U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Reports Nos: 50-206/89-09, 50-361/89-09, 50-362/89-09

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, 91770

Facility Name: San Onofre Units 1, 2 and 3

Inspection at: San Onofre Nuclear Generating Station Units 1, 2 and 3.

Inspection Conducted: March 6 - 10 and April 3 - 7, 1989

Inspectors: James F. Melfi — 5/2/89
J. F. Melfi, Reactor Inspector — Date Signed

Frank S. Gee — 5/2/89
F. S. Gee, Reactor Inspector Trainee — Date Signed

Approved By: S. A. Richards — 5/2/89
S. A. Richards, Chief, Engineering Section — Date Signed

Summary:

Inspections on March 7 - 10, 1989 and April 3 - 7, 1989
(Report 50-206/89-09, 50-361/89-09, 50-362/89-09)

Areas Inspected: A routine, unannounced inspection by regional based inspectors of the new installation of the nuclear instrumentation system and an assessment of the adequacy of the Main Feedwater (MFW) flow elements at San Onofre Nuclear Generating Station (SONGS), Unit 1. Items from the TMI action plan (NUREG-0737) were also inspected and updated for Unit 1, and followup of previously identified items was conducted for Units 2 and 3. Inspection procedures 30703, 37701, 37702, 2515/065 and 92701 were used.

Safety Issue Management System (SIMS) items

TMI item II.E.1.2 was closed, and the following TMI issues were updated on the SIMS system:
I.D.2 - Safety Parameter Display System Implementation
II.F.2 - Inadequate Core Cooling Level Instrumentation

Results:

General Conclusions and Specific Findings:

The installation of the new Nuclear Instrumentation System (NIS) was reviewed. The inspectors performed a documentation review and walked down most of the new installation. The training of the operators, QA/QC involvement in this installation, and the noise reduction efforts were also assessed. The installation of the new Nuclear Instrumentation System (NIS) seemed to be performed adequately.

Significant Safety Matters: The 10 CFR 50.59 violation issued in this report and the licensee's considerations on why their 10 CFR 50.59 review was appropriate may indicate a problem with their approach to 10 CFR 50.59 reviews.

Summary of Violations: Two violations were identified during this inspection. One violation concerning an inadequate 10 CFR 50.59 review for Unit 1 regarding a NIS block of a Start-Up Rate Trip (paragraph 5.C). The other violation was addressed at housekeeping in Unit 2/3 electrical cabinets (paragraph 10) and electrical maintenance in Unit 3 (paragraph 10).

Open Item Summary: No new open items.

DETAILS

1. Persons Contacted

a. San Onofre Nuclear Generating Station

*H. Morgan, Station Manager
*S. McMahan, Asst. Maintenance Manager
*C. Couser, Compliance Engineer
*G. Gibson, Licensing Engineer
*C. Balog, Site Nuclear Engineering Manager
*K. O'Connor, Construction Manager
*R. Plappert, Compliance Engineer
*R. Baker, Compliance Engineer
*G. Stavinicey, Project Engineer
*T. Elkins, Engineer
*R. Reiss, QA Engineer
T. Elkins, Engineer
A. Eckhart, Nuclear Engineer
A. Hernadez, Engineer
T. Straw, Training Instructor
P. Kuhner, Training Instructor
J. Ibarra, EQ Engineer

b. USNRC

*R. Huey, Senior Resident Inspector
*J. Tatum, Resident Inspector

*Attended Exit Meeting, March 10, 1989 and April 7, 1989

The inspectors also held discussions with other licensee and contract personnel during the inspection. This included plant staff engineers, technicians, administrative and clerical assistants.

2. Introduction

This inspection focused on the activities surrounding the installation of the new Nuclear Instrumentation System (NIS) at San Onofre Unit 1. The purpose of this new installation was to replace the older nuclear instruments with newer instruments. Since the NIS has reactor trips and rod blocks, which are important to reactor safety, this installation is an important safety-related change to the plant. The inspection focused on a review of the design packages implementing the installation, an assessment of the licensee's efforts to solve electronic noise problems an assessment of Quality Assurance (QA) and Quality Control (QC) involvement, a review of the instrument calibrations, and an assessment of the training of the licensee's staff on the new instrumentation.

The inspectors also looked at issues surrounding the Main Feedwater (MFW) flow orifices, the TMI Action Plan items for Unit 1, and the enforcement and followup items for Units 2 and 3.

3. Nuclear Instrumentation Noise Reduction Effort

The nuclear instrumentation (NI) for Unit 1 was replaced during the Cycle X refueling outage by the licensee with upgraded equipment which offers improved system performance and readily available parts for maintenance and repair. Because of the improved sensitivity of the new NI, electronic noise induction and interference by energized plant equipment became significant in magnitude to produce, at plant shutdown conditions, erroneous startup rate trips and power level readings on the NI source and intermediate ranges. One purpose of the inspection by the regional inspectors was to observe and to identify any potential safety issue in the licensee's NI noise reduction effort.

A meeting was held on March 7, 1989, with the Instrumentation and Control group to discuss the ongoing noise reduction effort in the newly installed nuclear instrumentation. The following Retrofit Problem Reports (RPR's) were identified as the licensee's effort in the noise reduction. The RPR numbers were 1997, 1998, 1999, 2228, 2297, and 2523. The corrective actions taken by the licensee for the RPR's were as follows:

A. Sent the new source and intermediate range rate amplifier boards back to the supplier (Westinghouse) for modification to decrease the sensitivity (i.e. to increase the time constant) to that of the old NI.

B. Installed Sola isolation transformers on the instrument and control power supplies to the NI and on the control power supply to the coincidentors.

C. Installed separate insulated ground cable from each of the four NI cabinets, tied the insulated ground cables at one point, and grounded the single insulated cable at a dedicated ground point outside the building.

D. Installed a RC circuit for AC relays and a diode for DC relays to suppress internally generated noise from the coincidentors to the NI.

E. Changed the source of power from regulated buses to vital buses, enhanced the shielding and grounding of field conduits, and added inner to outer shield grounding on all power range detector "A" signal cables at the drawers to reduce externally generated noise on the NI to an acceptable level.

F. Modified at the supplier factory the intermediate range rate boards to provide a rate output only above 10^{-4}% poser to minimize the noise effect on the NI from stroking HV-852A and CV-737A. The licensee had initiated the modification.

A walkdown was performed on the new NI system installation. The items included in the walkdown were as follows:

A. The lead-lined enclosure for the preamplifiers and the high voltage lead-in cables outside Unit 1 containment.

B. Containment NI cable penetrations from inside the containment.

C. NI cable routing inside the containment.

D. The three newly installed independent and dedicated ground bars (2 used, one spare) for the NI in the open area exterior to the control room building and near the diesel generator building.

E. Grounding of conduits and NI cabinets in the control room building.

F. The installation of noise suppressors RC circuit on AC relays and diodes on DC relays in the two coincidentor cabinets in the control room building.

G. The installation of Sola isolation transformers on the control and instrument power supplies for the NI and on the control power supply for the coincidentors.

H. The ongoing NI modification on the control board in the control room.

I. The cable installation in the J-console in the control room.

J. The battery room.

A significant amount of good work was done on the NIS noise reduction as shown by the reactive actions that were taken to resolve those Retrofit Problem Reports. Yet the lack of proactive effort was evident in establishing formal procedures to systematically identify the noise effect from all plant equipment and their synergistic contributions to noise on the NI during full operation. It was understood by the inspectors that the existing shutdown plant conditions prevented the availability of some plant equipment to be energized, and thus the related noise effect, if any, on the NI will not be observable until full plant operation. Examples of such equipment were the control rod drive mechanisms.

During the exit meeting on March 10, a draft outline of a planned NI noise monitoring program was submitted to the inspectors after the lack of a proactive effort in systematically identifying noise sources on the NI was discussed with representatives of the licensee. A printout of a listing of the design change packages on implementing groundings and shieldings as part of the effort in resolving the RPR's was also submitted to the inspectors.

During a subsequent inspection on April 3, the inspectors concluded that the proactive test plan on the NIS noise reduction effort which the licensee implemented since the March inspection was adequate. The

coverage of the test plan and the recorded noise baseline data reflected a conscientious attitude in correcting the previous lack of a proactive effort.

The cable separation in the J control board was observed to be maintained to the extent practical for the existing modification of the indicators and the mode selector switch. As the cables entered the control room in the J-console, they were wrapped with fire retardant tape. As stated in NRC Safety Evaluation dated December 13, 1988, the acceptability of this separation will be included as part of the staff's ongoing review of SONGS-1 compliance to the guidelines of Regulatory Guide 1.97.

4. QA/QC Involvement

The licensee's Quality Assurance (QA) and Quality Control (QC) organizations have the function to provide, in part, an independent assessment of the adequacy and quality of new safety-related installations. This independent assessment of quality can include a review of the areas of design control, receipt and procurement, testing, training, procedures, craft workmanship and resolution of design deficiencies of the installation. Since the installation of a new Nuclear Instrumentation System (NIS) is a large safety-related change to Unit 1, the inspector desired to review QA/QC assessments of the NI system and determine the extent of their involvement.

The licensee's QA groups were initially involved in reviewing the work on the NIS after it had been completed. The inspector was informed that the licensee's Quality Assurance (QA), Independent Safety Engineering Group (ISEG) and the Nuclear Safety Group (NSG) initiated an expanded, coordinated effort in mid January, 1989, to look at the new NIS installation at Unit 1. These three groups presented their Operational Readiness Assessment Plan for the NIS to the inspector. The plan's objectives were to assess the ongoing efforts, provide 24-hour QA coverage, and be involved in the daily activities surrounding the installation. The daily activities included looking at the design change review, the test criteria and results of the testing, reviewing the calibration and operating procedures, and a review of operator training on the new system. These QA groups were also planning to monitor the start-up activities on a 24 hour basis.

The QA groups have issued Nonconformance Reports (NCRs) and Retrofit Problem Reports (RPRs) on the NI system. The inspectors reviewed the issued RPRs and NCRs on the system. The actions taken by the licensee seem to be appropriate.

The licensee's Quality Control (QC) organization was involved in the manufacture of the NIS, with several QC inspectors witnessing the reassembly of the system. The inspectors discussed the QC involvement with the QC inspectors, and determined that the review seemed to be adequate.

The licensee's QA and QC organizations appeared to take an aggressive, proactive approach regarding the installation of the NIS. The inspector did not identify any concerns with the licensee's QA/QC organizations.

5. Nuclear Instrumentation System Modifications

A. Calibration of Source Range High Voltage

The source range detector measures the power of the reactor at very low power levels ($\leq 10^{-3}$% power). This detector provides an input into a rod block (prevent rod withdrawal) if there is a high start-up rate. The high voltage setting of this detector is important, since the setting value affects how many counts would be seen by the detector per incident neutron. A typical practice for setting the source range detector voltage is that the voltage is set at the "knee" of a detector voltage versus a logarithm of the count rate curve. The licensee did not set the detector voltage in this manner, but in a manner approved by the vendor (Westinghouse). The inspectors reviewed the new method with the licensee, which does place the detector voltage in the proper region for linearity of response.

B. Indicated Neutron Count Difference

The inspectors observed that at shutdown conditions, approximately a decade of difference existed on the two intermediate range count level meters of the newly installed nuclear instruments. The licensee indicated that the difference might be due to the geometry of the detector locations and installations, and expected to see a narrowing of the difference during and after power ascension.

C. Suppression of Intermediate Range Startup Rate Trip

The licensee elected to install a suppression of the intermediate range Start Up Rate (SUR) trip, to reduce the effects of random noise on the intermediate range instruments. This suppression blocks any signal to the Reactor Protection System below a certain power level (approx. 10^{-4}% power). This suppression of the SUR trip was not in the old installation (as noted in the Updated Final Safety Analysis Report (UFSAR)) or originally considered for the new installation (as noted in the Safety Evaluation with Technical Specification Amendment 117).

10 CFR 50.59 allows the licensee to make any change to the plant without prior NRC approval as long as that change does not involve an unreviewed safety question or a change to the technical specifications. As part of the change to the intermediate range SUR trip, the licensee included a 10 CFR 50.59 review with Nonconformance Report (NCR) S01-P-7112.

The licensee concluded in NCR S01-P-7112 that this change did not involve an unreviewed safety question in that the operability of the intermediate range trip was not assumed for accident analysis and that any power excursion generated below 10^{-4}% power will not present a challange to the integrity of the core. In further discussions with the licensee, the licensee stated that the setpoint was set at approximately the power level equivalent to the lower limit of sensitivity of the old intermediate range NIS. The NCR

also concluded that there was no change in any margin of safety as defined in any technical specification.

The inspectors evaluated this change and noted that Technical Specification 3.5.1 states that the trip is required to be operable in mode 1 (below 10% power) and in mode 2. In discussions with licensee personnel, it was determined that the reactor would go critical below 10^{-4}% power during plant startup, and therefore be in mode 2.

In reviewing the UFSAR, it was noted that there was no block described associated with the intermediate range SUR trip. Technical specification amendment 117, which included a NRR safety evaluation of the NIS system changes into the license, was also reviewed. The NRR safety evaluation of the new NIS system also did not mention any blocking of the intermediate range SUR trip during startup.

Based on the information porvided by the licensee, the inspectors did not identify a technical issue with the licensee's actions. However, the blocking of the intermediate range SUR trip was not described or addressed by the UFSAR, the technical specifications, or the associated license amendment, although blocking functions of this type are clearly typically addressed. Therefore, the inspectors concluded that this modification did involve a change to the technical specifications and is an apparent violation of 10 CFR 50.59. (50-206/89-09-01). The licensee has since submitted a technical specification amendment request.

D. Disabling of Source Range Detectors

On April 4, 1989, the inspectors noted in Instrument and Test Procedure SO1-II-1.6.5.1, Revision 0, TCN 0-3, page 53, Sections 6.18.4 and 16.18.5 that the source range high voltage cutoff is set at 10^{-5} % power and the required reset point is set at $8x10^{-6}$ % power. The source range high voltage cutoff is about a decade lower than 10^{-4} % power, the intermediate range suppressed startup-rate-trip setpoint. In this case, there is no rod stop startup rate trip protection for about a decade. After the discrepancy was identified to the licensee, the inspectors were told that the procedure was scheduled to be changed, and the change was made on April 5, 1989. The change implemented the disabling of the source range high voltage at $3x10^{-4}$ % power on power ascension and the enabling at $1.5x10^{-4}$ % power on descending power level.

E. Incore/Excore Correlation

The location of the Nuclear Instrument Detectors remained the same, except for the change of one detector to a spare assembly. This change was reviewed by the office of Nuclear Reactor Regulation (NRR), and was approved.

The inspectors noted that there is no check source of neutrons available to the new instruments. From the use of a check source,

it could be possible to ascertain beforehand the neutron flux the detectors should see. The licensee is not using a check source, but is instead relying on the decay of neutrons from fission products. The detectors are registering neutron pulses from the core, and the licensee is performing an analysis to verify if the amount of pulses seen is approximately correct. The licensee is also going to do an incore to excore check during their power ascension program, to verify the excore detector accuracy.

The licensee's actions seem appropriate.

6. Nuclear Instrumentation System Qualification

Certain components of the NIS system equipment are required by Regulatory Guide 1.97, (as noted in 10 CFR 50.49 (b)(3)) to have an environmental qualification (EQ) appropriate for the environment that the equipment is located in. The wide range nuclear instrument (intermediate range) is required to be environmentally qualified, to give an indication of nuclear power after design basis events.

At the time of the inspection, the licensee had not yet fully reviewed and qualified the intermediate range instrumentation. The licensee had qualified different parts of the system (i.e. coaxial cables, detectors, penetrations, etc), and provided the documentation packages for the inspector's review. The inspector did not identify any problem with the documentation packages. During the walkdown of the system, the inspector did not have any EQ concerns.

7. Operator Training

For safe operation of the new NIS, the control room Reactor Operators (ROs), Senior Reactor Operators (SROs), Shift Supervisors, Plant Equipment Operators, (PEOs) and Shift Technical Advisors (STAs) need to be familiar with the operational characteristics of the new system. The inspectors discussed the training of the operators with the licensee.

The licensee wrote a lesson plan, IXC 205, "Excore Nuclear Instrumentation System," from vendor information, the design change packages, and procedures. The inspectors discussed the lesson plan with the licensee, and did not identify any concerns.

The inspectors also verified the training records for the plant staff on the new system by looking at the course list.

The inspectors also discussed craft training on the new system with the licensee. The Instrumentation and Control (I&C) personnel were trained by the vendor (Westinghouse) on 6/28/88 on the new system. The training provided by Westinghouse included classwork and hands on training. The hands on training also included training to find purposely placed faults with the system. The training on the new system appeared appropriate.

Based on the inspectors' review, the training given seemed appropriate.

8. Feedwater Flow Orifice Replacement

During Cycle X refueling outage, the orifice plates FE-456, FE-457 and FE-458 for the three main feed lines were removed and inspected by the licensee. The orifice plates were examined for their orifice diameter, flatness, and inlet square edge. FE-456 was found in a marginal condition with impact mark on the inlet face of the orifice plate, possibly from loose debris. FE-457 was found acceptable. FE-458 did not meet the flatness and the orifice diameter tolerances. The three main feedwater orifice plates were replaced by the licensee.

The duplicated orifice plates manufactured to the original specifications were put into service by the licensee without actual flow calibration by claiming the original flow test accuracy of 0.25% plus 0.6% for duplication error. The licensee claimed a credit of 1% accuracy for the duplicated plates with 0.15% of margin.

A flow test accuracy of 0.25% was obtained by Alden Hydraulic Laboratory for the original calibrations of the flow element sections performed in 1965. The pressure taps of the flow sections were non-standard ASME configurations.

A duplication error of 0.6% at 95% confidence level was claimed by the licensee for manufacturing the three replacement orifice plates in accordance with the original specification for the bore diameter, the flatness, the thickness at the bore, and the upstream edge sharpness. This assumption was supported by the calibrations performed at Alden Research Laboratory for the orifice plates of the main feed lines for the Connecticut Yankee Nuclear Station. A comparison was made between the flow discharge coefficients of the 1966 calibration of the original plates and the 1986 calibration of the duplicated plates for the main feed lines from the Connecticut Yankee Nuclear Station. The licensee made eleven ultrasonic measurements to confirm that the pipe thickness had not changed significantly to affect the inside diameter of the pipe.

The Connecticut Yankee data did show an in-service degradation of accuracy. The licensee agreed to dimensionally verify the in-service degradation of the orifices and to accumulate baseline data on the degradation during subsequent outages. The baseline data are to be collected to a point when the 0.15% margin is exceeded. Then replacement of the respective orifice plate is to be scheduled before the 0.15% margin is exceeded.

Based on the inspectors' review of the licensee's calculations and applicable industry standards, and based on discussions with the technical staff of NRR, the NRC staff had no regulatory concern regarding the licensee's approach of replacing the orifice plates without performing a direct calibration. The licensee's future monitoring of the condition of the orifice plates will be followed as part of the ongoing inspection program.

9. <u>Feedwater Flow Transmitter Range Erroneously Transcribed and Calibrated</u>

On March 8, 1989, the inspectors found that incorrect differential pressure ranges were used for the calibration of the main feed flow transmitters FT-456, FT-457, and FT-458 in Unit 1. The transcription

error occurred approximately in 1983. The incorrect ranges were shown in Master Instrument List M37351. After being notified, licensee issued Nonconformance Report Number S01-P-7118. The incorrect ranges were corrected by FIDCN J-2077 which was issued for the purpose of orifice replacement.

Main Feed Flow Transmitters	Incorrect Ranges	Correct Ranges
FT-456	0-774"wc	0-769"wc
FT-457	0-772"wc	0-771"wc
FT-458	0-774"wc	0-764"wc

The use of incorrect differential pressure ranges for the main feed flow transmitters affected neither the core thermal power evaluation nor the nuclear overpower trip. The secondary calorimetric power used to calibrate the excore power range nuclear instrumentation was calculated from separate instruments, the Barton differential pressure indicators.

All three incorrect differential pressure ranges used were higher than the respective correct ranges. These transmitters input into the main feedwater flow/steam flow mismatch trip. With a higher differential pressure range, the calculated feedwater flow for the feedwater flow/steam flow mismatch trip was lower than the actual flow. With the actual feedwater flow being higher than the calculated flow, the mismatch trip point was in the conservative direction.

Based on the inspectors' review, the use of the incorrect feedwater flow transmitter ranges did not result in a reduction of safety protection.

10. Housekeeping and Electrical Maintenance

On April 6, 1989, during a walkdown to inspect the work performed on electrical separation in Units 2 and 3 as a followup of an earlier violation, the inspectors found debris in three of four control room cabinets inspected, 3CR50/3CR51, 3CR52, 3CR56, and 3CR60, and the remote shutdown panels of Units 2 and 3. The debris included several tie wraps, a spray can cap, a painted metallic safety light cover with partially chipped bare metal surface exposed, a half of an inch thick 8.5" by 11" paper pad with several pages of hand written note, a spare resistor, non-metallic washers, a chipped terminal block cover plate, unmounted embossed labels, and light bulbs.

The Units 2 and 3 remote shutdown panels are safety related panels and the accesses are restricted by locks.

The inspectors noted that a previous notice of violation was issued on the same noncompliance for an inspection conducted during 1987. Furthermore, the licensee stated that cleanliness would be concurrently evaluated with electrical separation inside electrical cabinets, in responding to a 1988 NRC inspection of Regulatory Guide 1.97. Especially, individual workers should recognize the safety functions that the remote shutdown panel is called to perform and the gravity of the

plant conditions when the panel is called into service. The remote shutdown panel should have not become a place for debris and material to accumulate and a storage location for spare parts. The guidelines have succinctly been set forth in SCE procedures that individuals shall cleanup after themselves in a timely manner, any unused equipment shall not be allowed to accumulate at any work place, and leftover material shall be removed at the completion of the job.

This is an apparent violation (50-361/89-09-01).

On April 6, 1989, the inspectors observed in the Unit 3 remote shutdown panel a pull rope extending beyond the end of a conduit entering at the top of the cabinet. This pull rope was wrapped around several times an unterminated coiled cable coming out of the same conduit and tied to the side of the cabinet. The diameter of the coil of the unterminated cable was approximately two feet, and the coil was able to swing from side to side within the cabinet. The conduit end was neither capped nor closed by putty. A pull tape was also observed extending beyond the end of another conduit in the same cabinet. This is a second example of apparent violation 50-361/89-09-01.

Another example of incomplete maintenance work was observed on April 6, 1989. Four removed terminal block cover plates were found in the Unit 2 remote shutdown panel not being returned to their original installation after maintenance. Three blue-coded terminal block cover plates for Separation Group D (TB-384) and one green-coded terminal block cover plate for Separation Group C (TB-383) were found on the floor inside the cabinet, and the respective terminal blocks were exposed.

11. TMI Action Plan Requirements (Unit 1) (2515/065)

This section includes the status of TMI Action Items as determined by the inspector through a review of documentation and discussions with licensee personnel. Several of these items were also statused in inspection report 50-209/88-29, 50-361/88-30, and 50-362/88-32.

A. (Open), I.D.2, "Safety Parameter Display System"

The previous inspection reports on this item were 50-206/85-35, 50-206/86-26, and 50-206/88-29.

The current status of this item remains open. The SPDS is not currently installed in the control room. The licensee was not planning on installing the SPDS this outage and is discussing with NRR the implementation of this item. This item will remain open pending installation of the SPDS, which is currently scheduled for cycle 12.

B. (Closed), II.E.1.1.2, "Auxiliary Feedwater System Evaluation - Long-Term System Modifications"

This item on Auxiliary Feedwater (AFW) had been previously inspected in inspection reports 50-206/85-35, 50-206/86-26, and 50-206/88-29.

The remaining NUREG-0737 requirements to be completed for SONGS 1 were as follows:

(1) Upgrade the two control grade AFW trains to Safety Grade by the end of the cycle 9 outage.

(2) The installation and upgrade to safety grade of a third train of AFW by the end of the cycle 10 outage.

The licensee has installed the upgrade to the AFW system. This modification put both the Turbine Driven Auxiliary Feedwater (TDAFW) Pump and the Motor Driven Feedwater (MDAFW) Pump on the same train (Train A). The licensee has another pump to inject auxiliary feedwater, the Dedicated Shutdown (DSD) Pump, which relies on a separate diesel for its safety related power. The DSD pump is now the train B pump. In discussions with the licensee, the inspectors were informed that the train B pump is designed so that it would start first, and the other train is interlocked from starting. On failure of this pump to start, the train A pumps would start. The licensee has performed a single failure analysis to show that this configuration is safe.

The modification was performed under Design Change Package (DCP) 3364.00TJZ. The inspectors reviewed the package, performed a walkdown of the modification, and discussed the package with the licensee. From this review, the licensee has finished the installation, conducted preoperational testing, and revised the procedures and drawings for the system.

Based on the inspectors' review, this TMI item is closed.

C. <u>(Open) II.F.2.3.B, "Instrumentation for Detection of Inadequate Core Cooling - Installation of Level Instruments"</u>

The previous inspection reports on this item were 50-206/85-35, 50-206/86-26, and 50-206/88-29.

The licensee is planning to implement this item in the cycle XI outage. This item will remain open pending completion by the licensee.

12. <u>Enforcement Items</u>

<u>(Closed) 50-361/88-18-02, "Lack of Separation in Post-Accident Monitoring Cabinet"</u>

This enforcement item was issued during the Regulatory Guide 1.97 team inspection at San Onofre units 2 and 3. During that team inspection walkdown, a condition was found in the unit 2 control room panel 59 which was not in accordance with the licensee's specification for separation. The licensee evaluated the situation and initiated corrective action to separate the wires in that control room panel. The licensee admitted the violation in their letter dated August 29, 1989, and instituted corrective actions to address possible generic concerns about separation.

The licensee trained personnel about separation according to their separation specification and inspected cabinets for unit 3, which happened to be in refueling at the time. As a result of this inspection of other cabinets by the licensee, other Nonconforming Reports (NCRs) were issued and dispositioned.

During this inspection, the inspectors reviewed the actions taken by the licensee for the cabinets. Some of the NCRs that were written to improve separation resulted in barriers being installed, rerouting of cables, installing siltemp (an approved barrier) around wires, and grooming of cables, which had drooped over time, to ensure wire separation.

The inspectors inspected the corrective actions of the licensee to improve separation for six of the licensee's unit 3 cabinets. The corrective actions are summarized in a memo, Wambolt to Morgan dated 12/2/88. The inspectors noted the licensee's actions, and did not identify any concerns with separation. The licensee is going to implement the same program for unit 2 when that unit comes down for refueling. The licensee's actions for Unit 2 will be followed up under followup item number 50-361/88-18-03.

While the inspectors did not have any concerns about separation, the inspectors were concerned about housekeeping in the cabinets. This is further discussed in paragraph 10.

Based on the licensee's actions, and future actions to address possible separation concerns, this item is closed.

13. Followup Items (92701)

(Closed) 50-362/88-19-01, "Followup on NCRs and Program to addressing Separation"

This item was issued during the Regulatory Guide 1.97 team inspection at San Onofre Units 2 and 3. This item was to specifically follow up on the licensee's corrective actions on separation for Unit 3. As noted in the closeout of Enforcement item 50-361/88-18-02, the Unit 3 cabinets were inspected and found to be satisfactory.

Based on the walkdown and discussions with the licensee, the licensee's corrective actions seem appropriate.

This item is closed.

14. Exit Meeting

The inspectors met with the licensee representatives identified in paragraph 1 on March 10 and April 7, 1989. The scope of the inspection and the findings up to that date were discussed. The inspectors identified that some additional information for Unit 1 was needed. The licensee sent the information to Region V, where it was reviewed, and the findings were identified in this report.