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50-323 Diablo Canyon Nuclear Power Plant, Unit 2, Pacific Ga 05000323
AUTH. NAME AUTHOR AFFILIATION
KIRSCH, D. F. Region 5, Office of Director
RECIP. NAME RECIPIENT AFFILIATION
SHIFFER, J. D. Pacific Gas & Electric Co.

SUBJECT: Forwards Insp Repts 50-275/87-01 & 50-323/87-01 on 870202-13 & notice of violation. Complex events at other facilities evaluated by util & personnel trained to respond accordingly for transient situations.

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MAR 26 1987

Docket Nos. 50-275 and 50-323

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

Attention: Mr. J. D. Shiffer, Vice President
Nuclear Power Generation, Licensing

Gentlemen:

Subject: NRC Inspection of Diablo Canyon Power Plant (DCPP)

This refers to the special team inspection conducted by Mr. R. T. Dodds and other members of our staff on February 2 through February 13, 1987, of activities authorized by NRC License Nos. DPR-80 and DPR-82, and to the discussion of our findings held with Mr. R. C. Thornberry and other members of your staff at the conclusion of the inspection.

Areas examined during this inspection are described in the enclosed inspection report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspectors.

Based on the results of this inspection, it appears that one of your activities was not conducted in full compliance with NRC requirements, as set forth in the Notice of Violation, enclosed herewith as Appendix A. Your response to this Notice is to be submitted in accordance with the provisions of 10 CFR 2.201 as stated in Appendix A, Notice of Violation.

This inspection focused primarily upon assessing whether industry problems which have occurred during specific operational events at other facilities, could be considered applicable to Diablo Canyon Units 1 and 2. The primary events chosen for review were the overcooling transient event at the Rancho Seco Nuclear Generating Station on December 26, 1985, (NUREG 1195), and certain aspects of the loss of feedwater event at the Davis-Besse Nuclear Power Plant on June 9, 1985, (NUREG 1154). Several additional industry problems were selected for review such as motor operated valve switch settings, the St Lucie steam bubble incident, and the quality assurance program. Also, the team assessed the material condition of the plant based on plant tours and walkdowns.

A summary of the areas inspected and results is included in Appendix B.

Overall Conclusions

The team determined that you have evaluated complex events at other facilities and appear to have trained your personnel to respond accordingly for the transient situations we examined. Recognizing that the auxiliary operators

receive extensive on-the-job training, we concluded that you would benefit by including auxiliary operators in your formal emergency training program.

With respect to your followup of external events, it was obvious to the team that you had not yet initiated a preventative maintenance program for manual valves that may be needed in the control of significant transient events. Also, the team found that several control air supply lines for air operated valves sloped toward rather than away from the air operator. We understand that you intend to develop an action plan for manual valves, which is to be implemented by the initial refueling outage for Unit 2 and a phased-in program for Unit 1 that will be completed during the next Unit 1 refueling outage. We encourage you to establish a similar plan for valve operator air lines.

While the overall material condition of the plant appeared to be satisfactory, the anomalies observed, such as oil leaks, excessive boron crystal growth, debris in panels, an inoperable air pressure gauge and regulator, and cigarette butts inside the radiation control zone, indicate a need for additional management attention to housekeeping, including touring the plant to assure that your expectations are being implemented.

The team also found a problem with procedural compliance which has been a previous, regulatory topic with you at Diablo Canyon. The apparent violation on the control of lubricants was considered to be a failure to follow a procedure. Therefore, you should consider providing additional guidance to your staff to assure procedural compliance in all areas.

Problem resolution still appears to be in need of attention. The team found that the operators believe the Action Request system to be ineffective in resolving their identified problems. Your management was apparently not aware of this perception. This finding highlights the need for strong management attention to assure thorough problem resolution and followup.

As discussed in our March 6, 1987, management meeting with you, these findings along with other recent inspection findings indicate that your overall performance may be declining. Therefore, these findings should be closely examined by PG&E management. In addition to your response to the Notice of Violation, please provide your plans to address these and other apparent weaknesses in your program as identified in Appendix "B".

In accordance with 10 CFR 2.790(a), a copy of this letter and the enclosures will be placed in the NRC Public Document Room.

The response directed by this letter and the accompanying Notice are not subject to the clearance procedure of the Office of Management and Budget as required by the Paperwork reduction Act of 1980, PL 96-511.

MAR 26 1987

Should you have any questions concerning this inspection, we will be glad to discuss them with you.

Sincerely,

Dennis F. Kirsch, Director
Division of Reactor Safety and
Projects

Enclosures:
A. Appendix A - Notice of Violation
B. Appendix B - Areas Inspected and Results
C. Inspection Report Nos. 50-275/87-01, 50-323/87-01

cc w/enclosures: State of California
S. M. Skidmore, PG&E
R. C. Thornberry, PG&E
R. F. Locke, PG&E
D. Taggart, PG&E
R. Weinberg, PG&E
S. Silver (ENCLOSURE C ONLY)

bcc w/enclosures: RSB/Document Control Desk (RIDS)
Project Inspector
Resident Inspector
G. Cook
B. Faulkenberry
J. Martin
docket file
R. Huey, SONGS

bcc w/o enclosure C: LFMB
M. Smith

REGION V/dot

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APPENDIX A

NOTICE OF VIOLATION

Pacific Gas and Electric Company
Diablo Canyon Units 1 and 2

Docket Nos. 50-275, 50-323
License Nos. DPR-80, DPR-82

As a result of the inspection conducted during the period of February 2 through February 13, 1987, a violation of NRC requirements was identified. In accordance with the General Statement of Policy and Procedure for NRC Enforcement Actions, 10 CFR Part 2, Appendix C, the following violation was identified:

> 10 CFR 50, Appendix B, Criterion V, states in part, "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures or drawings."
>
> Plant administrative procedure, AP D-753, Revision 10, dated April 25, 1986, titled "Control of Plant Lubricants," establishes the requirements for the storage and use of lubricants for plant equipment. AP D-753 states in part:
>
> > "Small cans used to transfer lubricants from bulk storage shall be uniformly identified and dedicated to a specific lubricant to preclude mixing of unlike lubricants."
>
> and
>
> > "A log book shall be available at the bulk storage areas to keep a record of all lubricants dispersed, including approximate quantity and where used. This log book will be reviewed by the foreman at the same frequency as the foreman's logs."
>
> Contrary to the above, at the time of the inspection, a one gallon unlabeled container filled with oil was in the tool shed area of the intake structure, a one gallon unlabeled container filled with oil was in a storage cabinet in the new cold machine shop, and three unlabeled filled grease guns were in the hot machine shop tool room. In addition, log books were not being maintained at the bulk storage areas or at any other of the dispensing areas.

This is a Severity Level IV Violation (Supplement 1)

Pursuant to the provisions of 10 CFR 2.201, Pacific Gas and Electric Company is hereby required to submit to this office within 30 days of the date of this Notice, a written statement or explanation in response to the above violation, including: (1) the corrective steps which have been taken and the results achieved, (2) corrective steps which will be taken to avoid further violations, (3) the date when full compliance will be achieved. Consideration may by given to extending your response time for good cause shown.

MAR 26 1987

Dated

Stuart Richards, Chief
Engineering Section

APPENDIX B

Areas Inspected and Results

Postulated Significant Events

Three postulated significant off-normal scenarios based on actual events at other sites were developed to allow evaluation of plant procedures, hardware and operator training. The simulator Control Room was used to direct auxiliary operators (AOs) stationed in a "ready room" in the plant to go to specific locations in the power block and to simulate the operation of various manual backup valves and controls needed to control the events. The main emphasis of the walkdown of these events was to assess the auxiliary operator actions and equipment function ability during the use of manual backup methods.

The team found that the control and auxiliary operators were very knowledgeable about plant operation and the location and operation of the manual valves and electrical breakers that were needed to contain the casualties.

Manual Valve Maintenance

The walkdowns of various portions of safety and non-safety related piping systems indicated that the manually operated valves were generally not being greased or maintained by a preventative maintenance program.

A formal program to maintain the manual valves was being developed, but had not been finalized and implemented at the site.

Action Requests

From the discussions with several operators with various levels of experience and qualifications, including licensed senior reactor operators, it was readily apparent that the operators lacked confidence in the "Action Request" (AR) program identified in procedure APC-1256, "Identification and Processing of Power Plant Action Requests and Quality Evaluations." The operators stated that they have requested work to be done by the maintenance department, but the work was not scheduled until a much later time than the operators considered reasonable.

Plant management was aware that a large backlog of ARs had been building and was attempting to resolve the priority of the ARs.

Emergency Training for Auxiliary Operators

The training program for the auxiliary operators (AO) involves a lengthy "on the job" (OJT) type environment with some supplementary classroom training. Actual formal emergency training has not been included in AO training until the individuals enter control operator training.

Although regulatory requirements do not specify that AOs receive formal emergency training, the licensee stated that the benefits of a formal emergency training program for the AOs will be evaluated.

Surveillance

The surveillance test procedures examined and tests observed appeared to be comprehensive. No anomalies were identified.

Control of Lubricants

The inspection of lubricant storage areas on site disclosed a lack of log books to record the type and quantity of lubricants dispensed, and the approximate location of use. The inspector also observed several instances of unlabeled lubricant containers. These observations appear to be a violation of requirements of the licensee's administrative procedure on the control of plant lubricants.

Lubrication records for the valve actuators of several motor operated valves for each unit in safety related systems were examined. The vendor manuals filed in the Record Management System related to preventive maintenance of valve actuators were reviewed. Several instances were identified where it was unclear whether the appropriate version of the vendor manuals were on file.

Equipment Condition/Housekeeping

During walk-downs of both units, the following anomalies were observed: 1) on three of four RHR pumps inspected, motor housing oil was on the pump lagging; 2) cigarette butts were found inside the dedicated shutdown panels in the auxiliary building; 3) debris was found in several electrical control panels; 4) numerous boric acid crystals were in evidence in the plant and Action Request tags to correct the problem were not noted; 5) calibration tags were out of date on various permanent panel meters throughout both units. The above examples indicate an increased need for management to tour the plant and assure that their expectations are being implemented.

The walk-down of the Compressed Air System control air supply lines and air operators for a number of safety related valves showed that the control air supply lines for several valves tended to slope toward the air operator. With the present configuration of the control air lines, water may accumulate at the valve operator if significant amounts of moisture were to enter the control air supply lines.

Maintenance

The evaluation of the maintenance program included the interviewing of key staff members working in the maintenance area plus reviewing maintenance procedures and the administrative procedures which govern the maintenance program process. Also, action requests, work orders, and equipment history files for maintenance performed on components in the RHR system were examined.

Maintenance program planning was in a state of transition, but appeared to be basically sound. While no regulatory violations were identified, the following weaknesses were noted:

1) There appeared to be a lack of formal operating procedures to govern some activities in the Work Planning Center.

2) The full history of maintenance work performed on plant components was difficult to retrieve. We understand that the licensee plans to consolidate past shop work folder equipment history into the current PIMS system.

3) It was not apparent that there was routine monitoring of priority corrective maintenance.

Strong Quality Control involvement in the review of ARs and Work Orders was viewed as a strength.

Quality Verification Activities

The team examined the QC organization structure, QC procedures, personnel qualifications, the QC program for control of in-process work, trending, corrective actions, and interviewed QC personnel. The team concluded that the program was generally effective in identifying problems; however, the corrective action program needed to be strengthened and receive additional management attention as evidenced by the repeated failures of the containment air lock doors.

IE Information Notice and Industry Experience Report Followup

The program for followup of IE Information Notices and Industry Experience Reports was examined and appears to have been effectively implemented.

Internal Events

The licensee was found to have implemented the stated corrective action for the six internal events that were examined.

Procurement

An assessment was made of the program and its implementation for the procurement, control and dedication of commercial grade components for safety-related systems. While it appears that components were being properly controlled on-site, it was not apparent that Corporate Engineering was maintaining records of the analysis used for the basis for certification of these components.

The licensee agreed to examine this apparent deficiency and effect appropriate corrective action.

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report Nos: 50-275/87-01, 50-323/87-01

Docket Nos. 50-275 and 50-323

License Nos. DPR-80 and DPR-82

Licensee: Pacific Gas and Electric Company
70 Beale Street, Suite 1451
San Francisco, California 94106

Facility Name: Diablo Canyon Units 1 and 2

Inspection at: San Luis Obispo, California (Diablo Canyon Site)

Inspection conducted: February 2 - February 13, 1987

Inspectors:

SWR FOR R. T. Dodds, Team Leader	3/24/87 Date Signed
SWR FOR J. F. Melfi, Reactor Inspector	3/24/87 Date Signed
SWR FOR P. W. Mclaughlin, Maintenance Inspector	3/25/87 Date Signed
W. J. Wagner W. J. Wagner, Reactor Inspector	3/24/87 Date Signed
SWR FOR G. Y. Suh, Reactor Inspector	3/25/87 Date Signed
SWR FOR W. M. Hill, Sr. Reactor Inspector	3/25/87 Date Signed
SWR FOR C. W. Bosted, Resident Inspector	3/24/87 Date Signed
SWR FOR R. P. Correia, I&E Inspector	3/25/87 Date Signed
SWR FOR F. C. Hawkins, Chief, Policy and Program Development Section, QAB	3/25/87 Date Signed

Approved By:

SWR S. A. Richards, Chief, Engineering Section	3/25/87 Date Signed

Summary:

Inspection on February 2, 1987 - February 13, 1987 (Report 50-275/87-01, 50-323/87-01)

Areas Inspected: Annual, announced team inspection of the Diablo Canyon Nuclear Power Plant, Units 1 and 2. The inspection focused on the ability of the plant to safely respond to events that have actually occurred at other power plants. Specifically, the Rancho Seco loss of Integrated Control System (ICS) power event (NUREG 1195) was reviewed in its entirety for applicability to Diablo Canyon. The plant's response to certain findings from the Davis Besse loss of main and auxiliary feedwater event (NUREG 1154) and the June, 1986, Catabwa depressurization event were also reviewed.

The following areas were also inspected:

1) General Plant tour to assess plant condition
2) Maintenance program (preventative and corrective)
3) Motor operated valve maintenance and training programs
4) Local and remote valve position indication
5) Quality Assurance Program
6) Bubble Formation during Natural Circulation

To the maximum extent feasible, the effectiveness of these activities were assessed as they apply to the following plant systems that were chosen based on Probabilistic Risk Assessment (PRA) studies, historic events at other sites, and a review of problems at Diablo Canyon.

1) Auxiliary Feedwater System (AFW)
2) Salt Water System (SW)
3) Auxiliary Salt Water System (ASW)
4) Component Cooling Water System (CCW)
5) Residual Heat Removal System (RHR)
6) Instrument and Control Air

This inspection was performed by five Region V inspectors, and four inspectors from NRC Headquarters. Inspection Procedures 25578, 30703, 35701, 61700, 62700, 62705, 71707, 71710, 90712, 92700, and 92701 were used.

Results: Of the areas inspected, one violation of NRC requirements was identified. (Failure to maintain control over lubricants, paragraph 2.)

DETAILS

1. Persons Contacted

   a. Diablo Canyon Power Plant (DCPP)

   *R. C. Thornberry, Plant Manager
   *J. M. Gliscon, Assistant Plant Manager
   *J. A. Sexton, ADM/Plant Superintendent
   *D. J. Hampshire, Nuclear Regulatory Affairs Engineer
   *A. Y. Atshan, Nuclear Gen. Engineer
   *S. Skidmore, QA Manager
   *D. A. Taggart, Quality Support, QA, Director
   *R. Weinberg, News Services
   *T. Grebel, Regulatory Compliance Supervisor
   *W. B. Mclane, Computer Engineering Manager
   *R. G. Todaro, Security Supervisor
   *T. Martin, Training Manager
   *M. Angus, Work Planning Manager
   *W. G. Crockett, I&C Maintenance Manager
   *R. M. Nanninga, Acting Mech. & Elec. Maintenance Manager
   *R. P. Powers, Acting Quality Control Manager
   *J. R. Haggis, Quality Assurance Audit Manager
   *S. G. Banton, Engineering Manager
   *G. M. Burgess, Surveillance Test Supervisor
   *C. L. Eldridge, QC Manager
   *B. Guilbeault, Procurement Specialist Group Supervisor
   *K. A. Levitt, Materials Manager

   Other licensee employees contacted included engineers, technicians, craftsman, and office personnel.

   * Attended the Exit Meeting on February 13, 1987.

2. Control of Lubricants

   An inspection was performed of the lubricant storage areas on site. The storage areas include Warehouse B, the oil reclamation and storage room in the Unit 2 Turbine Building, and various tool rooms. Lubricants are initially received and inspected at the Central Warehouse to verify conformance of lubricant type and quantity with the purchase order. The lubricants are then stored in Warehouse B from which they are distributed, in the original manufacturer's containers, to plant personnel. A log book to record the type and quantity of lubricant dispensed and location of lubricant use was not being maintained routinely at dispensing stations or the warehouse. The program requires such a log book to be periodically reviewed by the foreman. However, requisitions were being maintained of material issued for use as the lubricants are released from Warehouse B in response to Work Orders or Material Request Forms.

Based on conversations with licensee personnel, most of the lubricants used on site by the Operations and Maintenance groups were being stored in the oil reclamation and storage room at the 85 foot elevation of the Unit 2 Turbine Building. An inspection of this room found generally crowded conditions with lubricant containers stored on the floor as well as on the racks and shelving. Small containers, which were apparently used to transfer lubricant from the room, consisted primarily of plastic containers.

One 1-gallon container of oil was not closed and one 5-gallon pail of oil did not have its closing lid. Several containers were old antifreeze containers that the licensee stated had been cleaned with acetone prior to their use. The containers in the oil reclamation and storage room were appropriately labeled. Several unlabeled lubricant containers were identified in other areas of the plant; ie: a 1-gallon container filled with oil in the tool shed area of the Intake Structure; a 1-gallon container filled with oil in a storage cabinet in the New Cold Machine Shop; and three grease guns filled with grease in the Hot Machine Shop tool room.

At the start of the inspection, the oil reclamation and storage room did not have a log book to record the type and quantity of lubricant dispensed and location of lubricant use. Plant procedures require that this log be regularly reviewed by the foreman. On a subsequent inspection, the inspectors found a new log book in the room. Based on conversations with licensee personnel, a log book had apparently not been kept for the lubricants stored in the oil reclamation and storage room prior to the time the log book was placed in the room during the NRC inspection period.

Although most of the lubricants used by the Operations and Maintenance groups were apparently stored in the oil reclamation and storage room, the inspector identified instances of lubricant storage in other areas and of lubricant being distributed from the warehouse to an area other than the oil reclamation and storage room. During the inspection, no grease containers were found in the oil reclamation and storage room. The inspector found grease pails and grease guns in or near the various tool rooms throughout the plant. (Grease pails are initially stored at Warehouse B). Based on conversations with licensee and licensee contractor personnel, no log book was being kept for grease use. Grease gun use was controlled by the use of Tool Request Forms, the information from which was entered into a database. During an inspection of the Intake Structure, the inspector found a 55-gallon drum of Chevron GST Oil 68. A review of the applicable Work Order and conversations with licensee personnel indicated that lubricants (in this case GST Oil 68 for a Circulating Water Pump) were apparently delivered directly from the warehouse to the Intake Structure and bypassed the oil reclamation and storage room. No log book was being kept for the oils stored in the Intake Structure, and as discussed above, a log book was not being kept at the Central Warehouse or Warehouse B.

The instances described above of unlabeled lubricant containers and the lack of log book(s) are an apparent violation of the requirements of

Administrative Procedure (AP) D-753, titled "Control of Plant Lubricants." (87-01-01).

3. Maintenance Program

a) Scope

The inspection of the Diablo Canyon maintenance program consisted of a review of the licensee's administrative procedures governing the maintenance program, review of the technical procedures for performance of maintenance activities, review of completed maintenance work order packages, and review of the maintenance backlog. Corrective and preventative maintenance programs were also examined.

The most recent controlled copy of the following procedures were reviewed:

MP M-51.6, Valve External Inspections and Maintenance

MP M-51.B, Limitorque Valve Operator Disassembly Inspection Maintenance and Reassembly

MP M-51.14, Check Valve Inspection Procedure

MP M-54.1, Bolt Torquing

MP E-10.1, RHR Pump Motor Maintenance

MP E-53.10A, PM of Limitorque Motor Operators

MP E-53.10B, Limitorque Operator Torque/Limit Switch Adjustment

MP E-53.10C, Limitorque Operator Torque/Limit Switch Replacement

AP C-450, I&C Department PM Program

AP C-40, General Requirements for Plant Maintenance Program

AP C-40S1, Use of Maintenance Shopwork Follower

AP C-40S2, Plant Equipment Failure Tracking and Trending

AP C-40S3, Use of PIMS Corrective Maintenance Work Order Module

AP C-750, Maintenance Department PM Program

AP E-750, Maintenance Records

AP C-6S3, Post Maintenance Testing

AP C-12, Identification and Resolution of Problems and Nonconformances

AP C-81, Standard Plant Priority Assignment Scheme

In addition, all or part of the following maintenance work packages were examined.

Component	Work Packages
RHR PP 1-2 Suct MOV 8700B	AR A0019988 AR A0007428
Assorted MOV's in the RHR System	SWF MM-1-82-082 SWF MM-1-82-086
TIC 110 & 111, RHR PP Motor 1-2	SWF EM-1-85-127
RHR Pump Motor 2-2	WO R0019559
RHR Pump Motor 1-2	SWF MM-1-85-005
RHR Pump 1-2	AR A0007429
RHR Pump Motor 1-2	AR A0010766 SWF EM-1-85-142 AR A0001499

b) Criteria

The procedures were evaluated against the guidelines set forth in Regulatory Guide 1.33, which endorses industry standard ANSI 18.7-1976/ANS-3.2, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants". Procedure content was also evaluated using engineering judgement regarding reasonable maintenance practices for safety related equipment.

The maintenance work packages and equipment history files were reviewed to ascertain if the documentation and completed work had been performed in accordance with the applicable Diablo Canyon approved procedures. Some of the criteria employed were: the availability of approved procedures to govern maintenance activities; whether maintenance activities included full Quality Control (QC) involvement; conformance of maintenance activities to the schedule for those activities, particularly the PM tasks; whether post-maintenance testing was performed; and, whether the maintenance task had been performed in accordance with the equipment vendor's instructions.

c) Findings

The maintenance department, including I&C, has an authorized strength of approximately 280 people. There were about 30 unfilled positions at the end of 1986.

The maintenance department is supported by an organization called the Work Planning Center which does the review, planning and scheduling of work action requests and the development of maintenance work requests.

The inspectors found the maintenance planning program at Diablo Canyon to be a program in transition. The program was being

converted from an automated/manual work control system to a fully automated system. The Plant Information Management System (PIMS) had been operational from about August of 1986. The PIMS has the capability to schedule, track and distribute all maintenance tasks.

The conversion process from one work control system to another made the inspection process in the maintenance area difficult. The inspectors experienced difficulty in retrieving equipment maintenance history information, since the location of that type of information was kept in three different work control systems. However, the licensee was able to retrieve all requested files and stated that the process would be smoother in the future once all information had been loaded into the PIMS.

Although no violations of regulatory requirements were identified in the licensee's maintenance program, the following weaknesses were identified.

1) The Maintenance Department/Work Planning Center (WPC) implemented procedure AP C-750, Revision 6 (draft), prior to the Plant Staff Review Committee (PSRC) review and Plant Manager approval. This deficiency was also cited by a PG&E QA audit team (87032P) with a corrective action to train personnel in the use of transitional procedures and the importance of following approved procedures while testing new, unapproved procedures. While reviewing the work control methods of the Maintenance Department, it was also noted by the inspectors that many of the day-to-day operating methods used by the WPC were not documented in procedures or instructions. This lack of documented work procedures was judged a weakness because a change in personnel could result in missed maintenance tasks.

2) It was not apparent to the inspectors that the status of high priority maintenance backlog items was being routinely monitored. The WPC supplies information for the "Diablo Canyon Monthly Report" which reports on the amount of Work Orders, Maintenance Work Packages and Action Requests processed during the reporting period, but it was not apparent that it provides information concerning the amount of maintenance work yet to be performed. Maintenance backlog information provided to INPO on a quarterly basis also appeared to report the amount of paperwork generated and completed, not the amount of maintenance work yet to be accomplished. This was judged a weakness because it minimizes the possibility of management attention to correct excessive maintenance backlog if the quantity of the backlog is not routinely monitored.

The team found that the Quality Control organization was involved in the up-front review of Work Orders and that hold points were being established. The effective utilization of the computerized PIMS significantly enhanced QC involvement.

d) Maintenance of Valve Actuators

The lubrication records for the valve actuators of 4 motor operated valves for each unit in safety related systems were examined. The licensee's maintenance instructions conform with the vendor's recommendations to perform an inspection every 18 months for lubricant quantity, quality and consistency. The records for the selected valves confirmed that lubrication inspections had been performed within the previous 18 months.

As part of the review of preventative maintenance of valve actuators, the inspector reviewed the vendor manuals kept in the Record Management System (the plant's official files) to determine whether the licensee had the most recent, appropriate revision of the vendor manuals on file. Item 4.16.4.b of Nuclear Plant Administrative Procedure (NPAP) C-40, titled "General Requirements for Plant Maintenance Programs," refers to document control measures that assure that only the latest revision of drawings and manuals will be maintained in the official plant files.

Four vendor manuals and one wiring diagram are referenced in the licensee's Maintenance Procedures MP E-53.10B and MP E-53.10C. Reference DC-663314-116-1 is Bulletin 15-771, titled "Limitorque Valve Controls". In telephone conversations with vendor representatives, the inspector found that Bulletin 15-771 was apparently superseded by Bulletin 15-73. Bulletin 15-771 recommends periodic lubricant checks every 6 months and the use of a lubricant equivalent to Exxon Nebula EP-1 grease. The licensee was apparently not following these recommendations which indicates that, in this instance, the Records Management System did not have the appropriate vendor manual revision on file.

Reference DC-663165-64-1 is Limitorque Instruction and Maintenance Manual SMCI-04-78. In telephone conversations with vendor representatives, the inspector found that SMCI-04-78 has been superseded by SMCI-04-03-83. Although the licensee was following most of the lubrication requirements given in SMCI-04-78, this vendor manual revision appears to be outdated in one respect. It states that no substitute is recommended to Humble Oil Company Beacon 325 as the lubricant for SMC geared limit switches. Later Limitorque publications suggest the use of the Mobil 28 grease currently being used for SMC geared limit switches (IN 79-03). In this instance, it is unclear, pending further review, whether the Record Management System has the most appropriate vendor manual revision on file.

Reference DC-663314-382-2 is SMBI-170, titled "Instruction Book - Limitorque Valve Controls - Type SMB Instruction and Maintenance Manual." In telephone conversations with vendor representatives, the inspector found that SMBI-170 has been superseded by SMBI-82 which is Reference DC-663219-629-2. It is unclear why the licensee's maintenance procedures reference both SMBI-82 and the superseded SMBI-170. In addition, the copy of SMBI-170 in the Record Management System has no indication that SMBI-170 has been

superseded. SMBI-170 appears to be out-dated in that it recommends a six month lubricant inspection frequency (instead of the licensee's 18 month frequency) and recommends Nebula EP1 grease instead of the Nebula EP0 grease that the licensee currently uses.

In the three instances discussed above, there was an open question whether the licensee's Record Management System has the appropriate revision of vendor manuals on file. If a review determines that the later issued revisions are more appropriate for the plant files, the generic question relates to whether the Record Management System (as well as the controlled copies in the maintenance shops) has on file outdated vendor manuals and whether adequate controls exist to assure that significant updates to vendor technical information were being received by the licensee organizations on site. This item was brought to the licensee's attention and should be examined in the future as a followup item. (87-01-02)

e) Observed Preventative Maintenance Work

A preventative maintenance activity was observed on RHR pump 2-2 suction valve 8700B, to clean, inspect and test the valve operator. This maintenance was performed under work order number R0019159 using Maintenance Procedure MP E-53.10A, "PM of Limitorque Motor Operators".

The personnel performing the work seemed adequately trained. In looking at the valve motor, the inspector noted that the actuator was adequately lubricated. The inspector observed that the craftsman did not check the motor after removing power to the motor. While the procedure does not require this, it is a good work practice. The craftsman did tighten some of the torque switch, limit switch, and grounding electrical connections, but did not note the loose connections on the completed work order. (Note: There have been several industry events where the motors were put in a degraded condition when connections came off.) These observations were discussed in the management meeting. The licensee agreed that the loose wire condition should have been identified and that the importance of this will be reemphasized to craftsmen.

No violations or deviations were identified.

4. Walkdown of Postulated Significant Events

Three postulated significant off normal events, based on actual events at other sites, were developed to allow evaluation of plant procedures, hardware, and operator training. The site specific plant simulator was utilized to provide the plant conditions that directed the operator responses to these events. Additional Control Room equipment failures were injected into the scenarios such that auxiliary operators were required to perform manual backup manipulations to contain the casualty situation. The simulator Control Room was used to direct auxiliary operators (AOs) stationed in a "ready room" in the plant to go to specific locations in the power block and to simulate the operation of various manual backup valves and controls needed to control the events.

No operation of actual valves occurred, as all actions were simulated. The main emphasis of the walkdown of these events was to assess the actions of the auxiliary operators and their manual backup manipulations.

The events included: a reactor trip with a failed open 10% atmospheric steam dump valve; a failed steam turbine driven auxiliary feedwater (AFW) pump trip solenoid and a failed AFW flow control valve; a reactor trip without a turbine trip and a failed main feedwater (MFW) pump control and failed MFW control valve; a steam generator tube rupture (SGTR) and failed open 10% atmosphere steam dump valve. These accident scenarios were developed to produce excessive cooldown of the reactor coolant system and required operation of manually controlled backup valves and controls to terminate the events. The inspector accompanied the AOs and observed their simulated response to these events. Special attention was given to the following conditions associated with the operation of these valves and controls.

- Do plant procedures accommodate a failure of the control systems?
- How accessible are the manual valves and control operators?
- Are the manual valves maintained and capable of performing the backup function?
- What special equipment would be needed by the operator to operate the valves?
- Are the valves and controls identified or labeled to match the procedures in general usage (i.e. valve number and/or name)?
- Is local valve position indication available?
- What is the level of general operator knowledge/training in manual operation of valves and motor controllers?
- Is direction of rotation marked and time to operate valves known (full close to full open)?
- Are sufficient operators available on shift to operate required backup methods?

The inspector found that the operators were very knowledgeable about the location and operation of the manual valves and electrical breakers that were needed to contain the casualties. The operators knew which valves were difficult to operate and the approximate times to operate the valves. The valves that were simulated shut were of the rising stem type valve and no external position indication was used. All the valves used in the scenarios were accessible. One AFW isolation valve, FWV 1-196, was described by the operators as being normally difficult to operate. The inspector asked the operator how he would close the valve and the operator stated that he would need to use a valve wrench. The inspector also noted that the grease fitting for the valve stem did not appear to have been used and the valve stem appeared dry. The inspector asked the operator to get the valve wrench; whereupon, the operator produced an 18 inch pipe wrench. The operators stated that they previously had regular aluminum valve wrenches, but they have gradually disappeared. The operators did show the inspector a steel valve wrench, but the operator stated that they didn't work too well. The inspector reviewed a memorandum which was issued October 30, 1986, that directed the operators on the approved method of use of valve wrenches. The memo also directed that an action request (AR) be submitted on valves that were difficult to operate. Several operators commented to the inspector that they didn't

feel that the valves were worked on when an action request was submitted. (See paragraphs 5 and 6.) The inspector observed that the number of operators assigned to the units were sufficient to meet the requirements of an emergency in one of the units. If need be, operators from the non-affected unit can provide additional manpower to combat the situation.

No violations or deviations were identified.

5. Manual Valve Maintenance

During walkdowns of various portions of safety and non-safety related piping systems by the inspectors, the inspectors identified that manually operated valves were generally not greased or maintained by a preventative maintenance program. Portions of the systems walked down included residual heat removal (RHR), auxiliary feedwater (AFW), main steam (MS), and component cooling water (CCW). The following valves were identified as not having been serviced:

Valves:

CCW 2-153
CCW 1-153
RHR 1-8724 A&B
RHR 1-8726 A&B
RHR 1-8728 A&B

NOTE: On RHR 1-8728 A, the grease fitting on the valve stem upper bearing was missing and the hole for the grease fitting was painted over.

RHR 2-8724 A&B
RHR 2-8726 A&B
RHR 2-8728 A&B
PCV 1-21
PCV 1-22
FWV 1-196

Maintenance of manual valves was identified in IE Notice 86-61 issued in July 1986, and the site had just received the proposed action plan from the corporate offices shortly before the team inspection commenced. A formal program to maintain manual valves was being developed, but had not been finalized and implemented at the site. Management discussed the proposed program with the team. The manual valve program would have the Operations Department identify the valves needed to be operated during accident and recovery periods. These valves would then be entered into a preventative maintenance program and routinely exercised and greased. The implementation of these programs will be followed as an open item. (87-01-03)

No violations or deviations were identified.

6. Action Requests

In discussions with several operators with various levels of experience and qualification, including licensed senior reactor operators, the inspector became aware that the operators appeared to lack confidence in

the "Action Request" (AR) program identified in procedure AP C-1256, "Identification and Processing of Power Plant action requests and Quality Evaluations." The Action Request (AR) is prepared by members of the plant staff to request the maintenance work to be performed. The operators stated that they have requested work to be done by the maintenance department, but the work was not scheduled until a much later time than the operators considered reasonable. The operators stated that since these delays have happened so often, they don't submit an AR unless a plant Technical Specification action statement has been entered or the plant must be shut down. This low regard for the AR program by operators and the necessity for performing his assigned tasks, may result in negative actions on the part of the operators or as discussed earlier, caused the operator to produce an 18 inch pipe wrench to use as a valve wrench during the scenario.

In discussion with plant management, the inspector learned that management was aware of a buildup of a large backlog of ARs and was attempting to resolve the priority of the ARs. The inspector understood that management was developing an action plan for the resolution of the large backlog of ARs. The resolution of the AR backlog should decrease the time between the problem being identified and the maintenance being performed. This area will be followed up as an open item. (87-01-06)

No violations or deviations were identified.

7. Emergency Training for Auxiliary Operators

The inspector noted that the auxiliary operator (AO) training program involves a lengthy "on the job" (OJT) type environment with some supplementary classroom training. A new operator is given a 17 week formal classroom training period and then assigned to an operating crew for the OJT training.

The operator OJT is based on the job task analysis and at the completion of each of five areas of qualification, the AO is given a written and oral examination on the material for that job station. The AO is trained on the normal performance of each job station and emergency or off normal training is discussed. Plant emergency procedures require that certain plant valves be manually operated in the event of specific events, such as manual isolation of the 10% steam dump valve during a stuck open valve condition. Actual formal emergency training is not included in the AO training until the individual enters control operator training. During scheduled requalification periods, while the licensed operators are receiving retraining on emergency and off normal conditions, the auxiliary operators are being trained in other areas. The inspector related the additional benefits that the entire crews would realize by including the AOs in the formal emergency training. No regulatory requirements specify that AOs receive formal emergency training, however, following discussions with members of the plant staff, the licensee agreed to evaluate the benefits of a formal emergency training program for the AOs.

8. Equipment Condition/Housekeeping

During a housekeeping walk down of both units by the inspectors, several items were observed which were brought to management's attention. These items and corrective actions are listed below:

a) On three of four RHR pumps inspected, motor bearing oil was observed on the pump lagging. The cause of the oil was leaking fittings in the upper housing. No action request tag had been observed. The lack of AR tags was considered to be due to operator apathy towards the AR program (see paragraphs 5 and 6). The oil was cleaned up and ARs were initiated to correct the oil leaks.

b) Cigarette butts were observed inside the dedicated shutdown panels in the auxiliary building. This is a portion of the radiological controlled area where smoking is not permitted.

c) Additional debris was observed in several electrical control panels including the diesel generator, post accident monitoring, and main control room.

d) Numerous boric acid crystals were in evidence in the plant and AR tags were not noted. 2/SI/8801 A&B had a large accumulation of the crystals which reached nearly to the floor.

e) Numerous erroneous out of date "Calibration Due" tags were observed by the inspectors on various permanent panel meters throughout both units. A check by the inspectors into the work history revealed that the instruments had been calibrated, but the tags had not been changed or removed. The inspectors also noted that in the same general area, other instruments had current tags attached. In a discussion with management, the inspector learned that the plant was changing from attaching "Calibration Due" tags to a computerized method of automatically scheduling the calibrations. The inspector was informed that the licensee would develop an action plan to remove the old "Calibration Due" tags by the end of refueling of Unit 2. This item will be followed by the resident staff during their routine inspection program.

The overall appearance of conditions within the plant appeared to be satisfactory, however, the number of oil leaks, excessive boron crystal growths, panel debris and cigarette butts indicate that not enough attention was being paid to the details. The inspectors concluded that site upper management may not be getting into the plant and inspecting the material conditions in sufficient detail to instill their standards into the plant staff. These points were conveyed to site management. The resident staff will continue to trend housekeeping during their routine inspections.

No violations or deviations were identified.

9. Valve Operation and Switch Settings

The incorrect manual operation or improper setting of torque and bypass switches may result in damage to, or inoperability of, valves. Therefore, the inspector examined the procedures and training that were provided to plant personnel to perform maintenance or switch settings for valves to determine procedure and training adequacy. The training relating to manual operation of valves was also reviewed. In the systems examined, most of the valves that could be operated manually were either manual or motor operated valves. There were also a number of air operated and electro-hydraulic valves in these systems.

The inspector reviewed the DCPP training program for valves and found that it was being upgraded to a more formalized program for valves. The review included lesson plans, procedures, visual aids and mockups of valves. The licensee was upgrading to a full set of limitorque mockups for training purposes. Some of the lesson plans reviewed included:

- Lesson # ME1111, "Limit and Torque Switch Adjustment"
- Lesson # MM1285 (Draft), "MOV Operator Maintenance and Repair"
- Lesson NMS-14, "Non Licensed Operator Training, Valves"

The DCPP operations and maintenance lesson plans and procedures were found to be consistent with vendor supplied material. The training material also reflected the latest updates from vendor and industry operating experience.

Operations personnel have an extensive training course for qualification. Operations personnel were interviewed for their basic knowledge of motor and/or air operated valve actuators. The inspector interviewed seven auxiliary operators about their knowledge of valve operation and had several of these operators walk through Abnormal Procedure 8, "Control Room Inaccessibility". The operators exhibited knowledge of valve operation for Limitorque and Rotork motor operated valves, and also of air operated and electro-hydraulic valves. The operators were aware of the limitations about using "cheaters" on valves that were hard to operate.

Maintenance personnel were also interviewed for their knowledge on how to set torque and limit switches for Limitorque operators, and how to disassemble/reassemble the valve. The electrical maintenance personnel set the torque and limit switches. Their training to set these switches includes formalized and On-The-Job (OJT) training. Mechanical maintenance personnel do the repair work on the valve actuator, if required. Their training has been OJT, but will be progressing to a more formalized program as noted above.

The inspector interviewed craft and supervisory personnel with respect to setting the torque and limit switches. The setting of torque switches involves the use of a load cell developed at DCPP. The thrust required by the valve has been determined and is specified in the procedure. The load cell is then used to verify the thrust developed by the actuator and

the torque switch is set to that thrust. The inspector found the method different from other power plants, but acceptable. The electrical maintenance personnel seemed knowledgeable on the setting of torque and limit switches and the use of the applicable procedures. They were also aware of Environmental Qualification (EQ) requirements for valves.

The inspector also interviewed mechanical maintenance personnel with respect to valve disassembly/reassembly. The personnel were aware of how to repair the valves, but their training was OJT. They did have training on a mockup as part of their OJT, but did not have mockups of most of the different sizes of limitorque valves. The inspector noted that the licensee was progressing to a more formalized program with more mockups and classroom training.

The training with respect to valves appeared to be acceptable.

No violations or deviations were identified.

10. Remote Valve Position Indication

The inspector examined the adequacy of valve position indication in the control room and at the Dedicated Shutdown Panels (DSDPs). The examination emphasis was on the operation of controllers and on valves that do not have direct position feedback in the control room.

Most of the valves at Diablo Canyon do not have direct position indication in the control room, except when indicating the full open or full closed position. The process parameter that the valve is controlling is indicated such that direct valve position is not necessary. The only valves found to give direct position feedback were the AFW control valves. The inspector reviewed Operating Procedure (OP AP-8), "Control Room Inaccessibility". Part of this procedure directs control room operators to evacuate the control room and proceed to the DSDP. The inspector had several operators walk through the procedure with an emphasis on direct valve position. The inspector verified that operator training directs operators to use alternate means such as process parameters to verify valve position. In addition, the inspector noted that operators were knowledgeable about valves that displayed demanded position and the need to use alternate means to verify this position.

The inspector examined controllers to determine if scales were clear and unambiguous, free of extraneous markings; whether operator aids were correct and properly controlled; and established differences between the Control Room and the Dedicated Shutdown Panel.

No violations or deviations were identified.

11. Surveillance

The inspector reviewed two of the licensee's surveillance test procedures: STP P-7B, titled "Routine Surveillance Test of Auxiliary Salt Water Pumps," and STP V-3H11, titled "Exercising Makeup Water to CCW Surge Tank Valves LCV-69 and LCV-70." The procedures appeared to provide

sufficient detail for the performance of the tests and specified prerequisites, test preparations, test acceptance criteria, and measures to restore the systems to operation following completion of the test. Both surveillance tests are performed to satisfy in part the requirements of Technical Specification 4.0.5 which requires testing in accordance with Section XI of the ASME Boiler and Pressure Vessel Code.

The inspector witnessed portions of the performance of surveillance test STP P-7B for Unit 1 ASW Pump 1-2 and surveillance test STP V-3H11 for Unit 2 LCV-69 and LCV-70. The inspector verified that current test procedures were available and in use, test prerequisites were met, completed tests were reviewed as outlined in the test procedures, and that appropriate action was taken for an item which failed the test acceptance criteria. In the performance of STP V-3H11 for Unit 2 LCV-69, the stroke time for the valve exceeded the administrative test limit. In response, licensee personnel filed an Action Request which increased the test frequency from every 92 days to every 31 days.

No violations or deviations were identified.

12. Walkdown of Compressed Air System and Air Operated Valves

The inspector conducted a walkdown of the portion of the Compressed Air System located at the 85-foot elevation of the Unit 1 Turbine Building. Air Compressor 0-3, a Joy reciprocating compressor, and both temporary Atlas Copco ZT rotary screw compressors were supplying air through Air Dryer 0-1 to the Air Receivers, which indicated pressures of 102 psig. Traps 67 and 68, which are located between the air compressors and air dryers, were both inoperative with open bypass lines. Licensee personnel had filed Action Requests for both traps. Traps 70 and 71, which are located between the Air Receivers and the instrument air and service air headers, appeared to be operable and showed no indication of moisture accumulation.

The control air supply lines and air operators for a number of valves in the Residual Heat Removal, Component Cooling Water, and Auxiliary Saltwater Systems for both units were inspected. A number of valves, particularly for Unit 1, had rigid control air lines leading to the valve positioner and/or the air cylinder. No indications of significant vibration damage such as damaged insulation, paint chipping, and abrasion, were identified. Only one instance of air leaks or damage to the control air supply system was observed. This was an air leak at the linkage to the Bailey Positioner for Unit 1 RHR HCV-638. Licensee personnel had filed an Action Request for the repair of this item.

During the walkdown it was found that the pressure indicating gauge for Unit 1 CCW FCV-360 had apparently failed. In addition, the pressure regulator for Unit 2 CCW FCV-360 and FCV-366 had apparently failed, causing the pressure at the air operators for these valves to exceed 100 psig. System pressure at these valve operators is normally approximately 65 psig. Based on conversations with a licensee representative, it appears that both Unit 2 CCW FCV-360 and FCV-366 had passed their most recent valve exercising surveillance tests but with a valve stroke time in excess of 150 percent of their previous stroke times which may

indicate that the pressure regulator had failed prior to the performance of the most recent surveillance tests. Due to the increase in valve stroke time, Action Requests for both valves had been filed to increase the test frequency from every 90 days to every 31 days. The above items on Unit 1 CCW FCV-360 and Unit 2 CCW FCV-360 and FCV-366 were discussed with a licensee representative who stated that Action Requests would be filed for the pressure indicating gauge and pressure regulator which had apparently failed.

During the walkdown, it was observed that the control air supply lines for the following valves tended to slope toward the air operator in the immediate vicinity of the valve: CCW-FCV-360, CCW TCV-27, CCW TCV-28, RHR HCV-637, and RHR HCV-670 for both Unit 1 and Unit 2; and RHR HCV-638 for Unit 2. It was not apparent that an effort had been made on a consistent basis to slope the air lines away from the valve operators to allow for water drainage. If significant amounts of moisture were to enter the control air supply lines, the water could accumulate at the valve operators. This concern was brought to the licensee's attention and will be evaluated in the future as a followup item. (87-01-04)

No violations or deviations were identified.

13. Snubber Testing

The inspector reviewed the snubber functional testing program to ensure that procedures for testing hydraulic snubbers contained the appropriate acceptance criteria. Specifically, the inspector verified that the acceptance criteria compensated for the effects of temperature when performing snubber functional tests. The review revealed that for the two types of hydraulic snubbers installed, ITT Grinnell and Paul Monroe, the acceptance criteria satisfactory addressed temperature effects to assure desired maximum lock-up and bleed values at operating temperature.

No violations or deviations were identified.

14. Steam Bubble in Reactor Vessel During Natural Circulation Cooldown

The objective of this portion of the inspection plan was to determine how prepared the licensee was to respond to an external event that occurred at St. Lucie 1 on June 11, 1980. The event was the formation of a steam bubble due to the rapid depressurization in the reactor head area during natural circulation cooldown. The following emergency operating procedures were reviewed to determine that provisions had been incorporated to adequately address and respond to an upper head steam bubble (void) formation.

a. EP E-0.2, Revision 1, of March 7, 1985, entitled "Natural Circulation Cooldown". The scope of this procedure is to provide actions to perform a natural circulation RCS cooldown and depressurization to cold shutdown, with no accident in progress, under requirements that will preclude any upper head void formation.

b. EP E-0.3, Revision 1, of March 7, 1985, entitled "Natural Circulation Cooldown with Steam Void in Vessel (with RVLIS)." This

procedure provides actions to continue plant cooldown and depressurization to cold shutdown, with no accident in progress, under conditions that allow for the potential formation of a void in the upper head region with RVLIS available to monitor void growth.

c. EP E-0.4, Revision 0, of March 7, 1985, entitled "Natural Circulation Cooldown with Steam Void in Vessel (without RVLIS)".

These procedures contain provisions cautioning operators against conditions that could cause a steam bubble to form in the head area of the reactor vessel during RHR operation, and appropriate recovery action to take should these conditions occur. The procedures also include natural-convection cooldown and depressurization rates to preclude steam-void formation and ensure adequate core cooling.

The licensee has evaluated the design of component cooling water (CCW) systems to determine vulnerability to single failures that could cause loss of RCP cooling, common-mode failures of RCP seals, and reactor-coolant system leaks through failed seals at multiple locations. This evaluation, documented in PG&E File No. 4.73 of September 2, 1980, was in response to NRC Circular 80-15 addressing the same concerns regarding steam voids. The licensee concluded that due to the difference in plant design, the possibility of the St. Lucie incident happening at Diablo Canyon was extremely remote.

The operators are trained to recognize and prevent a steam void and how to react if one does occur. The inspector reviewed requalification training lesson number LR8644 on Post-Accident Monitoring System. This lesson accomplishes biennial procedure review on EP FR-I.3 "Response to Voids in Reactor Vessel." This lesson plan also includes description and how to use the Reactor Vessel Level Indication System (RVLIS).

As a result of reviewing emergency operating procedures, the engineering evaluation response to IE Circular 80-15, and the operator training program, the inspector was satisfied that the licensee will be prepared to adequately respond to an external event like St. Lucie 1 of 1980.

No violations or deviations were identified.

15. <u>Review of Quality Verification Activities</u>

One of the principal on site organizations responsible for performing quality verifications is the Quality Control (QC) organization, reporting directly to the Plant Manager. During this inspection, the NRC inspector performed an evaluation of the QC organization's effectiveness. More specifically, the inspector reviewed the QC organizational structure, QC procedures, and personnel qualifications; interviewed QC personnel; and, examined the QC program for control of in-process work, trending, and corrective actions.

Based on a review of these areas, the NRC inspector concluded that the program was generally effective in identifying problems; however, the corrective action program needed to be strengthened and receive additional management attention as discussed later in this section.

a. Organization

The QC organization performed on-site inspections and surveillances. It consisted of approximately 33 personnel. There were two sections under the QC Manager, Verification and Engineering. Within the two sections, there was a total of six subsections: inspection, surveillance, planning, engineering, report & scheduling, and support.

The NRC inspector looked specifically at the QC organizations which were responsible for performing field inspections and surveillances. The inspection group, composed of mechanical, electrical and I&C inspectors, was primarily responsible for field inspections and surveillances in these disciplines. The surveillance group consisted of operations, chemistry, and radiological controls personnel and was primarily responsible for performing surveillances within these disciplines. The NRC inspector noted that within these two groups, there were two individuals who previously held Reactor Operator licenses at other commercial nuclear plants.

b. Procedures

The NRC inspector reviewed the following site/QC procedures:

Number	Revision	Title
QCP 1.1	4	QUALITY CONTROL DEPARTMENT ORGANIZATION
QCP 1.2	0	QC DEPARTMENT POLICIES & OBJECTIVES
QCP 2.1	3	QC DEPARTMENT TRAINING
QCP 2.3	2	QC PROGRAM REVIEW
QCP 2.4	0	USE & CONTROL OF STAMPS
QCP 2.6	3	QC SAMPLING PLANS
QCP 2.7	0	QC DEPARTMENT SEAL PROGRAM
QCP 4.1	1	PROCUREMENT DOCUMENT REVIEW
QCP 5.1	5	QUALITY CONTROL DEPARTMENT PROCEDURES
QCP 5.2	1	QC REVIEW OF PLANT PROCEDURES
QCP 6.1	1	DOCUMENT CONTROL & EVALUATION
QCP 6.2	3	QC FILES
QCP 10.1	1	RECEIPT INSPECTION ACTIVITIES
QCP 10.2	3	INSPECTION ACTIVITIES
QCP 10.3	4	SURVEILLANCE ACTIVITIES
QCP 10.4	0	WORK CONTROL DOCUMENT REVIEW
QCP 15.1	1	QUALITY EVALUATION
QCP 18.1	4	MANAGEMENT REVIEW ACTIVITIES
NPAP A-2	4	PLANT STAFF REVIEW COMMITTEE - PSRC
AP A-2S2	1	PSRC PROCEDURE REVIEW COMMITTEE
NPAP A-802	2	QUALITY CONTROL DEPARTMENT STOP WORK AUTHORITY
NPAP C-12	12	IDENTIFICATION & RESOLUTION OF PROBLEMS & NONCONFORMANCES
AP C-12S6	3	IDENTIFICATION & PROCESSING OF POWER PLANT ACTION REQUESTS & QUALITY EVALUATIONS
AP C-40S3	2	USE OF PIMS CORRECTIVE MAINTENANCE WORK

		ORDER MODULE
NPAP C-800	3	QUALITY CONTROL INSPECTION AND SURVEILLANCE PROGRAM
AP C-800S1	6	DCPP QUALITY CONTROL DEPARTMENT ACTIVITIES

The NRC inspector confirmed that the procedures provided adequate guidance, were straightforward, and were easy to understand and follow. They provided for the identification of problems and deficiencies through inspections and surveillances. They required that deficiencies be documented on Action Requests (AR) and that the ARs be entered and tracked in a computer maintained database. All action requests were approved by the immediate supervisor. Action requests which were not approved by the immediate supervisor were returned to the originator with the reason for disapproval annotated on the AR. Those ARs that were safety-related or important-to-safety were upgraded by the QC organization to a Quality Evaluation (QE). All QEs were tracked by the QC organization until properly resolved.

The inspector reviewed 250 safety-related plant work orders to determine the extent of QC involvement in the processing of work orders. The work orders selected were for Unit 1 work activities during the time period of May through November 1986. This effort revealed that 92% of the work orders were being reviewed by QC, thus providing QC the opportunity to designate inspection hold points prior to performance of the work activity. However QC review was not evident on 21 of the 250 or 8% of the work orders reviewed. For the latter, the work activities were performed without being sent to QC for review prior to issuance of the work orders. This discrepancy was previously identified by the licensee's QA and QC groups and documented on NCR No. DC 0-87-N010 dated February 5, 1987.

c. Personnel Qualifications

The NRC inspector reviewed the qualification folders for members of the QC organization. These included the appropriate qualifications and certifications for each individual plus supporting documents, such as previous employment and educational history. The records indicated that the QC organization was staffed with technically competent people.

d. Personnel Interviews

The NRC inspector interviewed six QC inspectors and discussed various aspects of site activities with several other members of the QC organization. In general, the QC inspectors were experienced and indicated a positive attitude and comfortable relationships with their supervisor and members of other organizations. They exhibited a good knowledge of technical requirements. The interviews indicated that they were familiar with site procedures and how to follow them. Specifically, they knew how to identify, document, and process deficiencies. This observation supported the NRC inspector's previous conclusion regarding their qualifications.

e. Control of In-Process Work

The licensee maintained control of in-process work by establishing "hold points." A hold point is a step in a work process beyond which work cannot proceed without the documented consent of the QC organization. Initially, the other departments, such as maintenance or I&C (Instrument & Control), recommended hold points in work activities and specified appropriate acceptance/rejection criteria. The hold points were specified on the work order, procedure, shopwork order, or data sheet. The QC organization has adopted the hold points established by other departments but can specify additional hold points to assure quality. Guidelines used in establishing hold points were contained in procedure NPAP C-800, "Quality Control Inspection and Surveillance Program." The NRC inspector reviewed several work orders and confirmed that the licensee was establishing hold points based on sound technical judgement.

f. Trending

The QC department has established a trending program to provide a basis for various QC activities, such as scheduling inspections and surveillances. The trending program was being maintained on a computer generated database. Each group within the QC organization was responsible for data collection for those activities that they performed. The Support Services group was responsible for the administration of the program, data entry, and report generation. The Engineering group was responsible for analysis of the report.

Deficiencies were tracked in four categories: administrative control, personnel, procurement, and material/equipment problems. The NRC inspector reviewed the most recent QC trending report for the period January 1, 1986, through January 1, 1987. The report indicated the categories with the most deficiencies and the areas that had the highest percentage of deficiencies. The report also listed specific deficiencies by document type, stated observations from surveillances, and made recommendations.

A licensee employee stated that the trending report was generally intended for internal use by the QC organization. The NRC inspector considered the report to be a very good quantitative analysis and might be of interest to other organizations if it were made available to them. The inspector also stated that the report may be more useful if it included a qualitative evaluation of the deficiencies, as well as the quantitative assessment. These comments were acknowledged by licensee representatives during the exit meeting.

g. Corrective Action

The NRC inspector examined a recent event which had similarly occurred several times in the past. The most recent occurrence was on August 30, 1986, when the containment personnel hatch interlock and operating mechanism failed, allowing personnel to open the inner door while the outer door was open. The unit was in mode 3 at the time (hot standby). A nonconformance report (NCR) was written, and the corrective actions to prevent recurrence, as stated on the NCR, requested a design/engineering review and better operating instructions.

There was a history of design, maintenance and operator problems with containment doors at Diablo Canyon over a period of several years. These events were documented on NCRs, and the corrective actions to prevent recurrence generally were the same. Members of the QC organization were aware of the problems as indicated by their review and approval of the NCRs.

NRC Region V recognized this recurring problem with repeated failure of the containment personnel airlock door mechanisms and issued a Severity Level IV violation in December 1986 for failure to take adequate corrective action. The licensee responded to the violation and described their program to correct the problems. This program included establishing a task force of engineering and operations personnel to review the design. This matter was still under review by NRC Region V.

In the exit meeting at the conclusion of the inspection, the NRC inspector stated his agreement with the Region V assessment of the problem and his concern with the apparent weakness of the corrective action program in this particular instance. Although the inspector's review was limited to QC involvement in this series of events, he urged the licensee to review their overall program to ensure corrective actions were timely and effective. He also emphasized that it was management's responsibility to establish and maintain programs requiring effective corrective actions.

No violations or deviations were identified.

16. IE Information Notice and Industry Experience Report Followup

The licensee's program for Information Notice and industry experience report followup and its implementation was reviewed with site and corporate Regulatory Compliance (RG) and Nuclear Operations Support (NOS) groups respectively. When Information Notices and experience reports are received, they are given wide distribution, but NOS has lead responsibility for determination of applicability, prioritizing, and preparing a response from the General Office to the plant. Generally, the plant will be consulted before issuance of the response. Once issued, the response will be examined by the plant staff and then reviewed for approval and implementation by the Plant Safety Review Committee (PSRC). Both RG and NOS independently track and publish periodic management reports on the status of Information Notices, with

particular attention given to those outstanding for more than six months. From the review of the status of the Information Notices, it appears that the licensee has generally been responsive, particularly in cases calling for prompt action.

No violations or deviations were identified.

17. Internal Events

The following events were examined to assess the licensee's evaluation, followup and corrective action to preclude reoccurrence.

DC1-86-011	Both inner and outer containment personnel airlock hatch doors open at the same time due to failure of the mechanical interlock.
DC1-86-012	Inoperability of both RHR trains due to personnel error.
DC1-86-016	Main steam line check valve inoperable due to retainer nut problems.
DC2-86-011.	Manual unit trip following condenser tube failure results in safety injection due to steam dump failure.
DC2-86-014	Diesel generator start and loading due to an incorrectly terminated jumper.
DC2-86-06	Circulating water pump 2-2 motor ground causes reactor coolant pump undervoltage reactor trip.

Because two of the events were reported late, as noted in the licensee's reports, the inspector verified that the training of appropriate personnel on 10 CFR 50.72 reporting requirements had been accomplished as had the other training actions stated in the event reports. Plant procedures were verified to have been corrected when appropriate.

Where the problem could be generic, the licensee examined other components where appropriate and has scheduled operating equipment in Unit 2 for inspection and/or modification during the upcoming refueling outage. A task force has been assigned to review the containment air lock design to address the adequacy of the closure and interlock mechanisms, door status indication and annunciation, differential pressure indication, and enhancements that may be desirable based upon a review of other utilities with similar installations.

For the above events, it appeared that the licensee's evaluations were comprehensive and corrective actions timely. Specific documents examined included the following NCRs with supporting documents:

- DC1-86-MM-N101
- DC1-86-T1-N106
- DC1-86-MM-N128
- DC2-86-OP-N043

- DC2-86-EM-N062
- DC2-86-OP-N072

No violations or deviations were identified.

18. Procurement

A review and assessment of the PG&E procurement program was conducted. Specifically, the procurement process used to obtain and dedicate commercial grade items for safety-related applications was the focus of this inspection.

The three major groups involved with the procurement of commercial grade items which are to be dedicated for safety-related applications are engineering, the procurement specialist group and quality control. Each organization is responsible for particular functions involved in the procurement/dedication process. The Procurement Specialist Group (PSG) is responsible for determining the procurement classification of an item, such as safety-related or commercial grade.

In the case when a spare or replacement item is classified as safety-related, PSG attempts to procure the item as such, or more specifically, to the original specifications. In the case where the item can no longer be procured as safety-related, then it is procured as commercial grade. When the decision is made to procure a safety-related item as commercial grade, the PSG initiates a replacement parts evaluation (RPE) form which includes the general criteria for dedication activities. The form is then forwarded to the engineering department. Engineering is responsible for performing an evaluation of the critical characteristics of the item and for specifying other technical and quality assurance requirements to be verified during receipt inspection and post-installation testing.

Quality Control Engineering (QCE) responsibilities include a review and approval of PSG's procurement packages for inclusion of both the required technical and quality attributes of the items being procured. Also, QCE is responsible for performing the receipt inspection and verifying the implementation of the specified dedication activities.

Project Quality Engineering (PQE) is responsible for approval and concurrence with the replacement part evaluation performed by engineering.

During the inspection, two examples of items procured as commercial grade to be dedicated for safety-related application were reviewed; molded case circuit breakers (P. O./Contract No. 2128) and class 1E relays (P. O./Contract No. 3329). The inspector also reviewed the RPEs associated with the two procurements. In each case, the technical evaluations performed and documented by engineering on each RPE were in a checklist format which did not appear to provide adequate technical basis to dedicate the item for safety-related application.

An interview was conducted with the Engineering Project Manager and members of his staff involved with the relay and circuit breaker

procurements. The inspector questioned the technical evaluations performed for the relays and circuit breakers; specifically, how engineering determined what the critical aspects of the items were and what were the bases for the answers to the questions outlined in the technical evaluation portion of the RPE forms. Engineering personnel responded that based upon engineering judgment, industry records of performance testing, knowledge of the item's previous performance at Diablo Canyon, conversations with vendors, and review of design drawings, the technical evaluations were adequate. The inspector asked if the results of the evaluation process were documented and verified. Engineering personnel responded that part of the information was documented in files, but that there was not a formal compilation of the supporting engineering documents and references for each of the commercial grade items. Pending NRC review of the engineering documentation which supports dedication of these items, this issue is considered unresolved. (50-275/87-01-05).

As a result of this inspection, PG&E engineering has committed to perform a review of all RPEs issued since the commencement of the procurement program's use of RPE's (approximately mid-1986). Secondly, engineering personnel stated that they will re-review procurement of commercial grade items prior to the use of RPEs. This re-review will be of those items which engineering had evaluated as part of their corrective action to resolve Nonconformance Report No. NCR DCO-86-EN-002. This NCR-identified deficiencies associated with specifying, procuring and dedicating commercial grade items used as spare and replacement parts for safety-related applications. In both cases, the engineering department's reviews will require that all documentation used or generated to back up the technical evaluations for the commercial grade/safety-related items be compiled and included as part of the procurement packages.

19. Personnel Interviews

Quality Control Inspectors and Quality Engineers, six each, were interviewed to assess their perception of (1) QC procedure content, (2) how findings were documented and treated, (3) operation/maintenance interface with QC, and (4) management support of the quality functions. The general perceptions were as follows:

- Inspection Attributes - Inspection plans were generally adequate and the inspector/engineer had the flexibility to pursue independent inspection observations, including substantive technical aspects.

- Documentation - Findings were documented in Inspection Reports, Action Requests and Quality Evaluations. The originator was informed of the corrective actions to findings. Generally, adverse findings were treated appropriately; however, some have required negotiations between the cognizant parties.

- Interface - The interface between QC, Operations and Maintenance appears to be improving with all organizations supporting the QC function.

- Management Support - Management support appears to be getting stronger. They were encouraged by a recent meeting where Plant and Corporate management showed strong support for the resolution of outstanding issues.

- General - Most of those interviewed felt that there were too many open quality issues that could or should be closed more expeditiously. They believed that appropriate actions were being taken but that there was undue delay in completing the necessary documentation.

20. Unresolved Items

Unresolved resolved items are those items for which additional information is needed to determine if they are violations, deviations or acceptable items. An unresolved item has been identified in paragraph 18.

21. Exit Interview

Exit interviews were held with licensee management on February 6 and 13, 1987 to advise the licensee on the scope of the inspection and findings as described in this report.