

U. S. ATOMIC ENERGY COMMISSION
DIVISION OF COMPLIANCE
REGION V

Report of Inspection
CO Report No. 50-275/69-4

Licensee: Pacific Gas & Electric Company
Construction Permit No. CPPR-39
Category A

Date of Inspection: April 30, 1969

Date of Previous Inspection: March 28, 1969

Inspected by: A. D. Johnson 5/10/69
A. D. Johnson
Reactor Inspector

Reviewed by: G. S. Spencer 5/17/69
G. S. Spencer
Senior Reactor Inspector

Proprietary Information: None

SCOPE

Type of Facility: Pressurized Water Reactor
Power Level: 3250 Mwt
Location: Diablo Canyon near San Luis Obispo,
California
Type of Inspection: Routine - Announced
Accompanying Personnel: None
Scope of Inspection: The visit was made to PG&E's main
offices in San Francisco, California to review the status of the licensee's
quality assurance - quality control (QA-QC) program for the construction of
the Diablo Canyon Unit No. 1 nuclear plant.

B. Quality Assurance - Quality Control

The inspector met with the persons named above to discuss the status of the applicant's quality assurance-quality control (QA-QC) program. Based on the discussions, the following information was obtained relative to PG&E's activities concerning QA-QC.

1. Current QA-QC Activities

To date the applicant has no formalized QA-QC program per se. The functions of such a program have been fulfilled by PG&E's Engineering Department acting as the quality assurance agent with the General Construction Department responsible for quality control. (See CO Report 50-275/69-1 for details concerning PG&E's organization.)

PG&E as owner, designer and constructor provides management and control over the entire project. The major structures, components and systems are to be secured and installed through contract provisions with other firms. Table I attached to CO Report No. 50-275/69-1 is a listing of vendors selected to provide major equipment for the plant.

PG&E's major effort has been directed toward areas other than that related to the nuclear steam supply system which is to be provided by Westinghouse. The company is relying primarily on Westinghouse to install a quality product. However, PG&E has the right of audit and inspection of the activities of Westinghouse and has been exercising that right by performing audits of Westinghouse and its vendors. The responsibility to perform these audits has been assigned to the Company's Inspection Department. Mr. Forbes, Supervising Inspection Engineer, showed the inspector reports submitted by company inspectors during the past year. The record showed that two to three inspections at various vendors are currently being performed weekly. Forbes stated that no major problems have been encountered to date and that quality products are being obtained by Westinghouse for installation in the plant.

With the exception of site excavation, no major civil construction contracts have been awarded. However, contracts for the construction of buildings and related substructures for Unit 1 are currently scheduled for award during June 1969, with actual placement of steel to begin the last week of June. The construction schedule has slipped by about three weeks. In view of this, PG&E quality control effort at the site has been limited to date to assuring that the excavation

and fill work has been performed according to the terms of the contract. The inspector reviewed PG&E efforts in this area during the initial site visit on March 11, 1969 (see CO report 50-275/69-2).

The design and preparation of the contract specifications for the major civil structures have been performed by PG&E's Engineering Department. According to Kelley the detailed designs were done by design engineers in accordance with the appropriate standards and codes. The design details were then reviewed by supervisory personnel responsible for the design and subsequently approved by the appropriate Engineering Department Chief. Kelley added, that, documentation concerning various changes in design from that described in the preliminary safety analysis report has been evaluated and approved by responsible personnel. However, the evaluation and approval of these changes have not been formally documented other than by interoffice memos and by the final approval of the contract specifications. Schuyler said that all changes would be included in the Final Design and Safety Analysis Report (F&SAR) for the plant since the contract specifications along with possible subsequent changes will be used to describe the "as built" plant in the FD&SAR. (See Section B. for detail concerning design changes.)

In response to the inspector's question as to whether Westinghouse had reviewed and approved the detailed design of the containment building (Section 5.1.2.7. of PSAR), Mr. Schuyler stated that Westinghouse has reviewed and commented on the design but has not approved it per se. Kelley added that it was not the Company's intent to have Westinghouse be responsible for the design of the structure but only to provide a technical review of the structure with PG&E retaining the final approval authority. The word "approve", therefore, has been omitted in the construction application for Unit No. 2, currently under review by the Commission.

To fulfill the quality assurance requirement that the structures be built in accordance with the contract specifications, PG&E imposes on the contractors (by way of a contract condition) a requirement that the contractors must each implement a quality assurance-control program to show PG&E that the work will be and has been performed as per the contract specifications for the major civil structures which are currently out for bid. The specifications contained a five page section defining the scope and requirements of the QA-QC provisions to be imposed by the contract. These requirements

included the areas of (1) organization, (2) procedures and plans, (3) approval of procedures, (4) hold points, (5) records, (6) corrective action (7) specifications, drawings, documentation and change control, (8) inprocess and final inspection, (9) product control, (10) nonconforming products, (11) handling and storage, (12) special protection packing and packaging, (13) cleanliness, (14) audits. In addition, the contract provides that PG&E has the right to audit the contractor's quality assurance program and the right to stop or reject work, which in PG&E's opinion, is below specified quality standards.

The contract specifications also delineate the materials testing services to be provided by the company. Further, the specifications provide (1) that the contractor is responsible for performance of all quality assurance activities necessary to assure that products furnished by him are complete and in accordance with design specifications, and (2) that the contractor's program shall be reviewed by the company and revised where, in the company's judgement, it does not satisfy the specified requirements. All corrections to the plan must be made prior to start of work.

2. Planned QA-QC Program

Mr. Kelley explained that a more formalized QA-QC program is currently being prepared and that the QA program will be submitted to DRL during June 1969, as a supplement to the application for a permit to construct Unit No. 2 at the Diablo Canyon site. This program will also be implemented for the construction of Unit No. 1 and will be initiated prior to start of construction of the major civil structures. He added that PG&E's quality control programs concerning work covered by the contracts soon to be awarded will be implemented prior to start of the work. Kelley believed PG&E's current program lacks formal definition, especially in the area of documentation.

Kelley stated that the planned program currently is undergoing an upgrading process so that it will conform to the Commission's proposed amendment to Part 50 which prescribes criteria and guidance for applicants to follow in establishing an adequate QA-QC program. Schuyler stated that they intended to review their past efforts in view of the new program and assure to the best of their ability that work already done for Unit No. 1 meets the requirements of the new QA program.

B. Changes to Containment Design

During the meeting and a subsequent review of the contract specifications, the following changes in design of the containment were identified.

1. Contrary to the general description of the containment building provided in Section 5.1.2. of the PSAR, the containment liner anchors will be straight studs rather than the described L shape which were to hook around the reinforcing steel.
2. The containment liner plate and liner plate reinforcement has been changed from ASTM designation A-442 "Standard specifications for carbon steel plates with improved transition properties", Grade 60 (minimum yield strength of 32,000 psi and minimum tensile strength of 60,000 psi) to ASTM-A300, Cl.1 A516, Grade 70 (minimum yield strength of 38,000 psi and minimum tensile strength of 70,000 psi).
3. Concerning reinforcing steel, the contract specifications prescribe that the bars be deformed billet steel conforming to ASTM designation A615. This ASTM specification (1968) has replaced A-15, A408 and A432 which were prescribed in the PSAR. Further, only No. 18 bar in the containment structure and in the vertical columns of the auxiliary building has been specified to be grade 60 all other bars are to be grade 40. This is in variance with the material designations shown in Section 5.1.2.3.(b) of the PSAR which indicates that all of the reinforcing steel for the dome, cylinder walls and base mat of the containment building will have a minimum yield strength of 60,000 psi and a minimum tensile strength of 90,000 psi. The respective values for the grade 40 steel are 40,000 psi and 70,000 psi. Mr. Schuyler commented that the No. 18 bar will be the main load carrying member.

Concerning the above variances, Kelley was of the opinion that the containment building, as designed, does conform to the required design criteria prescribed for the structure.

C. Radiographs

During the vendor visit to Electric Steel Company (ESCO) Portland, Oregon, (CO Report No. 50-275/69-3) the inspector learned that the vendor retains the radiograph films associated with a specific product, for the code-required duration of 10 years. In response to the inspector's questions concerning ultimate disposition of the radiographs, Mr. Kelley indicated that Westinghouse has provided in its contract with ESCO that the film will not be destroyed without consent of Westinghouse. Kelley indicated PG&E has no intent of securing and retaining the radiographs.

d. Door on Diesel Generator Hallway

The licensee has issued an architectural revision sheet to reference drawing number 59533, dated 4/24/75, that establishes the details for the installation of the diesel generator hallway door. The door height is seven feet with the lower two feet of the door covered with galvanized sheet metal to act as a water barrier to preclude possible water entry into the diesel generator room.

7. Preoperational Test Witnessing Cold Hydrostatic Test

The cold hydrostatic test of the reactor coolant system was completed on May 28, 1975. Based on direct observations of portions of the test, testing was verified to have been performed consistent with procedural and regulatory requirements. The following observations were made by the inspector.

- a. Primary Reactor Coolant System Hydro, Test Procedure No. 7.1 (Rev. 1) was available and used for the performance of the test.
- b. Test prerequisites and minimum crew requirements were met.
- c. Applicable systems for the performance of the hydrostatic test were in service.
- d. Crew actions were correct and timely during the portions of the testing observed.
- e. Valve position establishing the hydrostatic test boundaries were checked and verified.
- f. The latest revisions to the following drawings were verified to have been used in defining the test boundary and valve identifications.
 - (1) Reactor Coolant System 102007/Rev. 4.
 - (2) Chemical & Volume Control System 102008/Rev. 4.
 - (3) Safety Injection System 102009/Rev. 4.
 - (4) Residual Heat Removal System 102010/Rev. 3.
- g. Communications were established between the control room and locations in the containment including the test gage located on top of the pressurizer.