

APPENDIX A

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report Nos. 50-206/90-25, 50-361/90-25, 50-362/90-25

Docket Nos. 50-206, 50-361, 50-362

License Nos. DPR-13, NPF-10, NPF-15

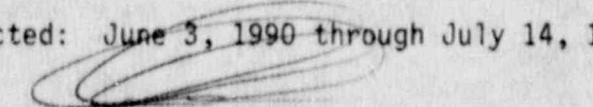
Licensee: Southern California Edison Company
Irvine Operations Center
23 Parker Street
Irvine, California 92718

Facility Name: San Onofre Units 1, 2 and 3


Inspection at: San Onofre, San Clemente, California

Inspection conducted: June 3, 1990 through July 14, 1990

Inspectors:


C. W. Caldwell,
Senior Resident Inspector

8/6/90
Date Signed


A. L. Hon, Resident Inspector

8/6/90
Date Signed



C. D. Townsend, Resident Inspector

8/6/90
Date Signed

Accompanying

Inspectors: James Sloan, Resident Inspector, Palo Verde
Louis Carson, Radiation Specialist

Approved By:


G. L. Constable, Acting Chief
Reactor Projects Section 3

8/6/90
Date Signed

Inspection Summary

Inspection on June 3, 1990 through July 14, 1990 (Report Nos.
50-206/90-25, 50-361/90-25, 50-362/90-25)

Areas Inspected: Routine resident inspection of Units 1, 2 and 3 Operations Program including the following areas: operational safety verification, radiological protection, security, evaluation of plant trips and events, monthly and complex surveillance activities, monthly maintenance activities, engineered safety feature system walkdown, refueling and plant modification activities, independent inspection, design changes and modifications, training

and qualifications, licensee event report review, and follow-up of previously identified items and noncompliances. Inspection procedures 30703, 37700, 37702, 37828, 41500, 60705, 60710, 61701, 61715, 61726, 62703, 71707, 71710, 71711, 71500, 72700, 90712, 92700, 92701, 92702, 93702 were covered.

Safety Issues Management System (SIMS) Items:

(Closed) Multi-plant Action (MPA)-B03, "Verification of Licensee Changes Made to Comply With PWR Moderator Dilution Requirements," (See Paragraph 11.d).

Results:

General Conclusions and Specific Findings:

The Unit 3 Cycle V refueling outage was completed during this inspection period. The outage appeared to be well planned, managed, and coordinated among various departments. When unexpected problems were encountered, such as the discovery of SG feedwater sparger erosion damage (Report 362/90-22-01), the licensee promptly mobilized resources to determine the root cause and perform necessary corrective actions.

Significant Safety Matters: None

Summary of Violations: None

Open Items Summary:

During this report period, one new follow-up item was opened and 9 were closed; two were examined and left open.

DETAILS

I. Persons Contacted

Southern California Edison Company

- H. Ray, Senior Vice President, Nuclear Engineering, Safety, and Licensing (NES&L)
- *H. Morgan, Vice President and Site Manager
- *R. Krieger, Acting Station Manager
- *B. Katz, Nuclear Oversight Manager, NES&L
- K. Slagle, Deputy Station Manager
- L. Cash, Maintenance Manager
- *M. Short, Technical Manager
- *M. Merlo, Nuclear Design Engineering Manager, NES&L
- P. Knapp, Health Physics Manager
- *D. Peacor, Emergency Preparedness Manager
- *D. Herbst, Quality Assurance Manager, NES&L
- C. Chiu, Quality Engineering Manager
- *J. Schramm, Operations Superintendent, Unit 1
- V. Fisher, Operations Superintendent, Units 2/3
- *R. Rosenblum, Manager, Nuclear Regulatory Affairs
- L. Brevig, Supervisor, Onsite Nuclear Licensing
- T. Calloway, Substance Abuse Program Manager
- *R. Plappert, Compliance Manager

San Diego Gas and Electric Company

- *R. Erickson, Site Representative

City of Anaheim

- *G. Edwards, Site Representative

City of Riverside

- C. Harris, Site Representative

*Denotes those attending the exit meeting on July 12, 1990.

The inspectors also contacted other licensee employees during the course of the inspection, including operations shift superintendents, control room supervisors, control room operators, QA and QC engineers, compliance engineers, maintenance craftsmen, and health physics engineers and technicians.

2. Plant Status

Unit 1

During this inspection period, Unit 1 operated at power until June 30, 1990, when it was shut down to commence the cycle 11 outage for thermal shield repair and refueling.

Unit 2

The Unit operated at power at the beginning of this inspection period until July 3, 1990, when it was shut down to repair a feedwater line leak. It was returned to service on July 5, 1990 and operated at power during the remainder of the period.

Unit 3

The Unit continued the Cycle V refueling outage during this inspection period.

3. Operational Safety Verification (71707)

The inspectors performed several plant tours and verified the operability of selected emergency systems, reviewed the tag out log and verified proper return to service of affected components. Particular attention was given to housekeeping, examination for potential fire hazards, fluid leaks, excessive vibration, and verification that maintenance requests had been initiated for equipment in need of maintenance. The inspectors also observed selected activities by licensee radiological protection and security personnel to confirm proper implementation of and conformance with facility policies and procedures in these areas.

A few minor deficiencies were identified to the Shift Superintendent and were promptly resolved.

No violations or deviations were identified.

4. Evaluation of Plant Trips and Events (93702,71500)

Feedwater Pipe Leak Due to Erosion (Unit 2 & 3)

On July 2, 1990, while Unit 2 was operating at full power, a leak was discovered on a feedwater bypass line. The six inch diameter bypass line was welded perpendicularly to the 20 inch main feedwater line for steam generator (S/G) E088. Both lines are made of carbon steel and built according to ANSI B31.1 Standards. The licensee shut down the Unit to Mode-2 in order to depressurize the line for inspection and repair.

The licensee inspected the wall thickness of the bypass line using ultrasonic testing (UT). This testing revealed wall thinning to less than the minimum thickness which was due to erosion at the section just down stream of the weld. For corrective action, the damaged pipe section was replaced. The licensee restarted Unit 2 on July 5, 1990, but elected not to inspect the feedwater bypass line for S/G E089 until the Unit is shut down at the end of July to inspect and repair (if necessary) the S/G

feedwater spargers. (This pipe section was later inspected after the unit was shutdown on July 28, 1990. UT showed pipewall thickness less than ANSI B31.1 minimum design and replacement was required.) In addition, the licensee inspected the feedwater bypass lines for both S/G E088 and E089 in Unit 3 (which was in a refueling outage with feedwater lines depressurized at the time). UT inspection revealed wall thinning to less than erosion/corrosion replacement criteria on both pipes (though one was still above the minimum B31.1 requirement). As a result, the licensee replaced the damaged sections of pipes on Unit 3.

As a follow-up to this problem, the inspector reviewed the licensee's erosion control program which was prepared in response to NRC Bulletin 87-01, "Thinning of Pipe Walls in Nuclear Power Plants". This program was based on the selection methodology developed by the Electric Power Research Institute (EPRI) and is to be augmented by actual plant erosion experience. This program was inspected by the NRC in August, 1988 and found acceptable. (The result of this inspection of San Onofre and other plants was reported in NUREG-1344.) However, the inspector noted that the damaged section of the feedwater bypass line was not included in the existing program, because it did not meet the selection criteria established in the procedure. The licensee planned to modify the program as part of the refinement process. This item is closed (361/90-25-01).

No violations or deviations were identified.

5. Monthly and Complex Surveillance Activities (61726,61701)

During this report period, the inspectors observed or conducted inspection of the following surveillance activities:

a. Observation of Routine Surveillance Activities (Unit 1)

S01-12.3-10, "No. 1 Diesel Generator Load Test"

S01-12.4-2, "Non-Routine In-Service Testing Of Valves, S1-FWS-CV-100B"

S01-12.9-19, "Functional Test Of The Safety Injection System"

b. Observation of Routine Surveillance Activities (Unit 3)

S023-3-3.12 "Integrated ESF (Engineered Safety Feature) System Refueling Test"

S023-XXV-4.4 "Surveillance Requirement - Channel Functional Test Fuel Handling Isolation System"

S023-V-12.2.1 "Surveillance Requirement - Core Protection Calculator (CPC) Functional Test (Monthly Interval)"

S023-5-1.3 "Plant Startup from Cold Shutdown to Hot Standby, Attachment 2, Mode 4 Pre-heatup Checklist"

No violations or deviations were identified.

6. Monthly Maintenance Activities (62703)

During this report period, the inspectors observed or conducted inspection of the following maintenance activities:

a. Observation of Routine Maintenance Activities (Unit 1)

M089123169000, "Clean And Inspect Component Cooling Water Heat Exchanger, S1-CCW-E-20A, During Cycle XI Refueling Outage"

M090061599000, "No. 1 Emergency Diesel Generator East Duplex Lube Oil Stainer Leaking A 4 Foot Stream From The South Side When The Diesel Runs Unloaded. Replace The Gasket"

M090061217000, "Steam Generator To Outfall Valve, S1-FWS-CV-100B, Strokes Slowly. Inspect And Repair"

b. Observation of Routine Maintenance Activities (Unit 3)

M09007015500 "Remove TFM (Temporary Facility Modification) 3-90-ABA-001 from MSIV (Main Steam Isolation Valve)"

M09007030600 "Repair Feedwater Line S3-1305-M2-102 due to Less Than Minimum Wall Thickness"

M09007030700 "Repair Feedwater Line S3-1305-M2-103 due to Less Than Minimum Wall Thickness"

No violations or deviations were identified.

7. Engineered Safety Feature Walkdown (61715, 71710, 71711)

The inspector walked down the Unit 3 Safety Injection and Containment Spray Pumps in the Safety Equipment Building. The inspector also walkdown the Unit 3 containment penetrations shortly after the Unit entered Mode-4 to verify the containment integrity. The pertinent drawings and procedures were used for these walkdowns.

The inspector also walked down the Unit 1 containment emergency sump as the Unit was shut down. The sump appeared to be in a satisfactory condition; however, the inspector noted a flashlight on the inside shelf of the sump cage and it appeared to have been there since the previous sump entry which occurred during a short outage in October 1989. The licensee is evaluating the impact of this finding and the inspector will follow the evaluation to its final disposition as inspector followup item (206/90-25-01).

No violations or deviations were identified.

8. Plant Modification and Refueling Activities (37700, 37828, 60705, 60710, 71711, 72700)

a. The inspector observed the following Unit 1 outage activities:

- Reclamation Of Debris In The Pressurizer
- Steam Generator Sludge Lancing

b. Excure Neutron Monitor System Amplifier and Signal Processor Power Supply Replacement

During the Unit 3 refueling outage, existing Acopian Model 15D-50 power supplies (P/S) were replaced with the vendor recommended "like in-kind" Lambda Model LOD-X-152 P/S due to reliability problems. This modification, was incorporated in Proposed Facility Change (PFC) 2/3-89-023, which was implemented through Field Change Notices (FCNs) S1744J, S1745J, S1746J and S1747J and Maintenance Orders (MOs) 89071785, 89060789, 89071788, and 89071793, 89072419, 89072420, 89072421, and 89072422. These P/Ss were classified as Seismic Category I, Environmentally Qualified (EQ) components.

The inspector reviewed the PFC documentation during this inspection period. The PFC was prepared in accordance with Procedure E&C 24-10-15, Revision 7, "Preparation, Review, and Approval of Proposed Facility Changes (PFC) and Proposed Facility Change Packages (PFCP) for SONGS 1, 2 & 3." The inspector noted two discrepancies with the PFCP. First, Form CC 26-182, "Design Change Package Plant Hazards Requirements," was not signed by the civil project group lead. During discussions with the licensee, the inspector learned that this was not done as the civil project group did not receive the form from the site. The licensee initiated action to correct this administrative deficiency.

Secondly, no calculations were performed to support the acceptability determinations for the seismic structure modification. Such calculations were not contained nor referenced by the PFCP and the inspector noted that the cognizant engineer (for the PFC) was unaware of any seismic calculations. Instead, only a subjective analysis was documented in the PFC that referred to an electronic mail message from the civil engineering group which was used as the basis for the PFCP conclusions.

The inspector considered that lack of documented rigor, in conjunction with the absence of a civil project group review signature, left the approved PFCP weak with regard to seismic considerations. However, the inspector observed the actual installations of both the signal processor and amplifier, and considered that the subjective seismic evaluation (in the PFC) was accurate in that the P/S change was insignificant (when considering weight) compared to other components contained in the cabinets and the cabinet enclosures themselves. Thus, the inspector considered that no significant hazard was created by this change from a seismic perspective. The inspector noted that E&C 10-24-15, Revision 7, (issued subsequent to preparation of this PFC) specifically required

calculations for such "minor changes" to existing Seismic Category I Structures. Issuance of this revised procedure should ensure that detailed calculations are prepared for other "minor" modifications in the future.

The inspector reviewed the MOs which implemented the PFC and noted that the retest consisted of successfully calibrating the P/Ss. The inspector concluded that the overall plant modification was performed in an acceptable manner except for the administrative deficiencies noted. This item is closed (362/90-25-01).

No violations or deviations were identified.

9. Independent Inspection

a. Component Cooling Water System Technical Specification Applicability (Unit 1) (71707)

On June 11, 1990, while the Unit was operating at power, the licensee removed the south component cooling water (CCW) system heat exchanger from service for routine maintenance. To do this, the inlet and outlet valves on the salt water cooling (SWC) system side were shut as was the outlet valve, MOV-720A, on the CCW side. The CCW heat exchanger outlet valves are interlocked with the SWC pumps to open when those pumps start automatically. Thus, MOV-720A automatically opens when the south SWC pump starts and MOV-720B automatically opens when the north SWC pump starts. The SWC valves were shut because maintenance was to be performed on the water box side of the heat exchanger. The CCW outlet valve was shut to prevent CCW water from bypassing the on-line CCW heat exchanger. The outlet valve, MOV-720B, to the north CCW heat exchanger was made passive so that no single active failure would remove both heat exchangers from service.

The CCW system is required for long term core cooling for a loss of coolant accident (LOCA) and/or a main steam line break (MSLB) inside containment. For a LOCA, the CCW system cools the recirculation system utilizing the recirculation heat exchanger. For a MSLB accident, long term core cooling is handled by the residual heat removal (RHR) system utilizing the RHR heat exchangers. Heat is transferred to the CCW system and then to the ocean utilizing the SWC system. Each CCW heat exchanger was designed and built to handle the heat loads for these conditions alone. As a result of the configuration, the other heat exchanger is in place to offer defense in depth for accident conditions and for normal heat loads during normal shutdown cooling operations.

In anticipation of proposed change notice (PCN)-151 to Technical Specification (TS) 3.3.1 "Safety Injection and Containment Spray Systems," the licensee informally placed a 72 hour administrative limit on the heat exchanger outage time (for training purposes) and subsequently exceeded the administrative time limit for a total of 97 hours of down time. (The inspector noted that the PCN has been under preparation for more than three years and the licensee agreed

that the length of time used to process this proposed TS change has been excessive.) The inspector considered that, at the time, the licensee did not recognize or address the possibility that the current TS could have been applied. Subsequent discussions with the licensee revealed that the licensee considered that the TS could have applied. However, because the other CCW heat exchanger was made passive and each heat exchanger was adequately sized to handle 100% of the emergency heat loads, the safety-related heat removal capability was available. Because there was no impact to plant safety, the inspector considered these actions acceptable.

The inspector will continue to observe the licensee's administrative actions in these areas as part of the routine inspection program. This item is closed (206/90-25-02).

b. Equipment Qualification Of The Residual Heat Removal System (37702)

Section 5.5.6 of the Updated Final Safety Analysis Report (UFSAR) describes the RHR system components and design. In particular, RHR transfers heat from the reactor coolant system (RCS) to the CCW system to reduce the temperature of the RCS to cold shutdown conditions at a controlled rate and to maintain the temperature while the plant remains in an outage. RHR is also required to achieve RCS cold shutdown after a MSLB. The requirements of RHR as stated in the UFSAR are as follows:

(1) Both RHR pumps shall be available for continuous unattended operation for at least 30 days after the MSLB.

(2) During this time, the components shall be assumed to be submerged in the water from the MSLB.

The inspector observed that, although the RHR motor was qualified for these conditions, the other components were not and questioned this condition. Subsequent to the Exit on July 12, 1990, the inspector learned that this issue was tracked under Unresolved Safety Issue (USI) 45 which has been generically deferred to the San Onofre Integrated Plant Evaluation (IPE). The IPE has been scheduled for completion in 1992.

c. Auxiliary Feedwater System Dedicated Watch (Unit 1) (37700)

On June 30, 1990, the inspector observed the shutdown of Unit 1 in preparation for the refueling outage. Generally, the operations personnel performed the evolution efficiently and professionally. At one point the dedicated auxiliary feedwater (AFW) watch was sent into the plant. His duties were taken by an extra assistant control operator (ACO), holding a reactor operator license, who was in the control room to assist in the shutdown. This extra ACO was subsequently sent into the plant as well, leaving the AFW watch with the ACO of record who was also assigned Unit shutdown responsibilities in the control room.

Licensee event report 89-031, "Potential For Auxiliary Feedwater Water Hammer," stated that a dedicated individual was placed at the control room AFW panel to monitor AFW system operation and to alert control room operators when that AFW flow is approaching the 150 gpm water hammer limit during plant evolutions requiring AFW. Also, the abnormal alignment Operations Division Procedure SO123-0-23, "Auxiliary Feedwater System," for AFW stated, "Station an operator with no other assigned duties in the control room..." to take actions to alert the licensed operator at the controls when AFW is initiated. The procedure stated specifically where to observe AFW initiation and what actions to take to limit AFW flow.

The inspector considered that the concept of a dedicated individual meant a person with no other assigned responsibilities. In this case, the licensee explained to the inspector that this was intended only when the AFW system was in operation. In this case, the ACO would have been expected to stop what he was doing elsewhere in the control room, and assume the AFW watch duties. Because of this additional clarification and the fact that the shift had one licensed reactor operator more than required by the TS, the inspector considered that the licensee's approach was acceptable. During discussions with the licensee, it was agreed that clarification as to the meaning of terms such as "dedicated individual" in future correspondences with the NRC would be appropriate.

d. Staff Qualifications (41500)

The inspector reviewed the qualifications of the following licensee management personnel:

- Acting Plant Manager
- Technical Manager
- Assistant Technical Manager
- Nuclear Oversight Manager

The inspector found that these individuals met or exceeded the minimum qualifications established in American National Standards Institute (ANSI) N18.1-1971, "Selection and Training of Nuclear Power Plant Personnel," as committed to by the licensee.

No violations or deviations were identified.

10. Review of Licensee Event Reports (90712, 92700)

Through direct observations, discussion with licensee personnel, or review of the records, the following Licensee Event Reports (LERs) were closed:

Unit 1

87-16, Revision 1, "Failure of ASCO Solenoid Valve Operator for CV-304"

- 88-04, Revision 1, "Failure of Solenoid Valve for Safety Injection (SI) Valve HV-851B"
- 89-11, Revision 1, "SI Alignment Delay Contrary to the Final Safety Analysis"
- 89-22, Revision 2, "Design Basis of the Overpressure Mitigation System Not Met"
- 90-11, Revision 0, "Manual Reactor Trip Due to a Loss of Feedwater to One Steam Generator"
- 90-13, Revision 0, "Voluntary Entry Into Technical Specification 3.0.3 Due to Hydrazine Tank Level Indicator Failure"

Unit 2

- 88-07, Revision 0, "Containment Purge Isolation System Iodine Channels Inoperable Due to Detector Non-Linearity"
- 90-05, Revision 0, "Containment Purge Isolation System Actuation Due to Technician Error During Monthly Surveillance"

Unit 3

- 89-12, Revision 0, "Delinquent Fire Watch for Inoperable Detector"
- 90-04, Revision 0, "Fuel Movement in Spent Fuel Handling Building Without Operable Post Accident Cleanup System"
- 90-06, Revision 0, "Fuel Movement With Insufficient Operable Source Range Monitor"

11. Follow-Up of Previously Identified Items (92701)

- a. (Closed) Follow-up Item (361/89-14-02), "Improper Sense of Ownership by Plant Operators"

During a previous inspection, the inspector noted that control room operations personnel did not appear to fully understand deficiencies associated with Qualified Safety Parameter Display System (QSPDS). They indicated that this was because they were not directly involved in the surveillance or evaluation and tracking of QSPDS operability since these functions were assigned to the plant computer technicians.

In response to the inspector's observation, the licensee assigned the monthly surveillance of the QSPDS to the control room operators. Operations procedure S023-3-3.49, Revision 0, "CFMS/QSPDS Monthly

Test," was implemented on June 12, 1990. The inspector considered that routine performance of this surveillance should enhance the operators' working knowledge of the system. Therefore, this item is closed.

b. (Closed) Item 50-206, 361, 362/Information Notice 90-33

The inspector verified that the licensee had received, and reviewed Information Notice 90-33, "Source of Unexpected Occupational Radiation Exposures at Spent Fuel Storage Pools (SFP)." In addition, the licensee compared the Spent Fuel Storage Pool (SFP) concerns indicated in the Notice with the licensee's efforts regarding the High Density Spent Fuel Storage Reracking Project for Units 2/3. The inspector considered that licensee appeared to have addressed the radiological concerns of SFP operations by enhancing the SFP reracking project health physics procedure with the suggestions in Information Notice 90-33. Therefore, this item is closed.

c. (Closed) Item 50-206, 361, 362/Information Notice 89-27

The inspector verified that the licensee had received and reviewed Information Notice 89-27, "Limitation on the Use of Waste Forms and High Integrity Containers." This Notice was issued to inform licensee's of the current status of Topical Reports for low-level radioactive waste, high integrity containers and waste forms that are reviewed and approved by the NRC. The inspector noted that licensee's radioactive material shipment procedures and programs for low-level radioactive waste disposal appear to address concerns indicated in the Notice. Therefore, this item is closed.

d. (Closed) Temporary Instruction (2515/94), "Verification of Licensee Changes Made to Comply with PWR Moderator Dilution Requirement Multi-Plant Action Item B-03" (Unit 1, 2, and 3)

This item was resolved for Unit 1 by a November 20, 1978 letter which indicated that the concerns raised by this multi-plant action item did not apply to Unit 1. The NRC agreed with this position as documented in a February 21, 1979 letter from the NRC to the licensee. Therefore, this item is closed for Unit 1.

This item was also resolved for Units 2 and 3 by NRR during the operating licensee review, as documented in the Safety Evaluation Report (SER) NUREG-0712, Supplement No. 1, Section 15.2.4.4 "Inadvertent Boron Dilution." It states that:

"The applicants agreed to install alarms on the source range nuclear instrumentation. The setpoint of these alarms is to be adjusted periodically as the shutdown flux decays so that the alarm will sound at least 15 minutes before criticality is reached (30 minutes during refueling) for the worst credible accident and with all uncertainties conservatively accounted for. We (NRR) conclude that with these modifications, San

Onofre 2 and 3 meets the requirement of the Standard Review Plan, Section 15.4.6, and is acceptable."

The inspector verified the alarms were installed in the control room and were covered by the alarm response procedure. The operators were directed to adjust the alarm setpoint to maintain 0.5 volts above the voltage corresponding to the highest Startup Channel reading of the two source range channels, per procedure S023-3-2.15, "Excure Instrumentation Operations." the inspector considered that these actions were adequate. Therefore, this item is also closed for Units 2 and 3.

e. (Closed) Follow-up Item (206/89-07-03), "Charging Pump Motor Rewind Qualification"

This item discussed a problem in which the motor rewind for charging pump G-88 was not performed to EQ requirements. In addition, the inspector questioned the confidence that could be placed on the log review that was used to establish any further EQ discrepancies resulting from maintenance.

For follow-up action, the licensee provided a methodology for performing log reviews for EQ acceptability associated with maintenance on components. This methodology was reviewed by NRR and found to be acceptable. In addition, the charging pump motor was rewound in a qualified manner. Therefore, this item is closed.

f. (Closed) Follow-up Item (206/89-07-09), "Intake Structure Inspection And Repair"

This item concerned potential degradation of the Unit 1 intake structure due to corrosion.

During this outage, the licensee is performing inspections of the intake structure and will perform repairs on the areas showing the worst degradation. A meeting was held between NRR and the licensee on July 11, 1990 to discuss the licensee's actions and further discussions will take place. Since NRR is currently following this effort through resolution, this item is closed.

g. (Closed) Follow-up Item (361/88-10-05), "CCW Surge Tank Relief Valve Sizing"

During a previous inspection, the inspector noted that Calculation M26.3, Revision 0 "CCW Surge Tank Pressure," did not include a postulated "failed open" nitrogen supply valve in its analysis to assure that the Surge Tank relief valves, 2PSV-6356 and 2PSV-6359, had adequate capacities for the higher (failed open) flow rate.

For corrective action, the licensee issued Calculation M26.3, Revision 2 on September 12, 1988 to confirm that the relief valves will limit the surge tank pressure to about 62 psig with a failed nitrogen supply valve. The surge tank pressure would remain below the design value of 150 psig. Therefore, this item is closed.

h. (Open) Follow-up Item (361/88-13-03), "Licensee To Correct Deficiencies In Functional Recovery Procedures"

This item identified a number of deficiencies with the emergency operating procedure functional recovery procedures (FRPs). As a result, the licensee revised the FRPs and corrected the root causes for these problems.

The inspector reviewed the revised FRPs and discussed their "useability" with the operators. During these discussions, the operators indicated that they considered that there still existed problems with the FRPs. As a follow-up to this concern, this issue was reviewed during the June 1990 operator licensing exam. During the exam, the NRC examiners noted that there were problems with the operators when trying to implement some of the FRP. One item of particular concern was that there was no direction for parallel problems such as a reactor trip and two rods stuck out of the core or with a S/G tube leak. As a result, the operators are compelled to complete one FRP before they can enter another FRP and take actions to address additional problems.

The inspector discussed this issue with responsible licensee management who indicated that they were aware of problems with the FRPs. The inspector learned that the licensee has recently made upgrades to the software for the Unit 2/3 simulator. As a result, the licensee plans to perform a validation of the FRPs during the upcoming operator requalification training which should identify particular weaknesses in them. Enhancements to the FRPs can then be made and factored back into the training program. The inspector will review the licensee's efforts to validate the FRPs and any corrective actions deemed necessary. This item will remain open.

i. (Open) Follow-up Item (361/88-13-01), "Licensee To Revise EOIs For Instrument Errors"

The NRC and the industry recognized that instrument accuracy is affected significantly by adverse containment environments and that some of these instruments were used by the operators during post accident conditions.

Before the emergency operating instruction audit, the licensee participated with the Combustion Engineering (CE) Owner's Group CEN task 536 for generic resolution with NRC. As a result of audit findings, the licensee contracted CE for a "harsh environment study" and a related "functional analysis" for SONGS 2 and 3. As of this inspection period, these studies were near completion and the licensee plans to discuss the results with NRR for resolution. Therefore, this item remains open.

j. (Closed) Followup Item (206/89-33-01), "Auxiliary Feedwater Potential For Water Hammer"

On December 28, 1989, the licensee notified the NRC of a condition in which the Unit 1 AFW system was capable of injecting more flow to

each S/G than the design basis minimum flow for water hammer considerations. This condition was discovered as a result of a review of the pre-operational testing performed during the May 1989 maintenance outage. The water hammer limit was 150 gpm per S/G and the as-found condition was 181 ± 3 gpm per S/G. As a result of these findings, the licensee posted a dedicated individual at the AFW panel in the control room to alert licensed operators of any condition in which AFW flow may exceed 150 gpm. These steps were documented in Licensee Event Report 89-031.

Additionally, the licensee concluded that a permanent change to modify the AFW flow venturis should be implemented during the Cycle 11 refueling outage (which began on June 30, 1990).

Since this item is being tracked by the revision to LER 89-031, and the licensee is pursuing a permanent change to correct this situation, this item is closed.

No violations or deviations were identified.

12. Follow-Up on Corrective Actions for Items of Non-Compliance (92702)

a. (Closed) Violation (362/89-33-01) "Heavy Overtime Usage"

During the Unit 2 Cycle V refueling outage, the inspector found that heavy overtime was being used over the three month period by the control room operations staff while Unit 3 was operating in Mode 1. This was not consistent with TS requirements. In addition, one health physics (HP) individual exceeded the TS guideline for overtime without proper authorization.

For corrective action to this violation the licensee revised the shift manning schedule for the Unit 3 Cycle V refueling outage. In order to handle the increased workload during the plant shutdown in the beginning of the outage and plant startup at the end of the outage, the control room operators worked a five day - 12 hour per day schedule. The rest of the period, the operators worked an 8 hour work day and were "called-in" or "held-over," as needed.

The inspector reviewed a sample of the time cards and noted that the amounts of overtime used during the outage fluctuated. On an average week, the amount of overtime averaged at approximately 40% per individual. However, the inspector noted that the overtime hours varied and did not exceed the TS guidelines with few exceptions that had received the proper authorization. With respect to HP personnel, the licensee reviewed the violation with all HP supervisors to ensure that overtime is controlled in accordance with the established procedure. This item is closed.

b. (Closed) Violation (361/89-33-01) "Hydrogen Fire Due to Inadequate Work Control"

During a previous inspection, a hydrogen ignition occurred while the mechanics were removing relief valve PSV-7237 (located in-line

between waste gas decay tank T-088 and waste gas tank T-082). In addition to the licensee's root cause findings, the inspector noted that the licensee did not have a procedure or program covering maintenance activities on systems containing combustible gasses other than the main generator, contrary to the requirements of TS 6.8.1.f.

Since that inspection, the licensee completed most of the corrective actions, such as training and procedure improvement. Procedure S0123-I-1.7 "Maintenance Order Preparation, Use and Scheduling" was revised to direct planners to implement a new procedure S0123-I-1.40 "Hydrogen - Precautions During Maintenance Evolutions." In addition, the licensee is augmenting the computerized San Onofre Maintenance Management System (SOMMS) to flag the systems and components that may contain hydrogen to aid in the planning process. The inspector considered the licensee's corrective actions to be responsive. Therefore, this item is closed.

No additional violations or deviations were identified.

13. Exit Meeting (30703)

On July 12, 1990 an exit meeting was conducted with the licensee representatives identified in Paragraph 1. The inspectors summarized the inspection scope and findings as described in the Results section of this report.

The licensee acknowledged the inspection findings and noted that appropriate corrective actions would be implemented where warranted. The licensee did not identify as proprietary any of the information provided to or reviewed by the inspectors during this inspection.