U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report Nos: 50-275/86-23 and 50-323/86-23

Docket Nos: 50-275 and 50-323

License Nos: DPR-80 and DPR-82

Licensee: Pacific Gas and Electric Company
77 Beale Street, Room 1451
San Francisco, California 94106

Facility Name: Diablo Canyon Units 1 and 2

Inspection at: Diablo Canyon Site, San Luis Obispo County, California

Inspection Conducted: August 10, 1986 through September 27, 1986

Inspectors: ---------- 10/14/86
M. L. Padovan, Resident Inspector — Date Signed

---------- 10/14/86
K. E. Johnston, Resident Inspector — Date Signed

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Approved by: ---------- 10/14/86
M. M. Mendonca, Chief, Reactor Projects Section 1 — Date Signed

Summary:


Inspection from August 10, 1986 through September 27, 1986 (Report Nos. 50-275/86-23 and 50-323/86-23)

Areas Inspected: The inspection included routine inspections of plant operations, maintenance and surveillance activities, follow-up of on-site events, open items, and LERs, as well as selected independent inspection activities. Inspection Procedures 25575, 30703, 50095, 60710, 61701, 61726, 62703, 64703, 71707, 71710, 90712, 92701, 93702, and 94703 were applied during this inspection.

Results of Inspection: No violations or deviations were identified.

DETAILS

1. Persons Contacted

*R. C. Thornberry, Plant Manager
*J. A. Sexton, Assistant Plant Manager, Plant Superintendent
*J. M. Gisclon, Assistant Plant Manager for Technical Services
*J. D. Townsend, Assistant Plant Manager for Support Services
C. L. Eldridge, Quality Control Manager
K. C. Doss, On-site Safety Review Group
*R. G. Todaro, Security Supervisor
*D. B. Miklush, Maintenance Manager
*D. A. Taggert, Director Quality Support
*T. J. Martin, Training Manager
*W. G. Crockett, Instrumentation and Control Maintenance Manager
*J. V. Boots, Chemistry and Radiation Protection Manager
*L. F. Womack, Operations Manager
*T. L. Grebel, Regulatory Compliance Supervisor
S. R. Fridley, Senior Operations Supervisor
*R. S. Weinberg, News Service Representative
D. A. Malone, Senior I&C Supervisor
*M. J. Angus, Work Planning Manager
*K. A. Levitt, Manager Materials Services
*D. A. Vosburg, Engineering Manager

The inspectors interviewed several other licensee employees including SFM, reactor and auxiliary operators, maintenance personnel, plant technicians and engineers, quality assurance personnel and general construction/startup personnel.

* Denotes those attending the exit interview.

Note: Acronyms are used throughout this report; refer to the Index of Acronyms at the back of the report.

2. Items of Interest During the Report Period

Several items of interest occurred during the reporting period;

- The Regional Administrator visited the site twice, on August 11 and September 20, 1986 to discuss operational performance and to personally examine the spent fuel racks being reinstalled.

- On August 29, 1986 Unit 1 began its first refueling outage. The outage will continue into November and includes major modification work such as replacement of Steam Generator J tube nozzles, and retubing and replacement of the main steam reheaters and feedwater heaters with non-copper alloy materials.

- Commissioner Asseltine visited the site on September 15, 1986 to discuss operational performance and to examine operating plant conditions.

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1. [illegible] Controls

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The inspectors interviewed a number of [illegible] employees including [illegible] and [illegible] [illegible] [illegible]

- The San Luis Obispo Mothers for Peace and the Sierra Club filed an emergency motion on September 16, 1986 for a stay on the licensee's use of the original fuel racks which were being reinstalled. After resolution of the issues raised in the motion, the motion was resolved by a stipulation agreed to on September 22, 1986.

3. Operational Safety Verification

a. General

During the inspection period, the inspectors observed and examined activities to verify the operational safety of the licensee's facility. The observations and examinations of those activities were conducted on a daily, weekly or monthly basis.

On a daily basis, the inspectors observed control room activities to verify compliance with selected LCOs as prescribed in the facility TS. Logs, instrumentation, recorder traces, and other operational records were examined to obtain information on plant conditions, and trends were reviewed for compliance with regulatory requirements. Shift turnovers were observed on a sample basis to verify that all pertinent information of plant status was relayed. During each week, the inspectors toured the accessible areas of the facility to observe the following:

(a) General plant and equipment conditions.

(b) Fire hazards and fire fighting equipment.

(c) Radiation protection controls.

(d) Conduct of selected activities for compliance with the licensee's administrative controls and approved procedures.

(e) Interiors of electrical and control panels.

(f) Implementation of selected portions of the licensee's physical security plan.

(g) Plant housekeeping and cleanliness.

(h) Essential safety feature equipment alignment and conditions.

The inspectors talked with operators in the control room, and other plant personnel. The discussions centered on pertinent topics of general plant conditions, procedures, security, training, and other aspects of the involved work activities.

b. Radiation Protection Controls

The inspector discovered two examples of poor radiation protection controls. The first involved a surface contamination area marked and roped off on the 140' level Auxilary Building deck. A SCA laundry bag containing used protective clothing was found lying

across the SCA boundary. The bag, supported by a light aluminum frame, had apparently been blown over by the gusting wind normally occuring on the Auxiliary Building deck. The inspector also noted loose hand wipes and unsecured herculon plastic that could have potentially blown out of the SCA. A Health Physics (HP) technician was notified and surveyed the bag for contamination. The inspector discussed the situation with the licensee's C&RP management and emphasized the need to be more attentive to conditions which exist when establishing an SCA.

The second example involves the improper radiation area postings. The inspector discovered that the posting on the south doors leading to the Unit 1 RHR pump rooms were posted as radiation areas, 10-100 mr/hr, and the north doors were posted as high radiation areas with special work permits required for entry; however, the pump rooms were not high radiation areas. When notified of the discrepancy, the health physics foreman on duty indicated that the RHR pump rooms had recently been downgraded from a high radiation area to a radiation area. It was explained that a contracted HP technician unfamiliar with the site had reposted the area and missed the north doors. This incident was also discussed with C&RP management. Similarly a licensee quality support surveillance report (QS-86-0074) dated August 5 stated that the area posting on either side of the Rad Waste filter area were not consistent. This subject was discussed with licensee management at the exit interview and will continue to be examined by the inspectors during routine inspection activities.

c. Auxiliary Feedwater System Walkdown (ESF Walkdown)

The inspector walked down the Unit 1 Auxiliary Feedwater (AFW) system from the condensate storage tank to all four main feedwater headers. The inspector verified system lineup by examining the position of selected valves. In addition general housekeeping and material condition of the AFW system were examined.

No violations or deviations were identified.

4. Event Followup

a. Inadvertant Actuation of AFW Pump 1-3, Unit 1

On August 20, 1986, while performing surveillance testing of the solid state protection system, an operator inadvertently stated one of the motor driven AFW pumps, instead of the intended steam driven pump, by pressing an improper relay switch. The improper switch was immediately adjacent to the intended switch in the SSPS cabinet.

The inspector interviewed the operator and examined the lighting and labeling in the involved cabinet.

The licensee notified the NRC under 10 CFR 50.72 and has generated a nonconformance report (NRC D-1-86-OP-095) to identify corrective actions.

b. Electrical Breaker Operated in Error

On August 21, 1986 during planned wire checks of a Unit 2 4160 V electrical breaker (52-HF-14 which provides power from the startup transformers to vital bus F) the breaker was accidently closed causing the startup power supply to be paralleled to the auxiliary power supply.

The breaker 52-HF-14 did not have its DC control power energized at the time of closure and was therefore unprotected from overcurrent conditions. However, the auxiliary power source had its breaker fully operable and that breaker 52-HF-13 tripped on overcurrent conditions.

The operators exercised caution and carefully restored power to normal conditions (powered by auxiliary power) which involved starting a diesel generator, physical inspection of the involved breakers, and returning to normal service.

The operations supervisor issued a night order (Operations Incident Summary) instructing operations personnel on the plant and personnel hazards associated with troubleshooting racked in breakers without control power and with the closing springs energized.

The licensee has initiated a Nonconformance Report (DC2-86-EM 099) which is intended to examine the adequacy of the questions of policy, procedures, training and reportability associated with this event which will be followed by the inspectors (Follow-up item 50-363/86-23-01).

c. Unit 1 Reactor Trip

On August 29, 1986, at 12:55 p.m. PDT, during a test of the Unit 1 shunt trip attachment to reactor trip breaker A, a loose wire termination associated with the undervoltage auxiliary coil (UVXA) was jarred resulting in a reactor trip from 53% power. While installing test leads to the UVXA, an Instrumentation and Controls technician jarred the loose lead allowing contact to be momentarily broken resulting in a shunt trip which opened the breaker. During the initial follow-up the licensee discovered that the same lead on Train B was also loose.

As corrective action, the licensee conducted crew briefings involving Instrumentation and Controls, and Electrical Maintenance personnel to reemphasize the proper practices of switchgear maintenance. In addition, an inspection in Unit 1 (of all similar relays in SSPS Trains "A" and "B" and at least 9 randomly selected relays in Aux Relay Rack RNAS-A) and in Unit 2 (of all connections to the UVXA Relays for both reactor trip breakers) was initiated. The inspection did not reveal any additional loose wires. The licensee concluded that when the UVXAs were installed in June 1984 the two wire terminations in question had not been properly tightened.

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While performing the above corrective action in Unit 2, a different problem was encountered. With Unit 2 in Mode 3 the licensee inspected the unit's UVXA relays for loose leads. While lightly tugging at a lead on the Train A UVXA relay, the wire lug termination broke, isolating the UVXA input to the shunt trip. Although this action should not have resulted in a reactor trip, approximately twenty seconds after the lug broke, the reactor trip breaker opened. Since there was no input from the solid state protection system before the reactor trip, the licensee assumes that the trip signal initiated from the breaker cubicle. The licensee twice re-enacted the electrician's actions at the same reactor trip breaker but could not recreate the trip. The licensee speculated that the electrician unintentionally jarred another relay or feature in or on the trip breaker cubicle and caused the breaker to trip. All terminations and wire lugs in the reactor trip breaker cubicles of both units were inspected and found to be tight and in good condition. The licensee views this as an isolated incident and has determined that no additional corrective action is necessary.

d. Unit 1 Containment Doors Both Open

On August 30, 1986, with the reactor in Mode 3 an incident occurred at 0005 PDT. Both personnel airlock doors were opened to the containment which caused an inrush of air into the containment due to the negative containment pressure. The force of the inrush was sufficient to overturn a desk in containment, tear a metal lid from a storage box and cause personnel in the air lock to hold on to equipment to prevent being swept away. The incident clearly involved a failure of the mechanical interlock designed to prevent both doors from being opened simultaneously. The indivisual who opened the second (inner) door was interviewed and stated that he had followed the door opening procedure. He had not attempted to open the inner door until the red warning light had gone out indicating the other outer door was shut. He apparently did not acceptably verify that pressure was equalized prior to opening the door.

The causes of this event are under investigation by the licensee. Additionally, the licensee filed a late notification of the event.

The licensees examination of the cause of the event, reportability and corrective actions will be examined further to determine if a violation is warranted. Unresolved item 50-575/86-23-02. An unresolved item is a matter about which more information is required in order to ascertain whether it is an acceptable item, an open item, a deviation, or a violation.

e. Disconnected Steam Generator Snubber

On September 11, 1986 the licensee discovered that one large hydraulic snubber on SG 1-2 (Unit 1 Steam Generator 2) had become disconnected from its support structure due to one of the load pins being disconnected. The snubber had been verified satisfactorily

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connected three days earlier on September 8. The other snubbers on SG 1-2 had pins out of position but were still functional.

The licensee corrected the snubbers of SG 1-2, verified the problem did not exist in the other steam generators in Unit 1 or Unit 2, and has tentatively decided to implement a design change to prevent the pin from backing out by a more positive means than the current design (which consists of a set screw).

The licensee has issued an NCR (DC1-86-MM-N108) and has committed to fully investigate the cause and possible consequences of the disconnected snubber. The licensee actions and analysis will be examined in a future inspection (unresolved item 50-275/86-03). An unresolved item is described in the above section.

f. Unit 2 Reactor Trip and Safety Injection

On September 18, 1986 while at 100 percent power, Unit 2 experienced an automatic reactor trip and subsequent turbine trip due to a steam generator low level signal coincident with a steam flow/feedwater flow mismatch. A momentary high steam flow signal coincident with low-low Tavg resulted in a subsequent safety injection. The spurious high steam flow signal occurred when closure of steam dumps caused pulsations in the steam lines which the plant protection system interpreted to be high steam flow. Low Tavg resulted from plant cooldown following the trip due to relatively cold auxiliary feedwater addition and continued steam demand by auxiliary systems. A Significant Event was declared, and the plant was stabilized in Mode 3 on September 18th.

The reactor trip signal occurred when main feedwater pump (MFP) 2-2 flow was inadvertently reduced to zero. I&C personnel were raising the limit potentiometer on the Lovejoy startup station slave controller in an attempt to raise the maximum startup demand signal. When the startup demand signal was adjusted to slightly higher than 96 percent, it suddenly dropped to zero. Since the Lovejoy control system is a "low select," MFP speed was controlled by the Lovejoy system rather than the normal control station Hagan controller. This resulted in a rapid reduction in MFP speed, thereby curtailing feedwater flow from the pump.

I&C personnel adjusting the potentiometer in the Lovejoy startup station slave controller were not knowledgable of the design peculiarity in the controller which would suddenly drop the startup demand signal to zero. As corrective action, the licensee has arranged for Key Lovejoy personnel to interface with PG&E employees on specific peculiarities of the Lovejoy control system. This information will also be incorporated into lesson plans for the training of operations personnel. Regarding the momentary spurious high steam flow signal, the licensee is evaluating a Westinghouse proposal to modify the steam line break protection logic to replace

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the high steam flow signal with a steam line rate of pressure decay signal.

No violations or deviations were identified.

5. Maintenance

The inspectors observed portions of, and reviewed records on, selected maintenance activities to assure compliance with approved procedures, technical specifications, and appropriate industry codes and standards. Furthermore, the inspectors verified maintenance activities were performed by qualified personnel, in accordance with fire protection and housekeeping controls, and replacement parts were appropriately certified.

a. Feedwater Check Valve Leak Repair

The inspector observed portions of the repair of a steam leak from a main feedwater check valve in the pipe rack area of Unit 1. The repair was performed to seal a gasket leak in the check valve hinge pin cover plate. Work clearances material inspection records were in order. The inspector observed the injection of steam leak sealing compound through a special device. The leak repair specialists assured the inspector that the sealing nature of compound would prevent the compound from entering the shaft area and interfering with valve operation.

b. Valve Operator Torque/Limit Switch Adjustment

The inspector observed portions of electrical maintenance adjustments performed on torque and limit switches on the motor operator of valve MOV 8974A (SI pump recirculation to the RWST) in accordance with Work Order C2048 and maintenance procedure E-53.10B "Limitorque Operator Torque/Limit Switch Adjustment." Torque switch adjustment was accomplished utilizing a load cell to record thrust during electrical operation of the valve. Proper administrative approvals and clearances were obtained prior to initiating the work, and the technicians were qualified to perform the work. Post maintenance testing requirements were also specified. Prerequisites for conducting the maintenance activities were adhered to, conditions required by the radiation work permit were met, and equipment used was verified to be calibrated.

c. Other Maintenance Activity

Additional maintenance and modification work was evaluated by the inspectors in conjunction with the examination of the installation of spent fuel racks, and the Unit 1 reactor trip of August 29, 1986 involving loose reactor trip breaker wiring as previously described in this report.

No violations or deviations were identified.

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6. Surveillance

By direct observation and record review of selected surveillance testing, the inspectors assured compliance with TS requirements and plant procedures. The inspectors verified that test equipment was calibrated, and acceptance criteria were met or appropriately dispositioned.

a. Containment Isolation Valve Leak Rate Test

Leak rate testing of Unit 2 containment penetration exhaust purge valves RCV 11 and 12, STP V-622, was observed by the inspector. These valves were opened for containment purging to reduce containment pressure. TS Surveillance Requirement 4.6.3.4 requires that leak rate testing be performed within 24 hours of the operation of containment ventilation isolation valves. Additionally, this test satisfied the inservice testing leak rate requirements of TS 4.4.5 for these valves. Required test equipment was properly calibrated, appropriate administrative approvals and equipment clearances had been obtained, and the test was conducted in accordance with approved procedures. Re-positioning of sealed valves for the test was controlled in accordance with NPAP C-9 "Sealed Valves." RCV 11 and 12 met the criteria of STP V-622 and indicated satisfactory seal tightness.

b. Primary Metrological Condition

The inspectors observed I&C technicians perform portions of STPs I-44 C1 "Channel Calibration, Wind Speed Channels" and I-44 C2 "Channel Calibration, Wind Direction Channels" on the Teledyne-Geotech 76 meter wind speed and direction sensors, modules and recorders. These semi-annual channel calibrations are required by TS Surveillance Requirement 4.3.3.4. In discussion with the technicians, the inspectors determined the technicians were qualified to perform the work, the work was performed in accordance with the approved procedures, and proper administrtive approvals were obtained prior to initiation of the work. Test equipment was also verified to be calibrated. The wind direction sensor did not pass the channel torque test in the clockwise or the counterwise direction. Corrective actions were initiated by the licensee.

c. Station Battery Performance Test

The inspector witnessed portions of an eight hour constant current discharge test performed on Unit 1 125 volt station battery bank 1-3 in accordance with STP M-12A "Battery Performance Test." TS Surveillance Requirement 4.8.3.1.e specifies this test be conducted every sixty months, during shutdown conditions to verify battery capacity is at least 80% of the manufacturer's rating when subject to the performance discharge test. As specified in the STP, the battery bank was tested in the "as found" condition without applying an equalization charge and without cleaning the battery cell connections prior to performance of the test.

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The inspector verified test prerequisites were fulfilled, test equipment was calibrated, and administrative approvals were obtained prior to performing the test. Through discussions with the test personnel, the inspector determined the involved individuals were qualified to perform the test. A review of the licensee's data and test results indicated the test was performed in accordance with the approved STP, and the battery exhibited 98.96% of the manufacturer's capacity rating, exceeding TS requirements.

d. Additional Surveillance Activity

Additionally, the inspectors examined the surveillance test aspects associated with the inadvertant actuation of AFW pump 1-3 on August 20, 1986 and the 4kv electrical breaker operated in error on August 21, 1986 as discussed previously in this report.

No violations or deviations were identified.

7. Independent Inspection

a. Observation of Licensee Meetings

During the reporting period the inspector attended and observed several regularly held licensee meetings to assess the format and conduct of the meetings. These included a plant staff meeting chaired by the Plant Manager, a Technical Review Group Meeting, several operations "tailboard" meetings, and a daily work planning meeting. The conduct of the meetings appeared to be sufficiently formal for the circumstances and the pertinent topics appeared to be discussed in sufficient detail.

b. Spent Fuel Pool Re-racking

High Density Racks

Certifications for the Boraflex material used in the Unit 1 high density racks were reviewed by the inspector and the material was found to meet the requirements of the purchase specification. Leveling and drag testing of all the high density racks was completed. However, the 9th Circuit Court of Appeals ruled that no spent fuel could be stored in the high density racks pending outcome of a hearing on the re-racking. Accordingly, Design Change Package M 35152 was issued to remove the high density racks and reinsert the eight original spent fuel racks.

Low Density Racks

Prior to inserting the racks, stiffener bars were welded to corner braces of the original racks, and the racks were then inserted into the spent fuel pool and welded to embedment plates in the fuel pool floor. This work was accomplished utilizing DCNs 1-EM-35152 and 1-EC-35152, and Work Instruction M-781, through Amendment 9.

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Documentation

The inspector reviewed documentation indicating the racks had been steam cleaned and chloride and fluoride residue on the racks was below acceptable values. QC hold points were specified on work instructions, and the inspector reviewed records for all eight racks indicating QC had verified welder qualifications, material cleanliness, welding technique, and final weld completion and had found the welds to be acceptable. Qualification records of the QC inspectors were also checked which indicated the QC inspectors were qualified as Level II inspectors. All minor variation reports were found to be properly dispositioned. However, on one QC weld inspection record inverted weld rod heat numbers were identified. This inconsistency was brought to the attention of the licensee, and the QC Department issued Minor Variation Report M-5. Subsequently, the MVR was dispositioned and reviewed by the inspector and was determined not to be of any safety significance.

Drag Testing

Drag testing of the re-installed racks was performed by startup department personnel in accordance with STP 34.1 "Fuel Transfer System Functional Test." Four cells did not meet the acceptance criteria, were reworked, and subsequently passed drag tests.

Location Adequacy

The inspectors verified a sampling of the spent fuel racks for location configuration per the original design drawings. The original design drawings state that the 1' 9" center to center spacing between adjacent fuel cells is critical and must be maintained to + or - 1/32 of an inch. The inspector found this to be true for the fuel cells on the individual fuel rack. However, the inspector found the spacing of fuel cells on adjacent racks to vary from 1' 8 3/8" to 1' 9 1/4". The licensee reviewed the inspector's question and concluded that the 1/32" design tolerance applied only to the design of the individual racks and that the spacing considered in the criticality measurements was 1' 4" allowing adequate margin.

As-built drawing adequacy

Prior to reinstallation of the low density racks, the licensee performed an as-built investigation of the structurally important assembly welds. This information was used by the licensee to verify the structural adequacy of the low density racks through design analysis. The inspector sampled 64 welds for fillet leg size and 170 welds for weld length. This sampling was performed to ensure the as-built drawing used for analysis was accurate and conservative. The inspector found no undersized fillet legs. The inspector did find five weld lengths undersized by lengths greater than normal tolerances in Nuclear Construction Issues Group (NCIG) guidance documents. Of the five welds, three weld lengths appeared to have been transposed with adjacent welds which bear the same

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load. Since the total weld length was conserved it was determined that the transposition of numbers was of no technical consequence. One of the two remaining welds was an 8 1/4" weld recorded at 9 1/2" and the other was a 1 5/8" weld recorded at 2". The resident staff refered these discrepancies to NRR for evaluation. The subject welds were found to be within an acceptable margin and the sample size indicates there is no further concern with the adequacy of welds on the low density fuel racks.

e. Welding of the Racks to Embedments

The inspectors examined the reinstalled rack to embedment attachment welds in detail. Each of the thirty-two welds was independently measured for size and visually inspected for quality by the inspector. Additionally, proper welder qualification was verified.

Three of the measured welds were found to be slightly undersize compared to the drawing requirement. On Rack #1 field welds 20 and 17 were undersize in the vertical weld leg by 1/8". On Rack #3 field weld #9 was 1/8" undersize in the vertical leg. The licensee prepared MVR-5285 to document and resolve the inspector's findings.

The licensee's analytical staff subsequently found the welds to be acceptable and affirmed that if undiscovered and uncorrected the welds would have been acceptable as-is.

The inspector further questioned the QC inspector who had accepted the slightly undersized welds. The QC inspector stated that one of the welds was difficult to measure. The inspector also noted that the other fillet leg in two cases was larger than required (which would provide sufficient weld throat).

Summary: The re-installation of the low density spent fuel racks was generally performed in a satisfactory manner. The errors noted in the measurement of welds (by as-built engineers and a QC inspector) and in the recording of weld rod heat numbers (with transposed numbers) did not have technical or safety significance. These examples of a lack of attention to detail appear to be isolated but will continue to be examined in the normal course of future inspections.

No violations or deviations were identified.

8. Open Items

a. IE Bulletin 86-02 (Closed)

IE Bulletin 86-02, "Static 'O' Ring (SOR) Differential Pressure Switches" identified erratic functioning of SOR differential pressure switches and required licensees to determine whether or not any SOR series 102 or 103 pressure switches were utilized as electrical equipment important to safety. By letter dated July 29, 1986, the licensee informed the NRC that it does not use SOR series

102 and 103 differential pressure switches in equipment important to safety as defined by 10 CFR 50.49 (b). The inspector confirmed that there are six SOR series 102 and 103 differential pressure switches used by the licensee in each unit. However, these switches are used in the moisture separator reheater systems which are "balance of plant" systems and are not considered important to safety. This bulletin is closed for Units 1 and 2.

No violations or deviations were identified.

9. Licensee Event Report Follow-up

Based on an in-office review, the following LERs were closed out by the resident inspector:

Unit 1: 86-07, 86-09

Unit 2: 86-19, 86-20, 86-21

The LERs were reviewed for event description, root cause, corrective actions taken, generic applicability and timeliness of reporting.

No violations or deviations were identified.

10. Followup of Headquarters Requests

a. Temporary Instruction (TI) 2515/75 - Environmental Qualification of Limitorque Operator Jumper Wires

As a followup to IE Information Notice No. 86-03, "Potential Deficiencies in Environmental Qualification of Limitorque Motor Valve Operator Wiring," an inspection of limitorque motor valve operator wiring was conducted in accordance with Temporary Instruction 2515/75. In each of the units, there are 50 safety related Limitorque operators located in harsh environments (as defined by 10 CFR 50.49). Three limitorque operators per unit were inspected and are listed below:

| Valve No. | Valve Description |
|---|---|
| Unit 1 | |
| 8805A | RWST to charging pump suction |
| FCV 440 | SG 1-3 feedwater flow control valve |
| LCV 109 | 1-1 AFW pump discharge header level control valve |
| Unit 2 | |
| 8805B | RWST to charging pump suction |
| FCV 357 | CCW return from RCP thermal barrier |

| | |
|---|---|
| FCV 669 | CHPS-1 isolation valve outside containment |

The licensee's documentation indicated that the wire installed by Limitorque had been replaced with environmentally qualified wire in all of their Limitorques in 1978 and 1979. The licensee replaced the original Limitorque installed wire because of questionable quality of installation (i.e. loose and frayed leads). Six limitorques requiring environmental qualification were subsequently purchased for each unit.

The six valves selected for this inspection were outside containment since both units were in operation at the time of this inspection. Two valves from each unit were of the set of valves with jumper wires replaced. Upon inspection, the inspector found the brand of jumper wiring to be consistent with the licensee's documentation. In addition, the inspector observed electrical maintenance personnel remove the cover from the operators and check the condition of the gasket, check the lead voltages, and examine for loose leads. In Unit 2, the electrical maintenance technician discovered a loose lead on the torque switch of FCV 357. It appears that the lead had previously been excessively tightened to the point where the threads had been stripped. The technician initiated an Action Request to have the torque switch repaired.

The inspector reviewed the licensee's documentation on the wiring which included checkoff sheets for the wiring replacement, the licensee's response to IE Information Notice No. 86-03, and the qualification documentation for the replacement wire. The subject TI is considered closed for Units 1 and 2.

b. Pressurizer PORV Stroke Time

The inspector verified that the surveillance requirements (for pressurizer PORV stroke time) take into consideration the stroke time required to prevent a low temperature overpressurization event as well as the inservice testing requirements of Section XI of the ASME code. The applicable procedure STP V-3J2, "Exercising Pressurizer Power Operated Relief Valves," indicated that an acceptable stroke time is less than or equal to 2 seconds. Earlier, in the licensing process, by letter dated November 21, 1980, the licensee had stated that the pressurizer PORV opening time assumed in the analysis of the low temperature overpressurization event was 3 seconds. The staff approved the licensee's low temperature overpressure protection system in SSER 27 dated July 1984.

The most recent testing of the Unit 1 PORVs conducted at the commencement of the refueling outage produced at stroke times between 1.3 seconds and 1.45 seconds. Since the test requirements and the test results are more conservative than the safety analysis assumptions, the licensees program appears acceptable.

No violations or deviations were identified.

11. Unit 1 Refueling

On September 18, 1986 Unit 1 entered Mode 6 (refueling) of operation. Operating Procedure (OP) L-6 "Refueling" was used to coordinate maintenance and operating activities related to refueling. The inspector verified licensee "sign-offs" had been obtained for each operation required to be performed during major refueling evolutions.

Removal of the vessel closure head was observed by the inspector and determined to be in accordance with Maintenance Procedure (MP) M-7.3 "Reactor Vessel Closure Head Removal." The polar crane's brakes were verified to be capable of holding the head load without creeping, and the closure head was then lifted about ten feet off the vessel flange. Technicians stationed in the refueling cavity verified rod control cluster assembly (RCCA) drive shafts were free from their housings, and inspected the vessel flange. The closure head was then raised to the reactor head storage stand following an approved load path. Airborne contamination from the head removal was non-existent due to nitrogen purging of the vessel head over the previous several week period. Closure head removal transpired without incident.

Following flooding of the refueling cavity, the RCCA drive shafts were uncoupled in preparation for removal of the upper internals package. Removal of the upper internals package, conducted in accordance with MP-7.6 "Reactor Vessel Upper Internals Removal and Installation," was also observed by the inspector. All required prerequisites were verified to have been signed-off prior to initiating removal of the upper internals package. Operations personnel positioned the internal lifting rig in place over the vessel guide studs and maintenance personnel then attempted to secure the lifting rig to the upper internals package with the three engagement tools. Difficulty in attaching one engagement tool was experienced, but with additional orientation of the lifting rig operators were successful in attaching the engagement tools to the upper internals package. The internals package was then successfully transfered to the upper internals package storage area.

The inspectors verified personnel were briefed before conducting critical evolutions. Implementation of foreign material and small item control was accomplished by maintaining a housekeeping Zone 3 around the refueling cavity and spent fuel pool. Communications between the control room personnel and personnel inside containment were evident, radiological controls were in place, approved procedures were in use, and personnel operating the manipulator crane were qualified.

No violations or deviations were identified.

12. Allegation Followup

ATS No: RV-86-A-069

a. Characterization

Concern that the licensee was using unqualified fire watches for hot work.

b. Implied Significance to Plant Design, Construciton or Operation

Unqualified personnel acting as fire watches might not control or properly respond to fire hazards.

c. Assessment of Safety Significance

On August 30, 1986, the inspector received an anonymous telephone call. The caller stated he was concerned that there were unqualified fire watch personnel in the turbine building. He stated that on Friday, August 29, the Bechtel Superintendant had converted a number of laborer-janitor craft into firewatch personnel without providing any firewatch training.

The inspector toured the turbine building and auxiliary building, questioned a few firewatch personnel, and discussed the situation with the PG&E Fire Protection Engineer and a few laborer janitors (converted to the Fire Watch designation).

The circumstances explained were consistant and led to the understanding that, due to a clause in the laborer janitor's contract, they can not do escort services. However, they are trained and qualified as escorts. During the first weekend of the Unit 1 outage, there was a shortage of escorts. Therefore, with the unions agreement, a number of laborer janitors were laid off and immediately hired in the fire watch rating. They wore a firewatch hard hat with an "E" for "escort". They did not perform firewatch duties. They did perform escort duties. On Tuesday, September 2, 1986, they were reverted back to laborer-janitors since the holiday weekend was over and the lack of escorts was no longer a problem.

The licensee's firewatch program utilizes roving fire protection personnel on an audit basis to ensure hot work permits are posted and qualified fire watch personnel are stationed at the work site. The fire protection foreman was questioned and stated he was aware of the situation and had assured that none of the converted laborer janitors was standing firewatch. The converted laborer janitors talked to by the inspector were aware that they were only to perform escort services and were not to perform firewatch duties.

d. Staff Position

The inspector concluded that the allegation was unsubstantiated.

e. Action Required

No further action is required.

No violations or deviations were identified.

13. Exit

On September 26, 1986 an exit meeting was conducted with the licensee's representatives identified in paragraph 1. The inspectors summarized the scope and findings of the inspection as described in this report.

## INDEX OF ACRONYMS

| | |
|---|---|
| AFW | Auxiliary Feedwater |
| C&RP | Chemistry and Radiation Protection |
| ESF | Engineering Safety Features |
| I&C | Instrumentation and Control |
| LER | Licensee Event Report |
| LCO | Limiting Conditions for Operation |
| MFP | Main Feedwater Pump |
| NRC | Nuclear Regulatory Commission |
| PG&E | Pacific Gas and Electric |
| RHR | Residual Heat Removal |
| SCA | Surface Contamination Area |
| SFM | Shift Foreman |
| SSPS | Solid State Protection System |
| TS | Technical Specification |
| UVXA | Undervoltage Auxiliary Coil |