U.S. NUCLEAR REGULATORY COMMISSION

REGION V

Report Nos. 50-206/87-03, 50-361/87-04, 50-362/87-05

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

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

Licensee: Southern California Edison Company
P. O. Box 800, 2244 Walnut Grove Avenue
Rosemead, California 92770

Facility Name: San Onofre Units 1, 2 and 3

Inspection at: San Onofre, San Clemente, California

Inspection conducted: February 8 through April 4, 1987

Inspectors: _____ 4/24/87
F. R. Huey, Senior Resident Inspector, Units 1, 2 and 3 — Date Signed

_____ 4/24/87
J. E. Tatum, Resident Inspector — Date Signed

_____ 4/24/87
A. Hon, Resident Inspector — Date Signed

Approved By: _____ 4/24/87
P. H. Johnson, Chief
Reactor Projects Section 3 — Date Signed

Inspection Summary

Inspection on February 8 through April 4, 1987 (Report Nos. 50-206/87-03, 50-361/87-04, 50-362/87-05)

Areas Inspected: Routine resident inspection of Units 1, 2 and 3 Operations Program including the following areas: operational safety verification, evaluation of plant trips and events, monthly surveillance activities, monthly maintenance activities, refueling activities, independent inspection, licensee event reports review, and follow-up of previously identified items. Inspection procedures 25575, 30703, 36700, 61702, 61705, 61706, 61707, 61708, 61709, 61710, 61726, 62703, 62704, 71707, 71710, 71711, 73051, 86700, 92700, 92701 and 93702 were covered.

Results: Of the areas examined, two apparent violations were identified: (1) inadequate control of modification to safety related equipment (paragraph 10.p) and (2) failure to comply with station housekeeping requirements (paragraph 10.n, to be the subject of future correspondence).

DETAILS

1. Persons Contacted

Southern California Edison Company

*H. Ray, Vice President, Site Manager
W. Moody, Deputy Site Manager
H. Morgan, Station Manager
*M. Wharton, Deputy Station Manager
*D. Schone, Quality Assurance Manager
D. Stonecipher, Quality Control Manager
R. Krieger, Operations Manager
D. Shull, Maintenance Manager
*J. Reilly, Technical Manager
P. Knapp, Health Physics Manager
*W. Zintl, Compliance Manager
D. Peacor, Emergency Preparedness Manager
P. Eller, Security Manager
W. Marsh, Operations Superintendent, Units 2/3
J. Reeder, Operations Superintendent, Unit 1
V. Fisher, Assistant Operations Superintendent, Units 2/3
B. Joyce, Maintenance Manager, Units 2/3
L. Cash, Maintenance Manager, Unit 1
T. Mackey, Compliance Supervisor
*C. Couser, Compliance Engineer
J. Wambold, Project Manager

San Diego Gas & Electric Company

R. Erickson, San Diego Gas and Electric

*Denotes those attending the exit meeting on March 30, 1987.

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. Operational Safety Verification

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.

a. Unit 1 Battery

During a tour of the #2 120 volt Unit 1 station battery, the inspector noted what appeared to be excessive buildup of corrosion products at the bottom of the battery case and on some of the plates of battery cell # 54. The licensee has stated that the observed condition is satisfactory and no action is necessary. This is an open item, pending additional review (50-206/87-03-01).

b. Inadequate Implementation of Work Authorization Controls for Safety Related Equipment (Unit 2)

On February 17, Unit 2 operations personnel released charging pump 2P192 for maintenance. The inspector reviewed work authorization controls associated with this outage. Work Authorization (WAR) 2-8700256 defined the administrative controls for this pump outage and required that the swing charging pump 2P190 be made operable on train A, while the normal train A pump was out of service. The WAR specifically required that the operator document the performance of a redundant component check/test of the swing pump before placing pump 2P192 out of service. The inspector noted that the operator had failed to document this redundant check on the WAR form. Although operator logs in the control room did not address any alignment check of pump 2P190 on February 17, discussion with plant operators indicated that the required check had been performed, but was inadvertently not documented. A review of the pump line up confirmed proper alignment of the Unit 2 charging pumps during the maintenance outage. This item was reviewed with the Unit 2/3 operations superintendent, who committed to reemphasize proper work authorization controls with all operations personnel.

c. Post Refueling Containment Tour (Unit 3)

Following the refueling outage, Unit 3 entered Mode 4 on March 1, 1987. The inspectors conducted an extensive tour of the Unit 3 containment on March 3, 1987, just prior to Mode 3 entry. The licensee had implemented well supervised controls of post refueling containment clean up and close out activities. These enhanced controls appear to have been effective, in that the inspector considered that containment looked considerably better than following previous refueling outages.

Although the general housekeeping and material condition of containment appeared good, the inspectors noted several examples of specific equipment deficiencies which should have been identified and corrected by licensee conducted walkdowns. During discussions with the inspector, the licensee acknowledged the need for continuing emphasis on attention to detail on the part of all cognizant station personnel following plant return from major outages. The licensee committed to provide renewed emphasis in this area. Examples of deficiencies noted by the inspectors which indicate a need for increased attention to detail include:

- Pressurizer safety valve 3PSV-200 had tape covering the valve housing vent.

- Loop 1A charging valve 3HV-9203 had a body to bonnet gasket leak.

- The remote valve position indicator was not properly installed on the loop 1A charging bypass valve 1201MU-107.

- Pressurizer level transmitter LT-0110-1 had no lockwire on its instrument isolation valves; also a plug was leaking in the bottom of the transmitter.

- A caution tag was improperly posted on the pressurizer auxiliary spray valve 3HV-9201. The tag indicated that the valve was hand torqued closed, whereas station procedures require this valve to be electrically closed.

- LPSI loop 2A check valve 1204MU-074 had a gasket leak.

- CCW supply valve 1203MU-277 to RCP P-002 seals was not locked open as specified in the plant alignment procedure (the valve was open as required).

The licensee resolved these conditions prior to Mode 2 entry.

d. Control of Maintenance Activities Affecting Operable Safety Related Equipment

The inspector expressed a concern relative to the control exercised by plant operators over maintenance activities with can have a significant effect on operable safety related equipment. In particular, the inspector toured the Unit 2 train B HPSI/LPSI pump room on February 18, and noted that maintenance personnel had left a portable cart associated with fire barrier seal installation work adjacent to HPSI pump 2P019, during Mode 1 operation. The cart was almost in contact with the pump bearing oil sight glass. Inadvertent impact of this cart with the relatively fragile oil sight glass could result in undetected draining of the pump bearing oil sump, rendering the pump inoperable.

A review of the maintenance order associated with this work did not provide any limitations or precautions associated with protection of operable equipment in the vicinity of the work. The inspector requested that the licensee consider the process implemented by plant operators relative to the potential impact of proposed maintenance activities in the vicinity of operable safety related equipment. For example, to what extent does this process properly address: equipment control evaluation (is the work worth the risk?); maintenance controls during work to minimize any risks; post work surveillance of adjacent components.

This item remains open pending additional review of licensee actions (50-361/87-04-01).

No violations or deviations were identified.

3. Evaluation of Plant Trips and Events

a. Reactor Trip on March 10, 1987 (Unit 1)

On March 10, 1987, while the Unit was at 92% power, an electrician inadvertently shorted the exciter brush rigging while performing a routine inspection and replacement of the exciter brushes. The short resulted in a loss of generator field which in return resulted in a turbine and reactor trip.

Plant operators responded to the event properly. Plant equipment also responded properly to the trip, with the following exceptions:

- The steam pressure did not reach the steam dump control set point as expected. Preliminary licensee calculations indicate that the energy removal mechanism due to cold auxiliary feedwater is significant enough to preclude the steam dump set point being reached. This apparently is due to the reduction in the T-avg program. The licensee plans to run a best estimate computer model, based on the current condition, to support ongoing operator and STA training with realistic plant response data.

- Condenser vacuum was lost shortly after the trip as a result of moisture separator reheater (MSR) steam dump isolation motor operated valves failing to close, resulting in air in-leakage. The licensee determined the cause of the valve failure to be a failed relay. The licensee is currently evaluating increasing the surveillance frequency on this relay from every refueling to during unit heat treatment operations, when power is below 70% and the circuit can be removed from service.

- Two of the rod bottom lights did not illuminate following the trip. The rods were later verified by LVDT measurement to be bottomed. The licensee determined that the instrument containing the rod bottom light circuitry had been replaced in January, when the unit was at power. Since full calibration and functional testing could not be performed at power (due to rod insertion limits), the licensee returned the instrument to service based on previously recorded baseline data. Apparently, ambient temperature differences between instrument adjustment with the plant in Mode 1 versus Mode 5 affects the accuracy of the instrument calibration. The need for additional action is still under review.

- The steam driven auxiliary feedwater pump started properly after the trip. However, when it was secured, the steam control valve CV3201 was found to be leaking and caused the turbine to rotate at lower speed. After the turbine was secured, the licensee posted a watch at the pump to notify the control room if the turbine starts again. The watch will be posted until CV3201 is repaired during the mid-cycle outage. The licensee committed to notify the NRC if the watch is terminated prior to the valve repair.

- The A steam generator feedwater block valve MOV-21 would not fully shut when closed remotely from the control room. It was subsequently manually closed. The licensee determined that the cause of malfunction involved a misaligned packing gland follower that resulted in stem binding during valve closure. The cause of the misalignment is still under review.

- One of two intermediate range nuclear instruments, NIS 1204, failed low during the trip due to the compensating voltage being out of adjustment. This was corrected prior to plant startup. Further investigation determined that detector degradation may have contributed to the channel failure. This instrument failed again approximately 10 days after plant restart. The licensee will inspect this detector during the next outage and determine what additional actions are necessary (Followup item 50-206/87-03-02).

The Unit was returned to service and synchronized to the grid at 0750 on March 13, 1987.

b. Unit Shutdown to Repair Main Transformer (Unit 2)

Unit 2 was shutdown on March 17, 1987, to make repairs to the neutral ground reactor on main transformer 2XM. The neutral ground reactor appeared to have an open circuit based on current readings, and the unit had to be shutdown to evaluate this condition. The licensee found that the open circuit was due to a poor electrical connection where the grounding cables were attached to the neutral ground reactor. Repairs were made to the electrical connection and the unit was returned to service on March 18, 1987.

c. Reactor Trip on March 28, 1987 (Unit 2)

Unit 2 tripped from 85% power at 0010 on March 28, 1987. The unit had reduced power to 85% to clean condenser water boxes when the reactor tripped due to low steam generator water level. During valve operation, the valve stem for feedwater regulating valve 2FV-1111 became separated from the actuator when the valve stem unthreaded from the actuator coupling device. The licensee believes that feedwater flow induced rotation of the valve disc and caused the valve stem to loosen from the coupling device. As a result, feedwater regulating valve 2FV-1111 did not pass sufficient feedwater to satisfy the steam demand at 85% power. The licensee has assembled the valve stem to the actuator coupling device, and pinned the valve stem to the coupling device to prevent recurrence. The licensee returned the unit to service on March 29, 1987.

No violations or deviations were identified.

4. Monthly Surveillance Activities

a. Unit 1

The inspector observed the following surveillances during this report period:

SO1-12.3-10 "Diesel Generator Load Test" (monthly)
SO1-12.2-26 "Steam Driven Auxiliary Feedwater Pump Operability Test" (monthly)

Procedure SO1-12.3-10 was performed in conjunction with procedure SO-12.4-2 "Operations In-Service Valve Testing". Both procedures require opening of cylinder compression valves and momentary air roll of the engine to inspect for moisture, lube oil or debris at the valve openings. During the surveillance, the air roll process was repeated several times in order to cycle different valves for SO-12.4-2 testing. Following the last air roll evolution, operators inadvertently failed to close the compression valves. When the diesel was subsequently started per procedure SO1-12.3-10, since the compression valves were still left open, a diesel fuel/air mixture was ejected through the open valves. The engine was immediately secured. Upon closing of the valves, the test proceeded and was completed successfully. The licensee has retrained involved personnel on the importance of attention to detail and strict procedure compliance.

During the performance of SO1-12.2-26, it was found that the start logic was inhibited after a momentary, spurious low suction pressure signal (introduced by faulty test equipment). This unexpected condition was quickly diagnosed by station operations and maintenance personnel. It was found that the low suction pressure trip signal was sealed in, even though it had been only a momentary signal. This occurrence identified an operability concern, in that the steam driven AFP trip must be manually reset after a low suction pressure condition (even if only momentary), in addition to acknowledging the annunciator. If this is not done, the pump will not start automatically upon demand. This condition was briefed to the oncoming shift and the licensee is evaluating necessary procedure, training and hardware modifications (Followup item 50-206/87-03-03). The rest of the test was performed successfully after the system was reset.

b. Unit 2

The inspector observed the monthly channel functional test on the Reactor Plant Protection System, Channel D. The surveillance was properly authorized and conducted in accordance with procedure SO23-II-1.1.4.

The inspector reviewed licensee performance of technical specification required surveillances prior to plant startup following the reactor trip on February 5. The inspector reviewed all surveillances required for plant startup and noted no discrepancies.

c. Unit 3

The inspector observed portions of the following surveillance activities:

SO23-V-12.1.30 Fixed Incore Detector Cable Testing

SO23-V-12.2.2.3 Core Protection Calculator (CPC) Channel C CEA Position - Response Time Test

SO23-II-5.29 Source Range Neutron Flux Monitor Channel 1 Calibration

SO23-II-8.19 Control Element Assembly Rod Drop Time Response Test

The surveillances were properly authorized and conducted in accordance with applicable procedures.

Prior to Unit 3 return to service, the licensee conducted integrated ESF testing in accordance with procedure SO23-3-3.12. The inspector reviewed the test results and made the following observations:

- In some instances, the ink used for recording data was not indelible and had smeared slightly.
- Some of the signature verification sheets were filled out in a sloppy manner and did not provide for good record keeping.
- As was the case during past integrated ESF tests, several of the Agastat relay timers did not function within the required time interval. Evidently, the tolerances associated with the Agastat relays are not sufficient to give good repeatability for satisfying the Technical Specification actuation times. The licensee committed to evaluate this condition to ensure that the tolerances of the Agastat relays have been properly factored into the accident analysis. This is an open item, pending additional review of licensee actions (50-362/87-05-01).

No violations or deviations were identified.

5. Monthly Maintenance Activities

a. Steam Driven Auxiliary Feedwater Pump (Unit 1)

The inspector observed the maintenance activity on drain bypass valve AFW-368 under MO #86070417000. This work effort involved unclogging debris and reassembly of the valve using new diaphragms. The work was performed properly and QC verified that proper quality replacement parts were used.

b. Rod Position Indications (Unit 1)

The inspector reviewed two maintenance orders for resolving the rod position anomaly observed during the plant trip on March 10.

Maintenance order #87030929000 was issued to determine the cause of the incorrect height indications of rods and maintenance order #87011496001 was issued to recalibrate the rod position indication circuits. No discrepancies were observed.

c. RAS Indicating Light Failure (Unit 2)

While conducting PPS matrix testing associated with the Channel B Recirculation Actuation Signal (RAS), the indicating light extinguished as required but would not illuminate upon completion of the test. The cognizant engineer examined the electrical diagrams and determined that an actual RAS signal did not exist, but that a failure had occurred in the indication circuit. Maintenance order #87021314 was initiated to replace the faulty circuit board. The inspector observed this maintenance activity and observed that the indicating light was illuminated upon replacement of the circuit board.

d. Auxiliary Contact Replacement (Unit 3)

During response time testing for the 480 VAC power supply breaker 3HV-9217, the licensee identified that an auxiliary contact was striking and causing sluggish operation of the breaker. The inspector observed that the auxiliary contact (S31805ESBJ17) was being replaced in accordance with maintenance order #87020927, and QC verified installation of the replacement part. 3HV-9217 is the reactor coolant pump controlled bleed off isolation valve located inside containment. No deficiencies were noted.

e. Fuel Injector Replacement (Unit 3)

During a one hour test run on diesel generator 3G003, the licensee identified a cylinder that exhibited high operating temperatures. Maintenance order #87020976 was initiated to replace the fuel injector for the cylinder and set the fuel racks. The inspector observed that this activity was being done in accordance with the procedures, and that foreign material exclusion (FME) requirements were being adhered to.

No violations or deviations were identified.

6. Engineered Safety Feature Walkdown

a. Unit 1

During the report period, the inspector walked down the Auxiliary Feedwater System while the Unit was in Mode 1 and shortly after the completion of the surveillance test on the steam driven AFP. The inspector verified that the valve alignment was in accordance with the procedures and that required equipment was operable.

b. Unit 3

Following the second refueling outage on Unit 3, the inspector verified the following valve alignments inside containment while the unit was in Mode 4:

- Penetration Isolation Valves
- Safety Injection Tank Isolation Valves
- Containment Emergency Cooling Unit Component Cooling Water Isolation Valves

After the unit achieved 100% power, the inspector also verified that the Safety Injection System and Emergency Boration System were properly aligned.

No violations or deviations were identified.

7. Post Refueling Activities

During this inspection period, Unit 3 completed low power physics testing and entered Mode 1 on March 12, 1987. The second refueling outage was completed on March 12, 1987, at 0735 when the unit was synchronized to the grid. Power ascension testing was completed and the unit achieved 100% power at 0445 on March 17, 1987. The inspector observed portions of the following activities:

SO23-V-1.0	Low Power Physics Testing
SO23-V-1.0.1	Criticality Following Refueling
SO23-V-1.0.2	Boron Endpoint Determination
SO23-V-1.0.5	Control Element Assembly Worth By Boration/Dilution
SO23-V-1.0.6	Control Element Assembly Worth by Exchange
SO23-V-2.0	Power Ascension Testing
SO23-V-1.11	Doppler Power Coefficient Measurement
SO23-V-1.19	Nuclear and Thermal Power Calibration

No violations or deviations were identified.

8. Independent Inspection

a. PSA-100 Snubber Failure

LER 86-17 for Unit 2 was issued by the licensee to identify Pacific Scientific PSA-100 snubber failures that were discovered during the routine 18 month surveillance. The licensee has completed an evaluation to determine the cause of snubber failure, and the cause was apparently due to assembly techniques used by the manufacturer

prior to March, 1979. Until that time, the snubbers were torqued together after the free fall test was conducted which resulted in excessive drag in some instances. After March, 1979, the manufacturer torqued the snubbers together prior to conducting the final free fall test to ensure that drag would not be excessive. During the recent Unit 3 refueling outage, no failures of the PSA-100 snubbers was identified during the 18 month surveillance testing.

b. Foreign Material Exclusion (FME)

Prior to the Unit 3 refueling outage, the licensee changed the administrative control of the FME program such that the maintenance organization was responsible for direct implementation of the program. Previously, the Quality Control (QC) organization was responsible for implementation and control of FME. During the Unit 3 refueling outage, the inspector monitored work in progress frequently to ensure that the FME requirements specified in maintenance procedure SO123-I-1.18, titled "Foreign Material Exclusion Control During Maintenance, Testing and Inspection Activities," were properly implemented. FME appeared to be well controlled in all instances.

c. IE Information Notice Program Review

During this inspection period, the inspector examined the licensee's program for addressing IE Information Notices. The following notices were selected for review:

86-03 Potential Deficiencies in Environmental Qualification of Limitorque Motor Valve Operator Wiring

86-05 Main Steam Safety Valve Test Failures and Ring Setting Adjustments

86-29 Effects of Changing Valve Motor Operator Switch Settings

86-47 Erratic Behavior of Static "O" Ring Differential Pressure Switches

86-53 Improper Installation of Heat Shrinkable Tubing

86-56 Reliability of Main Steam Safety Valves

86-71 Recently Identified Problems with Limitorque Motor Operators

The licensee's program for handling IE Information Notices relies exclusively on the review that is conducted by the Independent Safety Engineering Group (ISEG). The Technical Specifications for Units 2 and 3 require ISEG to examine NRC issuances, and to make detailed recommendations for improving plant safety to the Supervisor, Nuclear Safety Group. The licensee uses this ISEG

review as the formal program for handling IE Information Notices on Units 1, 2 and 3. It appeared to the inspector that in relying on ISEG for the handling of Information Notices, certain regulatory considerations such as operability of equipment and timeliness of corrective actions may not be addressed, since these are not ISEG functions. Distribution of Information Notices to ISEG and the Compliance organization was provided, and informational distribution was made to others. However, the method of handling Information Notices did not appear to be consistent. The Compliance organization did not appear to play a specific role. Due dates were not being assigned for completion of reviews, with the result that as much as a year sometimes elapsed before completion of some reviews (one example is IE Information Notice 86-03, discussed in paragraph 10.a). The technical specifications apparently intend that ISEG independently review the adequacy of the station's evaluation of concerns addressed in NRC Information Notices and Bulletins. This item was discussed with licensee management and remains open pending additional review (50-361/87-04-02).

d. Followup Review of Licensee Actions Related to the Surry Feedwater Rupture Event

The feedwater rupture event at Surry highlighted several significant concerns relating to the integrity of plant piping systems and possible plant operational problems resulting from malfunction of plant fire suppression equipment. To assess the applicability of these concerns at San Onofre, the inspector posed several questions to the licensee. The licensee responded as indicated to the following questions:

(1) Does the licensee take measurements for pipe thinning on secondary plant piping? Is there a program for periodic inspection?

Yes. In early December 1986, the licensee observed a through wall crack in a carbon steel reducer downstream of a Unit 1 heater drain tank control valve. The nominal wall size was approximately 0.35". The crack was determined to be the result of severe erosion of the reducer as a result of high velocity flow (approximately 100 fps) just downstream of the valve. This high velocity was the result of throttling of the valve, which was designed oversize. The licensee found similar conditions on both Units 2 and 3. The licensee is planning to implement some combination of the following possible fixes: smaller size control valve, line orifice, and reducer material change to corrosion resistant material (stainless or chrome-moly).

Yes. The licensee initiated their turbine plant pipe erosion inspection program as a result of the above problem and the subsequent Surry event. An extensive program was conducted on Unit 3 during the 1987 refueling outage. The licensee also inspected the same areas on Units 1 and 2 for which problems were noted during the Unit 3 inspections. No problems were

observed during these followup inspections on Units 1 and 2. The licensee is preparing a formal program for incorporating this type of secondary plant piping inspection into their existing ISI program. The format for this program is expected to be included in a report on the results of Unit 3 inspection efforts. This report should be issued by the end of April 1987. The licensee expects to implement comprehensive inspections on Unit 1 during the June 1987 mid-cycle outage and during the Fall 1987 Unit 2 refueling outage.

(2) Has the licensee taken thickness measurements outside of the heat affected zone?

Yes. Measurements were taken well beyond the weld area.

(3) Has the licensee considered the following in their evaluation?

(a) Two phase systems. Yes. The licensee did not observe any problems in two phase flow areas. The only observed problems involved carbon steel reducers in applications involving high localized flow conditions.

(b) Carbon steel fittings and spools. Yes. There was little erosion noted at elbows. All problems involved reducers experiencing high localized flow conditions.

(c) Fittings less than 10 pipe diameters apart. Yes. There are very few of these and no problems were observed.

(d) Bulk flow greater than 10 fps. Yes. Bulk flows ranged from approximately 7 to 22 fps.

(e) Temperature between 195 and 450 F. Yes. Temperatures ranged from 200 to 445 F.

(f) Oxygen less than 600 ppb. Yes. Oxygen levels are generally less than 10 ppb and always less than 30 ppb.

(4) What were the results of the licensee's inspection?

The licensee looked at the following components on Unit 3: Feedwater dump valves and piping, feedwater mini flow valves and piping, feed pump suction and discharge, MSR drain tank valves and piping, heater drain tank valves and piping, all bends, T's and fittings downstream of control valves associated with the high temperature feedwater heaters.

The following Unit 3 inspection results were observed:

(a) Reducers downstream of heater drain tank level control valves (approximately 150 fps local flow, 14 fps bulk flow): 0.15" as found / 0.33" nominal wall

(b) Reducers downstream of 2nd to 3rd point heater control valve: 0.112" as found / 0.400 nominal wall

(c) Reducers downstream of MSR level control valves: 0.23" as found / 0.43" nominal wall

(d) Feed piping at discharge of P063 main feedwater pump (approximately 3' either side of mini flow branch connections): 1.1" as found / 1.3" nominal wall. ANSI minimum allowed is 1.145". The licensee believes that this problem on Unit 3 is the result of extended low power (about 50%) in 1985, during which period the pumps operated with mini flows in service full time.

(5) During the Surry event, water and steam short circuited control systems associated with Halon and Cardox fire suppression systems, contributing to confusion and unsatisfactory conditions during the event. To what extent is this concern applicable to San Onofre?

Four Halon systems are installed in Units 2/3 and two in Unit 1. These systems are not generally arranged such that they would be subject to short circuiting from a steam accident (there were no spurious trips of this system during the Unit 1 water hammer event in November 1985). These systems are not toxic and would not prevent operator actions if spuriously activated.

CO2 systems are only used on the Units 2/3 turbines and are designed only to protect the turbine bearings. This system does not pose a problem for operator actions.

(6) What actions has the licensee taken to:

(a) Ensure that all fire suppression system conduit cover plates are securely in place?

Since circuitry for these systems is not likely to be subject to steam damage, no actions are planned.

(b) Ensure that all fire suppression system conduits are properly sealed where cable exits conduit to enter cable trays?

Conduits are sealed where they penetrate existing fire barrier walls. These are surveilled on a regular basis.

(c) Review the location and spray patterns of turbine building sprinkler systems relative to impact on fire suppression equipment?

The existing design is considered satisfactory.

(d) Evaluate the need for additional timing mechanisms located remotely from individual Cardox control stations to limit the total Cardox release into a single room?

This is not applicable at San Onofre.

(7) What actions has the licensee taken to preclude recurrence of events involving check valve related failures?

The licensee has performed numerous detailed visual inspections of check valves on all three units. The licensee has implemented an ungraded inservice inspection and test program to ensure early detection and correction of check valve degradation or malfunction.

e. Removal of Safety Channels from Service and Voluntary Entry into Technical Specification 3.0.3

Region V inspectors recently raised a concern at another facility relating to improperly controlled bypass of plant safety instrument channels (main steam isolation on low steam generator pressure) and voluntary entry in technical specification 3.0.3. The inspectors reviewed these concerns as they relate to San Onofre and noted the following:

(1) Cutout or bypass of instrument safety channels is only performed in accordance with properly approved procedures.

(2) In the particular case of main steam isolation on low steam generator pressure (Units 2/3), the shutdown procedure directs the operators to ensure insertion of simulated steam generator pressure signals before decreasing pressure below 10 psig (the Technical Specifications do not require this system to be operable in Mode 4).

(3) Entry into technical specification 3.0.3 is controlled by the licensee LCO action requirement system (LCOAR). Station Manager or Operations Manager approval is required for voluntary entry in technical specification 3.0.3. This approval and the reason for entry are recorded in the shift superintendent log.

9. Review of Licensee Event Reports

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

Unit 1

1-80-25 Linear Indication in Reactor Coolant Pump Flywheel Bores.

In May 1980 during an inservice inspection outage indications were detected in the intermittent seal welds in the flywheel bores of RCPs A and B. The NSSS Vendor Westinghouse informed the licensee that the purpose of this weld was to prevent relative motion between the flywheel plates during fabrication. The Westinghouse recommended corrective action was to machine out an annular area of the bore, removing the seal welds and heat affective zones. A 10CFR50.59 review was performed for this recommended modification and determined that no unreviewed safety question resulted. In a letter dated June 6, 1980, the licensee informed the NRC that the corrective action recommended by Westinghouse was implemented. This item is closed.

1-84-01 Emergency Air Treatment System Initiated Due to Tear Gas Drifting on Site.

This item is closed in conjunction with open item 50-206/84-05-04 (paragraph 10.c).

1-84-15 Spurious Safety Injection Actuation.

The licensee attributed a voltage transient to be the cause of this actuation. The licensee could not identify what caused the voltage transient. Post trip review identified two anomalies - the reactor coolant pump (RCP) did not trip and the SI first out annunciator failed. The licensee determined that the RCP did not trip due to relay contact surface contamination with a shellac like deposit, probably from lubricants. The relay was cleaned and tested. Similar contacts in other safety related switchgear were inspected and found free of similar deposits. The licensee was unable to duplicate the SI alarm failure. Similar spurious actuations have not recurred. This item is closed.

1-86-12 Surveillance Missed Due to Schedule.

This is an informational LER for a missed surveillance of switch fuse block removal verification per Technical Specification 4.1.1.b, Table 4.1.2. Item 10, 11, 12 and 13. The licensee investigation of cause determined that the surveillance had not been properly rescheduled during the August 6, 1986, Unit startup.
The licensee strengthened administrative procedure in the area of scheduling following a mode change. The licensee's corrective action appeared to be adequate and this item is closed.

1-86-12 Electrical Transfer Switch Delinquent Monthly Surveillance

1-87-01 Entry Into Technical Specification 3.0.3

Unit 2

2-84-45 Charging Pump 2P-191 Cracked Block

This item was previously discussed in paragraph 5 of Inspection Report 50-361/85-27. The licensee determined that the cracked block was due to fatigue brought on by cavitation. The licensee has changed the procurement specifications for the charging pumps to require the sharp edges associated with the plunger bores to be radiused and peened to correct this problem.

2-85-54 Surveillance Interval Exceeded for Containment Penetration Overcurrent Protective Devices

2-86-28 Delinquent Safety Injection Tank Surveillance

2-87-01 Unit 2 Trip Due to Closure of Main Feedwater Block Valve

Unit 3

3-83-62 CEA Dropped Due to Improper Time Sequencing of Grippers

As previously discussed in paragraph 3(b) of Inspection Report 50-361/86-24, the licensee replaced the CEA timer cards for all Unit 2 CEAs with automatic CEDM timing modules (ACTMs) to eliminate rod drops due to improper time sequencing of grippers.

This modification was completed on Unit 3 CEAs during the recent refueling outage.

3-84-43 AFW System Surveillance Not Performed

A notice of violation was issued for this item as discussed in paragraph 9(c) of Inspection Report 50-362/85-12. The licensee has completed corrective actions as documented in paragraph 10(a) of Inspection Report 50-362/86-08.

3-85-29 Snubber Deficiencies (Rev 1)

3-86-08 Containment Purge Isolation System (CPIS) Actuation

3-87-01 18 Month Surveillance of Instrument Line Snubbers Not Performed

10. Follow-Up of Previously Identified Items

a. (Open) IE Notice (86-03), Potential Deficiencies in Environmental Qualification of Limitorque Motor Valve Operator Wiring (Also Unresolved Item 50-361/86-34-05) (Units 2 and 3)

The inspector previously documented several observations related to the environmental qualification of Limitorque Motor Operated Valves

(MOVs) in Inspection Report 50-361/86-34. In response to these observations, the licensee provided the following information in a memo dated January 13, 1987:

(1) Internal wiring - the licensee stated that only qualified jumper wire was used in MOV actuators located inside containment, and CSA Type TEW wire was used in addition to qualified jumper wire in MOV actuators located outside containment. Interim use of the MOV actuators with CSA Type TEW wire was justified based on the utility group study titled, "Insulations and Jackets for Control and Power Cables in Thermal Reactor Nuclear Generating Stations," which was previously referenced. The licensee committed to verify that the jumper wires removed to date are consistent with the assumptions that were previously made.

(2) Crimp-on wire connectors - for the qualification basis of Limitorque installed crimp-on wire connectors, the licensee referenced a Nuclear Utility Group Equipment Qualification (NUGEQ) report titled, "Clarification of Information Related to the Environmental Qualification of Limitorque Motorized Valve Operators," dated April, 1986. The NUGEQ report states that the terminal lugs have been qualified by Limitorque test report B0119.

(3) Internal space heaters - the licensee stated that the effect of the space heaters on internal jumper wires was not specifically addressed because the motor wire was considered to be the most limiting factor. The licensee committed to evaluate any potential failure mechanisms of the heaters.

(4) Internal components - the licensee referenced the NUGEQ report for the qualification bases of Mobil 28 lubricant, grease seals, and terminal blocks. The NUGEQ report states that Mobil 28 lubricant was qualified by Limitorque test report B0212, and that terminal blocks were qualified by Limitorque test report B0119. The NUGEQ report states that VITON seals were used inside containment and Buna-N seals were used outside containment during qualification testing, but (according to Limitorque) sealing was not required to qualify the actuators.

(5) Slide wire position transmitters - the licensee committed to verify that the slide wire position transmitters would not be relied upon during emergency operating conditions.

(6) Arrhenius equation deficiencies - the licensee committed to review the calculations and make any necessary corrections.

On February 11, 1987, the inspector and members of the NRC Vendor Programs Branch (VPB), IE, attended a meeting with the licensee to discuss environmental qualification of Limitorque MOVs. With regard to the inspector's observations, the following items were discussed:

(1) Internal jumper wires - VPB emphasized the fact that unqualified jumper wire was found in various Limitorque MOVs located inside and outside containment, and requested the licensee to provide a justification for continued operation (JCO) for each valve that could be affected. The licensee committed to complete this action by February 27, 1987.

(2) Internal space heaters - VPB stated that it has not been demonstrated that the motor wiring insulation is more limiting than the internal jumper wiring insulation, and that the licensee would have to evaluate the effects of the internal space heaters on the jumper wires. VPB requested the licensee to provide JCOs for this condition if the evaluation indicated that use of the heaters was not qualified. The licensee committed to complete this action by February 27, 1987.

Following this most recent meeting, on February 20, 1987, the licensee determined that the use of space heaters in the Limitorque MOV limit switch compartments was not a qualified condition. The licensee initiated immediate actions to electrically disconnect the heaters, and a JCO was completed on February 27, 1987. In addition, the JCO also addressed the use of unqualified internal jumper wires in Limitorque MOV actuators. VPB reviewed the licensee's JCO and made the following observations:

(1) The effect of heater lead wire faults on valve operability was not evaluated. The licensee committed to include this evaluation in the JCO.

(2) The JCO assumed that Limitorque MOV internal jumper wires were qualified for those valves located inside containment. As stated previously, the licensee had insufficient basis for making this assumption. The licensee was considering the possibility of substantiating this assumption by chemical analysis.

(3) The JCO was not clear in some cases as to the functional and operational requirements associated with certain valves. The licensee committed to include these clarifications in the JCO.

There has been a history of problems associated with environmental qualification of Limitorque MOV actuators. The following problems have been identified to date:

(1) IE Notice 83-72 was issued on October 28, 1983, to identify potential EQ problems with terminal blocks, internal wiring, drain plugs, internal space heaters, and orientation of the motor operator.

(2) Combustion Engineering (CE) advised the licensee of a problem associated with melamine limit switch rotors in July, 1984. The rotors were cracking where the drive pin attached the rotor to the pinion gear.

(3) IE Notice 86-03 was issued on January 14, 1986, to identify potential EQ problems with internal jumper wires.

(4) While replacing internal jumper wire during the Unit 2 refueling outage that was conducted from March 15 through June 12, 1986, unqualified wire was found in the Limitorque MOV actuators. Similarly, while replacing internal jumper wire on selected Unit 3 Limitorque MOV actuators during the period from August through November, 1986, unqualified wire was found to exist in some of the MOV actuators.

(5) IE Notice 86-71 was issued on August 19, 1986, to identify potential EQ problems with internal space heaters and melamine limit switch rotors.

(6) In October, 1986, while replacing internal jumper wires on the Unit 3 Limitorque MOV actuators, the licensee replaced wiring that had discolored and embrittled insulation. The insulation had been degraded due to the effect of internal space heaters located in the limit switch compartment.

In light of the above problems, the inspector noted several concerns relating to the adequacy of licensee evaluation and corrective actions associated with the Limitorque MOV actuators. Specifically:

(1) The licensee did not adequately evaluate installed Limitorque MOV actuators to determine the extent of unqualified conditions in response to IE Notices 86-03 and 86-71.

In the case of IE Notice 86-03, the licensee did not evaluate the existing conditions until the inspector requested this information. The evaluation that was subsequestly performed by the licensee was based on a records review and concluded that the existing internal jumper wires in Limitorque MOV actuators were qualified. Subsequent insptections have demonstrated numerous examples of wires that have not been shown to be qualified.

In the case of IE Notice 86-71, the licensee did not evaluate the existing separation of internal wiring from internal heaters until after the inspector observed that wires from several of the Limitorque MOV actuators appeared to be degraded by heat. The licensee stated that only heater lead wires were observed to be damaged and that there were no examples of damage to other internal jumper wires due to the effects of heat. The licensee subsequently inspected several actuators to verify adequate heater separation from internal wiring to support a JCO.

(2) The effect of internal space heaters on jumper wires was not factored into the qualification basis for Limitorque MOV actuators in response to IE Notice 86-71. When the inspector questioned the qualification basis for the use of internal space heaters, the licensee determined that this was an

unqualified condition and took immediated action to electrically disconnect the heaters.

(3) Nonconformance Reports (NCRs) were not initiated to address the degradation effect of internal space heaters on internal jumper wires when this condition was observed to exist, nor were NCRs issued to address the existence of apparently unqualified jumper wires in Limitorque MOV actuators.

(4) Limitorque MOV actuator EQ packages did not adequately document the basis for qualification of certain internal components. Recently, the licensee has referenced the NUGEQ report as the basis for qualification of some components, but the applicability of this report to San Onofre was not demonstrated.

(6) The licensee's Independent Safety Engineering Group (ISEG) did not complete their review of IE Notice 86-03 until December 5, 1986, ten months after the notice was received. ISEG did not complete their review of IE Notice 86-71 until December 16, 1986, four months after that notice was received. ISEG review of these notices does not appear to have been conducted in a timely manner, given the potential safety hazards that were identified. Furthermore, the ISEG evaluation of IE Notice 86-71 appears to have been inadequate in that it failed to address the issue of potential heat damage to actuator wiring that was subsequently raised by the inspectors and resulted in the licensee determination that the heaters should be deenergized.

During the exit meeting with the inspectors, the licensee stated that the majority of NRC concern appears to be related to the perceived untimeliness of licensee actions relative to verification of Limitorque MOV environmental qualification. The licensee stated that, with the exception of the MOV space heaters, existing Limitorque environmental qualification packages are adequate to demonstrate proper qualification and that inspections conducted to date have not identified any condition which is perceived by the licensee to indicate that existing plant components are not qualified. As noted above, the licensee agreed to pursue possible chemical analysis to resolve inspector concerns relative to instances in which wiring was discovered which did not appear to be qualified, based on visual inspection. The licensee further stated that he believes that actions were taken in a timely manner considering the magnitude of the defined task and the nature of the NRC concern (e.g. the identified problems were addressed by an IE Notice rather than an IE Bulletin).

This item remains unresolved pending additional review of licensee actions and completion of requested further evaluation of as found wiring.

b. (Closed) Open Item 50-206/83-07-01, Long Term Corrective Action for Construction Rupturing of Salt Water Instrument Air Line

Summary

The licensee committed to implement a program to prevent inadvertent damage to embedded rebars, conduits and air lines while drilling concrete for modifications.

Status

The licensee issued an Interim Work Procedure IWP122 "Concrete and Masonry Drilling" on January 9, 1987. This procedure required the responsible work organization (RWO) to review applicable drawings for possible interfering embedded items prior to drilling. Furthermore, it required the use of electrical driven tools with ground fault devices which would trip the drill if the drill contacted any grounded metal which was embedded in the concrete. The inspector reviewed the above procedure and witnessed a demonstration operation of the trip device. The licensee's corrective effort appeared to be satisfactory and this item is closed.

c. (Closed) Open Item 50-206/84-05-04, Tear Gas Protection Evaluation (Also LER 84-01 -L0)

Summary

In response to the previous inspection, the licensee committed to evaluate the adequacy of protective measures in place to mitigate tear gas intrusion into the plant.

Status

The licensee addressed the commitment as follows:

(1) Communication channels with control rooms were established to forward pertinent information per the incident command system. The responsible Incident Commander for situations was also defined.

(2) Emergency Preparedness' Emergency Service group, Operations and Vital personnel as well as Station Security personnel were provided access to the proper breathing apparatus for tear gas environments.

(3) An incident command system was developed for implementation in similar tear gas intrusion situations.

(4) The Unit 2/3 Toxic Gas Isolation System (TGIS) was determined to have a low likelihood of detecting tear gas and initiating the Control Room Emergency Air Treatment System (CREATS), because internal sensors were designed to meet the Technical Specification required gas sampling requirement.

(5) The Unit 2/3 TGIS and CREATS, when actuated manually, have the capability to isolate the control room from outside air environment and purify the air in the control room.

The licensee considered this item resolved based on the above. The inspector reviewed the licensee's response and found them adequate. Thus, this item is closed.

d. (Closed) Open Item 50-206/84-10-03, Questionable Weld Undercut on 12 Inch Horizontal Beam in 480 V Room on 1985 Work

Summary

Previous inspection identified a 1/32 to 1/16 inch weld undercut which met the current standard of 1/16 inch maximum undercut but might exceed earlier code requiring less than 1/32 inch. The licensee committed to determine applicable code requirements and perform a sampling inspection if the applicable codes were not met.

Status

The item was addressed by the licensee's NCR SO1-P-2692 with other weld deficiencies identified during a walkdown. The licensee determined the seven identified deficient welds did not meet the requirements of AWS D.10 June 1963. However, these welds were evaluated in 1982-1983 by graduate Civil/Structural Engineers from Bechtel as part of the S.E.P. Seismic Reevaluation effort and deemed acceptable. However, to maintain quality workmanship, two of the welds were reworked in accordance with the latest AWS D1.1. The rework was completed per Construction Work Order CWO 4000-80 and the NCR was disposition on 8/17/84. Thus, the licensee determined this item was resolved.

Based on the documents reviewed, the inspector considers this item closed.

e. (Closed) Open Item 50-206/84-16-11, Use of "N/A" to Omit Steps in Procedure

Summary

Previous inspection identified general procedures permits omission of steps as "N/A" with subsequent approval of the Shift Superintendent and definitive criteria had not been promulgated to define the use of "N/A" or to identify all optional steps in procedures.

Status

The licensee implemented a new procedure SO123-VI-1.0.3 "Methods of Handling Invalid Steps/Section" on 2/28/86 to respond to this item. This procedure identified perceivable circumstances where a step was to be omitted and defined corresponding courses of action as well as proper markings for each circumstance.

The inspector reviewed this procedure and considered it addressed and closed this item.

f. (Closed) Open Item 50-206/84-33-01, Inoperable Fire Protection System

Summary

Previous inspection determined the licensee had substantially completed the corrective actions needed for this item. The only remaining tasks were revision to plant operating instructions SO1-11-1, SO1-11-2 and SO1-11-5. The revision would include caution statements to notify proper management such as Supervisor of Fire Protection or Station Emergency Preparedness Manager when the fire protection system becomes inoperable.

Status

The licensee implemented the above revision to the procedures. The inspector reviewed these procedures and considered this item closed.

g. (Closed) Open Item 50-206/84-36-01, Lack of Formal Requirements for Operators to Monitor Plant Indications when Alarms are Inoperable

Summary

After this condition was identified in the original inspection, the licensee developed an Annunciator Compensatory Action Procedure. This procedure required the shift supervisor to specifically assess any annunciator malfunction and determine necessary compensatory actions which are documented and reviewed by operations personnel shiftly until the annunciator malfunction is repaired. A follow-up inspection (50-206/85-14) found this procedure was fully implemented on Unit 1 and appeared to be working well. However, a similar program was not yet implemented on Unit 2 and 3 at that time.

Status

This procedure has been implemented for Unit 2 and 3. This item is considered closed.

h. (Closed) Open Item (50-361/85-09-03), Valve Marking with Felt Tip Pens

As discussed in paragraph 10(h) of Inspection Report 50-361/86-08, this item remained open pending review of informal markings used in conjunction with the water level standpipe installed during the Unit 2 refueling outage. During the recent Unit 3 refueling outage, the inspector observed that a calibrated scale was used and properly controlled by procedure. This item is closed.

i. (Closed) Open Item (50-361/86-08-01), Improper Color Code for Non 1E Cable

As previously discussed, the inspector observed that electrical test cable had been installed that was color coded with Class 1E colored

jacket material. This item was addressed by the licensee in NCR 3-1478. The non 1E cable has been tagged at routine intervals to provide proper identification and control. The licensee stated that this cable was installed during startup testing to assist in the integrated ESF test that is conducted each refueling outage. The inspector did not observe any additional examples of this condition, and it appeared to be an isolated case. This item is closed.

j. (Open) Open Item (50-361/86-08-02), M&TE Authorized User's List

This item was open pending review of the licensee's policy for controlling M&TE. Previously, the licensee's procedures required that each individual authorized to use M&TE be listed on the Authorized User's List. This policy was implemented to provide a high degree of control during construction and startup testing when large numbers of contract workers were used. Currently, the licensee does not feel that this degree of control is necessary for M&TE, and the procedures have been changed to specify that the cognizant station manager is responsible to ensure that personnel are qualified to use M&TE in accordance with ANSI N45.2.6-1978 and ANSI N18.1-1978. A change request has been issued by the licensee to clarify this position in the Topical Quality Assurance Manual. The licensee has committed to IEEE Standard 498-1980 titled "IEEE Standard Requirements for the Calibration and Control of Measuring and Test Equipment Used in the Construction and Maintenance of Nuclear Power Generating Stations," which requires that controls be considered for limiting the use of M&TE to authorized personnel. It is not clear that the licensee's current policy limits the use of M&TE to authorized users only, and this item remains open for additional review.

k. (Open) Open Item (50-361/86-11-01), Identification of Abandoned Electrical Circuits

As stated previously, the inspector had observed several examples where an abandoned electrical circuit was not labelled to indicate the current status. The licensee has implemented a program to identify and label all abandoned electrical circuits associated with safety related equipment. In addition, maintenance procedure SO123-I-4.59 titled "Wire and Cable Termination" was revised to require labelling of abandoned circuits that are ready identifiable. The procedure did not address labelling of abandoned circuits that are not readily identifiable and updating of records such as circuit schedules and pull cards. This item remains open pending additional review.

l. (Open) Open Item (50-361/86-19-03), Use of Uncalibrated Instruments

As discussed previously, the inspector observed that an uncalibrated Simpson multimeter and a motion meter which was out of calibration were being used during maintenance on th E field perimeter protection system. The licensee's QA organization issued CAR SO-P-956 to address this issue, and the station's response to the CAR stated, "Instrumentation used for troubleshooting or non

qualitative measurements, such as the Simpson multimeter, are not required to be calibrated...." This policy does not appear to satisfy the requirements of 10CFR50 Appendix B, Criterion XII which states that measuring and testing devices used in activities affecting quality shall be properly controlled, calibrated, and adjusted. The licensee's Topical Quality Assurance Manual commits to IEEE Standard 498-1980 titled "IEEE Standard Requirements for the Calibration and Control of Measuring and Test Equipment Used in the Construction and Maintenance of Nuclear Power Generating Stations", which requires measuring and test equipment used for testing or maintenance activities to be calibrated to ensure that the data obtained is valid. Only that data which will not be used to determine acceptability is allowed by IEEE 498 to be obtained by test equipment which is not calibrated. This item remains open pending further discussions with the licensee.

m. (Closed) Open Item (50-362/86-31-02), Control of Refueling Activities

Prior to the recent Unit 3 refueling outage, the inspector suggested that the licensee consider certain elements for controlling refueling activities during the outage. The inspector monitored refueling activities frequently during the outage and verified that selected evolutions were well controlled and properly supervised. This item is closed.

n. (Closed) Unresolved Item (50-362/86-38-01), Inadequate Housekeeping and Work Practices

Previously, the inspector documented examples of inadequate housekeeping and work practices. The inspector had additional discussion with the licensee on this matter, and the licensee stated the following position:

- The regulations are not clear as to the degree of cleanliness required and the extent that work practices must be controlled.
- Since the regulations are not clear, the only basis that exists for a notice of violation are the licensee's administrative procedures.
- The administrative procedures will be reviewed and revised to allow more flexibility in dealing with these issues.

10 CFR 50 Appendix B, Criteria II and V, provide the regulatory basis pertaining to housekeeping and work practices. The regulations require the licensee to establish written procedures to provide control over activities affecting quality. These regulations state that conditions such as cleanness must be controlled, and that procedures should include quantitative and qualitative acceptance criteria for determining that important activities have been properly accomplished.

The existing licensee program for maintaining cleanness is satisfactory; however, it did not appear during this inspection that

the program is being properly implemented by the licensee. The licensee's proposal to relax the procedural requirements will not correct the deficient conditions that were observed, and could render the licensee's overall housekeeping program inadequate. The inspector noted that the licensee appeared to be relaxing current program requirements based on a perceived belief that the defined program was overly restrictive, resulting in inappropriate NRC enforcement action that would not otherwise be warranted if the procedures implemented by the licensee were less restrictive. The inspector emphasized his belief that current licensee program properly reflects NRC regulatory provisions for station housekeeping and requested that the licensee reconsider his position.

During the exit meeting, the inspector reiterated his concern that the licensee is not properly implementing his program for station housekeeping and that emphasis should be placed on this problem rather than revising current requirements. The inspector identified additional examples of housekeeping deficiencies noted since the last inspection period:

(1) On February 10, the inspector observed that a chainfall block was improperly secured to safety related conduit (JZBR12) associated with a level switch in the room for HPSI pump 3P-018.

(2) On February 10, the inspector observed several pieces of unassembled scaffolding staged in the Unit 2 train B HPSI/LPSI pump room while the plant was in Mode 1 operation. No housekeeping tags were on the scaffolding.

(3) On February 18, the inspector observed that breaker 11C08 was left unsecured in the corridor between train A and train B switchgear in the Unit 1 4KV room while the unit was in Mode 1 operation.

(4) During a tour of the Unit 2 45 foot penetration area on February 19, the inspector observed several items of unsecured temporary test equipment and tools in the vicinity of containment airborne radiation monitor 2RE-7804-1.

(5) On February 19, the inspector observed that a breaker maintenance truck was chained to the DC distribution panel in the Unit #1 battery inverter room.

Enforcement action related to the above items is being evaluated and will be the subject of future correspondence. (50-362/87-05-02)

o. <u>(Closed) Unresolved Item (50-362/86-38-02), Failure to Record As-Found Data During Loss of Voltage (LOV) Relay Calibration</u>

During performance of surveillance procedure SO3-II-11.1, the inspector observed that the electrical technician did not record the as-found data prior to making adjustments to LOV relay 127F4. In

addition, the inspector observed that the technician did not repeat certain steps of the procedure after adjustments were made to the relay. The licensee stated that the intent of the procedure was to record the as-left data, even though this position was not obvious by the wording in the procedure. The licensee stated that the technician correctly understood the procedural requirements for the following reasons:

- Prior to taking data, the procedure required the technician to remove the relay for a visual inspection. During this process, adjustments could be made such that as-found data taken in the next step would not be meaningful.

- The Maintenance Data Record Form provided only one space for recording data. It was most logical to record as-left data upon completion of the calibration procedure.

In response to the inspector's observation that certain steps of the procedure were not repeated after LOV relay 127F4 was adjusted, the licensee stated that the calibration procedure was repeated for each relay after the necessary adjustments were made to all of the relays. The inspector verified that the licensee's actions were allowed by the procedure. The licensee noted that additional assurance was provided that the LOV relays were properly calibrated by the ESF testing that was conducted after the refueling outage, during which all of the LOV relays functioned satisfactorily. With regard to the inspector concern that as found data was not being documented or reviewed for safety related electrical relay equipment, the licensee agreed that this data should be recorded and reviewed by cognizant maintenance supervision. The licensee committed to revise applicable station procedures to require documentation of as found settings for all safety related electrical relay equipment. This item is closed.

p. <u>(Closed) 50-206/86-49-02 Control of Temporary Modification to Safety Related Equipment (Unit 1)</u>

Unit 1 technical specifications require that power operated relief valves (PORV) block valves are required to isolate a stuck open PORV. The block valves are fail open valves and a backup nitrogen system is required to ensure that the block valves will remain closed under assumed accident conditions. The backup nitrogen system for these valves (CV530, 531, 545 and 546) was installed by Design Changes 79-31 and 81-30 in order to meet NUREG-0578 requirements. The Safety and Environment Analysis performed for these design changes states that "The Bottles and piping shall be supported as Seismic Category A, Safety Related."

On February 2, 1987, the inspector observed that a temporary modification had been performed to the backup nitrogen system. It was observed that the nitrogen cylinder which had been installed by the original DCP was replaced with a shorter cylinder. To accommodate the manifold connections and storage rack supports, wood blocks were used to raise the shorter cylinder. Upon identification

of this deficiency by the inspector, the licensee took prompt corrective actions to replace the connections with proper length tubing and wood blocks were removed. The licensee performed an analysis to demonstrate that the as found condition would not result in a system failure during a design based seismic event. In addition, the licensee conducted a walkdown of other plant systems in order to identify other gas bottles with similar deficiencies. The licensee identified and corrected two additional examples of improper nitrogen bottle shims (both involving the auxiliary feedwater system). To prevent recurrence, the licensee modified the blanket maintenance order associated with the change-out of safety related nitrogen bottles to prevent the alteration of related hardware. Since the licensee determined that this condition has apparently existed for an extended period of time without detection by cognizant plant personnel, the licensee has reemphasized the importance of attention to detail during plant tours. Failure to properly control and review modifications to safety related equipment is an apparent violation (50-206/87-03-04).

The inspector considered the licensee's corrective action to be responsive and this item is closed.

11. Exit Meeting

On March 30, 1987, an exit meeting was conducted with the licensee representatives identified in Paragraph 1. The inspectors summarized the inspection scope and findings as described in this report.