U. S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION V

Report No. 50-312

Docket No. 50-312 License No. DPR-54 Safeguards Group

Licensee: Sacramento Municipal Utility District

P. O. Box 15830

Sacramento, California 95813

Facility Name: Rancho Seco

Inspection at: Rancho Seco Site and SMUD Headquarters

Inspection conducted: September 2-5, 1980

Inspectors: John O. Elin 10-3-80
John O. Elin, Reactor Inspector Date Signed

Date Signed

Date Signed

Approved By: R T Dodds 10/4/80
R. T. Dodds, Reactor Engineering Support Branch Date Signed
Reactor Construction and Engineering Support Branch

Summary:

Inspection on September 2-5, 1980 (Report No. 50-312/80-28)

Areas Inspected: Routine announced inspection by a regional based inspector of the licensee's activities performed in response to IE Bulletin 79-01B, "Environmental Qualification of Class 1E Equipment." The inspection involved 26 inspector-hours onsite and at SMUD Headquarters by one NRC inspector.

Results: No items of noncompliance or deviations were identified as a result of the inspection.

RV Form 219 (2)

DETAILS

1. Persons Contacted

   a. Sacramento Municipal Utility District (SMUD)

   *R. Colombo, Technical Assistant
   *L. G. Schwieger, Quality Assurance Director
   *T. D. Tucker, OPS Supervisor
   *H. Heckert, Nuclear Engineering Technician
   *G. Coward, Maintenance Supervisor and Acting Plant Superintendent
   *Q. Coleman, Q.A. Auditor
   B. Daniels, Electrical Engineering Supervisor
   J. Jewett, Acting Site QA Supervisor
   H. Knieriem, Electrical Engineer

   b. Other Persons

   *H. Canter, NRC Senior Resident Inspector
   *J. O'Brien, NRC Resident Inspector

   *Present at exit meeting on September 5, 1980.

2. Summary of Licensee's Response to IEB 79-01B

   a. NRC Requirement (45 day response)

   IE Bulletin 79-01B of January 14, 1980, Environmental Qualification of Class 1E Equipment, required submission within 45 days of (1) a "Master List" of all engineered safety feature systems required to function under postulated accident conditions, (2) written evidence of environmental qualification of class 1E electrical equipment to function during LOCA conditions and (3) service condition profiles for Loss of Coolant Accident (LOCA), main steam line break inside containment (MSLB), and High Energy Line Breaks inside and outside containment.

   (1) Licensee's 45 day submittal

   The licensee submitted a response to the above requirements, on March 3, 1980. A "Master List" of systems and components required to operate in harsh environments was provided. Thirteen systems were identified in this listing and the required component evaluation sheets for equipment inside containment were included, however these evaluations for equipment inside containment were largely incomplete. The required "written evidence" of environmental qualification of equipment inside containment was not provided per IEB 79-01B. Completed component evaluation sheets for equipment outside containment were not supplied. The licensee indicated that the missing or incomplete information was primarily data within the scope of their equipment vendors. The licensee stated that the missing information and supporting qualification data would be supplied with the 90 day response required by IEB 79-01B.

Also included in the March 3, 1980 submittal were service condition profiles for LOCA conditions per the FSAR. The licensee stated that service condition profiles for MSLB and HELB environments would be included in the 90 day response.

(2) NRC verification of 45 day response

During April 1980, an inspection of the Rancho Seco facility was made to insure a complete listing of components on the master list as submitted on March 3, 1980, and to verify correct component identification (Inspection Report 50-312/80-12). The inspector was unable to verify correct manufacturer and model number listing of all the components of the one system audited, containment isolation. Additionally the inspector identified several components within the scope of IEB 79-01B which were not included on the master list provided with the 45 day submittal, such as solenoid air pilot valves and limit switches used for position indication on containment isolation valves.

b. NRC Requirement (90 day responses)

IEB 79-01B of 14 January 1980, also required further evaluations to be made and submitted within 90 days of the bulletin. These evaluations included (4) an examination of all safety related electrical equipment both inside and outside containment for qualification to harsh environment per the Division of Operating Reactors Guidelines (DOR Guidelines) and (5) an evaluation of equipment location with respect to expected flood levels.

(1) Licensee's 90 day submittal

On 5 May, 1980 the licensee made a submittal of information in accordance with the required 90 day response. This response had significant deficiencies in the licensee's evaluation of equipment qualification to harsh environments (as detailed in paragraph 3). A schedule for completion of this environmental qualification review was provided which extended through the summer of 1981.

(2) License modification of August 29, 1980

On August 29, 1980, the Nuclear Regulatory Commission, Operating Reactors Branch, Division of Licensing issued an order for modification of license which provides that "information which fully and completely responds to the...(IE 79-01B)...shall be submitted ...not later than November 1, 1980.

3. Current Status of Licensees Review of Environmental Qualification

a. The five requirements of IEB 79-01B (detailed in paragraph 2) were reviewed with licensee's representatives:

(1) Master List of Systems and Equipment

The May 5, 1980 response details 22 rather than 13 systems required to function during accident conditions, and almost 500 electrical components. The inspector reviewed the containment isolation system component listing and noted that, although non-electrical air operated containment isolation valves were included, position switches which indicate isolation valve position to operators were not listed. The licensee indicated that walkdown of the 22 systems listed had not been completed to verify the accuracy of this listing and that the listing would be modified to reflect necessary changes for the November 1, 1980 submittal. These changes were not detailed to the inspector. The inspector was unable to obtain from the licensee, a list of class 1E designated components to compare to this listing.

(2) Written Evidence to Support Qualification of Class IE Components Inside Containment (Review of Component Evaluation Worksheets)

The licensee submittal of May 5, 1980 includes component evaluation worksheets for equipment inside containment. These worksheets are largely incomplete and do not provide evidence of qualification in accordance with DOR guidelines. Typical is the limitorque valve SFV-24004-L. The worksheet for this component does not detail the class insulation used for comparison to the identified qualification report. Additionally the qualification documentation listed shows only qualification to a steam and chemical environment for 24.8 hours. It is not clear to the reviewer that the qualification profile specified on the component evaluation worksheet envelopes the required temperature/steam profile. Radiation environment qualification and documentation references were not provided and the equipment specified radiation level was two orders of magnitude below the DOR guideline requirements. There was no evidence that aging was addressed in accordance with DOR guidelines. Finally specific location of the component was not provided to show evaluation of possible submergence. (Although this valve was not on the list provided in the May 5, 1980 response of equipment subject to submergence, the licensee's evaluation of this possibility was not clear as the specific location information was not provided.)

The items noted on the evaluation worksheet for this component were typical of the problems with component evaluation worksheets for components located inside containment.

(3) Environmental Profiles

Environmental profiles for temperature and pressure are provided for the LOCA condition and are the same as those specified in the FSAR. Profiles have not been provided for MSLB or HELB. Data has not been provided for areas where fluids are recirculated from inside containment to accomplish long term core cooling following a LOCA in accordance with paragraph 4.3.2 of the DOR guidelines. It was not apparent that the radiation effects of such recirculation on nearby equipment had been assessed.

(4) Written Evidence of Qualification of Equipment Subject to HELB/MSLB Accidents

Equipment evaluation worksheets for equipment outside containment are blank. No evidence to support qualification of this equipment was provided in the May 5, 1980 submittal.

(5) Evaluation of Equipment Location with Respect to the Maximum Flood Level

A list of some 29 components which are subject to submergence during LOCA was provided, however individual component location on the component evaluation worksheets was not provided to allow NRC audit of this evaluation.

Justification for continued operation with instrumentation below flood levels was not provided.

b. At the time of the inspection, the licensee had assigned 2-3 engineers from the SMUD generation engineering staff to work on this evaluation. In addition, the licensee has the assistance of a contractor (NUS) and the original architect/engineer (Bechtel) in completing qualification reviews and defining environmental parameters. A total of approximately 12 engineers are working on this project. No quality assurance coverage was being provided at the time of the inspection. The licensee stated that quality assurance coverage in accordance with the requirements of 10 CFR 50, Appendix B, would be provided by November 1. 1980.

The inspector reviewed a draft of one system review recently prepared for submittal on November 1. The inspector identified no major flaws in this draft as to equipment qualification evaluation. However, justification for continued operation with equipment not meeting the DOR guidelines had not been provided.

4. Review of Qualification Documentation

The following equipment test documentation was reviewed by the inspector:

(a) Limitorque Valve Actuators for PWR Service Project No. 600456

The titled test report details the qualification of limitorque type SMB-0-40 motor operated valves with class RH insulation to high temperature, steam, chemical, and radiation environments. Class RH insulation is used on limitorque valves inside containment.

(b) Limitorque Valve Actuators for PWR Service Project No. 600461

This test report details the qualification of limitorque type SMB-0-15 motor operated valves with class B insulation to temperatures of 250°F. Class B insulation is used on limitorque valves outside containment.

(c) Limitorque Valve Control Test Report No. 600198; Franklin Institute Research Labs Report F-C2232-01

This report details the qualification of type SMB limitorque operators with class H insulation to a 24.8 hour chemical and steam environment (no radiation testing).

(d) Franklin Institute Test Report F-C4927 Terminal Block Qualification

This report provides the results of steam and chemical spray exposure tests for KULKA terminal blocks in a steam and chemical spray environment for 24.8 hours (no radiation testing).

The inspectors' review of these test reports will be used in the evaluation of the licensee's final submittal responses to IEB 79-01B due on 1 November, 1980. No items of deviation or noncompliance were noted at this time.

5. Review of LER submittals as required by IEB 79-01B

No equipment has been identified by the licensee as not being capable of meeting environmental qualification requirements for the service intended as of this inspection. However, most of the equipment has not been fully evaluated. The licensee submitted LER 80-20 on April 17, 1980 detailing unqualified Namco limit switches providing indication of containment isolation. This LER was deleted by the licensee on April 23, 1980 because the switches only provide operator indication, and do not provide control of actuation, position or other interlock functions. This appears contrary to NRC positions taken on these indicators at other utilities. This matter was referred to IE Headquarters by memo on May 20, 1980.

6. Exit Interview

The inspector met with the licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on September 5, 1980 and summarized the inspections purpose, scope and findings. Particular emphasis was placed on the "order for modification of license" of August 29, 1980 and further NRC inspection efforts to be performed prior to the issuance of the Safety Evaluation Report of environmental qualification of electrical components by the NRC staff. The inspector expressed concern about the volume of work remaining to be accomplished as compared to the facilities the licensee has committed to this task. The inspector pointed out that the licensee' submittal of May 5, 1980 was largely incomplete and if left to stand alone would result in a negative safety evaluation report. The inspector emphasized that the time requirements for submittal were fixed and could not be waived or extended. The lack of quality assurance involvement in this task at this time was discussed.