



Areas Inspected: Implementation of 10 CFR 50, Appendix B, criteria involving design inspection, audits, QA records, action on previous inspection findings, and actions on two potential 10 CFR 21 items. The inspection involved one hundred and sixteen (116) inspector hours on site by four (4) NRC inspectors.

Results: In the six (6) areas inspected there was one unresolved item identified in one of the areas, three deviations identified in two (2) of the areas, and no deviations were identified in the remaining three (3) areas.

Deviations: Audits - failure to include ANSI N45.2.12 requirements in procedures (Notice of Deviation enclosure, item A); procedure manuals not being controlled per commitments (Notice of Deviation enclosure, item B.) Special Inspection - Approval of a vendor specification that did not meet requirements. (Notice of Deviation enclosure, item C.)

Unresolved Items - Compliances with record storage requirements could not be determined. (See Details Section III, paragraph C.3.c.)

DETAILS SECTION I

(Prepared by D. F. Fox)

A. Persons Contacted

- A. V. J. Burzi, Staff Instrument Engineer, I&C
- \*T. Costabile, Mechanical Engineer, Nuclear
- \*B. Czarnogorski, Engineer, Quality Assurance
- P. P. DeRienzo, Vice President, Quality Assurance
- \*J. A. Gaynor, Assistant Engineer, Quality Assurance
- N. Giannopoulos, Assistant Engineer, I&C
- \*J. Irons, Senior Engineer, Mechanical
- \*N. N. Keddis, Manager, Quality Assurance
- J. W. Mantz, Engineer, Mechanical - Nuclear
- C. A. Marra, Engineer, Mechanical
- \*M. S. Miller, Supervisor, Quality Assurance
- I. Shah, Engineer, I&C
- P. A. Totten, Asst. Chief Engineer, Mechanical
- \*J. E. Triolo, Supervisor, Quality Assurance
- \*E. J. Zadina, Supervisor, Quality Assurance

\*Denotes those present at the Exit Interview.

B. Lack of Adequate Cooling for the Diesel Generators During  
Emergency Conditions

As a result of the Three Mile Island incident, a design review performed under the auspices of the licensee (Texas Utilities Generating Company) led to the detection of a potential problem with the design of valving and controls for the interface between the Service Water System and the Auxiliary Feedwater System.

The review indicated that if the Service Water System were used as the designed backup water supply to the Auxiliary Feedwater System, severely restricted cooling of the emergency diesel generators could occur.

The licensee notified NRC Region IV (RIV) of the potential problem at CPSES (Comanche Peak Steam Electric Station) and requested the architect engineer (Gibbs and Hill, Incorporated) to investigate and evaluate the potential problem.

The Gibbs and Hill analysis concluded that the Service Water System flow through the diesel is adequate during all modes of operation. The licensee determined that the item is not reportable under 10 CFR 50.55(e) and so advised RIV.

1. Objectives

The objectives of this area of the inspection were to verify that:

- a. The available information and documentation is complete and accurate.
- b. The cause and effect; of the deficiency has been properly identified, sufficiently evaluated, verified, and documented.
- c. The correction action taken was timely and that preventive measures are being implemented.
- d. The generic effects have been reviewed in depth and that affected organizations have been properly notified.

2. Methods of Accomplishment

Review of the following documents to determine if objectives "a" thru "d" of section II.B.1 were accomplished.

- a. The following sections of the FSAR for the TUGCO (Texas Utilities Generating Company) CPSES through Amendment 7 dated July 31, 1979, to determine the G&H (Gibbs and Hill, Incorporated) commitments relative to the interface between the Service Water and the Auxiliary Feedwater Systems:
  - 9.2.1 System Service Water System
  - 9.2.5.3.3 Thermal Performance Evaluation
  - 10.4.9.1 re: Steam generator feedwater design flow rate
  - Table 9.5-16 re: Diesel generator cooling water design flow rate.
- b. Figure 9.2-1 of GIBBSAR (Gibbs and Hill Standard Nuclear Power Plant - Standards Safety Analysis Report) to determine

the design interface between the Service Water and the Auxiliary Feedwater Systems in the G&H standard plant design.

- c. The FSAR for the Omaha Public Power District Fort Calhoun I nuclear power plant to determine the design interface between the Service Water and Auxiliary Feedwater Systems.
- d. The following design documents to determine if the commitments contained in the CPSES FSAR were accurately translated into design technical descriptions and design specifications:
  - 2323-TD-0206, Revision 1, 1/8/79; Auxiliary Feedwater System
  - 2323-TD-0215, Revision 1, 2/21/79; Diesel Generator System
  - 2323-TD-0233, Revision 1, 7/21/75; Service Water System
  - 2323-MS-34, Revision 1, 7/25/75; Diesel Generator
- e. The following drawings to determine if the design input data contained in the design technical descriptions and design specifications was accurately reflected in the design output (drawings):
  - 2323-MI-0234, Revision 5, 3/29/79; Station Service Water System-Flow Diagram
  - 2323-MI-2234-02, Revision 3, 5/2/79; Station Service Water System - I&C Diagram
  - 2323-EI-0043, Revision 3, 2/23/79; Diesel Generator Package "A" Service Water Valve
  - 2323-EI-0053, Revision 2, 11/27/79; Auxiliary Relays 1-DGX/5691 & 1-42 AX/5691, A, B, C, D, E
  - DeLaval #09-500-76001, Revision N, 9/13/79; Control Panel Schematic - Service Water System.
- f. G&H calculations 2323-206-8, Revision 1 and #2323-233-18, Addendum 1 dated October 2, 1979, to determine if the data input, assumptions, and calculational methods were complete, accurate and appropriate to the analysis and that the conclusion reached was valid and independently verified.
- g. Telegram to G&H from Transamerica DeLaval dated December 3, 1979, to verify that the manufacturer of the diesel generator had reviewed and concurred with the G&H conclusion.
- h. Telegram to TUSI (Texas Utilities Services, Incorporated) from G&H dated October 3, 1979, to verify that the G&H conclusion was accurately transmitted to the licensee.

- i. Telegrams #TXX-3008, -3026, -3037 and 3054 to RIV from the licensee to verify that the NRC was timely and accurately appraised of the investigation and evaluation of the matter.

### 3. Findings

#### a. Deviation From Commitment

There were no deviations, unresolved items or followup items resulting from this area of the inspection.

#### b. Conclusion

The design of the valving and controls for the interface between the Service Water System and the Auxiliary Feedwater System appears to be as required and should preclude restricting the flow of cooling water (from the Service Water System) through the diesel generators under both normal and emergency conditions when the Service Water System is used as the designed backup water supply to the Auxiliary Feedwater System.

However, if under emergency conditions the licensee-operator should manually hold the "spring return to auto position" valve control switch (#1-HS-4393 or #1-HS-4394 for train #2 on G&H Drawing 2323-MI-2234-02) in the valve "Closed" position in an attempt to divert more than the design rated flow from the Service Water System into the Auxiliary Feedwater System, the normally non-modulatable motor operated valve (#1-HV-4393 or #1-HV-4394 for train #2 on G&H Drawing 2323-MI-0234) would close and thus reduce the cooling water flow through the diesel generator from 2400 GPM to 1965 GPM. This reduced flow would restrict the cooling of the emergency diesel generator to an unacceptable level.

The documentation relative to this item appears complete and consistent with that provided to the NRC. Since this does not appear to be a reportable item, the corrective and preventive actions and the generic implications were not required.

#### c. Additional Comments

- (1) The cooling water flow rate through the diesel generator increases by 265 GPM (rather than decrease) when the Service Water System is used as the designed backup water supply to the Auxiliary Feedwater System, provided the motor operated valve (#1-HV-4393 or #1-HV-4394) was not closed.

- (2) The manufacturer (Transamerica DeLaval) of the diesel generators advised G&H on December 3, 1979, that the increased flow rate is acceptable and should not present any detrimental effects to the diesel generator system. However, the manufacturer also informed G&H that they (Transamerica DeLaval) will not accept any responsibility for any detrimental effects caused by the increased flow rate of the cooling water. It could not be determined that the content of the manufacturer's telegram of December 3, 1979, was subsequently transmitted to the licensee.
- (3) The G&H standard plant design (GIBBSAR) utilizes a different design of the valving and controls for the interface between the Service Water System and the Auxiliary Feedwater System thus eliminating the potential for inadvertently restricting the cooling of the emergency diesel generator(s) to an acceptable level.
- (4) The potential for inadvertently restricting the cooling of the emergency diesel generator(s) of the Fort Calhoun I station to an unacceptable level could not be determined by examination of the applicable sections of the Fort Calhoun I FSAR. Detailed drawings were not readily available at G&H for examination during this inspection, however the responsible G&H Engineering Management stated that, to the best of their knowledge, the design of the Fort Calhoun I station precluded the possibility of inadvertently restricting the diesel generator(s) cooling water flow to an unacceptable level.

## C. Audits

### 1. Objectives

The objectives of this area of the inspection were to verify that the:

- a. Audit system is established which has organizational independence, authority, and is documented in procedures and/or instructions in accordance with commitments.
- b. Audit records include a written audit plan, team selection, audit schedule, and audit notification to the person or organization to be audited.
- c. Members of the audit team are independent of any direct responsibility for the activities being audited.

- d. Provisions exist for the reporting of the effectiveness of the Quality Assurance program to responsible management.
- e. Audit includes the use of checklists or procedures, detailed audit reports, and timely identification, acknowledgement, documentation of nonconformances, and subsequent corrective action and verification.
- f. Audit reports contain the audit scope, identification of auditors, persons or organizations contacted, summary of the results of the audit, the details of any nonconformances noted, the recommendations for correction, and distribution of the report to responsible management.

2. Methods of Accomplishment

- a. Review of the following documents to determine if objective "a" of section II.C.1 was accomplished:
  - (1) Section 17 of the PSAR for the TUGCO (Texas Utilities Generating Company) CPSES (Comanche Peak Steam Electric Station) to determine the original G&H (Gibbs and Hill, Incorporated) commitments relative to quality assurance audits.
  - (2) Section 17 and Appendix 1 (A) B of the FSAR for the TUGCO CPSES through Amendment 9 dated January 31, 1980, to determine the current G&H commitments relative to quality assurance audits.
  - (3) TUSI Project Guide dated July 24, 1978 to determine the assignment of responsibilities and the management policies and practices to be used for the control of the CPSES Project.
  - (4) The following G&H Quality Assurance Procedures to determine if the G&H commitments relative to quality assurance audits were correctly translated into a viable QA Department quality assurance program:



QA-2, Revision 5, 1/80; Vendor Audit and Surveillance Procedure  
 QA-4, Revision 6, 11/79; CPSES Internal Audit Procedure  
 QA-5, Revision 3, 11/79; Procedure for Indoctrination and Training  
 QA-7, Revision 3, 11/79; Issuance, Modification and Control of Project Procedures Manual.

- (5) The following G&H Quality Assurance Instructions to determine the detailed procedural requirements for planning, scheduling, personnel qualification, preparation, execution, reporting and follow-up of quality assurance audits:

QAI-1, Revision 0, 4/5/79; Preparation, Format, Control and Distribution of Quality Assurance Instructions  
 QAI-4, Revision 1, 5/8/79; Auditor Training and Certification  
 QAI-6, Revision 1, 7/79; Vendor Audits - Interface Between TUGCO and G&H  
 QAI-7, Revision 0, 4/25/79; Audit Performance, Reporting and Follow-up.

- b. Review of the following documents to determine if objectives "b" through "f" of section II.C.1 were accomplished:

- (1) The following quality assurance audits and audit files to determine that the approved procedures, instructions and management programs relative to quality assurance audits are being implemented:

Mechanical and Nuclear Engineering Department Audits

Engineering Audit Reports No. 9 and No. 11  
 Calculations Audit Reports No. 7 and No. 9  
 Drawing Audit Report No. 8 and No. 10  
 Design Review Audit Reports No. 1 and No. 4

I&C Department Drawing Audit Report No. 7

Nuclear Department Audit Report No. 11

Electrical - Nuclear Department Engineering Audit Report No. 9

Applied Mechanics Department Calculation Audit Report No. 3

Structural Department Drawing Audit Report No. 9

HVAC Department Engineering Audit Report No. 3

Chemistry Department Design Review Audit Report No. 3

Shielding Department Calculation Audit Report No. 6

- (2) Q.A. Trend Analysis Reports for 9/30/79 and 12/31/79
- (3) Qualification and documentation records for eleven (11) QA Department personnel who either are actively performing audits or who performed audits from January 11, 1979 through February 28, 1980.

### 3. Findings

#### a. Deviations from Commitment

Two (2) deviations from commitments were identified in this area of the inspection. See Notice of Deviation, Item A and Item B, and the additional comments below.

- (1) With respect to Item A, the following additional observations were noted by the inspector:
  - (a) Certification forms and other records for five (5) auditors and lead auditors were not maintained for the time period that five (5) audits were performed.
  - (b) None of the sixteen (16) audit reports examined contained an overall assessment of the effectiveness of the QA Program elements that were audited.
  - (c) The team leader was not specifically identified in three (3) audit reports. The team leader identified in a fourth audit report did not sign the report.
  - (d) There did not appear to be records or other documentation that the audit team numbers were oriented by the team leader prior to the execution of the audit.

Note: No vendor audit reports or files were examined during this inspection since the vendor audit program is executed under the direction of the TUGCO Quality Assurance Department.

(2) With respect to Item B, the following additional observations were noted by the inspector:

(a) Eight identified recipients of controlled CPSES Project Procedures Manuals did not return the acknowledgement receipt for either the original issue, or revisions or additions thereto, for the past eight and one half (8½) months. There were no records or other documentation that:

· The required follow-up notification was sent to the delinquent recipients;

· These manuals were considered by G&H to be "uncontrolled";

· The required notification was sent out to cancel the controlled number manual.

(b) One controlled CPSES Project Procedure Manual was not serialized, nor was the name of the person issued to, or date issued, contained on a list in Quality Assurance as required.

(c) One identified receipt of a controlled Quality Assurance Instruction Manual did not return the acknowledgement receipt for revisions or additions thereto for the past six (6) months. There were no records or other documentation that follow-up activities were performed to assure timely return of the acknowledgement receipts.

b. The Quality Assurance Management acknowledged the nonadherences to procedural and committed ANSI N45.2.12 requirements and immediately formulated plans for both corrective and preventative action. The management further stated that the current procedural requirements and implementing instructions and practices will be reviewed and upgraded as necessary.

There were no unresolved items or follow-up items identified in this area of the inspection.

#### D. Exit Interview

An exit interview was held with management representatives on February 29, 1980. In addition to those individuals indicated by an asterisk in paragraph A of each Details Section, those in attendance were:

L. B. Coggan, Project Engineer, CPSES  
F. W. Gettler, Vice President, Power Engineering  
H. R. Rock, Project Manager, CPSES  
P. R. Rajan, Project Engineer, CPSES  
M. A. Vivirito, Manager, Analytical Engineering  
W. Varnell, Mechanical Engineer

The inspector summarized the scope and findings of the inspection. Management comments were generally for clarification only, or acknowledgement of the statements by the inspector.

DETAILS SECTION II

(Prepared by R. H. Brickley)

A. Persons Contacted

H. Y. Chang, Pipe Rupture Analyst  
 \*B. Czarnogorski, QA Engineer  
 T. Constabile, Mechanical Nuclear Engineer  
 R. S. Sparrow, Lead Mechanical Designer  
 E. Weddon, Mechanical Designer

\*Denotes attendance at the exit interview.

B. Action on Previous Inspection Findings

1. (Closed) Deviation (Report No. 79-02) Failure to follow procedures in indicating the revised text on a revision to a procedure. The inspector examined the corrective action and preventive measures described in the letter of response dated August 17, 1979, i.e., Design Control Procedure DC-2 (Design Description Procedure) Revision 4 was reissued on August 3, 1979, with the revision number (R4) indicated next to the solid line and the Project QA Supervisor's directive to the QA group to assure their awareness and compliance with requirements of procedure QA-7 (Issuance, Modification and Control of Project Procedures Manual).
2. (Closed) Follow-up Item (Report No. 79-02) Mathematical errors were identified in safety related engineering design calculations. The inspector examined the corrective action and preventive measures described in the letter of response dated August 17, 1979, i.e., the identified errors were corrected and the new results evaluated, Design Control Procedure DC-7 (Technical Calculation Procedure) was revised and issued on September 1979, training sessions were conducted on the revised procedure, and QA has conducted audits of additional calculations for mathematical accuracy.
3. (Closed) Follow-up Item (Report No. 79-02) Project procedures need revising to incorporate the Specification Assignment Report and the Specification and Purchase Order Report. The inspector verified that procedure PC-3 (Specification Production Procedure) was revised (R3) to incorporate the above reports.

C. Protection Against High Energy Line Ruptures in Fluid Systems Outside Containment

## 1. Objectives

The objectives of this area of the inspection are to select one or more high energy line systems and determine:

- a. The essential systems that are proximate to any portion of the selected high energy line system.
- b. That the design analysis report combined with the composite drawing and stress isometric confirm that the integrity of the essential system would not be degraded in the event of a rupture at any location.
- c. That break point locations are in accordance with NRC guidelines and have been indicated on the drawings.
- d. That, for high energy line fluid systems located in containment penetration areas, the drawings and design basis provide confirmation that NRC criteria have been met.
- e. That, for those essential systems that are not protected by either the separation or protective enclosure design methods, the applicable drawings identify the break point locations and the physical design features to protect the essential systems.
- f. That the analysis for a postulated break assuming the loss of off-site power combined with a single active failure has been performed and documented.

## 2. Method of Accomplishment

The preceding objectives were accomplished by an examination of:

- a. A draft procedure (Pipe Rupture Damage Study Procedure)
- b. The "Guide for Postulating Breaks in Fluid System Piping for Nuclear Power Plants" dated May 8, 1979.
- c. The "Pipe Whip and Jet Impingement Interaction Procedure" Revision 1, dated May, 1979.
- d. The "Damage Study System Protection Criteria" Revision 0, dated March 1979.
- e. Sketch No. PSP-001-GH (Information Flow Diagram For Pipe Whip Analysis On A Problem Basis) Revision 5, dated December 18, 1979.

- f. The "Criteria Document for Jet Impingement Screening Rules for the CPSES" Revision 0, dated June 1979.
- g. Auxiliary Feedwater System break Nos. 742CWA and 742CWB damage study data i.e., Composite Drawing no. XD-2323-M-1584 (Damage Study Sketch Auxiliary Feedwater System, Problem 12A, B, C, D, E, & F, Safeguards Building) Revision 0, dated February 15, 1980:  
 Stress Isometric No. 2323-M-3206-39 (Auxiliary Feedwater System, Safeguards Building, Problem 1-12A and 1-12B) Sheet 39 Revision F, dated October 1, 1979; Problem No. 12 Damage Study Problem Book; Sketch No. XD-2323-M-1980 (HVAC Essential Components, Safeguards Building) Revision 5, dated June 9, 1978; Sketch No. XD-2323-MI-2607 (Instrument Locations, Safeguards Building Plan at El 790'6") Revision 5, dated October 12, 1979; Sketch No. XD-2323-M-1961 (Electrical Essential Components Tray Plan-El 790'6", Safeguards Building) Revision B, dated August 27, 1979; Pipe Rupture No. 2323-094-1-AF-12 Stress Summary; and Point of Impact Sketch.
- h. Auxiliary Feedwater System break Nos. 738CWA and 738CWB damage study data i.e. Damage Study Problem Book; Stress Isometric 2323-MI-3206-48 (Auxiliary Feedwater System, Safeguards Building) Sheet H8, Revision F, dated October 1, 1979, and Drawing No. 2323-MI-0206 (Flow Diagram Auxiliary Feedwater System) Revision 4, dated August 16, 1978.
- i. Safety Injection System break No. 83CWB damage study data i.e., Damage Study Problem Book; Stress Isometric No. 2323-MI-3252-06 (Safety Injection System, Safeguards Building) Revision H, dated October 22, 1979; and Drawing No. 2323-MI-0255 (Flow Diagram, C and VCS) Sheet 3, Revision 4, dated April 7, 1978.
- j. Steam Generator Blowdown System break No. 707CWA damage study data i.e. Damage Study Problem Book; Damage Study High Energy Line List; Drawing No. 2323-MI-0239 (Flow Diagram, Steam Generator Blowdown Cleanup System) Revision 7, dated April 25, 1979; and Sketch No. XD-2323-1481 (Damage Study Sketch, Safeguards Building, System Problem 1-79E) Revision 0, dated February 8, 1980.
- k. Steam Generator Blowdown System break No. 163CWA damage study data i.e., Damage Study Problem Book; Stress Isometric No. 2323-M-3239-48 (Steam Generator Blowdown System, Electrical and Control Building) Revision E, dated May 22, 1979; and Sketch No. XD-2323-M-1488 (Damage Study Sketch, Steam Generator Blowdown System) Revision 0, dated February 29, 1980.

3. Findings

a. General

- (1) The examination of the documents identified in paragraphs C.2.a through C.2.f above revealed that they followed the NRC guidance contained in Standard Review Plans (SRP) 3.6.1 and 3.6.2; Branch Technical Positions APCSB 3-1 and MEB 3-1; and ASME Code Section III, Paragraph NC-3652.
- (2) The examination of the documents identified in paragraphs C.2.g through C.2.k revealed that analysis activities followed the requirements contained in the documents identified in paragraphs C.2.a through C.2.f above and covered those areas identified in Objectives a. through e. above.

b. Follow-up Item

A complete inspection of the Failure Mode and Effects Analysis (SRP 3.6.1, Subsection 3) was not possible due to time limitations. This area will be examined during a future inspection.

c. Deviations and Unresolved Items

None identified in this area of the inspection.



DETAILS SECTION III

(Prepared by J. M. Johnson)

A. Persons Contacted

- \*B. Czarnogorski, Project QA Engineer
- M. Garafolo, Mechanical Engineer
- E. Horowitz, Assistant Chief Mechanical Engineer
- \*J. Irons, Mechanical Job Engineer
- \*C. Jacobson, QA Engineer
- \*N. Keddis, QA Manager
- \*M. Miller, Project QA Supervisor
- \*J. Triolo, QA Supervising Engineer

\*Denotes those present at exit interview.

B. Special Inspection - Solution - Annealing Requirements at ITT Grinnell

Review of Gibbs and Hill documents related to the procurement and fabrication of nuclear piping by ITT Grinnell for Comanche Peak Steam Electric Station (CPSES) to determine the cause for the vendor's failure to require and perform solution-annealing of austenitic stainless steel piping subjected to temperatures of greater than 800<sup>o</sup>F during the hot bending process. This condition was identified during an inspection of ITT Grinnell conducted February 26 - March 1, 1979, and has since been corrected at the vendor's fabrication facility. If unidentified, it would have resulted in failure to meet R.G.144 and CPSES Final Safety Analysis Report (FSAR) commitments.

1. Objectives

The objectives of this area of the inspection were to determine the following:

- a. Cause of the identified deficiency.
- b. Generic aspects.
- c. Need for corrective and preventive actions at Gibbs and Hill.

2. Method of Accomplishment

The preceding objectives were accomplished by an examination of the following:

- a. USNRC Inspection Report for Docket No. 99900019/79-01 dated April 2, 1979 and ITT Grinnell responses.

- b. CPSES FSAR, Section 1A(B) which commits to R.G. 1.44 and Section 6.1.B.1.1.2 (Integrity of ESF Components and Avoidance of Sensitization) which states in 1.c that for austenitic stainless steel "hot bending is followed by solution annealing."
- c. Specification No. 2323-MS-43A, Revisions 2 and 3 (Shop Fabrication of Nuclear Piping 8" and larger) issued to ITT Grinnell and Southwest (SW) Fabricating and Welding Company (as 2323-MS-43A.1)
- d. Specification No. 2323-MS-43B, Revision 2 (Shop Fabrication of Nuclear Piping in the Field) issued to Brown and Root.
- e. PSAR Conformance Record Sheets for c. and d. above and approval signatures.
- f. Specification Review Record forms for c. and d. above and approval signatures.
- g. Independent design reviews for revisions 2 and 3 of 2323-43A, including the attached mechanical Design Review Checklists which show review for SAR commitments.
- h. Correspondence number GTN-19722 dated June 29, 1977, from G&H to TUGCO concerning revision 3 to Specification 2323-MS-43A and listing modifications and referencing documents providing the reasons for each change.
- i. CPSES Project Control Procedure No. PC-5 (Vendor Drawing Review Procedure) for requirements for G&H review of vendor procedures (included under PC-5).
- j. ITT Grinnell Job Specification No. JS-136, revisions 9, 10, 11 and 12, and G&H approvals.
- k. ITT Grinnell Bending Procedure Specification No. BF-K-111, Revision 2, and G&H approval.
- l. Telex no. GTT3505 dated 1/28/79 from G&H to ITT Grinnell providing clarification of paragraph 3.7.4.5.2.c of Specification 2323-MS-43A.
- m. Telecon no. STN34793 dated 3/1/79 from G&H to ITT Grinnell providing clarification of requirements in paragraph 3.7.4.5.2.c., and paragraph 3.7.3.9 .
- n. Vendor Document List for ITT Grinnell and SW Fabrication and Welding, listing submittal and approval requirements for vendor documents for these contracts. (ITT Grinnell solution

annealing procedure was not required for submittal or approval. SW Fabrication solution annealing procedure No. HT-P8-1 has been submitted and approved).

### 3. Findings

a. The cause of the identified deficiency at the vendor facility includes the following:

(1) Vendor interpretation of certain sections of Gibbs and Hill specification no. 2323-MS-43A, Revision 3, which is confusing, if not contradictory. Specifically:

(a) Revision 2 of the specification, paragraph 3.7.4.5.2.c. states: "Austenitic Stainless Steels: All piping subject to bending to a radius smaller than 20 pipe diameters shall receive a solution anneal and a rapid quench following the bending operations." Note that this would have covered all piping bend sizes within the specification. However, Revision 3 of 2323-MS-43A changed this requirement for solution annealing to "piping subject to bending to a radius smaller than 5 pipe diameters." The reason Gibbs and Hill made this specification change is unclear, because paragraph 3.7.4.5.1.h. requires bend radii of 5, 6, 7, and 8 pipe diameters but none smaller than 5. Letter GTN-19722 which references documents providing justification for each change states "Reference 12: Meeting on 8/4/76 between G&H and TUSI." No records of this meeting could be located, and no one remembered the content of the meeting. Gibbs and Hill management explained to the inspector, however, that the intent was for this section to apply to cold bends only (although Telex no. GTT 3505 states that it applies to hot and cold bends). Also, it was explained that although the specification requires only bend radii of 5, 6, 7, and 8 diameters, it does not preclude bends with radii of under 5 pipe diameters.

(b) Specification 2323-MS-43B does state in both Revision 2 and Revision 3, paragraph 3.7.3.9:

"Furnace Sensitization: Austenitic stainless steel subject to temperatures above 800°F during any phase of fabrication . . . shall receive a subsequent solution anneal followed by a rapid cooling (quench)."

Also, paragraph 3.3.c.3 invokes R.G.1.44. Therefore, solution annealing is clearly required for hot bends by these sections of the specification.

- (2) ITT Grinnell procedures, approved for fabrication by Gibbs and Hill, showed that solution annealing would not be performed on austenitic stainless steel piping bent to a radius 5 pipe diameters or larger. Specifically, these Grinnell procedures state;
    - (a) Bending procedure no. BF-K-111 states "VII. Heat Treatment. Austenitic Stainless Steel shall not be heat treated except as required by the Job Specification."
    - (b) Job specification JS-136, revisions 10 and 11, state." All austenitic stainless steel piping subject to bending to a radius smaller than 5 pipe diameters shall receive a solution anneal and rapid quench following the bending operation." No reference is made to solution annealing after hot bending (800°F or higher). Note that the prior revision (9) of this job specification listed a radius of 20 pipe diameters (to match revision 2 of the Gibbs and Hill specification) which would have covered all potential bends within the Gibbs & Hill specification parameters, whereas revisions 10 and 11, which reflect the change in Revision 3 of the Gibbs and Hill specification, would have eliminated most, if not all, solution annealing subsequent to hot bending.
- b. The two other specifications of like nature were reviewed for generic aspects.
- (1) Spec. 2323-43B for field fabrication of smaller pipe does include paragraphs 3.7.3.9 & 3.3.c.3 and does not include paragraph 3.7.4.5.2.c. Therefore, there is no possibility for misinterpretation.
  - (2) Spec. 2323-43A.1 (to Southwest Fabricating and Welding) includes the same paragraphs as the spec to ITT Grinnell. However, only one stainless spool has been fabricated at Southwest Fabricating and review of the drawing for this spool, SI (Safety Injection) -2-RB-045, showed welded elbows rather than bending. G&H management also stated no spools with hot bending will be assigned to Southwest Fabricating.

Additionally, Southwest Fabricating has submitted a Solution-Anneal procedure which has been approved by G&H.

- c. Corrective actions were taken by ITT Grinnell in submitting Revision 12 to Job Specification JS-136 which states "All austenitic stainless steel piping subject to hot bending shall receive a solution anneal and rapid quench following the bending operation." Corrective action was taken by G&H in their approval of Revision 12. The need for preventive action, if any, will be addressed in G&H response to Notice of Deviation, Item C.
- d. In this area of the inspection, one deviation was identified (See Notice of Deviation, Item C). No unresolved items were identified.
- e. Relative to Notice of Deviation, Item C:
  - (1) Primary concerns are whether the Gibbs and Hill approval of vendor procedures which do not meet specification requirements is an isolated instance and also whether preventive actions are needed. Specific corrective action has been taken as described in Section 3.c. above.
  - (2) It is recognized that the Gibbs and Hill approval stamp has contractual limitations as mentioned by G&H during the exit meeting. These are stated as follows: "Subject to compliance with all contract requirements, drawings and specification" and also delineated in section 3.0 of Project Control Procedure PC-5 which quotes a similar section from contract terms and conditions. However, these clauses do not relieve Gibbs and Hill from procedural requirements of PC-5 to place the "Approved" stamp only on documents fulfilling specification requirements, and to note required changes and apply the "Approved except as noted" stamp where specification requirements are not met.

## C. QA Records

### 1. Objectives

The objectives of this area of the inspection were to examine the establishment and implementation of quality related procedures for collecting, filing, storing, maintaining, and dispositioning of QA records to verify that:

- a. A QA records system is defined, implemented, and enforced in accordance with approved procedures, instructions, or other

documentation for all groups performing safety related activities including QA, design, procurement, administration, and services.

- b. QA records are legible, completely filled out, adequately identifiable to the item involved, validated, and listed in an index that indicates: the record retention time, where the record is to be stored, and the location of the record in the storage area. Any changes or modifications to these records are controlled.
- c. A specific submittal plan for QA records is established between the licensee and contractor and records exist that acknowledge the licensee's receipt of QA records.
- d. A designated authority has been assigned to control the receipt of QA records by a system which includes a list of QA records required, a record of QA records received, and an inspection of incoming records including a current assessment of the status of incoming records.
- e. A custodian has been designated to assure that QA records are in accordance with b. above and to enforce a QA record storage filing system which includes a system description of the filing technique and storage area, rules for access and control of record files, accountability of records removed from record files and security requirements.
- f. The QA record storage facility is in compliance with applicable codes, standards, and regulations consistent with NRC Regulatory Guide 1.88.
- g. The QA record storage system is periodically audited to assure the record control system is implemented.

## 2. Method of Accomplishment

The preceding objectives were accomplished by an examination of:

- a. Comanche Peak Steam Electric Station (CPSES) Final Safety Analysis Report (FSAR), Appendix 1A(B) which delineates compliance with Division 1 Regulatory Guides (R.G.) as they apply to BOP (Balance of Plant) design and construction, and which commits to R.G.1.88 endorsing ANSI N45.2.9.
- b. CPSES Project Procedure QA-9, Revision 2 titled Quality Assurance Records Retention to assure that it meets FSAR commitments.

- c. Examination of duplicate file facility for conformance to requirements related to location, storage and preservation.
- d. QA records examined for duplicate storage, and legibility and completeness, where possible (no reader for microforms in duplicate storage facility):

(1) Design Review Reports (Record of Independent Design Review) for Specifications:

MS-43A, Revision 2 and 3 (Nuclear Piping - Shop Fabrication)  
 MS-46A, Revisions 1 and 2 (Nuclear Pipe Hangers)  
 MS-78 (Main Steam Relief Valves)  
 MS-74 (Mechanical Penetrations)  
 MS-76 Revisions 1 and 2 (Main Steam Isolation Valves)  
 ES-12, Revision 1 (Electrical Penetration Assemblies)  
 ES-16, Revision 2 (Radiation Monitoring System)  
 ES-10, Revisions 1 and 2 (AC Distribution Panel Board)  
 SS-14, Revision 4 (Containment Steel Liner)  
 SS-15, Revision 3 (Containment Personnel Air Locks)

(2) Calculations:

Calc. No. 401.6 (Calculation for Containment Spray System Minimum Pipe Wall Thickness Prior to Bending)

(3) Drawings (and microfiche) and Independent Design Review:

MI-0504, Revision 4 and 5 (Containment Spray Piping Arrangement Plan Above Elevation 905)

MN-0301, 1P (Hydro. Purge Supply)

EL-0040-01, Revision 2 (Air Operated Valve; Power Relief Valve)

MZ-2232-01 (Instrumentation and Control Diagrams - Containment Spray)

MZ-2229-02 (Instrumentation and Control Diagrams - Component Cooling Water)

EI-0514, Revision 5 (Reactor Building Nuclear Instrumentation System)

(4) QA System Audit Reports and Auditor Qualifications:  
 Audit Report No. 1 of Chemical Department (not in duplicate file); Audit Reports Nos. 1 and 2 of Shielding (not in duplicate file).

- e. Duplicate storage filing system and lists of records stored.
- f. Memoranda from TUGCO (Texas Utilities Generating Company) to Gibbs and Hill concerning QA duplicate file dated 10/24/78 and 10/31/79.
- g. QA System Audit of Duplicate File dated 2/25/80; QA System Audit of Print File (the group which stored QA records at that time) dated 10/20/78. These were reviewed to assure that audits were performed to assure that the record control system is implemented.

### 3. Findings

- a. In this area of the inspection, no deviations were identified. The following follow-up item and unresolved item were identified.

- b. Follow-up Item

- (1) The responsibility for the QA record system has been changed from the Print Department to QA. To provide a separate, remote location the facility is now located at 393 7th Avenue. This change in facility designation was made approximately November, 1979.
- (2) TUGCO memo dated 10/24/78 imposed a stop work on CPSES duplicate file until G&H completed the following:
  - (a) Identify, by location and purpose, all CPSES related files presently maintained.
  - (b) Provide an inventory and/or file list of each file.
  - (c) Evaluate the situation and provide a recommendation for meeting regulatory commitments. This should be something more than mass reproduction effort and establishment of additional files.
  - (d) Provide the procedure for implementing and maintaining the file. This procedure should embrace the documentation retention requirements committed to for CPSES.

Gibbs and Hill corrective actions for the above were accepted by TUGCO and the stop work was lifted on 10/31/79. Implementation of the revised procedure, (QA-9 Revision 2 dated September, 1979) is in progress but not yet complete.



Audit records were the only QA records identified during this inspection as missing from the duplicate file, but files were inspected on a sampling basis only. This area will be inspected further when the G&H effort is completed.

c. Unresolved Item

One unresolved item was identified, as follows. The duplicate storage area does not have any device to record humidity/temperature and it is therefore unknown whether humidity and temperature are controlled within acceptable limits to preclude deterioration of the microforms stored there. ANSI N45.2.9 which is an SAR commitment, states: "For storage of film and other special processed records (radiographs, photographs, negatives and microfilm), humidity and temperature controls shall be provided to maintain an environment as recommended by the manufacturers." It is unclear whether present storage practices, including air-conditioning and heat during much of the time, provide adequate controls.