he will not be under the direct supervision of Dr. Cooper.

5.0 PG&E ACTION

In addition to the contents of the similarly numbered sections of Reference 2, PG&E shall comment on the definition and accuracy of Potential Findings in accordance with the procedure established by the Findings Review Committee for the processing of Potential Findings. Review by the Guy F. Atkinson, Co. (GAF) and Wismer and Becker (W-B) shall be requested and coordinated by PG&E.

6.0 PROGRAM REPORTS

6.1 Types of Reports

The following types of reports will be prepared:

(1) Semimonthly Report
(2) Interim Technical Report on Construction Quality Assurance (ITR-CQA)
(3) Final Report on Evaluation of Construction Quality Assurance.

In addition, the Error or Open Item (EOI) report system used in Phase II, and described in Ref. 2, Appendix E, will be adapted to the CQA effort in the manner defined in 6.3 of this document.

6.2 Semimonthly, Interim Technical and Final Reports

Each of these is defined as follows:

(1) Semimonthly reports shall be prepared in accordance with 6.2 (1) of Reference 2.
(2) The ITR-CQA shall have the same intent as does the Final Report and will be issued by mid-November 1982.. Rev 1
(3) The Final Report on Evaluation of Construction Quality Assurance will be issued in mid-December 1982 and will compile all evidence reviewed, Potential Findings, Observations and Findings, including their description, comments, assessment of impact, results of the Findings Review Committee, results of the review of PG&E corrective action plans, and will assess the PG&E QA Program for construction of DCNPP Unit 1. The report will include a description of the work performed, an identification of documents used in or generated by this project, the results of the review, and the conclusions drawn from each task. Rev 1

6.3 Application of Open Item Report System

The EOI System described by 6.3 of Reference 2 and by DCNPP-IDVP-PP-003, Revision 1 will be utilized as a tracking system, using the following interpretations.

a. Open Item Reports (OIR) shall be issued by SWEC to report Potential Findings. The file number shall be assigned in sequence from the range of numbers 9000-9999.

b. Issuance of the OIR will initiate PG&E action in accordance with 5.0 to verify the definition and accuracy of Potential Findings. PG&E shall report their results to TES and SWEC by use of a PG&E Resolution sheet.

c. The Findings Review Committee shall report their recommendation to TES, with a copy to PG&E, as follows:

(1) A Potential Error Report as a Class A Error (ER/A) shall be used for recommended Findings.
(2) A Potential Error Report as a Class C Error shall be used for recommended Observations.
(3) A Potential Program Resolution Report as a Closed Item shall be used for recommended invalid Potential Findings.

d. When the recommendation of the Findings Review Committee are considered by TES to be in compliance with established criteria:

(1) An Error Report as a Class A Error shall be issued for Findings.
(2) An Error Report as a Class C Error shall be issued for Observations.
(3) A Program Resolution Report as a Closed Item shall be issued for invalid Potential Findings

If the recommendations of the Findings Review Committee are not considered by TES to be in compliance with established criteria, TES will issue an Open Item report, keeping the same File Number, referring the item back to the Findings Review Committee.

e. In response to a Finding (ER/A), PG&E shall develop and implement corrective action. They may consult with the IDVP, through TES, in the development and implementation of such action. Following completion of the corrective action, PG&E will so notify TES and SWEC by issuance of a PG&E Completion Report; TES will issue an Open Item Report, keeping the same File number; and SWEC will verify the corrective action.

f. When SWEC verifies the corrective action, including review by the Findings Review Committee, the Findings Review Committee will report its recommendation to TES, with a copy to PG&E as follows:

(1) A Potential Error Report as a Class A Error shall be used if the PG&E Corrective Action is not acceptable.
(2) A Potential Program Resolution Report as a Closed Item when the PG&E Corrective Action is acceptable.

g. The recommendations of the Findings Review Committee will be reviewed and reported by TES as follows:

(1) An Error Report as a Class A Error if TES concurs that the PG&E Corrective Action is not acceptable.
(2) A Program Completion Report as a Closed Item when the PG&E corrective action is acceptable, so that the Finding is deemed to be resolved.

h. An IDVP Completion Report will be issued by TES following issuance of an Error Report as a Class C Error (Observation) and following issuance of a Program Resolution Report as a Closed Item (invalid Potential Findings or resolved Finding).

7.0 DOCUMENTATION

The principles of 7.0 of Reference 2 apply to the CQA program.

REFERENCES

1. Pacific Gas and Electric Co. Letter (Crane) to NRC-NRR (Eisenhut) of September 7, 1982.

2. "Diablo Canyon Nuclear Power Plant-Unit 1, Independent Design Verification Program, Program Management Plan, Phase II", prepared by Teledyne Engineering Services as Program Manager, June 18, 1982.

APPENDIX D

SITE QUALITY ASSURANCE EVALUATION TEAM QUALIFICATIONS

APPENDIX D

Stone & Webster Engineering Corporation provided a highly competent, qualified team to assess certain activities at the Diablo Canyon job site. A total of 10 personnel, including an on-site team leader, provided independent construction and records verification for two contractors utilized at this site.

All assigned personnel were qualified Level II or Level III inspection, test, or examination personnel or lead (Level III) auditors in accordance with applicable ANSI or AWS standards and corresponding Regulatory Guides. The team had an average of 11 1/2 years' experience in nuclear power; the site team leader (Level III), for example, had over 35 years' experience in power plant construction, 15 years of which were in nuclear power plants. In addition, he has had increasingly responsible positions in Quality Assurance; Project QA Manager, Assistant FQC Manager, Senior Site Superintendent, etc. The team members were Senior Inspectors, Inspection Supervisors, QC Engineers, Senior QA Engineers, Assistant Managers, or Consultants.

The average creditable experience in Engineering, Quality Assurance, or Project Management was almost 17 years for the assembled team; the majority of team members had over 10 years of experience.

The team was carefully assembled to provide the necessary qualifications and experience in the significant task areas. For example, welding records were

reviewed by an AWS certified team member, NDT records by a team member qualified to SNT-TC-1A, Level III, civil records by a PE who is also ASME, Level III; in every case, personnel were assigned duties based on their specific discipline activity and area of expertise. Six members of the team were qualified to Level III in accordance with applicable national standards.

APPENDIX E

PROJECT PROCEDURE 4-2

CONSTRUCTION QUALITY ASSURANCE EVALUATION

Approval:

Manager Quality Assurance [signature] Date 10/28/82

Project Manager [signature] Date 10/29/82

1.0 PURPOSE

This procedure establishes the process to be used for the construction quality assurance evaluation of Diablo Canyon Nuclear Power Plant - Unit 1.

2.0 SCOPE

This procedure applies to the activities associated with the following tasks:

A. Quality Assurance Program Evaluation

B. Construction Verification Review

C. Processing of Findings

D. Corrective Action

E. Reports of Evaluation

3.0 ATTACHMENTS

3.1 Quality Assurance Evaluation/Construction Verification Checklist

3.2 Potential Finding Report

3.3 Open Item Report

3.4 Potential Error Report

3.5 Potential Program Resolution Report

3.6 Error Report

3.7 Program Resolution Report

3.8 Potential Finding Review Criteria

4.0 GENERAL REQUIREMENTS

4.1 All personnel assigned quality assurance program evaluation responsibilities shall be certified auditors in accordance with ANSI-N45.2.23 and applicable Stone & Webster procedures.

4.2 All personnel assigned construction verification responsibilities shall be certified inspectors in the appropriate discipline in accordance with ANSI N45.2.6 and applicable Stone & Webster procedures.

4.3 The construction quality assurance evaluation will be structured to determine, by evaluation against predetermined checklists, what quality practices were utilized in the construction of Diablo Canyon NPP-Unit 1, and whether those quality practices were appropriate to meet quality requirements in effect at the time of plant construction.

5.0 PROCEDURES

5.1 Quality Assurance Program Evaluation

5.1.1 The Senior Field Quality Control (FQC) Representative shall develop a Quality Assurance Evaluation/Construction Verification Checklist, Attachment 3.1, for each contractor to be evaluated. The Checklists shall be sequentially numbered for each contractor evaluated.

5.1.2 The auditor(s) assigned to conduct the evaluation of the contractor's construction program shall, utilizing the checklist, itemize those quality practices which were evident in the performance of each activity. All activities evaluated, and the results of the evaluation, shall be identified and documented on the checklist to assure repeatability.

5.1.3 After obtaining available evidence of implementation of a quality assurance program, the auditor(s) shall evaluate the implemented program against the accepted quality requirements at the time of construction to ascertain the adequacy of the contractor's construction program.

5.1.4 The Senior FQC Representative shall coordinate the activities of this section with the activities of Section 5.2 to ensure that nonconformances identified and dispositioned by the contractor's construction program have been properly resolved.

5.1.5 Each Potential Finding identified in conjunction with this evaluation shall be documented on a Potential Finding Report identified to the specific Checklist Number(s), Attachment 3.2, and processed in accordance with Section 5.3 of this procedure.

5.2 Construction Verification Review

5.2.1 The Senior FQC Representative shall prepare a sequentially numbered Quality Assurance Evaluation/Construction Verification Checklist, Attachment 3.1, for each system, or portion of a system, to be verified.

5.2.2 Each Checklist shall be prepared based on design drawings, specifications, reported as-built conditions, and other appropriate design data (e.g., flow diagrams).

5.2.3 The inspector(s) assigned to conduct the verification shall, utilizing the checklist, verify the as-built condition, and compare the as-built condition to the design documents. This verification shall include, but not be limited to, the following:

A. Verification that valves, pumps, tanks, instrumentation, and other components are installed in the correct location, properly oriented, and that identification corresponds to the applicable isometric drawing.

B. Verification that identification and location of pipe hangers and seismic supports are in accordance with the applicable engineering drawings.

C. Verification that required Non-Destructive Testing of welded joints has been completed, and joints correspond to those identified on the applicable drawings.

5.2.4 All systems shall be identified and documented on the checklist to assure repeatability.

5.2.5 Each Potential Finding identified in conjunction with this verification shall be documented on a Potential Finding Report identified to the specific Checklist Number(s), Attachment 3.2, and processed in accordance with Section 5.3 of this procedure.

5.3 Processing of Findings

5.3.1 A Findings Review Committee, composed of senior Stone & Webster personnel with broad experience in nuclear power plant engineering, construction management, and quality assurance, shall be established to review all Potential Findings identified in Section 5.1 and 5.2. The Findings Review Committee will also include a representative of Teledyne Engineering Services. The Findings Review Committee members are CORichardson, FSestak, EEErlandson, CLundin, and JAFlaherty.

5.3.2 Potential Findings, identified in Sections 5.1 and 5.2 shall be identified in writing on a Potential Finding Report identified to the specific Checklist Number(s), Attachment 3.2, by the auditor/inspector. All available information shall be annotated by the auditor/inspector to facilitate review of the potential finding, and to assure repeatability. The Potential Finding Report shall be forwarded to the senior FQC representative who will review the report for definition and accuracy. The senior FQC representative will return the Potential Finding Report to the originator for any additional information required to properly evaluate the potential finding. When the Potential Finding Report is complete, the senior FQC representative shall forward the report to the Findings Review Committee, for a preliminary evaluation as to validity. If in the opinion of the Findings Review Committee the Potential Finding is not invalid, an Open

Item Report, Attachment 3.3, will be issued to TES and PG&E with a copy attached to the next SWEC 2nd Friday Semi-monthly Report. The EOI File number shall be assigned by the Committee in sequence within the range 9000-9999.

5.3.3 The Findings Review Committee shall review each Potential Finding, for definition, accuracy, and an assessment of its impact on the adequacy of the plant, using Attachment 3.8 to document their review. The Committee shall recommend classification of Potential Findings to the Teledyne Engineering Services IDVP Manager in accordance with the following:

Committee Determination	Classification
1. Finding accurate and has potential for significant impact on adequacy of Diablo Canyon Unit 1 (DCPP 1).	Finding
2. Finding accurate but does not have potential for significant impact on adequacy of DCPP-1.	Observation
3. Finding not accurate.	Invalid

5.3.4 The Findings Review Committee shall generate a report in the EOI System for each Open Item Report. The Findings Review Committee shall report their recommendations to the IDVP Manager as follows:

A. A Potential Error Report, Attachment 3.4, as a Class A Error shall be used for recommended Findings.

B. A Potential Error Report, Attachment 3.4, as a Class C Error shall be used for recommended Observations.

5.3.5 A Potential Finding Classified as Invalid shall be reported to the IDVP Manager by a Potential Program Resolution Report, Attachment 3.5 as a Closed Item.

5.3.6 When the recommendation of the Finding Review Committee is considered by the IDVP Manager to be in compliance with established criteria:

A. An Error Report, Attachment 3.6, as a Class A Error shall be issued for Findings.

B. An Error Report as a Class C Error shall be issued for Observations.

C. A Program Resolution Report, Attachment 3.7 as a Closed Item shall be issued for invalid Potential Findings.

5.3.7 If the IDVP Manager does not concur with the classification recommendations, the Potential Finding shall be returned to the Findings Review Committee for reprocessing.

5.4 Corrective Action

5.4.1 The proposed solution of any Finding, as developed by PG&E, will be submitted to TES who shall reopen the file, by issuance of an OIR for verification of corrective action.

NOTE

The subsequent actions taken to resolve findings are not part of the SWEC original Scope of Work.

5.4.2 The senior FQC representative will verify that the corrective action has been satisfactorily completed. The senior FQC representative will then forward the Report to the Findings Review Committee for concurrence. The Findings Review Committee shall report its recommendations to the IDVP Manager as follows:

A. A Potential Error Report as a Class A Error shall be used if the PG&E Corrective Action is not acceptable.

B. A Potential Program Resolution Report as a Closed Item shall be used when the PG&E Corrective Action is acceptable.

5.5 Reports

5.5.1 The following types of reports will be submitted to the IDVP Manager by the Findings Review Committee:

A. Semi-monthly Report.

B. Interim Technical Report on Construction Quality Assurance (ITR-CQA).

C. Final Report on Evaluation of Construction Quality Assurance.

A. Semi-monthly Report: Semi-monthly reports shall be transmitted on the 2nd and 3rd Friday. The report submitted on the 1st Friday will not include any text but will compile all Open Item Reports originated by SWEC since the preceding 1st Friday Report. The report transmitted on the 3rd Friday will not list Open Item Reports, but will consist only of text presenting the IDVP status.

B. Interim Technical Report: This report will be submitted in mid-November and will have the same items as the final report. It will be submitted in accordance with the guidelines in the TES Independent Design Verification Programs, Progam Management Plan, Phase II.

C. Final Report: The final report will be submitted in mid-December and will summarize the documentation regarding each Error Report identified by SWEC, and influence the applicable Interim Reports. The total number of items reviewed and found acceptable will be documented so that any deficiencies may be placed in proper perspective. The final report will be submitted to the IDVP Manager in draft form for his review, and to make the report available to PG&E and NRC for their review.

STONE & WEBSTER ENGINEERING CORPORATION

QUALITY ASSURANCE EVALUATION/CONSTRUCTION VERIFICATION CHECKLIST

TITLE:	

CHECKLIST NO.:		PREPARED BY:
REVISION:	DATE:	APPROVED BY:
PAGE 1 OF		

Attachment 3.1
Page 1 of 2

CHECKLIST ATTRIBUTES

CHECKLIST NO.	REV.	J.O. NUMBER	AUDITOR(S)/INSPECTOR(S)	DATE

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS		COMMENTS
			NO. CKD.	NO. UNSAT.	

Attachment 3.2

POTENTIAL FINDING REPORT

Checklist No. _____
Potential Finding No. _____
Potential Finding Rev. No. _____

1. Prepared as a result of:

   Quality Assurance Program Evaluation - Contractor _____
   Construction Verification Review - System _____

2. Structure(s), system(s), component, or activity(s) involved:

3. Potential Finding:

4. Significance of Concern:

5. Signature of Orignator _____

6. Copy provided to PG&E

   GFA

   W-B

Potential Finding No._____

OPEN ITEM REPORT File No. _____

File Revision No. _____

1. Date reported to PG&E and TES _____
2. Scheduled for _____ (Originator) Semimonthly Report No. _____
3. Responsive to PG&E Technical Program: Task _____ (if applicable)
4. Prepared as a result of:
   a. ☐ QA Audit and Review Report of _____
   b. ☐ Field Inspection Deficiency
   c. ☐ Independent Calculation Deficiency
   d. ☐ Seismic Input Deficiency
   e. ☐ Design Methodology Deficiency
   f. ☐ Other Deficiency
5. Structure(s), system(s) or component(s) involved:

6. Description of Concern:

7. Significance of Concern:

8. Recommendation: (Not Applicable to SWEC)

9. Signature: _____ (Originator/Organization)

Potential Finding No._____

POTENTIAL ERROR REPORT

File No. _____

Class: _____ (A,B,C or D)

File Revision No. _____

1. Date submitted to TES for referral to Program Review Committee: _____
2. Report submitted on behalf of _____(Organization)
3. Structure(s), system(s), or component(s) involved:

4. Description of Error:

5. Significance of Error:

6. Recommendation: (Not Applicable to SWEC)

7. Signature: _____ (Recommended by)

Potential Finding No._____

POTENTIAL PROGRAM RESOLUTION REPORT

File No. _____

File Revision No. _____

1. Resolution of an: ☐ Open Item: ☐ Class _____ Error
2. Recommended Independent Design Verification Program Resolution is as:
   a. ☐ Closed Item
   b. ☐ Deviation
   c. ☐ Open Item with future action by PG&E
3. Date Reported to Program Manager _____
4. Report submitted on behalf of _____ (Organization)
5. Resolution based on the following documentation:

6. Program Resolution is: (Not Applicable to SWEC)

7. Signature: _____ (Recommended by)

Potential Finding No._____

ERROR REPORT

File No. _____

Class: _____ (A,B,C or D)

File Revision No. _____

PG&E Task No. _____

1. Dates: Reported to Program Review Committee _____
   Program Review Committee Action _____
   Reported to PG&E and Originator _____
2. Scheduled for TES Semimonthly Report No. _____
3. Structure(s), system(s), or component(s) involved:

4. Description of Error:

5. Significance of Error:

6. Recommendation: (Not Applicable to SWEC)

7. Potential Error Report signed by _____ (Type Name/Organization) on _____ (Date)

8. Signatures: _____ (For Program Review Committee) _____ (Approved/Program Manager)

PROGRAM RESOLUTION REPORT

Potential Finding No. _____

File No. _____

File Revision No. _____

1. Resolution of an: ☐ Open Item: ☐ Class _____ Error
2. Independent Design Verification Program Resolution is as:
   a. ☐ Closed Item
   b. ☐ Deviation
   c. ☐ Open Item with future action by PG&E: Task _____
3. Date Reported to PG&E _____
4. Scheduled for TES Semimonthly Report No. _____
5. Resolution based on the following documentation:

6. Program Resolution is: (Not Applicable to SWEC)

7. Potential Program Resolution Report signed by _____ on _____
   Type Name/Organization Date
8. Signature: _____ (Approved/Program Manager)

File No. _____

FINDINGS REVIEW COMMITTEE

Potential Finding Review Criteria

	YES	NO	MORE INFORMATION REQUIRED/COMMENT
I. Is the problem sufficiently defined to evaluate?			
A. Requirements stated			
B. Technical data included as appropriate			
C. Extent of problem defined			
D. Is information sufficient to continue review			
II. What impact does it have on the adequacy of the plant?			
A. Can it be determined whether the finding identifies an administrative or QA program vs. a plant adequacy problem?			
B. Does it appear to be an isolated case?			
1. Individual failure to follow procedures			
2. Potential judgmental error			
C. Does it appear to be a symptom of a problem?			
1. Evidence of a system breakdown			
2. Inadequate procedure			
3. Demonstrates lack of personnel awareness			
4. Deviation from Code or Standard			
D. What may reasonably be considered the effect on the plant if left undetected?			
1. Is there potential for end product deviations or deficiencies			
2. Is there a potential to affect operability or maintainability			
3. Was there a subsequent check, test, or inspection to confirm adequacy of the item			
E. Are the possible adverse effects of potential finding likely to effect the operability or safety of the plant?			

_____ _____

Project Manager Date

APPENDIX F

FINDINGS REVIEW COMMITTEE QUALIFICATIONS

EDGAR E. ERLANDSON

VICE PRESIDENT
DEPUTY DIRECTOR OF CONSTRUCTION

EDUCATION

Northeastern University-Mechanical Engineering
U.S. Army Signal Corps
Northeastern University-Management Development Program

LICENSES AND REGISTRATION

Registered Professional Engineer in Massachusetts

EXPERIENCE SUMMARY

Mr. Erlandson has been with Stone & Webster Engineering Corporation (SWEC) continuously since 1941, with the exception of three years' active duty with the U.S. Army Signal Corps during World War II. He has served on a variety of construction projects progressing from mechanical designer to Deputy Director of Construction. He has a comprehensive and successful record in the construction of nuclear and fossil power projects. In 1978, he was elected a Vice President of the Corporation.

DETAILED EXPERIENCE

As Deputy Director of Construction, Mr. Erlandson reports to the Director, assisting him and acting for him in his general responsibility for the overall direction of Construction Department activities. These include responsibilities for planning, scheduling, cost, labor relations, safety, staffing, personnel policies, site procurement, training, estimate and forecast reviews, progress reporting, problem resolving, and general headquarters support.

In his previous role as Senior Construction Manager, he directed the activities of the Construction Services Group at the Boston Headquarters Office, which provides various support services to all active field construction sites. During this period, he played a key role in a program to develop innovative construction methods and techniques, providing the overall direction and evaluation of recommended new ideas, and instituting those of merit.

Earlier, as Construction Manager for a two-unit nuclear power station, Mr. Erlandson was responsible for all construction activities of the project. Prior to this headquarters assignment, he served as Resident Manager for this nuclear project at the construction site. He has served as the Senior Construction Site Representative in the construction of both nuclear and fossil projects. Prior to his assignment in the Construction Department, Mr. Erlandson spent ten years in the SWEC Design Division.

JAMES A. FLAHERTY
Manager, Engineering
Design and Testing

Professional Resume

Education

Northeastern University, B.S. in Civil Engineering, 1964
Tufts University, M.Sc. in Civil Engineering, 1966

Experience

Teledyne Engineering Services and Teledyne Materials Research, since 1968: Engineering manager responsible for all work performed by Engineering Design and Testing Group. Responsibilities include project review, technical guidance, manpower assignment, cost and schedule review.
Direct responsibility for modification program for operating nuclear power plant components and their supports including material procurement, design, fabrication examination and testing requirements.
Provide consulting services in the area of pressure vessels, piping, valves and component supports with the particular emphasis on stress analysis and the applicability of the ASME Boiler Code and Pressure Vessel Codes.
Lecturer at Teledyne Engineering Services sponsored seminars for the nuclear power industry.

United States Army, Lexington-Blue Grass Army Depot (Kentucky), 1st Lieutenant, Corps of Engineers, 1966 to 1968: project officer in the Directorate for Data Systems; programmer and system analyst for accounting and logistic system support groups.

AVCO Corporation, Missile Systems Division, Associate Engineer, Summer 1966: structural analysis of reentry vehicles and related components involving static and dynamic loadings.

Tufts University, Graduate Teaching Assistant in Computer Center, academic years 1964-65, 1965-66: formulating, solving, and grading problems for senior/graduate course in numerical methods and computers.

Linethal-Becker-Eisenberg, Summer, 1965: analysis and design of structural components.

Membership

American Society of Civil Engineers
Welding Research Council: Pressure Vessel Research Committee
Registered Professional Engineer in Massachusetts

Authorship

"An Assessment of the Effect of Plate Flexibility on the Design of Moment-Resistant Baseplates." with L.J. DiLuna, presented at the Pressure Vessels and Piping Conference, San Francisco, California, June, 1979.

"The Field Installation of Concrete Anchorage Systems," with L.J. Diluna, presented at the ASCE Committee on Construction of Nuclear Facilities Conference, Pennsylvania State University, September, 1981.

"A Method for Digitizing, Preparing and Using Library Tapes of Ship Stress and Environment Data," with Aldie E. Johnson, Jr., and Isaac J. Walters, Ship Structure Committee Report SSC-236, 1973.

"Computer Programs for the Digitizing and Using of Library Tapes of Ship Stress and Environment," with Aldie E. Johnson, Jr., and Isaac J. Walters, Ship Structure Committee Report SSC-237, 1973.

LUNDIN, CRAIG D.

CHIEF ENGINEER
QUALITY SYSTEMS DIVISION

EDUCATION

Lowell Technological Institute - B.S. Mechanical Engineering - 1968
University of Connecticut - Statistical Quality Control Courses
Various Stone & Webster Continuing Education Courses and Management Workshops

EXPERIENCE SUMMARY

Mr. Lundin has been employed in the aerospace, shipbuilding and nuclear power industries in quality assurance/quality control since 1968. Currently as CHIEF ENGINEER, Quality Systems Division, he is responsible for establishing and directing all department programs in systems development, procedures and publications, continuing education, specification review and inspection planning, reports and data analysis.

Since joining Stone & Webster Engineering Corporation (SWEC) in 1973, he has held the positions of Quality Assurance Engineer, Quality Assurance Auditor, Assistant Superintendent of Field Quality Control, Project QA Manager, and presently Chief Engineer, Quality Systems Division.

As a member of the FQC, Headquarters Boston Division, as an Auditor, he was responsible to the Headquarters Auditing Supervisor and performed audits of Field Quality Control operations at various construction sites. He has held assignments at nuclear plant construction sites as an Assistant Superintendent and as Superintendent, FQC, responsible for directing the activities of FQC personnel at the project construction site and providing direction and guidance of QA/QC program requirements to FQC personel, construction supervision, contractors and crafts personnel. His responsibilities also included the quality control of piping/welding, management reports, assuring proper training and utilization of engineers, inspectors, and technicians under his supervision and coordinating and planning all efforts relating to FQC during construction. Additionally, Mr. Lundin was assigned as Project Quality Assurance Manager at a nuclear plant site with overall responsibility for implementation and performance of the Quality Assurance Program on the project.

Prior to joining SWEC, Mr. Lundin was involved in Quality Control and Quality Assurance activities in the shipbuilding industry.

RICHARDSON, CARL O., Jr.

ENGINEERING MANAGER
ENGINEERING DEPARTMENT

EDUCATION

University of Massachusetts at Amherst - Bachelor of Science, Mechanical Engineering 1959
State University of New York - Master of Business Administration 1968

LICENSES AND REGISTRATIONS

Professional Engineer - Massachusetts, New York, and Pennsylvania

EXPERIENCE SUMMARY

Mr. Richardson has over 21 years of experience in management of turbine plant systems for nuclear power plant projects, and turboshaft engines used in aircraft. Currently, as Engineering Manager, he sponsors the following divisions: Power, Advisory Operations, Operations Services, and Materials Engineering. He also sponsors Conceptual Engineering and Administrative Services.

Since joining Stone & Webster Engineering Corporation (SWEC) in 1968, he has been Project Manager on two pressurized nuclear power plants, responsible for engineering and construction on one and support services on the other.

Prior to joining SWEC, Mr. Richardson worked as a Mechanical Engineer with a utility company designing a 500 MW boiling water reactor nuclear power plant. Other previous experience includes experience as an installation and service engineer on aircraft gas turbine equipment and test engineering on a variety of turbines and generators.

SESTAK, FRANK JR.

CHIEF ENGINEER
POWER DIVISION

EDUCATION

Clarkson College of Technology - Bachelor of Mechanical Engineering 1954
Westinghouse Power Simulator Program - Power Operation
Northeastern University - Management Development Program

LICENSES AND REGISTRATIONS

Professional Engineer - New Jersey, Massachusetts, Pennsylvania, Wisconsin, Connecticut

EXPERIENCE SUMMARY

Mr. Sestak has 29 years of experience in operation, performance, maintenance, engineering and design of large utility electric generating units. This experience encompasses natural circulation and once-through type units fired by coal, oil, and natural gas, and high temperature gas cooled reactor (HTGR) and pressurized water reactor (PWR) nuclear units.

Mr. Sestak has 15 years of experience with Stone & Webster Engineering Corporation (SWEC). Currently, he is Chief Engineer of the Power Division. As such, he has the overall responsibility for the engineering and design of fluid systems, mechanical and nuclear components, piping systems, facilities systems and process systems for fossil and nuclear power plants and the engineering and design of advanced power technology concepts.

Since joining SWEC in April 1968, Mr. Sestak has held responsible positions on several nuclear projects during the engineering, design, and construction phases:

- Project Manager of the SWEC Independent Design Review Program of safety-related systems and analysis for Pacific Gas and Electric Company's Diablo Canyon - Unit 1.

- Project Engineer for a 1,200 MW PWR plant, and two 900 MW PWR nuclear power plants with the overall responsibility for all engineering and design activities associated with licensing and construction.

Prior to joining SWEC, his experience at an electric utility company included department head positions in the maintenance and operating departments of various generating stations.

APPENDIX G1

CHECKLIST - QA PROGRAM ASSESSMENT

STONE & WEBSTER ENGINEERING CORPORATION

ASSESSMENT PLAN

TITLE: Evaluation of Construction Quality Assurance - Wismer & Becker		
ASSMNT PLAN NO. DC-19.02		PREPARED BY: J.W. Franklin
REVISION: 2	DATE: 11/9/82	APPROVED BY: [signature] 11/9/82
PAGE 1 OF 2		

1.0 PURPOSE

1.1 To determine if the contractor's practices were in compliance with the governing specifications and his Quality Assurance Program.

1.2 To determine if practices covering inspections were evident and adequate.

1.3 To determine if practices governing the identification, control and dispositioning of construction nonconformances were adequate.

2.0 REFERENCES

2.1 SWEC "Independent Construction Quality Assurance Evaluation," September 24, 1982.

2.2 SWEC Project Procedure 4-2-1, "Construction Quality Assurance Evaluation," October 22, 1982.

2.3 PG&E Specification 8752, "Installation of the Nuclear Steam Supply Systems for Units 1 & 2 - Diablo Canyon Site," May 3, 1972.

2.4 Wismer and Becker QA/QC Manual, June 6, 1973.

2.5 Applicable Construction Drawings.

3.0 PROCEDURE

The evaluation/assesment shall be performed in accordance with the following instructions:

3.1 Review referenced documents and pertinent correspondence on the subject.

3.2 Complete the attribute sheets during the evaluation by entering the total number of observations of each attribute made and the number of observations found unsatisfactory, noting any remarks in the "Comments" column. Attributes determined to be not applicable shall be marked "N/A" and explained.

3.3 Each attribute noted as unsatisfactory shall be evaluated by the SWEC Quality Assurance Program Administrator (QAPA) to determine if the nonconforming condition warrants the issuance of a Potential Finding Report in accordance with the requirements of paragraph A3, Task A of Reference 2.1.

3.4 The attribute sheet shall be considered as only a guide and attributes may be modified or added as necessary to satisfy the objectives of References 2.1 and 2.2.

3.5 A representative sample of records, selected at random, shall be reviewed to evaluate each attribute. The number of records that constitute a representative sample shall be the judgement of the evaluator based on the nature of each attribute and the number and type of records applicable to an attribute.

ASSESSMENT PLAN ATTRIBUTES

ASSMNT PLAN NO.	REV.	J.O. NUMBER	ASSESSOR(S)	ASSMNT DATE:
DC-19.02	-02	14296.10	J.W. Franklin	Oct. 6 - Nov 1, 1982

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
	General-Specifications				PG&E Transmittal letters as follows:
1. jwf	Verify that the Contractor's Quality Assurance Program, including subsequent revisions have been reviewed & approved by PG&E. (8752, pg. 1-9, para. 6.23)		4	0	• Condition approval 8-6-71 • Approved 11-07-72 • Approved 3-12-74 • Approved 9-08-75
2. jwf	Verify that the Contractor submitted for PG&E's review and approval, the names and addresses of all subcontractors to who contractor subcontracted portions of the work. (8752, pg 1-9, para. 6.22)		2	0	Insulation: Transco, Chicago, Ill. WB August 8, 1972 Transmittal & PG&E telex dtd. Feb. 28, 1973 Radiography: Pullman Kellogg performed all RT on site. P.O./Contract No. 22-C-8711-C from PG&E to Kellogg dtd. May 25, 1970.

G1-3

ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
3. JHJ	Verify that the Contractor obtained a certificate of authorization from ASME to use the nuclear code symbol and comply with the Quality Assurance Requirement of Section III. (8752, pg. 3-1, para. 1.4)		6	0	The following Certificates were authorized 6-19-73 and expired 6-19-76: N-656 "NA", N-657 "NPT", N-658 "NA", N-659 "NPT" Certificates listed below were authorized 7-16-76 and expired 7-16-79. N-1462-1 "NPT" N-1461-1 "NA"
	Installation Procedures				Installation Procedures for: Reactor: Coolant Pump Cases 1-1, 1-2, 1-3, 1-4 - (WB301 & 300), RC Pump Cases Alignment Proced. (WB318), RC Pump Motor (WB332), RC Pump Assembly (WB-380 RI), RC Pump Motor In-Service Insp. (WB-456) Seal Leak Detection Tubing (WB-376) Seal Leak Detection Hydro. Test (WB-393) Steam Generators (4 each) Set & Alignment (WB-315), Pressurizer Installation (WB-321 RI) and Weld Procedures (14) listed on item #16 of this report. Note: the documents listed above are "Operation Process Sheet Travelers".
4. JHJ	Were installation procedures available for receiving, unloading, inspection, handling, unpacking, assembling, erecting, installing, welding, examining, cleaning, flushing, testing, and maintaining of all material, equipment and components? (8752, pg. 3-2, para. 2.1)		24	0	

C1-4

ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS		COMMENTS
			NO. CKD.	NO. UNSAT.	
5. yes	Were the above procedures approved by PG&E? (8752, pg. 3-2, para. 2.1)		24	0	Same as item # 4 above
	Cleanliness				
6. yes	Verify that the Contractor's written cleaning procedures were reviewed and approved by PG&E. (8752, pg. 3-4, para. 3.2)		1	0	Wismer & Becker Procedure # 3506-802

GI-5

ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
7. JWH	Was distilled or demineralized water used by the Contractor for cleaning and flushing operations of stainless steel materials? (8752, pg. 3-4, para. 3.3)		3	0	W Guide tube installation Procedure #2463A55, sub 2, para. 25, Traveler WB-431. Traveler WB-527, Operation #2, PG&E Maintenance Procedure #M10, Rev. 0. Daily Chemical Analysis Data Sheets dated; 12-1-76 12-8-76 12-9-76 12-15-76
8. JWH	Verify that only PG&E approved lubricants were used by the Contractor. Generally, lubricants used in assembly of equipment or components shall be colloidal graphite in isopropanol (Neolube Huron Industries or equivalent). (8752, pg. 3-10, para. 3.610)		4	0	W Guide Tube installation Procedure # listed above. W Thermocouple Insp. Procedure #616A211, sub 3, para 3.1, Traveler WB 525 R1. Traveler WB-380 R1.

G1-6

ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
9.	Verify that only chloride-free types of tape were used by the Contractor. (8752, pg. 3-10; para. 3.611)				See original page 5 Attachment SWB
	Equipment and Components				
10.	Verify that equipment and components were inspected by the Contractor immediately preceeding installation. (8752, pg. 3-11, para. 4.31)				See original page 5. Attachment SWB

G1-7

ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CMD.	OBSERVATIONS NO. UNSAT.	COMMENTS
9.	Verify that only chloride-free types of tape were used by the Contractor. (8752, pg. 3-10, para. 3.611)		2	0	PG&E Memorandum dtd. 2/14/74 to: Wiesmann & Becker From: PG&E (Rich Etzler) states the approved tapes to use on S/S. PG&E Memo, dtd. April 16, 1974 states tapes to use on S/S. Note: there are no records (per L. Carlson, WB) available to indicate what tapes were used. However, stated that only PG&E app'd tape was used on S/S.
	Equipment and Components				
10.	Verify that ~~all~~ equipment and components were inspected by the Contractor immediately preceeding installation. (8752, pg. 3-11, para. 4.31)		16	0	Operation Process Sht. Traveler WB-300 (Reactor Coolant Pump Case), OPST WB-301, WB-380 K1, Surveillance Reports: Reactor Vessel 1-1 " " Head 1-1 Reactor Vessel upper Internals 1-1 " " Lower " 1-1 Steam Generator - 1-1, 1-2, 1-3, & 1-4 Pressurizer 1-1 Reactor CR Pump Motor 1-1, 1-2, 1-3, & 1-4 Reactor CR Pump Case 1-1, 1-2, 1-3, & 1-4 SMI Tubing RC Piping Lp. 1, 2, 3, & 4 (See attached)

G1-8

DC-19.02

Attr. #10 (cont.)

Pressurized Surge line Piping
Seal Table - 1-1
Spring Seal Assembly

ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
	Piping And Tubing				P-4A Forms Southwest Fab. & Weld Co.; Primary Loop Piping
11. JWJ	Are ~~records~~ (Code Data Report Form P-4A) on file which indicate that the reactor coolant and pressurizer surge line piping was erected, welded, and examined in accordance with the applicable requirements of the ASME Boiler and Pressure Vessel Code, Section I, 1968 edition? (8752, pg. 3-12, para. 5.21)		18	0	PC. MK. Nos. 1-1, 1-5, 2-1, 2-5, 3-1, 3-5, 4-1, 4-5, Press-1, Press-2, 1-3, 1-4, 2-3, 2-4, 4-3, 4-4, 3-3, 3-4, Specification Change Notice No. 8752-9 change the requirement from the P-4A to the N-5, Section III, 1971 Note: All wismer & Becker activities were recorded on N-5 Report, dated Feb 2, 1976, except for Seal Leak Detection Tubing
12. JWJ	Verify that the above Code Data Reports are signed and certified by the inspector for the third party inspection agency. (8752, pg. 3-12, para. 5.21)		18	0	Same as item 11 above

G1-10

ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
13. JWH	Are records (Code Data Report Forms NPP-1 and N-5) on file which indicate that the incore instrumentation guide tubing and reactor vessel flange seal leak detection tubing were fabricated, installed, welded, and examined in accordance with the applicable requirements of ANSI B31.7, Nuclear Power Piping Code, 1969 edition, with 1970 addenda, for Class I piping. (8752, pg. 3-13, para. 5.22)		2	0	Reference Specification Change Notice 8752-9, para 5.22. BMI Tubing N-5 Data Report, dated Feb. 2, 1976. Seal Leak Detection Tubing NPP-1 Data Report, dated May 5, 1975.
13A JWH	Verify inspections (on the BMI system supports) were performed in accordance with PG&E approved dwgs. (Dwg. 443248, Chg. 4, Rev. 3, As Built)		2	2	PG&E Dwg. 443248, Chg. 2, Rev. 2, Dwg. 443248, Chg. 4, Rev. 3 - Operation Process Sheet Traveler (WB-375) Note: Suppt. #11, Section "B" and Suppt. #10, Section "H" fillet weld sizes are not in accordance with the "AS BUILT" dwg. 443248, Chg. 4, Rev. 3 RE PFR# 7, Rev# 9006

G1-11

ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
14.	Verify that the reactor flange seal leak detection tubing conforms to the following: . Tubing shall be 3/4-inch outside diameter, seamless stainless steel tubing, ASTM A213, soft annealed, type 316, 0.095-inch wall thickness. . Fittings shall be socket welded stainless steel, ASTM A182, Type 316. (8752, pg. 3-13, para. 5.4)		11	2	R&I #164, CMTR' Heat#304627 (Greenville Tubes Div.), and R&I #21, CMTR Heat # 53083 (Stainless Pipe Supply Co./The Republic Supply Co.) Note: CMTR HT# 53083 identifies Mat'l as; 1 Foot 3/4" Schedule 80 S/S Tubing ASTM A213 Typ316 does not identify subject mat'l. as being soft Annealed. The ASME CODE Data Report list mat'l. as being SA 213-TP 316, HT# 53083, 3/4" OD x .095 Wall x 15ft., Tube, Republic Steel. Verified CMTR's HT. Nos. 33008, X13952, X13284, 875882 Code Case 78 was used involving fitting PG&E Authorization dated 3/28/78 allowed W&B to used Code Case 78 Re PFR# 9007

G1-12

ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT	COMMENTS
	Welding				Sat. WPS Nos. 3500-2, 3500-1, (Rev. 4), 3500-1 (Rev. 3), 3500-2, 3500-3, 3500-1 (Rev. 2), 3500-1
15. JWF	Are welding procedures qualified in accordance with the ASME Boiler and Pressure Vessel Code, Section IX, 1971 edition? (8752, pg. 3-14, para. 6.2)		9	2	Note: The procedures listed below are AWS Prequalified WPS UNsat. WPS 3500-8, 3500-8 (Rev. 1) PFR# 9005 and Cancelled by PFR# 9005A
16. JWF	Are there records that reflect the above weld procedures including revisions, were approved by the authorized inspection agency and PG&E? (8752, pg. 3-14, para. 6.2		14	3	Sat. Weld Procedure Nos. Verified: 3500-1 Rev. 4, 3500-1 Rev. 3, 3500-1 Rev. 2, 3500-2, 3500-3, 3500-4, 3500-5, 3500-6, 1100 Rev. 0, 3500-9 Rev. 0, PWR 82127 ZJ Rev. 5 UNsat. 3500-8 - No A.I. approval 3500-8 Rev. 1 - No A.I or PG&E approval, PWR 82127 ZJ Rev. 7 - No A.I. approval PFR# 9000 and Cancelled by PFR# 9000 B

61-13

ASSESSMENT PLAN ATTRIBUTES I

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
17. JP JWJ	Verify that welding was performed by welders who were qualified in accordance with the ASME Boiler and Pressure Vessel Code, Section IX, 1971 edition, and any additional requirements of the applicable codes and standards. (8752, pg. 3-14, para. 6.3) Re PFR# 9023A		31	~~26~~ 16 JWJ For unsat. see attached	All but one (1) OK, per later Code JWJ ~~ASME IX PARA. QN22 WS-D REQUIRES FOR COMBINATION WELDS THAT THE WELDER MAKING THE ROOT PASS IS REQUIRED TO MAKE 2 ROOT BENDS IN LIEU OF SIDE BENDS. WELDERS QUALIFICATION RECORDS STATE THAT SIDE BENDS WERE USED~~ JWJ ~~WELDER SYMBOL~~ SEE ATTACHED SHEET WW W G K ~~CONT~~ JWJ SAT - CO, RR, SS, GG, OO, KK NN, MM, EE, AA, H, WW W, G, K
18. JP JWJ	Are performance qualification test records on file for the above welders? (8752, pg. 3-14, para. 6.3)		13	0	WELDER CO G RR QQ SS GG OO KK NN MM EE AA D

ASSMNT PLAN NO. DC-19.02 (CONTINUATION SHEET) PAGE 11 OF 44

D.C-19.02

AHr#17

Welder "J" unsat. on bend test

Welders "QQ", "P", "G", "AE", "AD", "U", "BU", "F", "S", "AV", "AI", "D", "AN", "TT", "A" unsat for BMI Tubing mock-ups.

ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
19.	Were the above performance qualification tests conducted using the mechanical test methods? (8752, pg. 3-14, para. 6.3)		13	0	WELDER CO, WW, GG, SS, KK, AA, NN, MM, OO, EE D., G, QQ
20.	Verify that the above test reports were reviewed and approved by PG&E and the authorized inspection agency. (8752, pg 3-14, para. 6.3)		~~[illegible]~~ 13	~~[illegible]~~ 0	WELDER CO, WW, GG, KK, RR. SS, AA, NN, MM, OO D, G, QQ
					~~UNSAT. WELDER [illegible]~~
20A.	IS WELDING ~~WELDING~~ BEING PERFORMED TO THE PROPER AMPS & VOLTS AS REQUIRED BY THE WPS?		350 32	227 20	Re. PFR# 9017 & 9027 BMI WELDS SURVEILLANCE SHEET EXHIBIT AMPS AND VOLTS OUTSIDE RANGE REQUIRED BY WPS 3500-2 SEE ATTACHED FOR DETAILS RC Welds (attached)

ASSMNT PLAN NO. DC-19.02 (CONTINUATION SHEET)

PAGE 4A OF 44

B M I WELDS "A"

REQUIRED AMPS., 100-120
REQUIRED VOLTS, 12-16

WELD NO.	AMPS	VOLTS	PASS	WELD NO.	AMPS	VOLTS	PASS
1-14-A	110	10	Bal				
1-17-A	110	11	Bal				
1-21-A	100	10-11	Bal				
1-23-A	100	10-11	Bal				
1-26-A	110	10	Bal				
1-29-A	110	10	Bal				
1-31-A	100	10-11	Bal				
1-33-A	105	11	Bal				
1-35-A	100	11	Bal				
1-39-A	100	10-11	Bal				
1-40-A	100	10-11	Bal				
1-41-A	110	10	Bal				
1-42-A	105	11	Bal				
1-46-A	105	11	Bal				
1-47-A	100	10-11	Bal				
1-49-A	100	10-11	Bal				
1-51-A	105	11	Bal				
1-54-A	100	10-11	Bal				
1-57-A	105	11	Bal				
1-58-A	100	10-11	Bal				

B M I WELDS "B"

REQUIRED AMPS., 100-120
REQUIRED VOLTS, 12-16

WELD NO.	AMPS	VOLTS	PASS	WELD NO.	AMPS	VOLTS	PASS
1-1B	40-80		Root	1-10B	110-115		Bal
1-1B	40-80		Int.	1-11B	40-60	11	Root
1-1B	100-115		Final	1-11B	105-115	11	Int.
1-2B	40-60		Root	1-12B	40-60		Root
1-3B	40-60		Root	1-12B	40-80		Int.
1-3B	40-80		Int.	1-12B	110-115		Bal
1-3B	100-115		Int	1-13B	40-80		Root
1-4B	40-60	11	Root	1-14B	100-120		Bal
1-4B	105-110	11	Int	1-14B	40-60	12	Root
1-5B	40-60		Root	1-14B	100-110	12	Bal
1-5B	40-80		Int	1-15B	40-60		Root
1-6B	40-80		Root	1-16B	40-60		Root
1-6B	100-110		Int	1-16B	95		Bal
1-6B	105-115		Bal	1-18B	40-80		Root
1-7B	40-60		Root	1-18B	100-110		Bal
1-8B	40-60	11	Root	1-19B	40-60	11	Root
1-8B	105-115	11	Int	1-19B	105-115	11	Bal
1-8B	95		Bal	1-20B	40-60	11	Root
1-9B	40-80		Root	1-20B	105-110	11	Bal
1-9B	100-110		Int	1-24B	40-80		Root
1-9B	110-120		Bal	1-24B	100-120		Bal
1-10B	40-60		Root	1-25B	40-60		Root
1-10B	40-80		Int	1-25B	40-80		Int
				1-25B	110-115		Bal

B M I WELDS "B" Page 2 of 2.

REQUIRED AMPS., 100-120
REQUIRED VOLTS, 12-16

WELD NO.	AMPS	VOLTS	PASS	WELD NO.	AMPS	VOLTS	PASS
1-26B	40-60	12	Root	1-42B	40-60	12	Root
1-26B	100-110	12	Bal	1-42B	100-110	12	Bal
1-27B	40-60		Root	1-44B	40-60		Root
1-28B	40-60		Root	1-44B	40-80		Int
1-29B	40-60	11	Root	1-44B	110-115		Bal
1-29B	105-115	11	Bal	1-46B	40-60	12	Root
1-30B	40-60	12	Root	1-46B	90-100	12-14	Bal
1-30B	100-110	12	Bal	1-47B	40-60		Root
1-31B	40-80		Tack	1-47B	40-80		Int
1-31B	100-120		Bal	1-47B	97		Bal
1-33B	40-60	11	Root	1-48B	40-60	12	Root
1-33B	105-115	11	Bal	1-48B	100-110	12	Bal
1-34B	40-60	12	Root	1-50B	40-60	11	Root
1-34B	90-100	12-16	Bal	1-50B	105-115	11	Bal
1-35B	40-60		Root	1-51B	40-60	12	Root
1-35B	100-110		Bal	1-51B	90-100	12-14	Bal
1-37B	40-80		Root	1-53B	40-80		Root
1-37B	100-120		Bal	1-53B	100-120		Bal
1-38B	40-60	12	Root	1-54B	40-80		Tack
1-38B	90-100	12-14	Bal	1-54B	100-120		Bal
1-39B	40-60		Root	1-56B	40-60	12	Root
1-39B	100-115		Bal	1-56B	100-110	12	Bal
1-41B	40-60	12	Root	1-57B	40-60	12	Root
1-41B	100-110		Bal	1-57B	100-110	12	Bal
			Bal	1-58B	40-80		Tack
			Tack	1-58B	100-120		Bal
			Bal				

B M I WELDS "C"

REQUIRED AMPS., 100-120
REQUIRED VOLTS, 12-16

WELD NO.	AMPS	VOLTS	PASS
1-1-C	Sat	Sat	
1-2-C	100	11	Final
1-3-C	Sat	Sat	
1-4-C	Not Record	Not Record	
1-5-C	100	10-11	Intermed.
1-6-C	Sat	Sat	
1-7-C	100	10-11	Final
1-8-C	100	10-11	Inter
1-9-C	80	10	Tack
1-10-C	100	11	Inter/Final
1-11-C	Not Recorded		
1-12-C	100	10-11	Final
1-13-C	95	10	Final
1-14-C	Not Recorded		
1-15-C	100	11	Final
1-16-C	100	11	Inter
(Audit & LP reports identify Weld No. 1-17-C as 1-11-C)			
1-17-C	Sat	Sat	
1-18-C	100	11	Final
1-19-C	100	11	Inter
1-20-C	100	10-11	Final
1-21-C	100	10-11	Inter
1-22-C	Not Recorded		
1-23-C	80	11	Tack
1-23-C	100	11	Inter/ Final
1-24-C	100	11	Final
1-25-C	80	10	Tack
1-25-C	100	11	Int/Fnl
1-26-C	100	11	Final
1-27-C	100	11	Final
1-28-C	100	11	Inter
1-29-C	100	11	Final
1-30-C	100	11	Final
1-31-C	95	11	Inter
1-31-C	100	11	Final
1-32-C	Sat	Sat	
1-33-C	80	10	Tack
1-33-C	100	11	Inter/ Final
1-34-C	100	11	Inter
1-35-C	80	10	Tack
1-35-C	100	11	Inter.
1-36-C	100	11	Inter
1-36-C	95	10	Final
1-37-C	Sat	Sat	
1-38-C	Sat	Sat	
1-39-C	80	10	Tack
1-39-C	100	11	Inter/ Final
1-40-C	100	11	Inter
1-41-C	100	11	Inter
1-42-C	Sat	Sat	
1-43-C	100	10-11	Final
1-44-C	Not Recorded		
1-45-C	100	11	Inter
1-46-C	100	11	Inter/ Final

B M I WELDS "C"

REQUIRED AMPS., 100-120
REQUIRED VOLTS, 12-16

WELD NO.	AMPS	VOLTS	PASS	WELD NO.	AMPS	VOLTS	PASS
1-47-C	100	10-11	Inter				
1-47-C	100	11	Inter				
1-48-C	95	10	Final				
1-49-C	100	10-11	Inter				
1-50-C	100	11	Inter				
1-51-C	Not Recorded						
1-52-C	100	11	Inter				
1-53-C	100	11	Final				
1-54-C	Sat	Sat					
1-55-C	Sat	Sat					
1-56-C	Sat	Sat					
1-57-C	Not Recorded						
1-58-C	100	10-11	Inter				

B M I WELDS "D"

REQUIRED AMPS., 100-120
REQUIRED VOLTS, 12-16

WELD NO.	AMPS	VOLTS	PASS	WELD NO.	AMPS	VOLTS	PASS
1-4-D	Not Recorded			1-15-D	Not Recorded		Root
1-5-D	100	10-11	Inter	1-15-D	100	11	Final
1-5-D	105	12	Final	1-16-D	Not Recorded		Root
1-6-D	100	15	Root	1-16-D	100	11	Inter
1-6-D	100	10	Final	1-16-D	Not Recorded		Final
1-7-D	Not Recorded		Root	1-17-D	Not Recorded		Root
1-7-D	100	10-11	Final	1-17-D	115	11	Final
1-8-D	Not Recorded		Root	1-18-D	Not Recorded		Root
1-8-D	100	10-11	Inter	1-18-D	100	11	Final
1-8-D	105	12	Final	1-19-D	100	11	Root
1-9-D	Not Recorded			1-19-D	100	11	Final
1-10-D	80	10	Root	1-20-D	Not Recorded		Root
1-10-D	100	11	Inter	1-20-D	100	11	Final
1-10-D	100	11	Final	1-21-D	Not Recorded		Root
1-11-D	Not Recorded		Root	1-21-D	100	11	Inter
1-11-D	100	11	Inter	1-21-D	105	12	Final
1-11-D	Not Recorded		Final	1-22-D	Not Recorded		
1-12-D	Not Recorded		Root	1-23-D	80	10	Tack
1-12-D	100	11	Final	1-23-D	100	11	Inter
1-13-D	Not Recorded		Root	1-23-D	100	11	Final
1-13-D	100	11	Final	1-24-D	100	15	Root
1-14-D	Not Recorded			1-24-D	Not Recorded		Bal

B M I WELDS "D" Page 2 of 3

REQUIRED AMPS., 100-120
REQUIRED VOLTS, 12-16

WELD NO.	AMPS	VOLTS	PASS	WELD NO.	AMPS	VOLTS	PASS
1-25-D	80	10	Root	1-35-D	80	10	Root
1-25-D	100	11	Inter	1-35-D	100	11	Inter
1-25-D	100	11	Final	1-35-D	100	11	Final
1-26-D	100	15	Root	1-36-D	Not Recorded		Root
1-26-D	Not Recorded		Bal	1-36-D	100	11	Final
1-27-D	100	15	Root	1-37-D	115	15	Root
1-27-D	Not Recorded		Bal	1-37-D	Not Recorded		Bal
1-28-D	100	10	Root	1-38-D	115	15	Root
1-28-D	Not Recorded		Bal	1-38-D	Not Recorded		Bal
1-29-D	Not Recorded		Root	1-39-D	80	10	Root
1-29-D	115	14	Final	1-39-D	100	11	Inter
1-30-D	Not Recorded		Root	1-39-D	100	11	Final
1-30-D	115	14	Final	1-40-D	Not Recorded		
1-31-D	100	11	Root	1-41-D	Not Recorded		Root
1-31-D	100	11	Final	1-41-D	100	11	Inter
1-32-D	115	15	Root	1-41-D	Not Recorded		Final
1-32-D	100	11	Final	1-42-D	100	15	Root
1-33-D	80	10	Root	1-42-D	100	10	Final
1-33-D	100	11	Inter	1-43-D	100	10-11	Root
1-33-D	100	11	Final	1-43-D	Not Recorded		Bal
1-34-D	Not Recorded		Root	1-44-D	Not Recorded		Root
1-34-D	100	11	Inter	1-44-D	100	11	Inter
1-34-D	Not Recorded		Final	1-44-D	Not Recorded		Bal

B M I WELDS "D"

REQUIRED AMPS., 100-120
REQUIRED VOLTS, 12-16

WELD NO.	AMPS	VOLTS	PASS	WELD NO.	AMPS	VOLTS	PASS
1-45-D	100	11	Root				
1-45-D	Not Recorded		Final				
1-46-D	100	11	Root				
1-46-D	Not Recorded		Final				
1-47-D	Not Recorded		Root				
1-47-D	100	10-11	Inter				
1-47-D	105	12	Final				
1-48-D	Not Recorded		Root				
1-48-D	100	11	Final				
1-49-D	Not Recorded		Root				
1-49-D	100	10-11	Inter				
1-49-D	105	12	Final				
1-50-D	100	11	Root				
1-50-D	Not Recorded		Final				
1-51-D	Not Recorded						
1-52-D	100	11	Root				
1-52-D	Not Recorded		Final				
1-53-D	115	15	Root				
1-53-D	Not Recorded		Bal				
1-54-D	100	15	Root				
1-54-D	95*	10	Final				
1-55-D	Not Recorded		Root				
1-55-D	115	14	Inter				
1-55-D	100	11	Final				
1-56-D	Not Recorded		Root				
1-56-D	115	14	Inter				
1-56-D	100	11	Final				
1-57-D	Not Recorded		Root				
1-58-D	100	11	Inter				
1-58-D	105	12	Final				

B M I WELDS "E"

REQUIRED AMPS., 100-120
REQUIRED VOLTS, 12-16

WELD NO.	AMPS	VOLTS	PASS	WELD NO.	AMPS	VOLTS	PASS
1-1-E	40-60	N/A	Tack	1-17-E	115	N/A	Tack/Rt
1-1-E	40-60	N/A	Root/Bal	1-17-E	110-115	N/A	Bal
1-1-E	100-110	N/A	Bal	1-17-E	110-115	N/A	Bal
1-2-E	40-60	N/A	Tack	1-17-E	90-100	N/A	Bal
1-2-E	100-110	N/A	Bal	1-18-E	40-60	N/A	Tack
1-3-E	40-60	N/A	Tack	1-18-E	100-110	N/A	Root
1-3-E	40-60	N/A	Root/Bal	1-19-E	40-60	N/A	Tack
1-3-E	100-110	N/A	Bal	1-19-E	110-120	N/A	Root
1-4-E	40-60	N/A	Tack/Root	1-19-E	90-110	N/A	Bal
1-4-E	110-120	N/A	Bal	1-20-E	40-60	N/A	Tack
1-4-E	90-110	N/A	Bal	1-20-E	100-120	N/A	Root
1-5-E	40-60	N/A	Tack	1-20-E	90-110	N/A	Bal
1-5-E	40-60	N/A	Root/Bal	1-21-E	40-60	N/A	Tack
1-5-E	100-110	N/A	Bal	1-21-E	100-110	N/A	Root
1-6-E	40-60	N/A	Tack	1-22-E	115	N/A	Tack/Rt
1-6-E	100-110	N/A	Root	1-22-E	110-115	N/A	Root/Ba.
1-6-E	90-110	N/A	Bal	1-22-E	110-115	N/A	Bal
1-7-E	40-60	N/A	Tack	1-22-E	90-100	N/A	Bal
1-7-E	100-110	N/A	Root	1-23-E	40-60	N/A	Tack
1-7-E	90-100	N/A	Bal	1-23-E	100-110	N/A	Root
1-8-E	40-60	N/A	Tack	1-24-E	45-70	N/A	Tack
1-8-E	100-120	N/A	Root	1-24-E	110-115	N/A	Root/Ba.
1-8-E	90-110	N/A	Bal	1-24-E	105-115	N/A	Bal
1-9-E	40-60	N/A	Tack	1-25-E	40-60	N/A	Tack
1-9-E	100-110	N/A	Root	1-25-E	40-60	N/A	Root/Ba.
1-9-E	90-100	N/A	Bal	1-25-E	100-110	N/A	Bal
1-10-E	40-60	N/A	Tack	1-26-E	40-60	N/A	Tack
1-10-E	40-60	N/A	Root/Bal	1-26-E	100-105	N/A	Root
1-10-E	100-110	N/A	Bal	1-26-E	90-110	N/A	Bal
1-11-E	40-60	N/a	Tack	1-27-E	40-60	N/A	Tack
1-11-E	110-120	N/A	Root	1-27-E	100-115	N/A	Root
1-11-E	90-110	N/A	Bal	1-27-E	90-100	N/A	Bal
1-12-E	40-60	N/A	Tack	1-28-E	40-60	N/A	Tack
1-12-E	40-80	N/A	Root/Bal	1-28-E	100-110	N/A	Root/Ba.
1-12-E	100-110	N/A	Bal	1-29-E	40-60	N/A	Tack
1-13-E	40-60	N/A	Tack	1-29-E	110-120	N/A	Root
1-13-E	100-110	N/A	Root/Bal	1-29-E	90-100	N/A	Bal
1-14-E	40-60	N/A	Tack	1-30-E	40-60	N/A	Tack
1-14-E	100-105	N/A	Root	1-30-E	100-105	N/A	Root
1-14-E	90-110	N/A	Bal	1-30-E	90-110	N/A	Bal
1-15-E	40-60	N/A	Tack	1-31-E	45-70	N/A	Tack
1-15-E	100-110	N/A	Root/Bal	1-31-E	110-115	N/A	Root/Ba.
1-16-E	40-60	N/A	Tack	1-31-E	105-115	N/A	Bal
1-16-E	100-110	N/A	Root	1-33-E	40-60	N/A	Tack
				1-33-E	110-120	N/A	Root
1-16-E	97	N/A	Bal	1-33-E	90-110	N/A	Bal

B M I WELDS "E"

REQUIRED AMPS., 100-120
REQUIRED VOLTS, 12-16

WELD NO.	AMPS	VOLTS	PASS	WELD NO.	AMPS	VOLTS	PASS
1-35-E	40-60	N/A	Tack				
1-35-E	100-110	N/A	Root				
1-35-E	90-100	N/A	Bal				
1-37-E	40-60	N/A	Tack				
1-37-E	100-110	N/A	Root				
1-38-E	100-110	12 10-15-92 FRM	Root				
1-38-E	90-110	N/A	Bal				
1-39-E	40-60	N/A	Tack				
1-39-E	100-110	N/A	Root				
1-39-E	90-100	N/A	Bal				
1-41-E	40-60	N/A	Tack				
1-41-E	100-105	N/A	Root				
1-41-E	90-110	N/A	Bal				
1-42-E	40-60	N/A	Tack				
1-42-E	100-105	N/A	Root				
1-42-E	90-110	N/A	Bal				
1-44-E	40-60	N/A	Tack				
1-44-E	40-60	N/A	Root/Bal				
1-44-E	100-110	N/A	Bal				
1-46-E	100-110	12	Root/Bal				
1-46-E	90-110	N/A	Bal				
1-47-E	40-60	N/A	Tack				
1-47-E	40-60	N/A	Root/Bal				
1-47-E	100-110	N/A	Bal				
1-48-E	40-60	N/A	Tack				
1-48-E	100-105	N/A	Root				
1-48-E	90-100	N/A	Bal				
1-50-E	40-60	N/A	Tack				
1-50-E	110-120	N/A	Root				
1-50-E	90-100	N/A	Bal				
1-53-E	40-60	N/A	Tack				
1-53-E	100-110	N/A	Root				
1-54-E	45-70	N/A	Tack				
1-54-E	110-115	N/A	Root/Bal				
1-54-E	105-115	N/A	Bal				
1-56-E	40-60	N/A	Tack				
1-56-E	100-105	N/A	Root				
1-56-E	90-110	N/A	Bal				
1-57-E	40-60	N/A	Tack				
1-57-E	100-105	N/A	Root				
1-57-E	90-110	N/A	Bal				
1-58-E	45-70	N/A	Tack				
1-58-E	110-115	N/A	Root/Bal				
1-58-E	105-115	N/A	Bal				

B M I WELDS "F"

REQUIRED AMPS., 100-120
REQUIRED VOLTS, 12-16

WELD NO.	AMPS	VOLTS	PASS	WELD NO.	AMPS	VOLTS	PASS
1-1-F	40-50	NOTE: Records for "F" Welds 1 to 58 shown N/A for Voltage	Tack	1-26-F	Sat	NOTE: Records for "F" Welds 1 to 58 Show N/A for Voltage	Bal
1-1-F	Sat		Bal	1-26-F	40-50		Tack
1-2-F	40-50		Tack	1-27-F	Sat		Bal
1-2-F	80-85		Bal	1-27-F	40-50		Tack
1-3-F	80-85		Bal	1-28-F	80		Bal
1-3-F	40-50		Tack	1-28-F	40-50		Tack
1-4-F	Sat		Bal	1-29-F	80		Bal
1-4-F	40-50		Tack	1-29-F	40-50		Tack
1-5-F	Sat		Bal	1-30F	80		Bal
1-5-F	40-50		Tack	1-30-F	40-50		Tack
1-6-F	Sat		Bal	1-31-F	Sat		Bal
1-6-F	40-50		Tack	1-31-F	40-50		Tack
1-7-F	Sat		Bal	1-32-F	80		Bal
1-7-F	40-50		Tack	1-32-F	40-50		Tack
1-8-F	Sat		Bal	1-33-F	Sat		Bal
1-8-F	40-50		Tack	1-33-F	40-50		Tack
1-9-F	Sat		Bal	1-34-F	80		Bal
1-9-F	40-50		Tack	1-34-F	40-50		Tack
1-10-F	80-85		Bal	1-35-F	Sat		Bal
1-10-F	40-50		Tack	1-35-F	40-50		Tack
1-11-F	85-90		Bal	1-36-F	80		Bal
1-11-F	40-50		Tack	1-36-F	40-50		Tack
1-12-F	Sat		Bal	1-37-F	80		Bal
1-12-F	40-50		Tack	1-37-F	40-50		Tack
1-13-F	80-85		Bal	1-38-F	80		Bal
1-13-F	40-50		Tack	1-38-F	40-50		Tack
1-14-F	Sat		Bal	1-39-F	Sat		Bal
1-14-F	40-50		Tack	1-39-F	40-50		Tack
1-15-F	80-85		Bal	1-40-F	Sat		Bal
1-15-F	40-50		Tack	1-40-F	40-50		Tack
1-16-F	80-85		Bal	1-41-F	80		Bal
1-16-F	40-50		Tack	1-41-F	40-50		Tack
1-17-F	80		Bal	1-42-F	80		Bal
1-17-F	40-50		Tack	1-42-F	40-50		Tack
1-18-F	80		Bal	1-43-F	80		Bal
1-18-F	40-50		Tack	1-43-F	40-50		Tack
1-19-F	80		Bal	1-44-F	80		Bal
1-19-F	40-50		Tack	1-44-F	40-50		Tack
1-20-F	Sat		Bal	1-45-F	80		Bal
1-20-F	40-50		Tack	1-45-F	40-50		Tack
1-21-F	Sat		Bal	1-46-F	80		Bal
1-21-F	40-50		Tack	1-46-F	40-50		Tack
1-22-F	80		Bal	1-47-F	Sat		Bal
1-22-F	40-50		Tack	1-47-F	40-50		Tack
1-23-F	Sat		Bal	1-48-F	80		Bal
1-23-F	40-50		Tack	1-48-F	40-50		Tack
1-24-F	Sat		Bal	1-49-F	Sat		Bal
1-24-F	40-50		Tack	1-49-F	40-50		Tack
1-25-F	80		Bal	1-50-F	80		Bal
1-25-F	45-50		Tack	1-50-F	40-50		Tack

B M I WELDS "F"

REQUIRED AMPS., 100-120
REQUIRED VOLTS, 12-16

WELD NO.	AMPS	VOLTS	PASS	WELD NO.	AMPS	VOLTS	PASS
1-51-F	Sat	No Voltage Readings Taken	Bal				
1-51-F	40-50		Tack				
1-52-F	80		Bal				
1-52-F	40-50		Tack				
1-53-F	80		Bal				
1-53-F	40-50		Tack				
1-54-F	Sat		Bal				
1-54-F	40-50		Tack				
1-55-F	80		Bal				
1-55-F	40-50		Tack				
1-56-F	80		Bal				
1-56-F	40-50		Tack				
1-57-F	Sat		Bal				
1-57-F	40-50		Tack				
1-58-F	Sat		Bal				
1-58-F	40-50		Tack				

1. Weld No. 1-1A

   Quadrant C-D

   20 volts recorded on 7-26-73, using 1/8" rod. Minimum volts allowed is 21.

2. Weld No. 1-1B

   Quadrant C-B

   Surface pickup welding was performed on 2-12-74, using 3/32" wire at 110 amps. Maximum amps allowed is 100.

3. Weld No. 1-2A

   Quadrants B-A and C-D

   20 volts recorded on 7-26-73, using 1/8" rod. Minimum volts allowed is 21.

   Quadrant C-D

   Surface pickup welding was performed on 2-13-74, using 3/32" wire at 105 amps. Maximum amps allowed is 100.

4. Weld No. 1-3A

   Quadrant B-A

   a. 20 volts recorded on 1-10-74, using 1/8" rod. Minimum volts allowed is 21.

   b. 19 and 20 volts recorded from 1-14-74 to 1-24-74, using 1/8" rod. Minimum volts allowed is 21.

   c. Surface pickup welding was performed on 2-15-74, using 3/32" wire at 120 amps. Maximum amps allowed is 100.

   Quadrant C-B

   a. 20 volts recorded on 1-10-74, 1-18-74, 1-21-74, 1-22-74, 1-23-74 and 1-24-74, using 1/8" rod. Minimum volts allowed is 21.

   b. Surface pickup welding was performed on 2-15-74, using 3/32" wire at 120 amps. Maximum amps allowed is 100.

   Quadrant C-D

   a. 20 volts recorded from 1-11-74 to 1-23-74, using 1/8" rod. Minimum volts allowed is 21.

   b. Surface pickup welding was performed on 2-15-74, using 3/32" wire at 120 amps. Maximum amps allowed is 100.

   Quadrant D-A

   a. 19 and 20 volts recorded from 1-11-74 to 1-24-74, using 1/8" rod. Minimum volts allowed is 21.

   b. Surface pickup welding was performed on 2-15-74, using 3/32" wire at 120 amps. Maximum amps allowed is 100.

LOOP 1

5. Weld No. 1-4A

Quadrant B-A

20 volts recorded on 1-21-74, using 1/8" rod. Minimum volts allowed is 21.

Quadrant C-B

20 volts recorded on 1-23-74, using 1/8" rod. Minimum volts allowed is 21.

Quadrant C-D

a. 20 and 21 volts recorded on 12-7-73 and 12-11-73 for insert welding. Maximum volts allowed is 12.

b. 20 volts recorded on 1-16-74, using 1/8" rod. Minimum volts allowed is 21.

Quadrant D-A

a. 20 and 21 volts recorded on 12-7-73 and 12-11-73 for insert welding. Maximum volts allowed is 12.

b. 20 volts recorded on 1-18-74, using 1/8" rod. Minimum volts allowed is 21.

6. Weld No. 1-4B

Quadrant B-A

a. 19-21 volts recorded on 1-10-74, using 1/8" rod. Minimum volts allowed is 21.

b. 20-22 volts recorded on 1-21-74 and 1-29-74, using 1/8" rod. Minimum volts allowed is 21.

Quadrant C-B

a. 19-20 volts recorded on 1-10-74, using 1/8" rod. Minimum volts allowed is 21.

b. 20-21 volts recorded on 1-18-74; 20-22 volts recorded on 1-21-74, 1-22-74 and 1-29-74; and 19-22 volts recorded on 1-30-74, using 1/8" rod. Minimum volts allowed is 21.

Quadrant C-D

a. 20 volts recorded on 1-15-74 and 1-21-74, using 1/8" rod. Minimum volts allowed is 21.

b. 20 volts recorded on 1-18-74 and 21 volts recorded on 1-24-74, using 5/32" rod. Minimum volts allowed is 23.

c. 19 volts recorded on 1-28-74 and 1-29-74, using 1/8" rod. Minimum volts allowed is 21.

d. 20 volts recorded on 1-29-74, using 1/8" rod. Minimum volts allowed is 21.

Quadrant D-A

a. 20 volts recorded on 1-11-74, 1-21-74, 1-22-74, 1-23-74, 1-25-74, 1-29-74 and 1-30-74, using 1/8" rod. Minimum volts allowed is 21.

LOOP 1

b. 105 amps recorded on 2-13-74, using 3/32" wire. Maximum amps allowed is 100.

7. Weld No. 1-5A

Quadrant B-A

a. 85-90 amps recorded on 4-16-74, using 3/32" rod. Maximum amps allowed is 80.

Quadrant C-D

a. 110-120 amps and 20-22 volts recorded on 4-22-74, using 1/8" and 3/32" rod. 1/8" rod requires maximum of 110 amps and minimum of 21 volts. 3/32" rod requires maximum of 80 amps.

b. 100-110 amps recorded on 4-23-74, using 3/32" rod. Maximum amps allowed is 80.

Quadrant D-A

a. Surface pickup welding was performed on 2-13-74, using 3/32" wire at 120 amps and 14 volts. Maximum amps allowed is 100 and maximum volts allowed is 12.

b. 110-120 amps and 19-22 volts recorded on 4-22-74, using 1/8" and 3/32" rod. 1/8" rod requires maximum of 110 amps and minimum of 21 volts. 3/32" rod requires maximum of 80 amps and minimum of 20 volts.

c. 100-110 amps recorded on 4-23-74, using 3/32" rod. Maximum amps allowed is 80.

8. Weld No. 1-5B

Quadrant B-A

a. 25 volts recorded on 7-12-73, using 1/8" rod. Maximum volts allowed is 23.

b. 130 amps and 24 volts recorded on 7-12-73, using 1/8" rod. Maximum amps allowed is 110 and maximum volts allowed is 23.

1. Weld No. 2-1B

   Quadrant B-A

   22 volts recorded on 3-19-74, using 3/32" wire. Maximum volts allowed is 12.

2. Weld No. 2-5A

   Quadrant C-D

   120 amps recorded on 9-22-74, using 1/8" rod. Maximum amps allowed is 110.

REACTOR COOLANT PIPING WELDS

LOOP 3

1. Weld No. 3-1B

Quadrant B-A

a. 19-21 volts recorded on 3-21-74, using 3/32" rod. Minimum volts allowed is 20.

b. 80-90 amps and 19-22 volts recorded on 3-22-74, using 3/32" rod. Maximum amps allowed is 80 and minimum volts allowed is 20.

c. 19-22 volts recorded on 4-25-74, using 1/8" rod. Minimum volts allowed is 21.

d. 110-115 amps recorded on 4-25-74 and 4-26-74, using 3/32" wire. Maximum amps allowed is 100.

Quadrant C-B

110-115 amps recorded on 4-26-74 and 4-25-74, using 3/32" wire. Maximum amps allowed is 100.

Quadrant C-D

a. 75-85 amps recorded on 3-21-74, using 3/32" rod. Maximum amps allowed is 80.

b. 110-115 amps recorded on 4-25-74 and 4-26-74, using 3/32" wire. Maximum amps allowed is 100.

Quadrant D-A

a. 75-85 amps recorded on 3-21-74, using 3/32" rod. Maximum amps allowed is 80.

b. 110-115 amps recorded on 4-25-74 and 4-26-74, using 3/32" wire. Maximum amps allowed is 100.

2. Weld No. 3-1A

Quadrant C-D

a. 20-22 volts recorded on 5-20-74, using 1/8" rod. Minimum volts allowed is 21.

b. 65-75 amps and 20-24 volts recorded on 5-21-74, using 1/8" and 3/32" rod.

1/8" rod requires minimum of 80 amps and 21 volts.

3/32" rod requires maximum of 22 volts (the recorded amps are within the allowable range of 55-80).

c. 20-24 volts recorded on 5-22-74, using 3/32" rod. Maximum volts allowed is 22.

3. Weld No. 3-2A

Quadrant A-B

a. 18-21 volts recorded on 4-1-74, using 1/8" rod. Minimum volts allowed is 21.

b. 20-22 volts recorded on 4-4-74, using 1/8" rod. Minimum volts allowed is 21.

Quadrant B-C

The following voltage values were recorded on dates indicated, using 1/8" rod. Minimum volts allowed is 21.

19-22 on 4-2-74, 11-22 on 4-5-74, 12-20 on 4-8-74, 18-20 on 4-9-74, and 18-22 on 4-10-74

Quadrant C-D

a. 18-21 volts recorded on 4-1-74, using 3/32" rod. Minimum volts allowed is 20.

b. 20-22 volts recorded on 4-2-74, using 1/8" rod. Minimum volts allowed is 21.

c. 19 volts recorded on 4-9-74, using 1/8" rod. Minimum volts allowed is 21.

d. 100-105 amps and 20-22 volts recorded on 4-11-74 and 4-12-74, using 3/32" and 1/8" rod. 3/32" rod requires maximum of 80 amps (the recorded volts are within the allowable range of 20-22).

1/8" rod requires minimum of 21 volts (the recorded amps are within the allowable range of 80-110).

e. 90 amps recorded on 4-15-74, using 3/32" rod. Maximum amps allowed is 80.

f. 110 amps recorded on 4-15-74, using 3/32" wire. Maximum amps allowed is 100.

Quadrant D-A

a. 90 amps and 20-24 volts recorded on 3-29-74, using 3/32" rod. Maximum amps allowed is 80 and maximum volts allowed is 22.

b. 18-21 volts recorded on 4-1-74, using 3/32" rod. Minimum volts allowed is 20.

c. 105-110 amps recorded on 4-5-74, using 3/32" wire. Maximum amps allowed is 100.

d. 19-22 volts recorded on 4-8-74, using 1/8" rod. Minimum volts allowed is 21.

e. 95-105 amps recorded on 5-9-74, using 3/32" wire. Maximum amps allowed is 100.

LOOP 3

4. Weld No. 3-3A

Quadrant B-A

a. 19-22 volts recorded on 3-8-74, using 5/32" rod. Minimum volts allowed is 23.

b. 150-155 amps and 20-22 volts recorded on 3-12-74, using 5/32" rod. Maximum amps allowed is 150 and minimum volts allowed is 23.

Quadrant C-B

a. 21 volts recorded on 3-11-74, using 5/32" rod. Minimum volts allowed is 23.

b. 150-155 amps and 19-22 volts recorded on 3-12-74, using 5/32" rod. Maximum amps allowed is 150 and minimum volts allowed is 23.

Quadrant C-D

a. 19 volts recorded on 3-4-74, using 1/8" rod. Minimum volts allowed is 21.

b. 150-155 amps recorded on 3-8-74 and 3-12-74, using 5/32" rod. Maximum amps allowed is 150.

c. 19-22 volts recorded on 3-12-74, using 5/32" rod. Minimum volts allowed is 23.

Quadrant D-A

a. 21 volts recorded on 3-11-74, using 5/32" rod. Minimum volts allowed is 23.

b. 150-155 amps and 20-22 volts recorded on 3-12-74, using 5/32" rod. Maximum amps allowed is 150 and minimum volts allowed is 23.

5. Weld No. 3-4A

Quadrant B-A

a. 19-21 volts recorded on 3-6-74, using 1/8" rod. Minimum volts allowed is 21.

b. 20-24 volts recorded on 3-7-74, using 1/8" rod. Voltage range allowed is 21-23.

c. 20-22 volts recorded on 3-7-73 and 3-8-74, using 1/8" rod. Minimum volts allowed is 21.

d. 18-24 volts recorded on 3-18-74, using 5/32" rod. Minimum volts allowed is 23.

Quadrant C-B

19-22 volts recorded on 3-4-74, using 1/8" rod. Minimum volts allowed is 21.

Quadrant C-D

a. 19-22 volts recorded on 3-6-74 and 3-7-74, using 1/8" rod. Minimum volts allowed is 21.

b. 20 volts recorded on 3-15-74, using 1/8" rod. Minimum volts allowed is 21.

c. 20-24 volts recorded on 3-18-74, using 5/32" rod. Minimum volts allowed is 23.

d. 19-22 volts recorded on 3-19-74, using 5/32" rod. Minimum volts allowed is 23.

Quadrant D-A

20-22 volts recorded on 3-19-74, using 5/32" rod. Minimum volts allowed is 23.

6. Weld No. 3-4B

Quadrant B-A

a. 19-22 volts recorded on 3-4-74, using 1/8" rod. Minimum volts allowed is 21.

b. 18-20 volts recorded on 3-6-74, using 1/8" rod. Minimum volts allowed is 21.

c. 19-22 volts recorded on 3-14-74, using 5/32" rod. Minimum volts allowed is 23.

d. 145-155 amps and 20-21 volts recorded on 3-15-74, using 5/32" rod. Maximum amps allowed is 150 and minimum volts allowed is 23.

e. 20-22 volts recorded on 3-18-74, using 5/32" rod. Minimum volts allowed is 23.

Quadrant C-B

The following voltage values were recorded on dates indicated, using 5/32" rod: Minimum volts allowed is 23.

22 on 3-12-74, 19-22 on 3-14-74, 22 on 3-15-74, and 20-22 on 3-18-74.

Quadrant C-D

a. 19-22 volts recorded on 3-4-74 and 3-6-74, using 1/8" rod. Minimum volts allowed is 21.

b. 21-22 volts recorded on 3-12-74 and 3-14-74, using 5/32" rod. Minimum volts allowed is 23.

c. 20 volts recorded on 3-15-74, using 5/32" rod. Minimum volts allowed is 23.

LOOP 3

Quadrant D-A

a. 19-22 volts recorded on 3-14-74, using 5/32" rod. Minimum volts allowed is 23.

b. 21-22 volts recorded on 3-14-74 and 3-15-74, using 5/32" rod. Minimum volts allowed is 23.

7. Weld No. 3-5A

Quadrant B-A

19-22 volts recorded on 2-13-74 and 2-14-74, using 1/8" rod. Minimum volts allowed is 21.

8. Weld No. 3-5B

Quadrant B-A

Surface pickup welding was performed on 2-11-74, using 3/32" wire at 105 amps. Maximum amps allowed is 100.

1. Weld No. 4-2A

   All Four Quadrants

   110-115 amps recorded on 4-26-74, using 3/32" wire. Maximum amps allowed is 100.

2. Weld No. 4-3A

   Quadrant B-A

   75-85 amps recorded on 4-2-74, using 3/32" rod. Maximum amps allowed is 80.

   Quadrant D-A

   110 amps recorded on 4-3-74, using 3/32" wire. Maximum amps allowed is 100.

ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
21. JHJ	Were written procedures established to document the control, receipt, storage, baking, drying, and distribution of all weld filler metals? (8752, pg. 3-14, para. 6.41		2	0	Welding Electrode Storage and Control Procedure No. 3500-100, PG&E Approved 3/7/73. Welding Elect. Storage and Control Procedure No. 3500-100, PG&E 10/11/74
22. JHJ	Does the above procedure assure traceability (certified mill test reports) of all weld filler metal used? (8752, pg 3-14, para. 6.41)		2	0	Same as item # 21 above

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ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS		COMMENTS
			NO. CKD.	NO. UNSAT.	
23. JAJ	Are records available for electrodes which identify the following: . Receiving date . Condition . Heat or lot numbers . Diameter . Type and manufacturer (8752, pg. 3-14, para. 6.42)		9	0	R&I Nos. 59, 51, 41, 40, 39, 32, 31, 24, 25,
24. JAJ	Do records reflect electrodes were issued by count, and were all stubs and electrodes accounted for at the end of each four (4) hours? (8752, pg. 3-15, para. 6.43)		254	0	Weld Electrode Control Sheets for E7018, Quality Document Nos. 8752.62 33 of 39 (Qty 3 shts.), 32 of 39 (Qty 10 shts.) Total No. of issues Verified on 13 shts. were 254 Observ.

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ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
25. JAG	Do records show that the remaining unused electrodes were returned to the holding oven and redryed in accordance with manufacturer's instructions after each four (4) hour period? (8752, pg. 3-15, para. 6.43)		254	0	same as item #24
26. JAG	Is there evidence that tack welds were made using approved filler metal in accordance with an approved welding procedure? (8752, pg. 3-15, para. 6.53)		5	0	weld proc. #3500-1, Rev. 4, Rev. 3, 3500-2, dtd. April 13, 1973, 3500-3 dtd. March 1, 1973, 3500-5, o/dtd April 11, 1973, 3500-6, (3131-2, Rev. 2), dtd June 14, 1973

ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
27. JWJ	For welding of stainless steel, verify that the root pass of all butt welds and all passes on socket and tube welds were accomplished by use of the inert gas tungsten-arc welding (GTAW) process. (8752, pg. 3-17, para. 6.61)		46	0	Seal leak Detection Tubing weld traveler (WB-377) Weld I.D. Nos.: 1-A thru 1-S, & 2-A thru 2-S verified for GTAW. Note: The following travelers do not identify The welder(s): 1-A; 1-I, 1-J, 1-S, 2-A, 2-F, 2-I, 2-J, 2-M, 2-N, & 2-Ø Reactor Coolant Piping Traveler (WB-328) Weld I.D Nos.: 1-1A, 1-1B, 1-2A, 1-3A, 1-4A, 1-4B, 1-5A, & 1-5B Tubing was subsequently verified as having a welder's identification marking.
28. JWJ	Verify that, subsequent to the root pass, only low hydrogen welding electrodes of current characteristics AWS Type-15,-16, or-18, using the shielded metal arc welding (SMAW) process was used on all butt welds. (8753, pg. 3-18, para. 6.64 & 6.65)		46	0	Same as item # 27 above

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ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
29. JHC	Do records reflect that filler metal, including consumable inserts, for austenitic stainless steel welds were selected and controlled to produce welds which contain from 5-15 percent ferrite? (8752, pg. 3-18, para. 6.66)		15	0	HT# 34012C, 13747C, 5605B, 12783C, 13747C, 13846C, 5410, 12760C, 13062, 5649B, G317B, X1227T308, 221224, G6629, 29963
30. JP JHC	Verify that the ferrite measurements on completed welds were determined by using a magnetic ferrite indicator. (8752, pg. 3-18, para. 6.66 and change notice 8752-4)		385	143	Re PFR# 9028. Surge Line records do not indicate ferrite checks being performed. BMI tubing weld records do not all have ferrite readings recorded. Not all weld records reflect ferrite checks on completed welds. In addition, intermediate ferrite checks are below the 5% min. Welds involved are 2-3A (3%), 3-1B (2.2%) 4-1B (.5-1%) and 4-4B (4%). See attached.

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attn. #30 & 29 pg 1 of 3

Receiving Inspection Reports: (RIR)

25 Thoorhorous (see pg. 2 of 3) ~~255~~ Not Verified
26 Ferrite on chem 5410
28 Ferrite on E2253T308 ~~256~~ " "
31 ferrite on 13062 ~~277~~ " "
32 5649B, 55928 ferrite on ~~280~~ " "
HT 12783C
-39 Ferrite on Chem on ~~301~~ " "
5605B
-40 FERRITE ON Chem on ~~302~~ " "
-41 13747C Chem on ~~312~~ " "
-51 13846C Chem on ~~321~~ " "
-54 7538 Chem on X ~~358~~ " "
-59 / FERRITE ON 34012C ~~364~~ " "
~~73~~ NOT Verified X ~~367~~ " "
~~79~~ " " X ~~372~~ " "
~~95~~ " " X ~~379~~ " "
~~95~~ " " X ~~380~~ " "
~~100~~ " " X ~~394~~ " "
~~103~~ " " X ~~398~~ " "
~~122~~ " " ~~424~~ " "
~~151~~ " " ~~426~~ " "
~~163~~ " " ~~432~~ " "
~~184~~ " " ~~472~~ " "
~~196~~ " " ~~483~~ " "
~~199~~ " " ~~484~~ " "
207 X1227T308 Ferrite on ~~495~~ " "
-211 HT 6317B ferrite on -519 29963
235 21224, G 6629 ferrite on ~~525~~ Not verified

CMTR's for ER308 wire state phosphorous ~~content~~ content of .032. The maximum allowed by SFA 5.9 is .03. although this condition is not acceptable to ASME II 1971 edition, later editions of the code and ASTM E-29 have stated that for the purpose of ~~recording~~ recording of chemical contents it is acceptable to round off the figure to the closest limiting value. Therefore since ~~the~~ SFA 5.9 requires .03 phosphorous

content and CMTR's state .032 which can be [redacted] rounded to .03 This condition can be considered acceptable.

ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
31. JWJ	Were interpass temperatures (in all stainless steel welding processes) limited to 350°F maximum? (8752, pg. 3-18, para. 6.67)		16	0	1-1A, 1-1B, 1-2A, 1-3A, 1-4A, 1-4B, 1-5A, 2-1A, 2-1B, 2-2A, 2-2A, 2-3A, 2-4A, 2-4B, 2-5A, & 2-5B The weld numbers listed above are RC Pipe welds. (WB-328).
32. JWJ	Are methods and materials used to monitor the interpass temperature described in the welding procedure(s)? (8752, pg 3-18, para. 6.67) For S/S only		14	8	Sat. WPS 3500 1 Rev.4, 3500-1(Rev.3), 3500-2, 3500-3, 3500-8, 3500-(Rev.1) Unsat. WPS-3500-4, ~~3500-5~~, 3500-5, 3500-6, ~~3500-8~~, ~~3500-8(Rev.1)~~, 3500-9 (Rev.0), 1100 (Rev. 0), PWR 82127 ZJ (Rev.5), PWR 82127 ZJ (Rev.7), 82127 SK (Rev.1). Re PFR # 9001

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ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
33. HP	Verify that weld defects revealed by nondestructive examinations were eliminated and repaired in accordance with a procedure approved by PG&E. (8752, pg. 3-18, para. 6.7)		10	0	The following welds were repaired as a results from NDT: RC Weld Nos. 3-1B, 3-1A, 3-2A, 3-3A, 1-1B, 1-2A, 1-4A, 1-4B, 1-5A, 1-5B Weld record listed above, also identifies welding Proc. & NDE Proc used.

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ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
34.	Verify that the Contractor's weld records include the following: . Weld number . Welder's symbol & name . Welding procedure, including weld joint preparation, filler metal and type of welding process. The definition of filler metal shall be complete, including manufacturer, heat or lot number, type, diameter and sequence used. . Preheat charts . Stress relief charts . Nondestructive examinations performed and examinations procedures used. . Results of tests with dated certified examiner's signature . Similar data on any repairs made to weld . ASME Boiler and Pressure Vessel Code Data Reports. (8752, pg. 3-19, para. 6.82)		10 1	0 0	same as 33 above WB Code Data Report

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ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
	Nondestructive Examination				
35. JWJ	Were nondestructive examinations performed in accordance with detailed, written examination procedures? (8752, pg. 3-20, para. 7.2)	I.	14	7	RT Covering Welds 1-1A, ~~1-1A~~, 1-1B, 1-2A, 1-3A, 1-4B, 1-5ARI, & 1-5B (see attachment) LP Covering Welds 1-1A, 1-1B, 1-2A, 1-3A, 1-4A, 1-4B, 1-5B, & 1-5A (see Attachment 1-6) Re PFR#9018
36. JWJ	Do records reflect that the above procedures (NDE), including changes thereto, were reviewed and approved by PG&E & by the authorized inspection agency prior to the start of work? (8752, pg. 3-20, para. 7.2)		6	0	Radiographic Procedure ESO-206 (W-B), Issue 4-71, Rev 2-24-72, 6-26-73 Liquid Penetrant Procedure 3500-500, R 2, appd 6-11-65, R1, appd. 11-27-73, R0, appd 3-29-73

G1-50

Attr. #35

1 of 6

Plan # DC-19.02

Welds listed below were reviewed and checked against referenced documents and the results of our review is as follows:

Reference Documents:

- Southwest Fabricating & Welding Dwgs. 7524-F, Sheet #4, Rev. 2, 7524-F, Sheet #5, Rev. 1, and 7524-F, Sheet #1, Rev. 2

- Southwest Fabricating & Welding Code Data Report covering Loops 1-1, 1-3, 1-4, and 1-5

- Operation Process Sheet Travelers covering welds 1-1A, 1-1B, 1-2A, 1-3A, 1-4B, 1-5ARL, and 1-5B

- Radiographic Inspection Reports covering welds listed above.

- Radiographic Procedure ESD-206 (NB) issued 4/74, Rev. (2-24-77), (6-26-73), and (3-11-74).

- Radiographic Procedure Qualification #WFB-1 (KRT-2, issued 8-20-73)

#11r. = 35

Plan # DC-19-02 (cont.)

ASME, Section III, 1971 edition

Conditions and Comments Noted

The information listed below was recorded from the radiographic inspection reports:

I. Weld # 1-1A, film exposed 3-9-74

1. Material thickness: 3"
2. Material Diameter: 35"
3. Source size: .10 x .10
4. Distance: 17½"
5. Total unsharpness: 0.020

Comments

Item #3. The radiographic procedure in effect at the time the above weld was radiographed (dated 6-26-73) states that the physical dimension shall be no greater than 0.100 inch in diameter by 0.040 inch long.

Source size: .10 x .10 = 0.140

Source size: .10 x .04 = 0.107

Plan # DC-19.02 (cont.)

Item # 4. Source to object distance is approx. 15 inches.

Item # 1. Material thickness is 2.335 min. wall.

Item # 5. Based on documents reviewed, the geometric unsharpness is 0.022.

II. Weld # 1-1R, Film exposed 4-7-74

1. Material thickness: 2 1/2"

2. Material Diameter: 37"

3. Source size: .10 x .10

4. Distance: 17 1/2"

5. Total unsharpness: 0.020

Comments

Item # 1. Material thickness is 2.87 min. wall.

Item # 3. Source size .10 x .10 = 0.140

Item # 4. Source to object distance is approx. 16 1/4 inches

Item # 5. Based on documents reviewed, the geometric unsharpness is 0.025.

Attr. # 35

Plan # DC-19.02 (cont.)

III. Weld # 1-2A, film exposed 3-26-74

1. Material thickness: 2½"
2. Material Diameter: 35"
3. Source size: .10 x .09
4. Distance: 17½"
5. Total unsharpness: 0.021

Comments

Item # 3. Source size .10 x .09 = 0.130

Item # 4. Source to object distance is approx 15½ inches.

Item # 5. Based on document reviewed, the geometric unsharpness is ~~correct~~ 0.021

IV (See Next sheet)

IV. Weld # 1-3A, Film exposed 4-19-74

1. Material thickness: 3"
2. Material diameter: 31" I.D.
3. Source size: .10 x .10
4. Distance: 17½
5. Total Unsharpness: 0.020

Comments:

Item # 4. Source to object distance is approx. 15½"
Item # 5. Based on documents reviewed, the geometric unsharpness is 0.027
Item # 3. Source size .10 x .10 = 0.140

V Weld # 1-4B, Film exposed 3-6-74

1. Material thickness: 3" to 3⅛"
2. Material Diameter: 37"
3. Source Size: .10 x .04
4. Distance: 18½"
5. Total Unsharpness: .019

Comments

Item 3. .10 x .04 = 0.107
Item 4. Source to object distance is approx. 15½
Item 5. Based on documents reviewed, the geometric unsharpness is 0.021 to 0.023

Plan # DC-19.02

VI Weld # 1-5AR1, film exposed 4-27-74

1. Material thickness: 2 1/2"
2. Material Diameter: 32" O.D.
3. Source size .10 x .10
4. Distance 17"
5. Total unsharpness: 0.020

Comments

Item # 3. Source size: .10 x .10 = 0.140

Item # 4. Source to object distance is approx 13 1/2 inches.

Item # 5. Based on documents reviewed, the geometric unsharpness is 0.026

VII. Weld # 1-5B, film exposed 5-23-74

Item # 3. Source size: .10 x .10 = 0.140

Item # 4. Source to object distance is 13 1/2 inches.

Item # 5. Based on documents reviewed, the geometric unsharpness is 0.028.

1. Material thickness: 2.7"
2. Material Diameter: 32 1/2"
3. Source size: .10 x .10
4. Distance 16 1/8"
5. Total unsharpness: 0.021

ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
37	Is there evidence that NDE personnel were qualified in accordance with SNT-TC-1A? (8752, pg 3-20, para. 7.3)		37	0	Radiography (Kellogg Personnel) R. Barber - Level, II & III M. Costley - " , II & III L. Chrisman - " , I E. Martindale - " , III M. Shove - " , II For Liquid Penetrant, see attachment.
38,	Were qualification tests and qualification records for examination personnel reviewed and approved by PG&E and by the authorized inspection agency? (8752, pg. 3-20, para. 7.3)		8	0	WB Qualification and Training Program (M-2) Rev. 1, 7-7-75. Liquid Penetrant L. Carlson - Level, II L. Glass - " , II H. Machado - " , II R. Mansonen - " , II K. Gronberg - " , II J. Keaveney - " , III L. G. Thomas - " , II J. Mc Gregor - " , II

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ATP = 37 Level-II, LP

Geoff Simcox approved 5-8-73

Leon Vann, Approved 6-6-75. (Level I)

Anson Averell, Approved — Level III

John McGregor, Approved 9-25-75

Lanny G. Thomas, Approved 1-6-75

J. J. Kearney, Approved 3-12-74 (Level III)

Keith Groenberg, Approved 8-15-74
12-12-73 (Level II

Robert D. Mansanon, Approved 9-10-73 (Level I)

Harry Machado, Approved 9/10/73

Lance Carlson, Approved 1/6/75

Lawrence Glass, Approved 9/10/73

RC Welds 1-1A, 1-1B, 1-2A, 1-3A, 1-4A, 1-4B, 1-5A & 1-5B

RC Welds 4-1A, 4-1B, 4-2A, 4-3A, 4-4A, 4-4B, 4-5A & 4-5B

RC Surge Line Welds PS-1A, PS-2A & PS-2B.

ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CMD.	OBSERVATIONS NO. UNSAT.	COMMENTS
39. JWF	Verify that the Contractor visually examined all welds in accordance with written visual examination procedures and acceptance criteria. (8752, pg 3-20, para. 7.41)		62	53	Visual Weld Examination Procedure No. 3500-300 Rev. 1 PG&E approved 11-8-73. R.C. Piping Travelers (WB-328) Weld Nos.: 3-1A, 3-1B, 3-2A, 4-5A, 4-5B, 2-1A, 3-5A, 3-5B, 4-1A, 4-2A, 4-1B, 2-1B, 2-2A, 2-5A, 2-5B Note: The above records do not identify the Visual Examination Procedure
	Re PFR# 9002				Seal Leak Detection Tubing Weld I.D. Nos.: (WB-377) 1-A Thru 1-S & 2-A thru 2-S There are no Visual Exam. records covering the 38 SLDT listed above Sat. 3-3A, 3-4A, 3-4B, 4-3A, 4-4A, 4-4B, 2-3A, 2-4A, 2-4B
40. JWF	Verify that the Contractor performed liquid penetrant examination on all stainless steel finished weld surfaces. (8752, pg 3-20, para. 7.42)		38	0	R.C. Welds: Operation Process Sheet Traveler (WB-377). Weld Nos.: 1-A Thru 1-S and 2-A Thru 2-S
			350	58	BMI Welds: W Dwg# 685J702 & O.P.S.T. (WB-352) identify "F" Welds (Finished surfaces) as not requiring LP examination. Modif. & Data Report certifies same as being in accordance with ANSI B31.7
	Re PFR# 9032				

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ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
41. JWJ	Verify that the Contractor performed magnetic particle examination on all carbon steel finished weld surfaces. (8752, pg 3-20, para. 7.43)		5	5	See attached 2 welds on x-over restraints (OPST-WB491) unsat. 3 welds on BMI supports #9, 10, & 11 (OPST-WB378) unsat. Re PFR# 9025
42. JWJ	Are records available which indicate that all full penetration welds were radiographed? (8752, pg. 3-21, para. 7.44)		5 14	5 0	Same as 41 above See attached welds Nos; sat. 3-1B 1-1A 3-1A 1-2A 3-2A 1-3A 3-3A 1-4B 3-4B 1-4A 3-5A 1-5A 3-5B 1-5B Re PFR# 9025

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Checklist #DC-19.02, Attributes #41 & #42, Attachment

3. Potential Finding:

Documents reviewed concerning activities listed below, performed by Wismer & Becker, do not reflect magnetic particle or radiographic examinations were performed as required.

A. "Operation Process Sheet Traveler-Submittal No. WB-378" covering BMI Supports:
B. "Operation Process Sheet Traveler-Submittal No. WB-491" covering Cross-Over Restraints Rework at Steam Generators:

COMMENT A

Carbon Steel welding is not identified in the "Operation Description" blocks provided on subject traveler. However, through physical verification, it was noted that supports #9, #10 and #11 were, in fact, spliced and butt welded.

COMMENT B

Operation description #7, with attachments, identify that full penetration welds were made by Wismer & Becker. Further, other documents, i.e. nonconformance reports, engineering transmittal approvals, etc., covering activities listed above were researched for possible deviation of authorization.

4. Significance of Concern:

Specification requirements for MT and RT of Carbon Steel Welding (Sections 3-20 and 3-27, paragraphs 7.43 and 7.44) were revised by Specification Change Notice #22 which provides for substitution of visual examination, paragraph 7.41, only on approval by the Engineer. Records are not available which provides this approval.

ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
43. glj	Verify that all penetrant examination procedures include the following information as a minimum:		3	0	Liquid Penetrant Procedures 3500-500.R0, R1, & R3
	. Brand name and specific type (number or letter designation if available) of penetrant, penetrant remover, emulsifier, and developer.				Magnaflux Penetrants (SKL-S) " Developer (SKC-S); " Cleaner (SKD-S)
	NOTE: All items shall be halogen free.				
	. Details of the method of pre-examination cleaning and drying, including cleaning material used and time allowed for drying.		3	0	Same as noted above
	. Details of the method of penetrant application, the length of time that the penetrant remains on the surface, and the temperature of the surface and penetrant during the examination if not within 60° to 125°F range.		3	0	R2 States 50°F - 125°F R1 states 60°F - 125°F R0 states 60°F - 125°F 10-20 minutes
	. Details of the method of removing excess penetrant from the surface and of drying the surface before applying the developer.		3	0	same as noted above
	. Details of the method of applying the developer and length of developing time before examination.		3	0	Not exceeding 5 minutes
	. Method of postexamination cleaning.		3	0	same as noted above
	(8752, pg. 3-21, para. 7.61)				
	Re PFR #9019		16	1	16 Lot numbers covering welds identified on item #35 (see attachment)

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3. Potential Finding:

Material certifications for cleaning agents, penetrants, and developers (lot numbers/certifications) covering liquid penetrant inspections for welds 1-1A, 1-1B, 1-2A, 1-3A, 1-4A, 1-4B, 1-5A, and 1-5B were checked as noted below:

Cleaning Agents	Penetrants	Developers
3J056 (150)*	2L095 (20&116)*	4A012 (124&150)*
2M077 (20)	4B082 (150)	2M032 (20&58)
3M013 (126)	2E034	2H044 (61&96)
2H069 (96&61)		4D026 (397)
5A093 (349)		
5B021 (324)		
3A137 (43)		
3M116 (304)		
4L063 (273)		

* Denotes the Receiving Inspection Report Numbers.

Lot numbers listed above were reviewed and found satisfactory, with the exception of 2E034, for which certification was not on file nor made available at the time of evaluation.

ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
44. JNJ	Verify that all magnetic particle examination procedures include the following information, as a minimum: . Material, shapes, or sizes to be examined. . Type of magnetization to be used. . Equipment to be used for magnetization and the allowable distance between contacts or prods. . Surface preparation (finishing and cleaning). .. Ferro-magnetic particles to be used: Manufacturer, color, wet, or dry. . Magnetization current. . Demagnetization. . . Sketches or a chart indicating coverage, where necessary for clarity. (8752, pg 3-22, para 7.71)		N/A	N/A	Wismer & Becker rep. stated that NO MT was performed There is no evidence of MT being performed.

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ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
	Quality Assurance Program				RC Pipe-Welding Travelers Weld Nos; 1-1A, 1-2A, 1-3A, 1-4A, 1-4B, 1-5A, 1-1B, & 1-5B
45.	Verify that Contractor's quality related documents, i.e., specifications, drawings, procedures, instructions, inspection and test plans, as well as authorized changes, used in work performed under specification 8752, were current, properly completed, approved by authorized personnel, ~~and distributed for use~~. (8752, pg 4.3, para. 4.32) Unable to verify timely distribution.		8	0	
46.	Verify the availability of the Contractor's written inspection and test plans which should establish the initial, in-process, and final inspections and tests that were performed to assure quality. (8752, pg4-6, para. 4.4)		3	0	"Documentation Checklist-Travel Packet" Covering The Pressurizer Surge Line Welel Nos; PS-1A PS-2A PS-2B

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ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
47.	Verify that the inspection and test plans include the following: 1. Receipt inspection 2. Storage inspection 3. Dimensional inspection 4. Visual inspection 5. Cleanliness inspections 6. Fit-up inspections 7. Weld inspections 8. Nondestructive tests 9. Materials tests 10. Electrical circuit continuity tests 11. Hydrostatic tests 12. Operating tests. (8752, pg 4-6, para. 4.4)		88	0	1. WB Receiving Inspection Reports, #89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, & 100 2. Storage surveillance records covering; Reactor Vessel, RV. Head, upper Internals, Lower Internals, Internals lifting device, RV. Head lifting device, Steam Gen., Pressurizer, R.C. Pump, RC pump cases, BMI Tubes, R.C. piping, Spring Seal Assem. 3. RC pipe welds 1-1A, 1-1B, 1-2A, 1-3A, 1-4A, 1-4B, 1-5A, & 1-5B 4. Same as 3 above. 5. WB Proc. # 3500-802 and O.P.S. (WB-436) NSSS Component final Cleanliness and Inspection. 6. Same as 3 above. 7. Same as 3 above 8. Same as 3 above 9. Same as item # 29 10. N/A for W.B. 11. NPP-1 CODE Data, Quality Document 8752.25 and Operation Process Sht. Traveler (WB-376) Covering Seal leak Detection Tubing 12. Surveillance Reports, Reactor Vessel, Steam Gen. & Pressurizer

Oper. Process Sht. Travel (cont.) for NSSS Hydro. WB 449

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ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
48.	Verify that the inspection and test plans delineate the following requirements: . Inspection and test results to be recorded. . Data to be collected . Identity and signature of the observing personnel . Acceptance criteria for each inspection and test point (described or referenced) (8752, pg 4-6, paras. 4.45 & 4.46)		8	0	Operation Process Sheet Traveler's Covering RC piping. Weld Nos.: 4-1A, 4-2A, 4-1B, 4-3A, 4-4A, 4-4B, 4-5A, & 4-5B
49.	Were the plans filled out and completed as work was performed to document ~~and~~ the results of inspections and test? (8752, pg 4-6, para. 4.46)		8	0	Same as 48 above

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ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
50. SP YWJ	Do records provide for the identification, and segregation of nonconforming material? (8752, pg 4-4, para. 4.37)			0	NCR 86 STATES THAT WORK HAD BEEN PERFORMED ON AN ITEM WITH A HOLD TAG ON IT.
	Wismer & Becker QA & Control Manual		14	0*	SAT. NCR #'S 100, 99, 86, 57, 54 44, 37 34, 7, 6, 1 & 69 107, 58
51. SP YWJ	Verify that nonconformance reports were assigned a nonconformance serial number and that blocks 1 through 11 and block no. 13 were completed by the cognizant inspector. (pg XV-2, para. 4.1)				* OF THE 14 NCE'S REVIEWED, ONLY 3 HAD BLOCK 10 COMPLETED. BLOCK 10 IS USED FOR SEQUENTIALLY NUMBERING NONCONFORMING ITEMS AND IS NOT CONSIDERED A VITAL BLOCK TO BE COMPLETED.

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ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
52. JP [illegible]	Were the above nonconformance reports approved by the Project Quality Manager? (pg. XV-2, para. 4.1.2)		15	0	NCR #S 100, 99, 86, 58, 57 54, 44, 37, 34, 7, 6, 1 164, 107, 58
53. JP [illegible]	Were nonconformance dispositions approved by the Project Manager and the Project Engineer, and were the nonconformance reports signed by the inspector and Project Quality Manager (in block No. 17)? (pg. XV-3, para. 4.1.3; pg. XV-5, para. 4.1.5,3)		15	0	NCR #S. 100, 99, 86, 58, 57, 54 44, 37, 34, 7, 6, 1, 164 107, 58

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ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
54. JWF	Verify that each shop/field traveler was accompanied by the spool drawing, a documentation checklist (listing all documents which must be retained), and a Quality Checklist; and that the above documents were approved by the Project Quality Manager. (pg V-4, paras. 4.3 & 4.4)		15	0	Q.A. and Control Check List for UNIT 1 NSSS. Documentation Check List for BMI Tubing Weld Procedure-"B" Welds. Operation Process Sht. Travelers (WB-352) Weld Nos. 1-1B Thru 1-13B
56. JWF	Drawing Requirements Reactor Vessel Bottom Mounted Incore Instrumentation Verify liquid penetrant inspections (root layer and final layer) were performed on all thimble guide tube connections at vessel. 0.400 I.D. 50 welds 0.600 I.D. 8 welds (W Dwg. No. 685J702, Rev. 4)		58	0	BMI Weld Nos. (WB-352) 1-1A Thru 1-58A
55A JWF	Verify the above connections were radiographed (W Dwg. No. 685J702, Rev. 4)		58	1	Re PFR# 9004A RT Inspection Report for Weld 1-25A does not identify the status (Accept/Reject) of the Weld. Note: Corrected 10-13-82 ✓ Verified by J.W.F.

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ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
56. jwf	Verify thimble guide tube material as being ASTM A213 Type 304, cold drawn and heat treated. (W Dwg. No. 685J702, Rev. 4)		3	0	Babcock & Wilcox CMTR's (Qty 2) HT. Nos. M4358, M4449, M4443, M4344, M4347 Note: CMTR's do not identify Heat Treatment, however, each CMTR contains the statement certifying subject tubes have been inspected and tested IN accordance with, and have Met all the requirements of the Specifications.
57. jwf	Do test reports for the above material reflect the following tests: • Hydrostatic test to 3750 PSI • Ultrasonic inspect per W MTS CAP 595137 longitudinal & shear modes to Quality Level "B" (W Dwg. No. 685J702, Rev. 4)		3	3	Same CMTR's as Noted IN Item 56 above. CMTR's reflect UT was conducted IN the shear Mode ONLY. UT records reflect same. Re PFR # 9003A

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ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CMD.	OBSERVATIONS NO. UNSAT.	COMMENTS
58.	Verify liquid penetrant inspections (root layer and final layer) were performed on all thimble guide tubes to couplings. (132 welds). (W Dwg. No. 685J702, Rev. 4)		58	0	Operation Process Sht. Travelers (WB 352) Weld Nos; 1-1B, 1-2B, 1-3B, 1-4B, 1-5B, 1-6B, 1-7B, 1-8B, 1-9B, 1-10B, 1-11B, 1-12B, 1-13B, 1-14B, 1-15B, 1-16B, 1-17B, 1-18B, 1-19B, 1-20B, 1-21B, 1-22B, 1-23B, 1-24B, 1-25B, 1-26B, 1-27B, 1-28B, 1-29B, 1-30B, 1-31B, 1-32B, 1-33B, 1-34B, 1-35B, 1-36B, 1-37B, 1-38B, 1-39B, 1-40B, 1-41B, 1-42B, 1-43B, 1-44B, 1-45B, 1-46B, 1-47B, 1-48B, 1-49B, 1-50B, 1-51B, 1-52B, 1-53B, 1-54B, 1-55B 1-56B, 1-57B; 1-58B.
59.	Verify coupling material as being ASTM A276, type 304 Anld. & Centerless ground. (W Dwg. No. 685J702, Rev. 4)		2	0	W&B N-5 Code Data Report, dtd., Feb. 11, 1976 CMTR from Industrial S/S. HT# 44524

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ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CND.	OBSERVATIONS NO. UNSAT.	COMMENTS
60. JHS	Do test reports covering the above material reflect subject material was ultrasonic inspected per W MTS CAP 595137, longitudinal & shear modes to Quality Level "B". (W Dwg. No. 685J702, Rev. 4)		1.	1	CMTR as identified in 59 above. CMTR states "Ultrasonic tested to ISS Spec #9 - No indications" There are NO UT test reports available, and since the CMTR does not state same requirements as reference dwg, UT may not have been conducted in accordance w/same. Re PFR# 9024
	Pressurized Surge Line				
61. JHS	Verify liquid penetrant inspections (root pass and finished weld) were performed on all (3) three field welds. (SF&W Dwg. No. 7524-F, Sht. No. 18, Rev. 1)		3	0	Weld PS-1A Weld PS-2A Weld PS-2B Note: I.D. Root LP was performed on weld PS-1A only. The other two welds are not accessible from the inside.

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ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
62. JHJ	Are records on file which reflect the above welds were radiographed and subsequently accepted by personnel qualified and certificated in accordance with SNT-TC-1A? (SF&W Dwg no. 7524-F, Sht. No. 18, Rev. 1) (8752, pg 3-20, para. 7.3) (Pg. IX-12, para. 4.3.2)		3	0	same as 61 above Level III
63. JHJ	Verify that the above pipe & fittings were 100% ultrasonically inspected prior to fabrication. (SF&W Dwg. No. 7524-F, Sht. No. 18 Rev. 1) Specification #8752, pg. 2-24 lists Pressurizer Surge line piping as ASTM A376, Type 316, S-2 & S-6. S-6 requires UT examination Fitting do not requirm UT (per matl spec & Spec-8752) Re PFR # 9026A		2	0 JHJ	NOTE: Subsequent investigation of Pipe in question was Verified as being stamped with HT# 1474 and not #1424 as shown on SWF&W dwg. 7524-F, SHT. #18, ASME Code Data, dated 12-22-70, Covering MK. Nos: PGE-Press-1 & -2 ASTM A376, Typ 316, S2 & S6 There were no records offered to indicate HT was performed on the 2 sections fabricated by SWF&W and installed by Wismer-Becker HT Nos: effected E1424 & E1474 JHJ E-1474 Verified see 1st Note above

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ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
	Extent of Work		1	0	OPERATION SHEET TRAVELER (WB 309) FOR REACTOR VESSEL-SET & ALIGN A CALIBRATED OPTICAL LEVEL WAS USED.
64.	After the machined shims were installed verify that the vessel was lowered to final position and that alignment measurements were taken using calibriated instruments. (8752, pg. 2-2, para. 2.211)				
65.	Verify that two (2) reactor vessel flange seal leak detection tubing lines were installed during the installation of the reactor vessel. (8752, pg 2-3, para. 2.212)		2	0	Operation Process Sht. Traveler - (WB-376) for; Seal Leak Detection Tubing-Installation Procedure OPST (WB-377) for; Seal Leak Detection Tubing Welding Traveler

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ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
66. JWJ	Is there evidence indicating that the Contractor assembled and fit up the seal assembly to the reactor vessel and to the embedded seal ring in order to verify proper installation? (8752, pg 2-3, para. 2.214)		1	0	Operation Process Sht. Travelr (WB-376) for; Seal Leak Detection Tubing-Installation Procedure
67. JWJ	Is there evidence indicating that the Contractor performed surveillance inspections and/or audits of the subcontractor installing the stainless steel, reflective type insulation? (8752, pg 2-3, para. 2.22) (pg. XVIII-3, para. 4.3.2)		2	0	Record. reviewed indicate subject work was performed by Plant/Thrope under a seperate contract #22-C-873-2 and specification 8748 issued by PG&E.
67A JWC	Is there evidence indicating that the Contractor performed audits of other subcontractors? JWC (pg XVIII-3, para. 4.3.2)		4	0	Reviewed Wisner & Becker audit reports, File Code No. 8752.30, folder #3 of 4. Four of the quarterly QA audits of W+B field operations (performed by the Corporate QA + Control Manager) included an audit of radiography, which was performed by M.W. Kellogg for W+B. The four audit reports are dated 6/27/73, 8/19/74, 2/26/75, + 9/10/75.

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ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS		COMMENTS
			NO. CKD.	NO. UNSAT.	
68.	Is there evidence indicating that the Contractor maintained the reactor coolant pumps until acceptance by PG&E? (8752, pg 2-4, para. 2.25)		32	0	Surveillance (WB) Report for Reactor Coolant Pump Motors 1-1, 1-2, 1-3, & 1-4 (Qty. 32 reports) Accepted by: PG&E on 1-20-76
69.	Verify that the Contractor installed the eight (8) part-length control rod drive mechanisms (CRDM's) and fifty-three (53) full-length control rod drive mechanisms on the reactor vessel head. (8752, pg 2-5, para. 2.271)		22	0	Operation Process Sht. Travel Submittal ## WB-365 Covering The "Part lenght CRDM Installation Procedure" Head Adapter Locations; 10-D, 4-F, 10-M, 4-K, 6-D, 12-K, 6-M, 12-F. OPST (WB-364) Covering "Full lenght CRDM-Installation Procedure Head Adapter locations; 2-H, 6-P, 6-K, 9-E, 8-M, 8-D, 6-H, 6-F, 13-N, 11-N, 12-M, 5-C, 8-H, 8-F, Note: Seal Welds listed above were LPid before & after Hydro.

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ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
70.	In conjunction with the installation of the CRDM's, verify that the Contractor installed sixty-one (61) thermal-sleeve-guide-funnel assemblies, nine (9) adapter plugs and eight (8) in-core instrumentation port columns on the reactor head. (8752, pg 2-5, para. 2.271)		71	16	Operation Process Sht. Traveler - WB-366 identifies 5 instrm. Ports and 13 Head adapter plugs were installed. Operation Process Sht. Traveler WB-364 identifies 53 Thermal Sleeves were installed @ Dwg. 685J685, Rev. 5, dtd. 10/6/75 requires 53 Thermal Sleeves, 13 Head Adapter Plugs, & 5 Instrumentation Ports and agrees with work performed by WB. Unsat are identified follows: 8 thermal sleeves less than required by Spec 8752 5 Adapter Plugs more than required by Spec 8752 3 Instrumentation Ports less than required by Spec 8752 Note: Conflict between Specs and drawings. Re PFR# 4033

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ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS		COMMENTS
			NO. CKD.	NO. UNSAT.	
71.	In conjunction with activities identified in items 69 and 70, are records available which indicate the following was performed? . Fit up . Installation . Cleaning . Welding . Examination . Inspection . Hydrotesting of each CRDM pressure housing and plug. (8752, pg 2-5, para. 2.271		18	0	Operation Process Sht. Traveler (WB-366) Installation of Instu. Ports and Head Adapter Plugs 13 Head Adapter Plugs and 5 Instrumentation Ports (See attached for Location & Part Nos.)

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Attribute No. 71

Head Adapter Plugs

	Location:	Part No.:
1.	5-L	451-07-3
2	5-J	451-05-4
3	9-L	451-05-8
4	5-E	451-07-4
5	7-J	451-02-1
6	11-L	451-07-2
7	9-J	451-02-02
8	9-G	451-02-04
9	7-E	451-05-2
10	7-G	451-02-3
11	11-G	051-05-7
12	1-E	451-16-1
13	11-E	451-07-1

Instru. Ports

1-L	051-16-5
5-A	451-16-3
15-L	051-16-1
15-E	451-16-2
11-R	051-16-5

ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS		COMMENTS
			NO. CKD.	NO. UNSAT.	
72.	Verify that the CRDM cooling shrouds and baffle cans around the CRDM assemblies on the reactor vessel head were fitup, assembled and installed by the Contractor. (8752, pg 2-5, para. 2.272).		N/A	N/A	N/A. Class II Equip & not part of the NSSS piping sys.
73.	Do records indicate that the reactor coolant system hydrotest was conducted with the reactor vessel head installed (with CRDM's and head lifting rig assembled)? (8752, pg 2-6, para. 2.274)		2	0	O.P.S.T. (WB-446) for Head Installation - For Hydro O.P.S.T. (WB-449) for NSSS Hydrotest

G1-81

ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS		COMMENTS
			NO. CKD.	NO. UNSAT.	
74. SP JHJ	Does evidence exist to show that the Contractor installed the fifty-eight (58) incore instrumention guide tubes complete from the bottom of the reactor or vessel up to the seal table? (8752, pg 2-7, para. 2.29)		58	0	REF: W-B TRAVELER 352 WELDS A-F AND ATTRIBUTE #32 ON CHECKLIST DCPP-001.
75. SP JHJ	Do records reflect that the hydraulic snubbers with support arrangements were fitup, installed, and set to proper travel on the steam generators and coolant pumps complete with oil reservoirs and interconnecting tubing? (8752, pg 2-8, para. 2.210)		1	0	W-B TRAVELER 342 REV 1 & WB340 HAVE INSTALLATION, BOLTING AND CLEARANCE REQUIREMENTS. PG&E ASSUMED RESPONSIBILITY FOR SOME COLD POSITION CHECKS AND FINAL HOT POSITION CHECKS. ~~SEE~~ SP ATTACHED MEMO MAKES REFERENCE TO RED LINING LAST REQUIRED W-B INSPECTION. BOTH TRAVELERS NOTED EXHIBIT RED LINES, THUS RELEVING W-B OF RESPONSIBILITIES FOR INSPECTIONS

G1-82

DC 19.02
Att #75

COPY

P. O. Box 117
Avila Beach, California 93424

INFORMATION ONLY

February 1, 1978

Mr. Reg Eden
Project Manager
Wismer and Becker Contracting Engineers
P. O. Box 548
Avila Beach, California 93424

File Copy In

Diablo Canyon Project
Specifications 8735, 8752
Termination of Physical Work

Dear Mr. Eden:

In accordance with our agreements, you will be terminating on-site physical work February 3, 1978 and moving off site approximately February 24, 1978. The remaining work covered by Specifications 8735 and 8752 will be assigned to other contractors, with two exceptions discussed below.

Your work has been performed in accordance with procedures developed on site to meet specification requirements. The existing travelers which are not complete will be assigned to other contractors. A red line will be drawn below your last Q. C. Acceptance signature to delineate where your responsibility for work ends. The contractor assigned the remaining work will be responsible for the performance and acceptance of their work. We discussed this arrangement with your Mr. Pester and he is in agreement.

Wismer and Becker responsibilities for completion of A.S.M.E. code data packages for Unit 2 will still exist, as well as your responsibility relating to supervision of the Transco insulation subcontract. We will notify your Sacramento office in advance of these activities.

A contract change order will be issued shortly to extend your contract and provide reimbursement for the above two responsibilities.

Sincerely,

(SIGNED) M. R. TRESLER

M. R. TRESLER
Project Superintendent

RUEtzler:fqr
bcc: RSBain
CKMaxfield
File

ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
	Equipment and Components		1	0	1. MODIFIED N-5 COMPLETED DUE TO ALL ITEMS NOT STAMPED BY MANUFACTURERS 2. CERTIFICATION OF DESIGN WHERE APPLICABLE WAS CERTIFIED, BY VARIOUS MANUFACTURERS.
76.	Verify that the Contractor has certified the installation of nuclear vessels designed and fabricated to ASME Section III (i.e., reactor vessel, steam generators, and pressurizer) by completing the ASME Code Data Report Form N-5, as shown in Section III, 1971 edition. (8752, SCN NO. 9, pg. 3-11, para.4.21)				
77.	Verify that the above Code Data Report was certified by the third party inspector. (8752, SCN No. 9, pg. 3-11, para.4.21)			0	CODE DATA REPORT NSSS SERIAL # WB-1

G1-84

ASSESSMENT PLAN ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS		COMMENTS
			NO. CKD.	NO. UNSAT.	
78.	Verify that the levelness of the reactor vessel reference plane surface is determined from the internals support ledge and that records reflect a dimensional tolerance within 0.0005 inch per foot of flange diameter. (8752, pg. 3-11, para. 4.33)		1	0	OPERATION SHEET TRAVELER (WB-304) FOR REACTOR VESSEL SET & ALIGN

GI-85

APPENDIX G2

CHECKLIST - VERIFICATION OF PHYSICAL INSTALLATION

STONE & WEBSTER ENGINEERING CORPORATION

CONSTRUCTION VERIFICATION CHECKLIST

TITLE: NSSS PIPING INSTALLATION VERIFICATION		
CHECKLIST PLAN No: DCPP-001		PREPARED BY: S.W. Bâranow D.E. Murphy F.R. McLean L.J. Peterson F. Bearham
REVISION: 1	DATE: 11/9/82	APPROVED BY: 11/9/82
PAGE. 1 OF 2		

1.0 PURPOSE

To determine the effectiveness and the implementation of a controlled program during the fabrication, installation and testing of the Reactor Coolant Piping, components and auxiliary systems.

2.0 SCOPE

This verification checklist details those inspections required to be performed in accordance with the applicable documents as referenced in Section 3.

3.0 REFERENCES

3.1 SWEC "Independent Construction Quality Assurance Evaluation," September 24, 1982.

3.2 SWEC Project Procedure 4-2-1, "Construction Quality Assurance Evaluation," October 22, 1982.

3.3 PG&E Specification 8752, "Installation of the Nuclear Steam Supply Systems for Units 1 & 2 - Diablo Canyon Site," May 3, 1972.

3.4 Wismer & Becker QA/QC Manual, June 6, 1973.

3.5 Applicable drawings.

4.0 PROCEDURE

4.1 The verification/assessment shall be performed in accordance with the following instructions:

4.1.1 Review Q.A./Q.C. programs, referenced documents and pertinent correspondence/directives relative to the performance of the physical verification of the installation of the Reactor Coolant piping as identified in Section 1.0.

4.1.2 Complete the attributes during the verification by entering the total number of observations made, the number of observations found to be unsatisfactory and noting any remarks in the comment column. Attributes determined to be not applicable shall be marked N/A in the Observations column.

4.1.3 Each attribute noted as unsatisfactory shall be evaluated by the SWEC Quality Assurance Program Administrator (QAPA) to determine if the nonconforming condition warrants the issuance of a Potential Finding Report in accordance with the requirements of paragraph B4, Task B, Reference 3.1.

4.1.4 Due to the limited scope of work of the NSSS piping contractor, a 100% verification of the installation of the RC piping and auxiliary systems shall be performed.

4.1.5 The attribute sheet shall be considered as only a guide and attributes may be modified or added as necessary to satisfy the objectives of References 3.1 and 3.2.

5.0 ATTACHMENTS

5.1 Construction verification checklist.

5.2 Potential Finding Report.

CHECKLIST ATTRIBUTES

CHECKLIST PLAN NO.	REV.	J.O. NUMBER	INSPECTOR(S)	DATE
DCPP-001	0	14296.10	F. BEARHAM, R. McLEAN, L. PETERSON, D. MURPHY	OCT. 6, 1982 to NOV. 5, 1982

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
	Reactor Coolant Piping System Walkdown Attribute Checklist				⊘LOOP #1 ⊘LOOP #2 ⊘LOOP #3 ⊘LOOP #4 ⊘SURGE LINE 2 ADDITIONAL CONNECTIONS WERE NOTED ON HOT LEGS OF LOOPS #3 AND 4, THIS WAS MADE PER. DCO-EM-809-R6.
1.	PIPING Verify location and orientation of Piping as per dwgs. (8752, Sect. 5)		5	0	
2.	Verify the availibility of drawings and their respective applicable dates . Piping Isometrics . Flow Diagrams . Arrangement Drawings . As-built Drawings (8752, Sect. 5)		22	0	THE FOLLOWING DRAWINGS WERE AVAILABLE AND USED BY VERIFICATION TEAM. DC-663219 – SH 186 – ITEM 4 437988 – N/A 10 DC-663219 – 167 3 DC-663219 – 171 3 DC-663219 – 170 3 DC-663219 – 174 3 DC-663219 – 172 – 3 DC-663219 – 175 – 3 DC-663219 – 176 – 3 DC-663219 – 179 – 3 DC-663219 – 178 – 2 DC-663219 – 183 – 3 DC-663219 – 180 – 3 DC-663219 – 182 – 3 DC-663219 – 181 – 1 DC-663387 – 16 – 2 438276 – N/A – 7 443248 – N/A – 4 438271 – N/A – 4 500181 – N/A – 3 500039 – N/A – 6 500055 – N/A – 5

G2-3

CHECKLIST ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CMD.	OBSERVATIONS NO. UNSAT.	COMMENTS
3.	Verify that piping is identified by use of tags, labels, stencile or other means and is in agreement with drawings. (8752, Section 5)		30	0	REACTOR COOLANT LOOPS #1,2,3&4 & SURGE LINE VERIFIED, TOTAL OF 30 ITEMS CHECKED INCLUDING 8 THERMO WELLS. ITEMS ARE IDENTIFIED BY SPOOL# WELD# HEAT# OR W SPIN#
3A.	Verify field welds are identified. (8752, Sect. 3, para. 6.8)		35	5	5 FIELDS WERE NOT IDENTIFIED BY WELD# ON THE WELD. NO PFR WRITTEN BECAUSE WELDS ARE ADEQUATELY IDENTIFIED ON DRAWINGS
4.	Verify that unlagged piping and welds are free of arc strikes, gouges, dents, weld spatter, surface contamination, etc. (8752, pg. 3-16, para. 6.57 & pg. 3-6 para. 3.52)		30	30	ALL SPOOL PIECES HAD ONE OR MORE DEFECTS SEE PFR # 9034 & ATTACHMENTS 1,2,3,4&5

Attachment 5.1

G2-4

CHECKLIST ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
5.	Verify that the diameter of piping is in accordance with drawings. (8752, Section 5)		15	0	VERIFIED R.C. LOOP PIPING, PRESSURIZER SURGE LINE & REACTOR VESSEL LEAK DETECTION LINE. THERE WERE 15 DIAMETER CHECKS ON THE THREE SYSTEMS
6.	Verify that code date plates are present where required on, if removed, documented as such.		N/A.		REACTOR COOLANT PIPING, PRESSURIZER SURGE LINE & BMI TUBING DO NOT REQUIRE DATA PLATE!

Attachment 5.1

G2-5

CHECKLIST ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS		COMMENTS
			NO. CKD.	NO. UNSAT.	
7.	Verify that STainless Steel Piping is free of surface contaimination, rust, paint and other contaminents. (8752, pg 3-6, para. 3.5.2)		30	30	SURFACE CONTAMINATION IS EVIDENT ON 4 R.C LOOPS & SURGE LINE SEE ATTRIBUTE # 4 & PER # 9034
8.	Components Verify that components are located and oriented in accordance with drawings. (8752, Section 5)		18	0	REACTOR VESSEL, STEAM GENERATORS, PRESSURIZER & THERMO WELLS VERIFIED AGAINST PG&E DRAWING: 57725, 57726 ALSO DC 663219 - 167-3 DC 663219 - 171-3 DC 663219 - 170-3 DC 663219 - 174-3

Attachment 5.1

G2-6

CHECKLIST ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS		COMMENTS
			NO. CKD.	NO. UNSAT.	
9.	Verify that check valves have been properly installed and oriented in the direction of flow. (Good Construction Practice)		N/A	N/A	N/A No check valves in system
10.	Verify that the correct relief valves have been properly installed on components. (8752, Sect. 5)		3	0	THREE RELIEF VALVES INSTALLED AT PRESSURIZER, SET PRESSURE IS 2485# IN ACCORDANCE WITH BG&E DWG. #.101938 Page 119 WHICH IS A SET POINT DOCUMENT

C2-7

Attachment 5.1

CHECKLIST ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
11.	Verify that all components are properly identified and are in agreement with applicable drawings. (8752, Sect. 5)		4	0	R.C.P.'s VERIFIED. R.V., ST. GENERATORS AND PRESSURIZER NOT ACCESSIBLE. ITEMS VERIFIED ARE IN ACCORDANCE WITH PG EE DRAWINGS 57725 & 57726
12,	Verify that motor operated valve operator units are present and are the proper type. (8752, Sect. 5)		N/A	N/A	N/A NO MOV'S IN SYSTEM

Attachment 5.1

G2-8

CHECKLIST ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS		COMMENTS
			NO. CKD.	NO. UNSAT.	
13.	Verify that air operated valve operator units are present and are the proper type. (8752, Sect. 5)		N/A	N/A	N/A No AIR OPERATED VALVES IN SYSTEM
14.	Verify that the correct ~~gate~~ GLOBE valves have been properly installed. (8752, Sect. 5)		2	0	VERIFIED GLOBE VALVES ON R.V. SEAL LEAK DETECTION LINES. FROM PG&E DWG 500181-3 VALVE #S 3/4-8069A & B

C-26-9

Attachment 5.1

CHECKLIST ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
15.	Verify that all components, that have been installed, are identified and are in accordance with drawings. (8752, Section 5)		18	0	SEE ATTRIBUTE #8
	Welding				
16.	Verify that welds are free of surface defects, i.e., arc strikes, weld spatter, pitting porosity, undercut, etc. (8752, pg 3-16, para 6.55)		30	30	SURFACE DEFECTS ARE EVIDENT ON ALL 4 REACTOR COOLANT LOOPS & SURGE LINE SEE ATTRIBUTE #4 & PFR# 9034

Attachment 5.1

G2-10

CHECKLIST PLAN NO. DCPP-001 (CONTINUATION SHEET)

CHECKLIST ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT	COMMENTS
17.	Verify that welds exhibit proper reinforcement, without evidence of over-grinding. (8752, pg 3-16, para. 6.510)		32	5	REACTOR COOLANT PIPING EXHIBITS 1/32" to 1/16" BELOW FLUSH CONDITION AT THE TOE OF WELDS. ALL FINISH GRINDING WAS PERFORMED UNDER THE DIRECTION OF PG&E & THEREFORE IS OUTSIDE THE SCOPE OF THIS VERIFICATION. SEE PFR #9034
18.	Verify, where accessible, that weld inside diameters exhibit correct root reinforcement and are free of defects. (8752, pg. 3-16, para. 6.58)		4	0	RC LOOP #3 INSPECTED I.D OF WELDS IN HOT & COLD LEGS. NO UNSAT CONDITIONS NOTED

Attachment 5.1

62-11

CHECKLIST ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
19.	Verify that transition welds exhibit proper taper as required by the welding procedure. (Weld procedure)		24	0	TRANSITION WELDS EXHIBITED CORRECT TAPER
20.	Verify that stainless steel welds are free of surface contamination (rust). (8752, page 3-6, para. 3.52)		30	30	ALL REACTOR COOLANT LOOPS EXHIBITED SOME RUST SEE PFR # 9034 & ATTRIBUTE # 4.

G2-12

Attachment 5.1

CHECKLIST ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS		COMMENTS
			NO. CKD.	NO. UNSAT.	
21.	Verify that welders identification symbols are stamped adjacent to the toes of welds or are identified accordingly on documentation and welders are qualified. (8752., Change Notice #2)		N/A	N/A	VERIFIED THROUGH DOCUMENTATION BY Q.A. EVALUATION. SEE CHECKLIST # DC-19.02, ATTRIBUTE # 24
22.	Verify physical presence of radiographic station marker. (R/T Procedure)		32	7	R/T STATION MARKS WERE NOT EVIDENT ON 7 WELDS. NO PFR PREPARED BECAUSE OPERABILITY OR SAFETY OF THE PLANT WOULD NOT BE ADVERSELY AFFECTED Attachments 5.1

G2-13

CHECKLIST ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
23.	Verify that no temporary attachments are present, not gound below flush and L.P. of removal area performed. (8752, pg. 3-13, para. 5.3) (Good Construction Practice)		24	24	24 REMOVAL AREAS CHECKED ON R.C LOOPS 1, 2, 3 & 4. ALL 24 HAD ONE OR MORE DISCREPANCIES. 24 HAD NO LP DOCUMENTATION 1 HAD A LINEAR INDICATION 11 WERE GROUND FLUSH 6 WERE GROUND BELOW. FLUSH IS INDICATED ON ATTACHMENTS SEE ATTACHMENTS 1, 2, 3 & 4 & PFR #9031
	Bottom Mounted Instrumentation Tubing				
24.	Verify that tubing surface is free of surface defects, i.e., dents, gouges, weld spatter, etc. (8752, pg. 3-16, para. 6.55)		350	0	NO SURFACE DEFECTS NOTED ON BMI TUBING & WELDS

Attachment 5.1

CHECKLIST PLAN NO. DCPP-001 (CONTINUATION SHEET) PAGE 12 OF 23

G2-14

CHECKLIST ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS		COMMENTS
			NO. CKD.	NO. UNSAT.	
25.	Verify that bends made in tubing are in accordance with applicable bending procedures. (Bending Procedures)		58	0	ACTUAL RADii WAS NOT MEASURED. THIS ATTRIBUTE WAS VERIFIED THROUGH (W) CERTS.
26.	Verify that in the areas of tubing bend areas, that no crimping or excessive ovality exists. (Bending Procedures)		58	0	ALL 58 LINES WERE VISUALLY INSPECTED ALONG THEIR ENTIRE LENGTH. NO ADVERSE CONDITIONS WERE NOTED.

Attachment 5.1

G2-15

CHECKLIST ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT	COMMENTS
27.	Verify that seal plate welding is complete and is of acceptable workmanship. (Good ~~construction~~ practice) Insp W.B. WELD PROCEDURE 3500-2 W DWG 685J702		58	58	ALL FILLET WELDS AT THE SEAL TABLE ARE UNDERSIZE, ACCORDING TO WB WELD PROCEDURE 3500-2 SEE PFR # 9012 ALL WELDS MET DIMENSIONAL REQUIREMENTS OF W. DWG. # 685J702. W DWG CONFLICTS WITH W&B PROCEDURE
28.	Verify that couplings, fittings, valves and instrumentation are present where required and are located in accordance with the drawings. (8752, Sect. 5)		175	0	VISUALLY VERIFIED 117 COUPLINGS AND 58 BOTTOM CONNECTIONS ON BMI TUBING. ONE ADDITIONAL COUPLING NOT SHOWN ON W DRAWING IS INSTALLED BETWEEN WELDS #1-43C AND 1-43D AND IS IDENTIFIED AS WELDS 1-43H AND 1-43L. THE ADDITIONAL WELDS ARE FULLY DOCUMENTED. Attachment 5.1

G2-16

CHECKLIST ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS		COMMENTS
			NO. CKD.	NO. UNSAT.	
29.	Verify that restraints restrict sway movement of tubing to 1/8" while allowing for a displacement of 1" for thermal expansion of vessel. (W Dwg. 685J702, Note 7)		N/A	N/A	N/A (NOT UNDER W/B SCOPE). TUBING WAS INSTALLED IN ACCORDANCE WITH (W) DWG..
30.	Verify that supports are spaced between a minimum of 6 feet and a maximum of 10 feet and are located where required by applicable drawings. (W Dwg. 685J702 Note 7)		11	1	SUPPORTS 8 & 9 ARE 5'6" APART. THIS IS NOT REPORTED AS A PFR BECAUSE.. (A) THE MINOR NATURE OF THE DISCREPANCY (B) SUPPORT #9 IS NOT A RIGID SUPPORT.

Attachment 5.1

CHECKLIST ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS		COMMENTS
			NO. CKD.	NO. UNSAT.	
31.	Verify that relief valve settings are in compliance with specification and drawing requirements. (8752, Sect. 5)		N/A	N/A	N/A (NO RELIEF VALVES IN SYS)
32.	Verify that thimble guide tubing number correlates with the core location number. (W Dwg. 685J702)		58	0	ALL THIMBLE GUIDE TUBES WERE VERIFIED.

G2-18

Attachment 5.1

CHECKLIST ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
33.	Verify that Electrolytic Etching has been performed and located 6" from each end of the tube. (W Dwg. 685J702)		350	0	IDENTIFIED BY ELECTROLYTIC ETCHING OR VIBRO-ETCH; (W) CERTS REVIEW REVEALED ACCEPTABILITY OF ELECTRO-LYTIC ETCHING.
34.	Verify that ferrite checks have been performed through actual Severn Gauge checks. (8752, Change notice #4)		N/A	N/A	N/A (REVIEWED BY QA EVALUATION) SEE CHECKLIST DC-19.02, ATTRIBUTE #30

G2-19

Attachment 5.1

CHECKLIST ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
35.	Verify proper fillet weld size. (8752, Section 5) W DWG 6857702		350	218	BMI. TUBING SOCKET WELD FILLETS EXHIBITED 'Y' DIMENSION LESS THAN DRAWING CALLED FOR. SEE PFR #9011 (SWB)
36.	Verify correct tubing size. (8752, Section 5)		58	0	TUBING O.D. WAS VERIFIED WITH A CALIBRATED VERNIER CALIPER ALL TUBES WERE WITHIN SPECIFIED TOLERANCE

G2-20

Attachment 5.1

CHECKLIST ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS		COMMENTS
			NO. CKD.	NO. UNSAT.	
37.	Verify correct tubing clearances. (W dwg. 685J702)		58	0	VERIFIED 6" CLEARANCE AT CHANNELS & SUPPORTS
38.	Verify that welds not exhibiting welders symbols are properly documented in the permanent weld records. (8752, pg. 3.19, para. 6.80		200 APPROX	200 APPROX	NO RECORDS EXIST TO INDICATE WELDER ASSIGNED TO STRUCTURAL SUPPORT WELDS
39.	Verify that complete records are maintained for each weld. (8752, pg. 3.19, para. 6.82)		200 APPROX	200 APPROX	NO RECORDS EXIST TO INDICATE THE WELD IDENTIFICATION #. NOTE NO PER PREPARED FOR ATTRIBUTE #38 & 39 BECAUSE WELDS ARE ADEQUATELY TRACEABLE BY DRAWINGS & WELD ROD ISSUE RECORDS

Attachment 5.1

CHECKLIST PLAN NO. FVPP-001 (CONTINUATION SHEET)

CHECKLIST ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
40.	Miscellaneous Verify where applicable, location, orientation and type of installed instrumentation. (BMI GUIDE TUBE (8752, Sect. 5)		58	0	58 BMI LINES WERE VERIFIED AGAINST W DRAWING # 685J702
41.	VERIFY THAT BMI WELDS ARE PROPERLY IDENTIFIED, (8752, PG. 3-19, PARA. 6.81)		350	1	WELD NO. 1-43E ON BMI TUBING IS INCORRECTLY VIBRO-ETCHED NO. 1-34E. NO PFR WAS WRITTEN BECAUSE THE WELD IS IN LINE #43 AND AT CORRECT LOCATION.
42.	VERIFY THAT TUBE SUPPORT WELDING IS IN ACCORDANCE WITH DRAWINGS AND PROCEDURES. (DWG. 443247, 443248 & @ 685J702)		8	8	ALL SUPPORT CHANNELS HAVE FLARE BEVEL WELDS AT CLIPS IN LIEU OF FILLET WELDS AS SHOWN ON DRAWINGS. CHANNELS ON SUPPORTS #7 AND #8 HAVE SPLICE WELDS ADJACENT TO THE CLIP. SEE PFR #9009
43.	VERIFY THAT ANCHOR BOLTS ARE PROPERLY INSTALLED AT TUBE SUPPORTS, AND "U" BOLTS INSTALLED. (DWG. 443247 & 443248)		32	12	(1) SUPPORTS #4, 5 AND 6 HAVE WRONG SPACING OF BOLTS. (ANCHOR) (2) SUPPORT #6 HAS 19 UNUSED DRILLED HOLES IN CHANNEL, (3) LINE #13 HAS ONLY ONE NUT ON "U" BOLT AT SUPPORT #2, (4) SUPPORT #7 ON LINE #1-51 HAS "U" BOLT MISSING. (5) LOOSE NUTS ON U BOLTS AT SUPPORT #8 SEE PFR #9009 FOR ITEM #1 SEE PFR #4030 FOR ITEM #2.

Attachment 5.1

C2-22

CHECKLIST ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
44.	VERIFY THAT TUBE SUPPORT FILLET WELDS ARE IN ACCORDANCE WITH DRAWINGS 443247 & 443248		200+	200+	+ APPROX. TOTALS SEE PFR # 9008 DISCREPANCIES IN SUPPORT WELDS.
45.	ARE THE EIGHT STRUTS INSTALLED NEAREST THE REACTOR 46.5" PIN TO PIN. (DWG. 439573 NOTE 14)		8	2	NORTHWEST STRUT ON GENERATOR 1-3 IS 46 5/16". SOUTHWEST STRUT ON GENERATOR 1-2 IS 47". NOTE - CONDITIONS NOTED ARE IRRELEVANT DUE TO MOVEMENT OF GENERATORS DURING HOT FUNCTIONAL.
46.	ARE THE EIGHT REMAINING STRUTS INSTALLED WITH A 48.5" PIN TO PIN DIMENSION. (DWG. 439573 NOTE 14)		8	3	SOUTHWEST STRUT ON GENERATOR 1-3 IS 48 1/8". SOUTHWEST STRUT ON GENERATOR 1-4 IS 48". NORTHEAST STRUT ON GENERATOR 1-2 IS 49". NOTE - CONDITIONS NOTED ARE IRRELEVANT DUE TO MOVEMENT OF GENERATORS DURING HOT FUNCTIONAL.
47.	VERIFY WHEN SHIMS ARE USED THAT THEY ARE 1" ± 1". (DWG. 439573 NOTE 14)		16	1	SOUTHEAST STRUT ON GENERATOR 1-2 HAS 2 3/4" SHIM. SEE PFR # 9029

G2-23

CHECKLIST PLAN NO. _____ (CONTINUATION SHEET)

CHECKLIST ATTRIBUTES

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
48.	VERIFY THAT THE MINIMUM ELEVATION OF THE TOP BOLT OF RESERVOIR MOUNTING BRACKET IS AT ELEVATION 148'4". (DWG. 439573 NOTE 12)		4	0	ALL RESERVOIRS ARE AT PROPER ELEVATION, MEASURED FROM ESTABLISHED DATUM POINT.
49.	VERIFY THAT HYDRAULIC RESERVOIRS AND VALVES ARE INSTALLED, VERIFY VALVES ARE IN PROPER FLOW DIRECTION. (DWG. PD-10871) - PAUL MONROE HYDRAULICS.		4	0	2 VALVES INSTALLED WITH FLOW ARROW AGAINST THE FLOW OF LINE. THIS CONDITION IS ACCEPTABLE PER MEMO. SEE ATTACHMENT #6
50.	VERIFY RESTRAINTS EXIBIT CORRECT CLEARANCES. (DWG. 438271)		4	0	CLEARANCES DO NOT MEET DWG. 438271. FURTHER INVESTIGATION REVEALED PG&E MEMO'S DP-1-2067-P AND DP-1-1023-P ACCEPTED CLEARANCES. BASED ON HOT FUNCTIONAL TESTS.

C2-24

CHECKLIST PLAN NO. _____ (CONTINUATION SHEET)

CHECKLIST ATTRIBUTES

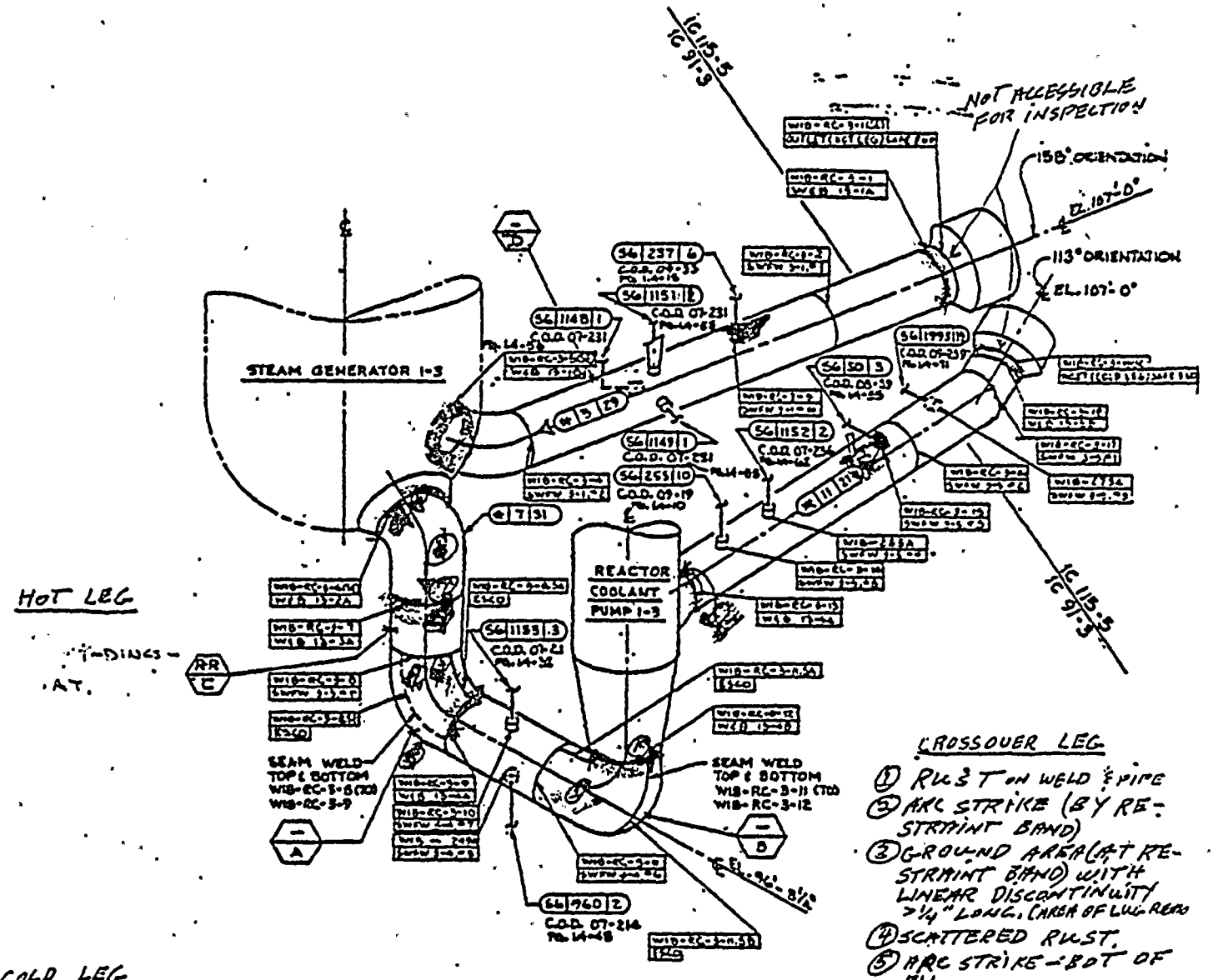
ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS NO. CKD.	OBSERVATIONS NO. UNSAT.	COMMENTS
51.	VERIFY THAT BOLTING OF RESTRAINTS IS IN ACCORDANCE WITH APPLICABLE DRAWINGS. (DWG. 438271)		96	36	① REACTOR COOLANT CROSSOVER LEG RESTRAINT SHIM PLATES ARE BOLTED WITH A490 BOLTS. DRAWING REQUIRES A307. ② DRAWING REQUIRES LOCK WASHERS, MAJORITY OF BOLTS LACK LOCK WASHERS. ③ STRAPS REQUIRE A490 BOLTS, A325 BOLTS ARE INSTALLED. SEE PFR# 9022
52.	VERIFY THAT STRAPS ARE INSTALLED WITH A TIGHT FIT AGAINST THE R.C. LOOP PIPE. (DWG. 438271)		16	0	NOT ALL CLAMPS EXHIBIT TIGHT FIT. THIS CONDITION IS ACCEPTABLE PER, RESULTS OF HOT FUNCTIONAL TESTS.

G2-25

WALL TO BOTTOM OF STAIRS ELEV. 91'
TURN RIGHT AND FOLLOW CRANEWALL TO ___°
ENTER DOORWAY MARKED LOOP 1-3

CHECKLIST PLAN NO. DCPP-001
ATTACHMENT #

CALLED NORTH



CROSSOVER LEG

1. RUST ON WELD & PIPE
2. ARC STRIKE (BY RE-STRAINT BAND)
3. GROUND AREA (AT RE-STRAINT BAND) WITH LINEAR DISCONTINUITY >1/4" LONG. (AREA OF LUG REMO
4. SCATTERED RUST.
5. ARC STRIKE - BOT OF ELL.
6. RUST, PAINT, SPATTER.

COLD LEG

1. 1" ARC STRIKE ON R.C.P. ONE FOOT FROM F.W. @ 1:00 POSITION. (FACING PUMP)
2. ARC STRIKES ON T.W.

FOR INFORMATION ONLY

7. FW # not applied @ FW 3-2A & 3-3A

DIABLO CANYON UNIT I
INSERVICE EXAMINATION ISOMETRIC
PACIFIC GAS AND ELECTRIC COMPANY

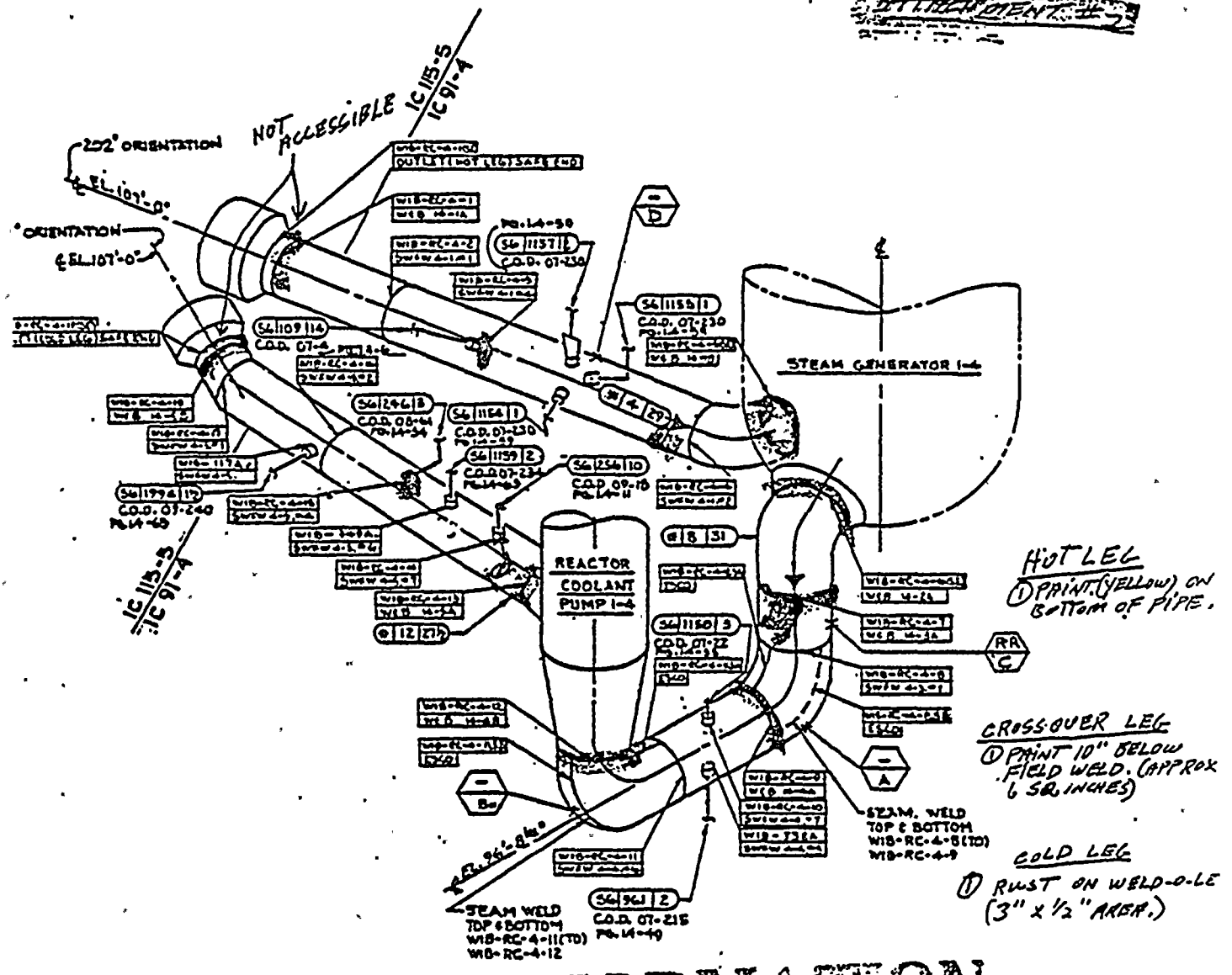
AREA: F&G	ISO-07-31A	P&ID COORD: 07-[illegible]	SYSTEM: PCS
REF DWG RC 1-3	REPLS. 029	LINE NO. # - 3-29 # - 7-31 # - 11-27	DRAWN: S. GATTISON
		PAGE: 1.4-3	CHK'D.
			APPR'D:
			DATE:

-3-29 SP.	REACTOR COOLANT OUT LOOP 3
-7-31 SP.	REACTOR COOLANT FP SUCT LOOP 3
[illegible] SP.	REACTOR COOLANT FP DISCH LOOP 3
NE NO.	DESCRIPTION

WALK TO BOTTOM OF STAIRS ELEV. 91'
TURN RIGHT AND FOLLOW CRANEWALL TO ___
ENTER DOORWAY MARKED LOOP 1-4

CALLED NORTH

CHECKLIST PLAN NO. DCPP-001
ATTACHMENT #2



FOR INFORMATION ONLY

-4-29 SPL	REACTOR COOLANT OUT LOOP 4
-8-31 SPL	REACTOR COOLANT PP SUCT LOOP 4
-12-27½ SPL	REACTOR COOLANT PP DISCH LOOP 4
LINE NO.	DESCRIPTION

DIABLO CANYON UNIT I
INSERVICE EXAMINATION ISOMETRIC
PACIFIC GAS AND ELECTRIC COMPANY

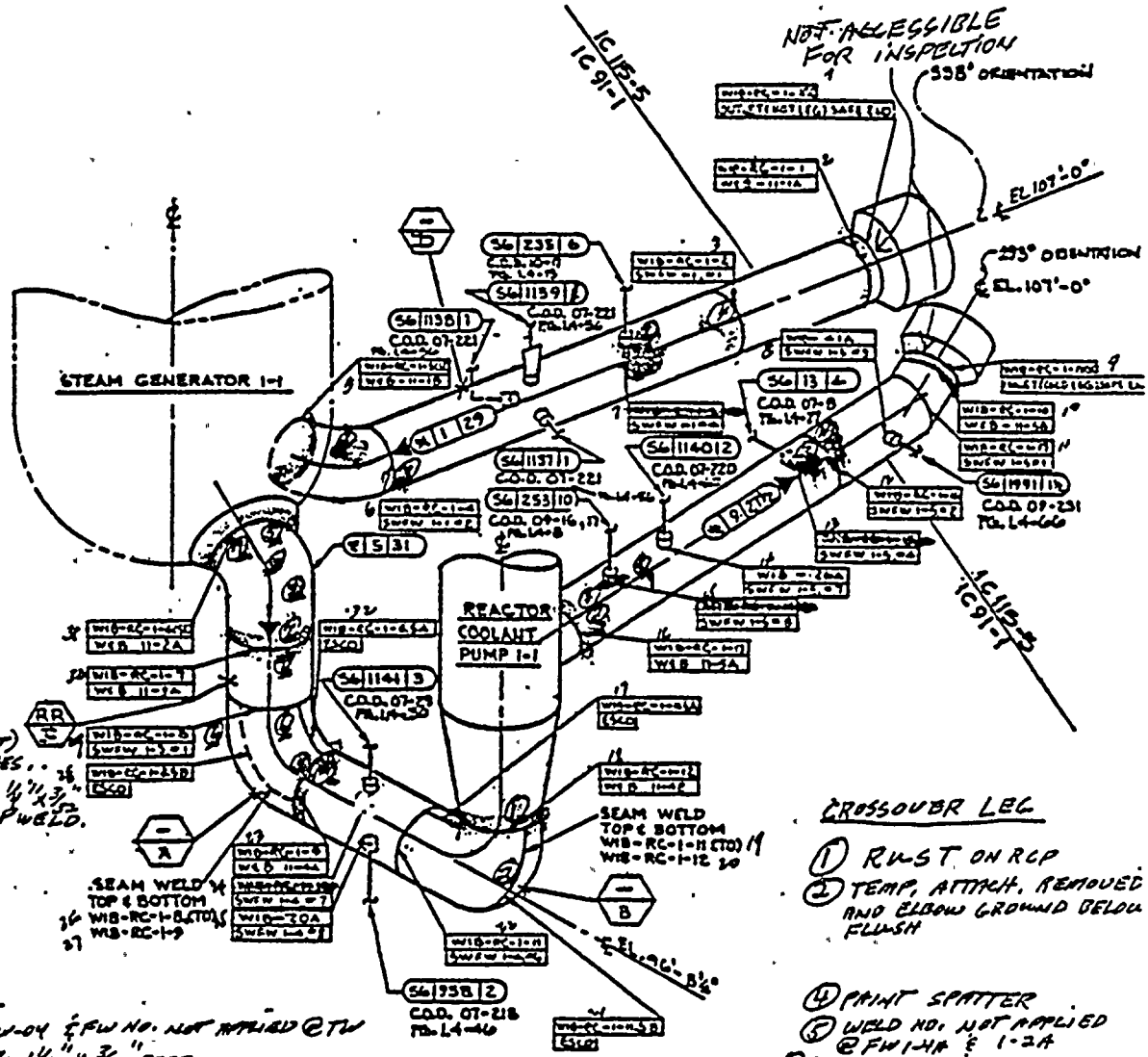
AREA: F&G	ISO: 07-30A	P&ID COORD: 07-RC-30	SYSTEM: RCS
REF. DWG. RC 1-4	REPLS. 042	LINE NO. 4-29, 4-8-31, 4-12-27½	DRAWN: B. GATTISON
		PAGE: 1.4-4	CHK'D
			APPR'D:
			DATE:

CONTAINMENT

WALK TO BOTTOM OF STAIRS, ELEV. 91'
DIRECTLY ACROSS FROM STAIRS @ ____"
ENTER DOORWAY THROUGH CRANEWALL
MARKED LOOP 1-1

CHECK LIST PLAN NO. DCPP-00
ATTACHMENT #3

CALLED NORTH



HOT LEG
1) WELD SPATTER
2) ARC STRIKES ON TW-8, (NO DEPTH)
3) FLAKING RUST ON PIPE (AT RESTRAINT) APPROX. 4 SQ INCHES.
4) GROUND AREA 1" x 1/4" x 3/32" DEEP @ TOE OF SHOP WELD.

COLD LEG
1) WELD SPATTER
2) SCATTERED RUST
3) ARC STRIKES ON TW-04 & FW NO. NOT APPLIED @ TW
4) GROUND AREA - 3" x 1½" x 3/32" DEEP

CROSSOVER LEG
1) RUST ON RCP
2) TEMP. ATTACH. REMOVED AND ELBOW GROUND BELOW FLUSH
4) PAINT SPATTER
5) WELD NO. NOT APPLIED @ FW 1-4A & 1-2A
6) TEMP. ATTACH REMOVED AND ELBOW GROUND BELOW FLUSH.
7) SCATTERED RUST & PAINT
8) WELD SPATTER (TOTAL SCATTERED AREA IS 3 SQ. FT.)

FOR INFORMATION ONLY

DIABLO CANYON UNIT 1
INSERVICE EXAMINATION ISOMETRIC
PACIFIC GAS AND ELECTRIC COMPANY

AREA: F&G 1150-07-30 | PGID COORD: 01-1032 | SYSTEM: RCS

REF. DWG.	REPL'S.	LINE NO.	DRAWN: B. GATTISON
RC 1-1	001	1-29, 5-31, 9-27	CHK'D.
		PAGE: 1.6-1	APPR'D:
			DATE:

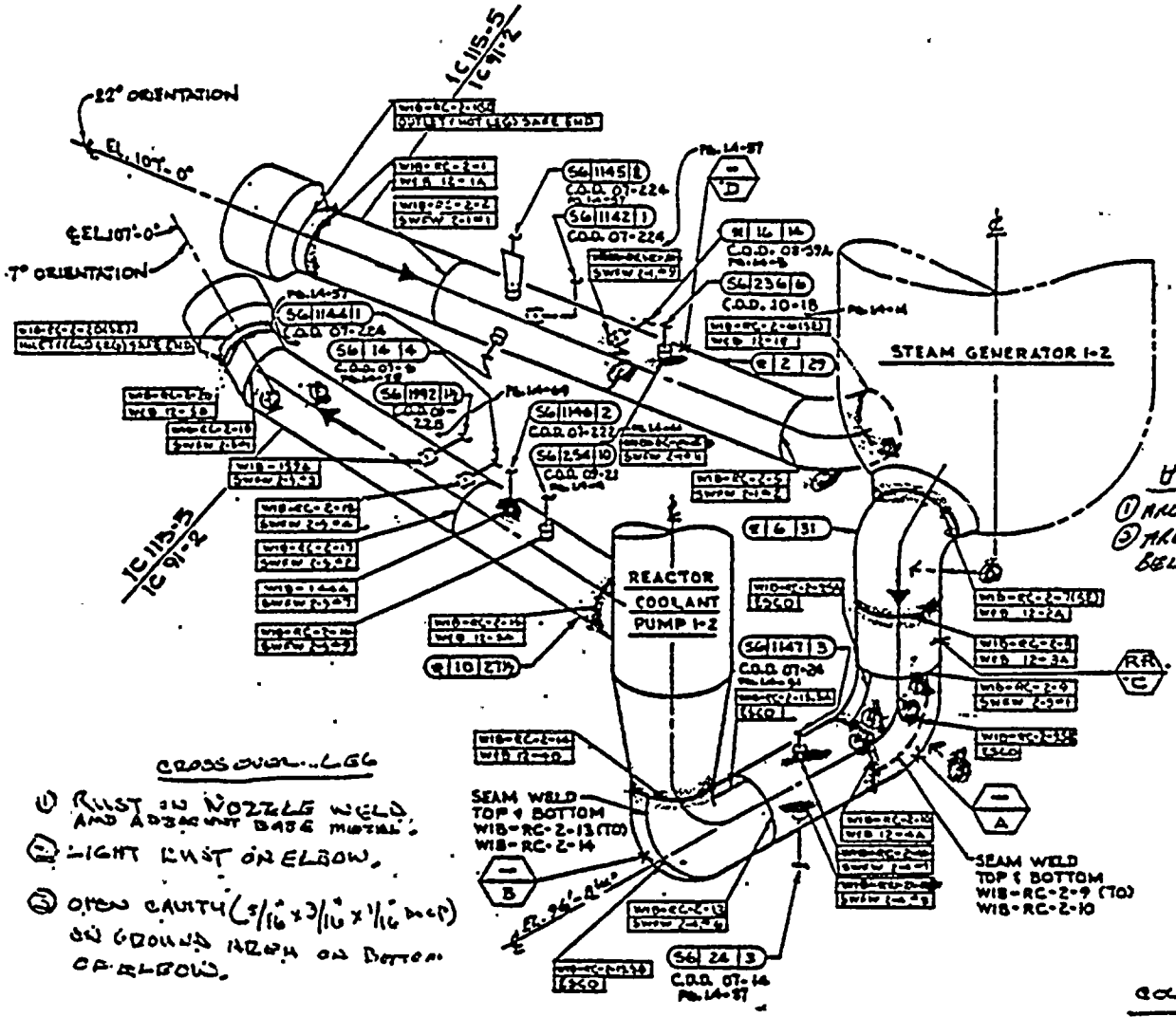
-9-27½ SP.	REACTOR COOLANT PP DISCH. LOOP 1
-5-31 SP.	REACTOR COOLANT PP SUCT. LOOP 1
-1-29 SP.	REACTOR COOLANT OUT LOOP 1
LINE NO.	DESCRIPTION

CONTAINMENT

WALL TO BOTTOM OF STAIRS, ELEV. 91'
CONTINUE TO LEFT OF CRANEWALL TO ____
ENTER DOORWAY MARKED LOOP 1-2

CALLED NORTH

CHECKLIST PLAN NO.
RCFP-00
ATTACHMENT #4



HOT LEG
① ARC STRIKES
② AREA GROUND BELOW FLUSH

CROSSOVER LEG
① RUST ON NOZZLE WELD AND ADJACENT BASE METAL.
② LIGHT RUST ON ELBOW.
③ OPEN CAVITY (5/16" x 3/16" x 1/16" DEEP) ON GROUND AREA ON BOTTOM OF ELBOW.
④ RUST UNDER RESTRAINT BANDS AND ON WELD.
⑤ (2) 5" LONG GOUGES, APPEAR TO BE BELOW FLUSH

COLD LEG
① ARC STRIKE @ 4'00 FACING RQ 2" x 1/16" x 8" DEPTH
② TWO 1/8" DEEP DEPRESSIONS @ 4'00 AND 7'00 FACING RQ

FOR INFORMATION ONLY

-2-29SPL	REACTOR COOLANT OUT, LOOP 2
-6-31SPL	REACTOR COOLANT PP SUCT LOOP 2
-10-27½SPL	REACTOR COOLANT PP DISCH LOOP 2
INE NO.	DESCRIPTION

DIABLO CANYON UNIT I
INSERVICE EXAMINATION ISOMETRIC
PACIFIC GAS AND ELECTRIC COMPANY

AREA: F&G	ISO: 07-31	P&ID COORD:	SYSTEM: RCS
REF DWG. RC 1-2	REPL'S. 014	LINE NO. ★-2-29 ★-6-31 ★-10-27½	DRAWN: B. GATTISON
		PAGE: 1.4-2	CHK'D
			APPR'D:
			DATE:

PG&E
General Construction
77G-87 5/79

"A" & "G"

DIABLO CANYON
PROJECT

TELECON

CHECK IF:	NO	YES
Call constitutes a Design Change	☆	☐
Design Change Request Number		
Copy is to be returned to Engineering Department for their information	☐	

PERSON CALLED: PAUL GANT, PAUL MUNROE HYDRAULICS, ORANGE CALIF 714-978-9600

DATE CALLED: 10/21/82

SUBJECT: INSTALLATION ON SNUBBER RESERVOIR SHUTOFF VALVE

LOCATION: STM GEN 1-2

DRAWING NO. DC 663387-8 CHG: 2 SPEC. NO.: 8791 4R NO.: 8791

REASON FOR CALL: THE RESERVOIR SHUTOFF VALVE FOR THE SNUBBER OF STM GEN 1-2 IS INSTALLED SO THAT THE INDICATED DIRECTION OF FLOW, STAMPED ON THE VALVE BODY, IS OPPOSITE TO THE DIRECTION OF FLOW. (THE VALVE P/N'S ARE: PAUL MUNROE — PC 10455-9; PNEU-TROL — N20SK IS THIS ACCEPTABLE FOR PROPER OPERATION?

DATE OF REPLY: SAME

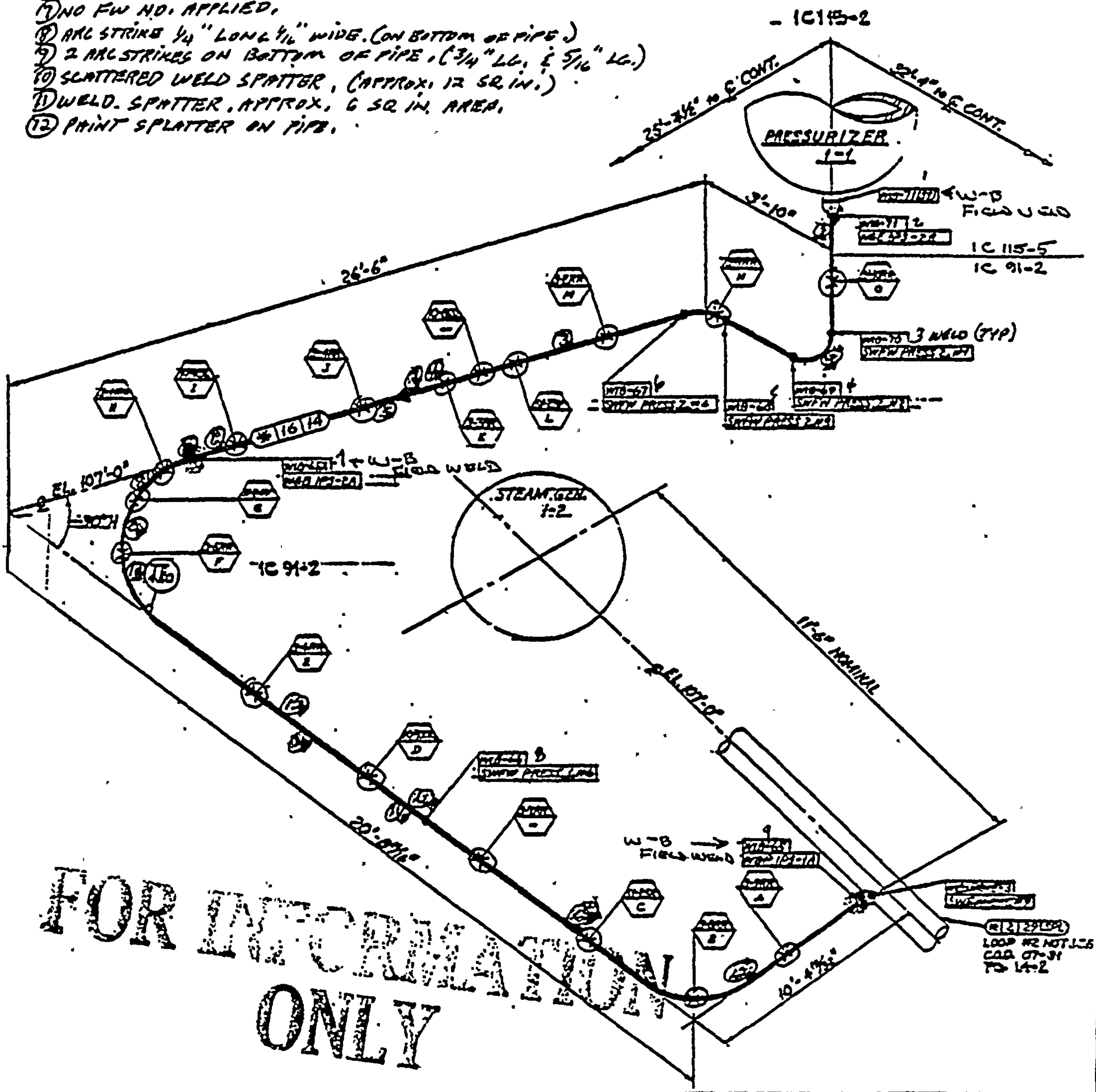
REPLY RECEIVED: THIS IS ACCEPTABLE AS IS. THE PNEU-TROL VALVE BODY IS USED IN SEVERAL TYPES OF CONFIGURATIONS. OURS IS A NEEDLE VALVE AND WILL WORK EQUALLY WELL IN EITHER DIRECTION. (THE P/N N20SK DENOTES A NEEDLE VALVE). MR GANT ALSO STATED THIS INFORMATION TO MR. LEONARD PETERSON OF STONE & WEBSTER

SIGNED: Thomas E Niemi

Arc strikes, spatter, rust and paint noted during the verification are not considered to be the specific responsibility of Wismer & Becker. During verification program, it was noted that many defects on the base metal had been removed and properly inspected. Since the period of time that Wismer & Becker demobilized and the time the verification was performed, the insulation has been removed and another contractor has installed piping and restraints to Reactor Coolant Piping. Under these circumstances, the possibility for the conditions noted to occur is highly likely, therefore, the conditions noted should be evaluated by PG&E but are not specifically attributable to Wismer & Becker.

CHECKLIST PLAN NO. DCP-P-007
ATTACHMENT #5

1. NUMEROUS PITS - LARGEST IS 3/8" x 1/8" x 1/16" DEEP
2. PARTIALLY REMOVED ARC STRIKE - 2" LONG
3. ARC STRIKE 1 1/2" LONG, 1/16" WIDE, 6" FROM HGR. 32RR
4. ARC STRIKE 7" LONG, 1/16" WIDE.
5. ARC STRIKE 4" LONG, 1/16" WIDE.
6. PAINT ON PIPE.
7. NO FW NO. APPLIED.
8. ARC STRIKE 1/4" LONG 1/16" WIDE. (ON BOTTOM OF PIPE.)
9. 2 ARC STRIKES ON BOTTOM OF PIPE. (3/4" LG. & 5/16" LG.)
10. SCATTERED WELD SPATTER, (APPROX. 12 SQ. IN.)
11. WELD SPATTER, APPROX. 6 SQ IN. AREA.
12. PAINT SPLATTER ON PIPE.



DIABLO CANYON UNIT 1			
INSERVICE EXAMINATION ISOMETRIC			
PACIFIC GAS AND ELECTRIC COMPANY			
AREA: "G"		COORD: 07 "B"-A	SYSTEM: CVCS
REF DWG. 437988	REPLCS 028	LINE NO. *-16-14	DRAWN: L. YALE
			CHK'D:
			APPR'D:
		PAGE: 1.4-3	DATE:

2-16-K2 PRESSURIZER SURGE LINE
LINE NO. DESCRIPTION

APPENDIX H

PROGRAM MANAGER'S ASSESSMENT

Appendix H

PROGRAM MANAGER'S ASSESSMENT

Independent review by TES of the tasks considered to evaluate the Construction Quality Assurance of the work performed by Wismer & Becker on the Installation of NSSS Piping at Diablo Canyon Nuclear Power Plant - Unit I, was performed in accordance with IDVP Program Plan, Revision 1, Adjunct Program for Evaluation of Construction Quality Assurance dated October 1, 1982.

The review involved a visit to the site to comment on the procedures and checklists drafted by SWEC's engineers and an analysis of the recommendations by the Findings Review Committee.

The files issued by SWEC were reviewed thoroughly and specific recommendations were made to the IDVP Program Manager delineating appropriate resolution.

As a result of the verification of the selected samples and the assessment of the impact of SWEC's findings, TES, as Program Manager, is of the opinion that no additional verification is required.