UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-4005

February 6, 2007

Richard M. Rosenblum
Senior Vice President and
Chief Nuclear Officer
Southern California Edison Company
San Onofre Nuclear Generating Station
P.O. Box 128
San Clemente, CA 92674-0128

SUBJECT: SAN ONOFRE NUCLEAR GENERATING STATION - NRC INTEGRATED INSPECTION REPORT 05000361/2006005; 05000362/2006005

Dear Mr. Rosenblum:

On December 31, 2006, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your San Onofre Nuclear Generating Station, Units 2 and 3 facility. The enclosed integrated report documents the inspection findings, which were discussed on December 21, 2006, with Dr. R. Waldo and other members of your staff.

The inspection examined activities conducted under your licenses as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your licenses. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

This report documents three NRC identified findings and one self-revealing finding of very low safety significance (Green). These findings were determined to involve violations of NRC requirements; however, because of the very low safety significance and because they were entered into your corrective action program, the NRC is treating these findings as noncited violations (NCVs) consistent with Section VI.A of the NRC Enforcement Policy. If you contest these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission Region IV, 611 Ryan Plaza Drive, Suite 400, Arlington, Texas 76011-4005; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington DC 20555-0001; and the NRC Resident Inspector at the San Onofre Nuclear Generating Station, Units 2 and 3, facility.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Troy W. Pruett, Chief
Project Branch D
Division of Reactor Projects

Dockets: 50-361
50-362
Licenses: NPF-10
NPF-15

Enclosure:
NRC Inspection Report 05000361/2006005; 05000362/2006005
w/Attachment: Supplemental Information

cc w/enclosure:
Chairman, Board of Supervisors
County of San Diego
1600 Pacific Highway, Room 335
San Diego, CA 92101

Gary L. Nolff
Assistant Director-Resources
City of Riverside
3900 Main Street
Riverside, CA 92522

Mark L. Parsons
Deputy City Attorney
City of Riverside
3900 Main Street
Riverside, CA 92522

Ray W. Waldo
Southern California Edison Company
San Onofre Nuclear Generating Station
P.O. Box 128
San Clemente, CA 92674-0128

David Spath, Chief
Division of Drinking Water and
Environmental Management
California Department of Health Services
P.O. Box 942732
Sacramento, CA 94234-7320

Michael R. Olson
San Onofre Liaison
San Diego Gas & Electric Company
8315 Century Park Ct. CP21G
San Diego, CA 92123-1548

Director, Radiological Health Branch
State Department of Health Services
P.O. Box 997414 (MS 7610)
Sacramento, CA 95899-7414

Mayor
City of San Clemente
100 Avenida Presidio
San Clemente, CA 92672

James D. Boyd, Commissioner
California Energy Commission
1516 Ninth Street (MS 34)
Sacramento, CA 95814

Douglas K. Porter, Esq.
Southern California Edison Company
2244 Walnut Grove Avenue
Rosemead, CA 91770

James T. Reilly
Southern California Edison Company
San Onofre Nuclear Generating Station
P.O. Box 128
San Clemente, CA 92674-0128

Daniel P. Breig
Southern California Edison Company
San Onofre Nuclear Generating Station
P.O. Box 128
San Clemente, CA 92674-0128

A. Edward Scherer
Southern California Edison Company
San Onofre Nuclear Generating Station
P.O. Box 128
San Clemente, CA 92674-0128

Brian Katz
Southern California Edison Company
San Onofre Nuclear Generating Station
P.O. Box 128
San Clemente, CA 92674-0128

Chief, Radiological Emergency Preparedness Section
Oakland Field Office
Chemical and Nuclear Preparedness and Protection Division
Department of Homeland Security
1111 Broadway, Suite 1200
Oakland, CA 94607-4052

Electronic distribution by RIV:
Regional Administrator **(BSM1)**
DRP Director **(ATH)**
DRS Director **(DDC)**
DRS Deputy Director **(RJC1)**
Senior Resident Inspector **(CCO1)**
Branch Chief, DRP/D **(TWP)**
Senior Project Engineer, DRP/D **(GEW)**
Team Leader, DRP/TSS **(RLN1)**
RITS Coordinator **(MSH3)**
DRS STA **(DAP)**
V. Dricks, PAO **(VLD)**
Regional State Liaison Officer **(WAM)**
NSIR/DPR/EPD **(REK)**
D. Cullison, OEDO RIV Coordinator **(DGC)**
ROPreports
SO Site Secretary (vacant)

SUNSI Review Completed: __TWP___ ADAMS: ✖Yes ☐ No Initials: __TWP___
✖ Publicly Available ☐ Non-Publicly Available ☐ Sensitive ✖ Non-Sensitive

R:_REACTORS_SO23\2006\SO2006-05RP-CCO.wpd

RIV:RI:DRP/D	SRI:DRP/D	C:DRS/PEB	C:DRS/PSB	C:DRS/OB
MASitek	CCOsterholtz	LJSmith	MPShannon	ATGody
T-TWP	***T-TWP***	***/RA/***	***/RA/***	***/RA/***
01/30/07	01/30/07	01/29/07	01/31/07	01/29/07
C:DRS/EB	C:DRP/D			
WBJones	TWPruett			
/RA/	***/RA/***			
01/30/07	02/06/07			

OFFICIAL RECORD COPY T=Telephone E=E-mail F=Fax

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket:	50-361, 50-362
Licenses:	NPF-10, NPF-15
Report No.:	05000361/2006005 and 5000362/2006005
Licensee:	Southern California Edison Co. (SCE)
Facility:	San Onofre Nuclear Generating Station, Units 2 and 3
Location:	5000 S. Pacific Coast Hwy. San Clemente, California
Dates:	September 24 through December 31, 2006
Inspectors:	C. C. Osterholtz, Senior Resident Inspector, Project Branch D, DRP M. A. Sitek, Resident Inspector, Project Branch D, DRP J. F. Drake, Reactor Inspector, Operations Branch, DRS G. W. Apger, Reactor Engineer, DRS P. J. Elkmann, Emergency Preparedness Inspector, DRS B. W. Henderson, Reactor Inspector, Engineering Branch 1, DRS C. K. Huffman, Nuclear Safety Professional Development Program Participant R. A. Kopriva, Senior Reactor Inspector, Engineering Branch 1, DRS R. E. Lantz, Senior Emergency Preparedness Inspector J. M. Mateychick, Senior Reactor Inspector, Engineering Branch 2, DRS T. C. Steadham, Resident Inspector, RIII D. L. Stearns, Health Physicist, DRS B. K. Tharakan, Health Physicist, DRS
Approved By:	Troy W. Pruett, Chief Project Branch D Division of Reactor Projects

SUMMARY OF FINDINGS

IR05000361/2006005, 05000362/2006005; 09/24/06 - 12/31/06; San Onofre Nuclear Generating Station, Units 2 & 3; Integrated Resident and Regional Report; Refueling and Other Outage Activities, Surveillance Testing, Occupational Rad Safety, and PI&R.

This report covered a 3-month period of inspection by resident inspectors and regional office inspectors. The inspection identified four Green findings, all of which were noncited violations. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter 0609, "Significance Determination Process." Findings for which the significance determination process does not apply may be Green or be assigned a severity level after NRC management's review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Initiating Events

- Green. A self-revealing noncited violation of Technical Specification 5.5.1.1 was identified for the failure of operations personnel to follow procedures while diluting the reactor coolant system. This resulted in the Technical Specification required surveillances on the core operating limits supervisory system not being performed prior to exceeding 20 percent reactor power following a Unit 3 reactor startup. The issue was entered into the licensee's corrective action program as Action Request 061200640.

  The finding was determined to be more than minor because unplanned reactivity excursions could be reasonably viewed as a precursor to a significant event, in that they could lead to more serious situations where reactor protection equipment may be required. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheet, the finding was determined to have very low safety significance because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. The core operating limits supervisory system was verified operable within approximately one hour after the event, and all other mitigating equipment and functions remained available. The finding had a crosscutting aspect in the area of human performance associated with work practices in that Unit 3 control room operators did not perform a controlled reactor power increase in accordance with established procedural requirements. In addition, supervisory oversight failed to ensure that the reactivity change was properly planned and briefed prior to execution (Section 1R22).

Cornerstone: Mitigating Systems

- Green. The inspectors identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the failure to prevent recurrence of a significant condition adverse to quality involving the premature tripping of Square D thermal overloads used for equipment protection on safety-related equipment. This deficiency had not been properly evaluated or corrected since 2001. This issue was entered into the licensee's corrective action program as Action Request 061000859.

The finding was determined to be more than minor because it was associated with the equipment performance attribute of the mitigating systems cornerstone and it affected the cornerstone objective by challenging the availability and capability of safety-related components. Using the Manual Chapter 0609, “Significance Determination Process,” Phase 1 worksheet, the finding was determined to have very low safety significance because it did not result in an actual loss of safety function for affected systems. This finding also had crosscutting aspects in the area of problem identification and resolution associated with the corrective action program because the licensee failed to thoroughly evaluate and correct the problem in a timely manner (Section 4OA2).

Cornerstone: Occupational Radiation Safety

- Green. The inspectors identified a noncited violation of 10 CFR 19.12 for the failure of health physics personnel to adequately inform workers of the radiological conditions of the Unit 3 containment on October 23, 2006. A contract health physics technician and a health physics supervisor failed to inform workers of the airborne radiological conditions. This issue was entered into the licensee's corrective action program as Action Request 061001435.

  The finding was determined to be more than minor because if left uncorrected it would become a more significant safety concern in that the failure to inform workers of radiological conditions could result in unintended exposures. The inspectors processed the finding through Appendix C, "Occupational Radiation Safety Significance Determination Process," of Manual Chapter 0609, "Significance Determination Process," and determined that the finding is of very low safety significance because it was not an ALARA issue; there was not an overexposure or substantial potential for an overexposure; and the ability to assess dose was not compromised. The cause of the finding has a crosscutting aspect in the area of human performance associated with work practices in that the contract health physics technician did not follow established health physics procedures for adequately informing workers of radiological conditions. In addition, supervisory oversight of the radiological condition briefings failed to ensure that nuclear safety was supported in that the airborne radioactivity component of the health physics briefings was being omitted and the supervisor was not cognizant of the airborne radioactivity levels (Section 1R20).

- Green. The inspector identified a noncited violation of 10 CFR 20.1904(a) because the licensee failed to adequately label a container of radioactive material. On August 4, 2006, a vial of spent resin that had a dose rate of 5 millirem per hour on contact and contained 14 microcuries of fission and activation products (primarily cesium-137 and cobalt-60) was found in the reactor chemistry lab trash can designated for “clean” non-radioactive waste. The health physics department had previously determined that when the vial was transferred to the reactor chemistry lab, the vial was in a plastic bag that was appropriately labeled with the words “Caution Radioactive Material” and sufficient information about the radiation hazards as required by 10 CFR 20.1904(a). However, when the inspector questioned whether the vial was adequately labeled, the licensee conducted an apparent cause evaluation and determined that the vial was found in the "clean" trash without an adequate label. The licensee's immediate corrective action was to place a radioactive material label with dose rate information on the bag and store it in a lead pig. This issue was entered into the licensee's corrective action program as Action Request 060800249.

The finding was greater than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute of Exposure Control, and affected the cornerstone objective to ensure the adequate protection of a worker's health and safety from exposure to radioactive materials because workers could have received additional exposure. The finding was processed through the Occupational Radiation Safety Significance Determination Process and was determined to be of very low safety significance because: (1) it was not an as low as reasonably achievable finding, (2) there was no personnel overexposure, (3) there was no substantial potential for personnel overexposure, and (4) the finding did not compromise licensee's ability to assess dose. Additionally, this finding had a crosscutting aspect in the area of human performance related to work practices because the licensee's staff did not perform self checking to ensure the container of radioactive material was adequately labeled (Section 2OS2).

REPORT DETAILS

Summary of Plant Status

Unit 2 began the inspection period at approximately 99 percent reactor power and remained there throughout the inspection period.

Unit 3 began the inspection period at approximately 100 percent reactor power. On October 9, 2006, the Unit 3 reactor started to coastdown for the Cycle 14 refueling outage. The Unit 3 Cycle 14 refueling outage began on October 16, 2006, and ended on December 12, 2006. Unit 3 was returned to Mode 3 on December 12, 2006, to repair an oil leak on reactor coolant Pump 3P001. The leak was repaired and Unit 3 returned to Mode 1 on December 13, 2006. On December 25, 2006, reactor power was reduced to approximately 29 percent while a high oxygen concentration in the secondary plant was investigated and repaired. On December 28, 2006, reactor power was held at approximately 65 percent while high vibrations on main feedwater pump Turbine K005 were investigated and repaired. Unit 3 ended the inspection period at approximately 98 percent reactor power.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Readiness For Seasonal Susceptibilities

a. Inspection Scope

The inspectors completed a review of the licensee's readiness of seasonal susceptibilities involving extreme high winds. The inspectors: (1) reviewed plant procedures, the Updated Final Safety Analysis Report (UFSAR), and Technical Specifications (TS) to ensure that operator actions defined in adverse weather procedures maintained the readiness of essential systems; (2) walked down portions of the one system listed below to ensure that adverse weather protection features were sufficient to support operability, including the ability to perform safe shutdown functions; (3) evaluated operator staffing levels to ensure the licensee could maintain the readiness of essential systems required by plant procedures; and (4) reviewed the corrective action program (CAP) to determine if the licensee identified and corrected problems related to adverse weather conditions.

- December 11, 2006, Units 2 and 3, control building

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

.1 Partial System Walkdowns

a. Inspection Scope

The inspectors: (1) walked down portions of the two listed risk important systems and reviewed plant procedures and documents to verify that critical portions of the selected systems were correctly aligned; and (2) compared deficiencies identified during the walk down to the licensee's UFSAR and CAP to ensure problems were being identified and corrected.

- October 24, 2006, Unit 3, Trains A and B spent fuel pool cooling system
- October 23-27, 2006, Units 2 and 3, Trains A and B component cooling water system alignments following discovery of nitrogen in portions of the critical and non-critical loops

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed two samples.

b. Findings

No findings of significance were identified.

.2 Complete System Walkdown

a. Inspection Scope

The inspectors: (1) reviewed plant procedures, drawings, the UFSAR, TSs, and vendor manuals to determine the correct alignment of the Unit 3 auxiliary feedwater system; (2) reviewed outstanding design issues, operator workarounds, and UFSAR documents to determine if open issues affected the functionality of the Unit 3 auxiliary feedwater system; and (3) verified that the licensee was identifying and resolving equipment alignment problems. Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

a. Inspection Scope

Quarterly Inspection

The inspectors walked down the six listed plant areas to assess the material condition of active and passive fire protection features and their operational lineup and readiness. The inspectors: (1) verified that transient combustibles and hot work activities were controlled in accordance with plant procedures; (2) observed the condition of fire detection devices to verify they remained functional; (3) observed fire suppression systems to verify they remained functional and that access to manual actuators was unobstructed; (4) verified that fire extinguishers and hose stations were provided at their designated locations and that they were in a satisfactory condition; (5) verified that passive fire protection features (electrical raceway barriers, fire doors, fire dampers, steel fire proofing, penetration seals, and oil collection systems) were in a satisfactory material condition; (6) verified that adequate compensatory measures were established for degraded or inoperable fire protection features and that the compensatory measures were commensurate with the significance of the deficiency; and (7) reviewed the UFSAR to determine if the licensee identified and corrected fire protection problems.

- October 17, 2006, Unit 3, containment
- October 18, 2006, Unit 2, Train A component cooling water Pump 2P024 room
- November 29, 2006, Units 2 and 3, technical support center
- November 29, 2006, Units 2 and 3, control room
- November 29, 2006, Unit 2, Train A charging Pump 2P191 room
- November 29, 2006, Unit 2, Train B charging Pump 2P192 room

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed six samples.

b. Findings

No findings of significance were identified.

1R08 Inservice Inspection Activities (71111.08)

02.01 Inspection Activities Other Than Steam Generator Tube Inspection, PWR Vessel Upper Head Penetration Inspections, Boric Acid Corrosion Control

a. Inspection Scope

The inspection procedure requires review of two or three types of non-destructive examination (NDE) activities and, if performed, one to three welds on the reactor coolant system pressure boundary. Also, review one or two examinations with recordable indications that have been accepted by the licensee for continued service.

The inspectors directly observed the following non-destructive examinations:

System	Component/Weld Identification	Examination Method
Steam Generator	03-004-010 Inlet Nozzle to Head Weld	Ultrasonic
Pressurizer	03-005-009 Surge Nozzle to Bottom Head Weld	Ultrasonic
Pressurizer	03-005-31 Surge Nozzle to Safe End Weld	Ultrasonic
Pressurizer	03-016-001 12" Schedule 160 Nozzle to Pipe	Ultrasonic
Safety Injection	03-020-700 Guide W/integrally Welded Lugs	Liquid Penetrant
Safety Injection	03-020-680 Strut	Visual
Safety Injection	03-020-700 Guide & Y-Stop	Visual
Safety Injection	03-020-720 Guide & Y-Stop	Visual
Safety Injection	03-020-730 Y-Stop	Visual

During the review and observation of each examination, the inspectors verified that activities were performed in accordance with American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code requirements and applicable procedures. The qualifications of all non-destructive examination technicians performing the inspections were verified to be current.

A recordable indication was detected by the liquid penetrant examination of the 03-020-700 guide with integrally welded lugs. The indication was round, 0.125 inch diameter on the fillet weld of the lug to pipe weld. The indication was acceptable per allowable flaw criteria of ASME Section XI, IWB-3516.1 and IWB-3514-2. Licensee's acceptance for continued service was in accordance with ASME Code.

Records from two examples of welding on the reactor coolant system pressure boundary (class 1) were examined as follows:

System	Component/Weld Identification
Pressurizer	Surge line, weld overlay, Item # 03-016-001, Nozzle to pipe
Safety Injection	Check Valve MU 072

Welding procedures and non-destructive examination of the welding repair conformed to ASME Code requirements and licensee requirements.

The inspectors completed one sample under Section 02.01.

b. Findings

No findings of significance were identified.

.2 Vessel Upper Head Penetration (VUHP) Inspection Activities

a. Inspection Scope

The licensee performed non-destruction examination of all reactor pressure vessel (RPV) upper head penetrations. The inspectors directly observed a sample of the examinations as listed below:

System	Component/Weld Identification	Examination Method
RPV Head	Vent Line	Eddy Current (ET)
RPV Head	In-Core Instrumentation (ICI) 92	ET/ Ultrasonic Test (UT)
RPV Head	ICI 93	ET/UT
RPV Head	ICI 94	ET/UT

The NDE inspections were performed in accordance with the requirements of NRC Order EA-03-009. No indications or defects were detected, and no welding repairs were necessary.

The inspectors reviewed Relief Request ISI-3-21, Request for alternative to ASME Code rules for the embedded flaw repair process for control element drive mechanism (CEDM) 56. A flaw was detected in CEDM 56, which was repaired with weld overlay during the previous refueling cycle. Relief Request ISI-3-13 was approved by the NRC to continue operation for one additional cycle provided the licensee would identify a long-term repair method for implementation during the current refueling cycle. ISI-3-21 asks for continued operation for an additional cycle based on NDE examinations that showed no change in the flaw characteristics during the last cycle. This request was pending NRC approval at the end of the on-site in-service inspection (ISI).

The inspectors completed one sample under Section 02.02.

b. Findings

No findings of significance were identified.

02.03 Boric Acid Corrosion Control (BACC) Inspection Activities

a. Scope

Resident inspectors observed a sample of BACC activities and verified that visual inspections emphasized locations where boric acid leaks can cause degradation of safety significant components.

ISI inspectors reviewed the single instance where boric acid deposits were found on reactor coolant system piping components. A visual inspection of Valve MU 043, a safety injection tank check valve, found boric acid crystals in the gap between the hinge pin cover and the valve body, in contact with bolting as it passes through the gap. The condition was properly entered into the licensee's corrective action program (Action Request 061001144), and an engineering evaluation was performed. The check valve was cleaned, and re-torquing of the bolts was scheduled to be performed prior to completion of the outage. The evaluation concluded that the bolting and flange for this check valve are stainless steel, and thus not subject to boric acid corrosion, and the low temperature environment with dry boric acid does not promote extreme corrosive activity. The valve remains operable.

The inspectors completed one sample under Section 02.03.

b. Findings

No findings of significance were identified.

02.04 Steam Generator Tube Inspection Activities

a. Scope

No tubes were identified that met the requirements for in-situ pressure testing, thus no in-situ pressure testing was performed.

The inspectors reviewed report R-3675-00-1, "Tube Degradation Prediction for the San Onofre Nuclear Generating Station Unit 3 Steam Generators – 2005 Update." The report predicted that 114 tubes in Steam Generator (SG) 88 and 100 tubes in SG 89 would require plugging based on historical trends. Only 44 tubes in SG 88 and 22 tubes in SG 89 actually met plugging criteria, indicating a conservative prediction regimen.

The inspectors evaluated the recommended steam generator tube eddy current test scope established by TS requirements and the San Onofre Nuclear Generating Station degradation assessment report. The inspectors compared the recommended test scope to the actual test scope and found that the licensee had accounted for all known flaws and had established a test scope that met TS requirements, Electric Power Research Institute guidelines, and commitments made to the NRC. The scope of the licensee's eddy current examinations of tubes in both steam generators included:

- A full length bobbin examination of 100 percent of inservice tubes

- Plus point, rotating coil exams of 100 percent of hot leg top-of-tubesheet locations (+4", - 13")

- Plus point, rotating coil exams of 100 percent of cold leg top-of-tubesheet locations (+2", -13")

- Plus point, rotating coil exams of 100 percent of Rows 1-4 U-bend locations

- Plus point, rotating coil exams of 20 percent of Rows 5-10 U-bend locations

- Plus point, rotating coil exams of special interest locations

No new degradation mechanisms were identified during the inspection activities, and all areas of potential degradation as indicated by plant specific experience were inspected.

Plugging and sleeving are approved for use in Unit 3, but only plugging was employed. Plugging criteria are conservative, and these administrative limits were adhered to. In addition to wear and primary water stress corrosion cracking, dinged and dented tubes were evaluated against plugging criteria and repaired as required.

No steam generator tube leakage in excess of three gallons per day was identified prior to entering the refueling outage or during post-shutdown visual inspections.

No loose parts or foreign material was identified prior to the outage, however a small piece of gray plastic, 0.35 inches square and 1/32 inch thick, was found and removed during robotic visual examinations at the secondary side, cold leg, top of the tube sheet in SG 89. No tube damage was attributed to this foreign material.

The steam generator tube inspection contractor used eddy current test probes that were appropriate to find the type of degradation expected. Extensive use of the plus point, rotating probe was employed.

The inspectors reviewed a sample of steam generator tube inspection data for tubes in which flaws were detected as listed below:

Steam Generator	Tube Row/Line	Flaw Through wall depth or Degrees for axial flaw
89	30/50	25 Degrees
88	32/128	29 Degrees
88	43/73	154 Degrees
89	54/84	29% Through wall
89	107/45	27% Through wall
89	130/92	30% Through wall

The inspectors completed one sample under Section 02.04.

b. Findings

No findings of significance were identified.

02.05 Identification and Resolution of Problems

a. Inspection scope.

The inspection procedure requires review of a sample of problems associated with in-service inspections documented by the licensee in the corrective action program for appropriateness of the corrective actions.

The inspectors reviewed 17 corrective action reports which dealt with in-service inspection activities and found the corrective actions were appropriate. Action requests reviewed are listed in the documents reviewed section. From this review the inspectors concluded that the licensee has an appropriate threshold for entering issues into the corrective action program and has procedures that direct a root cause evaluation when necessary. The licensee also has an effective program for applying industry operating experience.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11)

.1 Biennial Inspection (71111.11B)

a. Inspection Scope

This inspection was conducted during the last week of the biennial examination testing cycle, which ended the week of December 4, 2006.

The inspectors observed the simulator dynamic examination and critique evaluations for two active shift crews. The inspectors also reviewed documentation associated with the licensee critique of those crews, and the critique of a third crew that was also tested during the inspection. The inspectors reviewed five licensed operator medical records, and procedures governing the medical examination process, against the standards in 10 CFR 55.53. The inspectors reviewed the examination remediation process, and the specific remedial examinations for three reactor operators who failed the biennial written examination, against the standards in NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9.

The inspectors performed a quality review of a sample of the requalification examination question bank, as well as the as administered biennial written examination questions for all of the biennial written examinations, against the standards of NUREG-1021. The inspectors also verified the adequacy of the examination development process and security controls against the standards of 10 CFR 55.49 and NUREG-1021.

The inspectors reviewed a sample of five corrective action documents related to licensed operator requalification for adequacy and completion of the corrective actions associated with the identified issues.

The inspectors reviewed the overall pass/fail results of the annual operating tests and biennial written examinations administered by the licensee during the biennial requalification testing cycle. Fourteen crews participated in the annual operating tests, which included job performance measures and simulator dynamic scenarios, with a total of 81 licensed operators. Three reactor operators failed the biennial written examination, and there were no operating test failures. The inspectors also reviewed the documents listed in the attachment to this report.

The inspectors completed one inspection sample.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12Q)

Maintenance Effectiveness Baseline Review

a. Inspection Scope

The inspectors reviewed the two listed maintenance activities to: (1) verify the appropriate handling of structure, system, and component (SSC) performance or condition problems; (2) verify the appropriate handling of degraded SSC functional performance; (3) evaluate the role of work practices and common cause problems; and (4) evaluate the handling of SSC issues reviewed under the requirements of the maintenance rule, 10 CFR Part 50 Appendix B, and the TSs.

- October 27 - November 28, 2006, Unit 3, Fisher butterfly valve taper pin inspections and staking

- November 15 - 22, 2006, Units 2 and 3, south switchyard tower corrosion repair

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed two samples.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12T)

Periodic Evaluation Reviews

a. Inspection Scope

The inspector reviewed the San Onofre Nuclear Generating Station report documenting the last periodic evaluation in accordance with 10 CFR 50.65(a)(3), which was the licensee's "Periodic Assessment of Maintenance Rule Program" for the period from July 2003 through June 2005.

The inspector reviewed the monitoring of risk significant SSC with degraded performance to access the effectiveness of the licensee's evaluations and the resulting corrective actions. The performance monitoring of non risk significant functions using plant level criteria was also reviewed.

The inspector evaluated whether the report contained an adequate assessment of the performance of the Maintenance Rule program as well as conformance with applicable programmatic and regulatory requirements. To accomplish this, the inspector verified that the licensee appropriately and correctly addressed the following attributes in the assessment report:

- Program treatment of non risk significant SSC functions monitored against plant level performance criteria

- Program adjustments made in response to unbalanced reliability and availability

- Application of industry operating experience

- Performance review of Category (a)(1) systems

- Evaluation of the bases for system category status change (e.g., (a)(1) to (a)(2) or (a)(2) to (a)(1))

- Effectiveness of performance and condition monitoring at component, train, system and plant levels

- Review and adjustment of definitions of functional failures

Inspection Procedure 71111.12 Triennial, "Maintenance Effectiveness," requires a minimum sample of four SSCs. The inspector reviewed seven systems and one structure that were classified as high risk significant. The inspection sample consisted of the following:

- Component Cooling Water System
- Emergency Core Cooling System
- Emergency Heat Ventilation and Air Conditioning System
- Intake Structure

- Main Steam System
- Plant Protection System
- Reactor Coolant System
- Salt Water Cooling System .

The inspector reviewed the: (1) evaluations of the balance of reliability and unavailability for maintenance rule functions, (2) consideration of industry operating experience, (3) assessment and management of risk related maintenance activities, and (4) use of insights from the probabilistic risk assessment to support the maintenance rule program.

Documents reviewed by the inspectors are listed in the attachment.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)

Emergent Work Control

a. Inspection Scope

The inspectors: (1) verified that the licensee performed actions to minimize the probability of initiating events and maintained the functional capability of mitigating systems and barrier integrity systems; (2) verified that emergent work-related activities such as troubleshooting, work planning/scheduling, establishing plant conditions, aligning equipment, tagging, temporary modifications, and equipment restoration did not place the plant in an unacceptable configuration; and (3) reviewed the UFSAR to determine if the licensee identified and corrected risk assessment and emergent work control problems.

- September 11, 2006, Unit 3, inadvertent letdown isolation (Action Request [AR] 060900409)

- September 24 - December 12, 2006, Unit 3, pressurizer vapor space leak (AR 060500766)

- September 27, 2006, Unit 3, charging Pump 3P190 breaker failed to open on demand (AR 060901232)

- December 12, 2006, Unit 3, reactor coolant Pump 3P001 oil leak (AR 061200594)

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed four samples.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors: (1) reviewed plant status documents such as operator shift logs, emergent work documentation, deferred modifications, and standing orders to determine if an operability evaluation was warranted for degraded components; (2) referred to the UFSAR and design basis documents to review the technical adequacy of licensee operability evaluations; (3) evaluated compensatory measures associated with operability evaluations; (4) determined degraded component impact on any TSs; (5) used the Significance Determination Process to evaluate the risk significance of degraded or inoperable equipment; and (6) verified that the licensee had identified and implemented appropriate corrective actions associated with degraded components.

- September 12, 2006, Unit 2, foreign material in the spent fuel pool

- September 28, 2006, Units 2 and 3, atmospheric dump valve operability during a steam generator tube rupture event

- November 7, 2006, Units 2 and 3, high pressure safety injection mini-flow potential flow induced erosion

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed three samples.

b. Findings

No findings of significance were identified.

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

The inspectors selected the five listed postmaintenance test activities of risk significant systems or components. For each item, the inspectors: (1) reviewed the applicable licensing basis and/or design-basis documents to determine the safety functions; (2) evaluated the safety functions that may have been affected by the maintenance activity; and (3) reviewed the test procedure to ensure it adequately tested the safety function that may have been affected. The inspectors either witnessed or reviewed test data to verify that acceptance criteria were met, plant impacts were evaluated, test equipment was calibrated, procedures were followed, jumpers were properly controlled, the test data results were complete and accurate, the test equipment was removed, the system was properly re-aligned, and deficiencies during testing were documented. The inspectors also reviewed the UFSAR to determine if the licensee identified and corrected problems related to postmaintenance testing.

- October 18, 2006, Unit 2, Train A component cooling water Pump 2P024 postmaintenance test following mechanical seal replacement

- November 2, 2006, Unit 3, main steam and feedwater lines spring cans inside containment postmaintenance test following cleaning of surface rust

- November 8, 2006, Unit 3, feedwater system piping weld postmaintenance test that revealed a foreign material exclusion plug left in the piping prior to welding

- November 29, 2006, Unit 3, steam Generator 3E089 manway cover postmaintenance test following removal and replacement as a result of failed clearance gaps

- December 5, 2006, Unit 3, Penetration 20, quench tank makeup Valve 3MU573 local leak rate postmaintenance test following corrective maintenance

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed five samples.

b. Findings

No findings of significance were identified.

1R20 Refueling and Other Outage Activities (71111.20)

a. Inspection Scope

The inspectors reviewed the following risk significant refueling items or activities during the Unit 3 Cycle 14 refueling outage to verify defense in depth commensurate with the outage risk control plan, compliance with the TSs, and adherence to commitments in response to Generic Letter 88-17, "Loss of Decay Heat Removal:" (1) the risk control plan; (2) tagging/clearance activities; (3) reactor coolant system instrumentation; (4) electrical power; (5) decay heat removal; (6) spent fuel pool cooling; (7) inventory control; (8) reactivity control; (9) containment closure; (10) reduced inventory or midloop conditions; (11) refueling activities; (12) heatup and coldown activities; (13) restart activities; and (14) licensee identification and implementation of appropriate corrective actions associated with refueling and outage activities. The inspectors' containment inspections included observations of the containment sump for damage and debris; and supports, braces, and snubbers for evidence of excessive stress, water hammer, or aging. Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

Introduction. The inspectors identified a Green noncited (NCV) of 10 CFR 19.12 for the failure of health physics personnel to adequately inform workers of the radiological conditions of the Unit 3 containment.

Description. On October 23, 2006, the inspectors received a briefing from a contract health physics technician on the radiological conditions of the Unit 3 containment prior to a planned general tour. The briefing included a cursory discussion of the general area dose rates and surface contamination levels. Following the briefing, the inspectors began to enter the Unit 3 containment and noticed an airborne radioactivity area posting above the personnel access door. The contract technician had failed to brief the inspectors on the airborne concentration levels and failed to inform the inspectors that the containment was posted as an airborne radioactivity area. The inspectors also observed that the contract technician failed to inform other workers of the airborne radiological conditions inside containment. The inspectors sought to obtain the airborne levels from another health physics technician in the area, but that technician did not know the levels and directed the inspectors to the health physics supervisor. The supervisor provided multiple upper bounding values and indicated that she did not fully understand the airborne radiological conditions.

The inspectors reviewed the detailed airborne radiological conditions of the Unit 3 containment and discussed the issue with the licensee's health physics management. The inspectors determined that at the time of their entry they did not enter any areas that met the requirements for posting as an airborne radioactivity area. The inspectors questioned why the entire Unit 3 containment was posted as an airborne radioactivity area. The licensee indicated that they were in the process of breaching systems and on-loading equipment that could become a source of airborne radioactivity. The licensee indicated that instead of posting multiple local airborne radioactivity areas in containment it was more efficient to post the entire containment and inform workers of the purpose of the posting.

The inspectors reviewed Health Physics Division Performance Standard HP-S-21, "Health Physics Control Point Protocol - Radiological Requirements," Revision 6, and noted that the standard on worker briefings stated that, "Personnel entering the RCA shall be briefed on the radiological conditions expected enroute and at their work location." The standard defines radiological conditions to include "dose rate ranges, sources of radiation, general contamination levels and general airborne radioactivity levels."

The licensee attributed the direct cause of the inadequate briefing to be the lack of regular monitoring of the health physics control points to ensure that management standards were being met. Corrective actions taken included more frequent monitoring of control points; reconfiguration of the briefing area to make it more conducive to quality briefings; and retraining of the appropriate health physics staff on the standard for worker briefings.

Analysis. The failure of health physics personnel to inform workers of the airborne radiological conditions of the Unit 3 containment was determined to be a performance deficiency. The finding was determined to be more than minor because if left uncorrected it would become a more significant safety concern in that the failure to inform workers of radiological conditions could result in unintended exposures. The inspectors processed the finding through Appendix C, "Occupational Radiation Safety Significance Determination Process," of Manual Chapter 0609, "Significance Determination Process," and determined that the finding is of very low safety significance because it was not an ALARA issue; there was not an overexposure or substantial potential for an overexposure; and the ability to assess dose was not compromised.

The cause of the finding has a crosscutting aspect in the area of human performance associated with work practices in that the contract health physics technician did not follow established health physics procedures for adequately informing workers of radiological conditions. In addition, supervisory oversight of the radiological condition briefings failed to ensure that nuclear safety was supported in that the airborne radioactivity component of the health physics briefings was being omitted and the supervisor was not cognizant of the airborne radioactivity levels.

Enforcement. 10 CFR 19.12 requires, in part, that all individuals who in the course of employment are likely to receive in a year an occupational dose in excess of 100 millirem be kept informed of the transfer or use of radioactive material and in precautions to minimize exposure. Contrary to these requirements, on October 23, 2006, health physics personnel failed to inform workers of the airborne radiological conditions in the Unit 3 containment so that the workers could take the necessary precautions to minimize exposure. Because the finding is of very low safety significance and has been entered into the licensee's corrective action program as AR 061001435, this violation is being treated as an NCV consistent with Section VI.A of the Enforcement Policy: NCV 05000362/2006005-01, "Inadequate Containment Airborne Radioactivity Briefing."

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed the UFSAR, procedure requirements, and TSs to ensure that the four listed surveillance activities demonstrated that the SSC's tested were capable of performing their intended safety functions. The inspectors either witnessed or reviewed test data to verify that the following significant surveillance test attributes were adequate: (1) preconditioning; (2) evaluation of testing impact on the plant; (3) acceptance criteria; (4) test equipment; (5) procedures; (6) jumper/lifted lead controls; (7) test data; (8) testing frequency and method demonstrated TS operability; (9) test equipment removal; (10) restoration of plant systems; (11) fulfillment of ASME Code requirements; (12) updating of performance indicator data; (13) engineering evaluations, root causes, and bases for returning tested SSC's not meeting the test acceptance criteria were correct; (14) reference setting data; and (15) annunciators and alarms setpoints. The inspectors also verified that the licensee identified and implemented any needed corrective actions associated with the surveillance testing.

- October 3, 2006, Unit 3, inservice test of containment spray Pump 3P012

- October 3, 2006, Unit 3, engineered safety feature (ESF) relay testing charging Pump 3P191

- October 5, 2006, Unit 3, scheduled inservice test to verify ESF subgroup relay actuation for auxiliary feedwater Pump 3P141

- December 11, 2006, Unit 3, TS surveillances required on the core operating limits supervisory system prior to exceeding 20 percent power following reactor startup

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed four samples.

b. Findings

Introduction. A Green self-revealing NCV of TS 5.5.1.1 was identified for the failure of operations personnel to follow procedures while diluting the reactor coolant system. This resulted in the TS required surveillances on the core operating limits supervisory system not being performed prior to exceeding 20 percent reactor power following a Unit 3 reactor startup.

Description. On December 11, 2006, two Unit 3 control room operators, dedicated specifically for reactivity changes, added approximately 500 gallons of primary water to raise reactor power from approximately 15.3 percent to 18 percent. The operators later indicated that they based the 500 gallon addition on their own judgment, based on xenon buildup and the amount of water added on the previous shift. The operators did not perform a formal calculation for water addition in accordance with Attachment 9, "Power Change Calculation," to Procedure SO23-5-1.7, "Power Operations," Revision 27, as required.

The estimate of 500 gallons was approximately twice the amount needed to achieve the desired power increase. Once power reached nearly 19 percent, the dedicated operators informed the shift manager and the Unit 3 control room supervisor that the power increase was exceeding what was anticipated. The dedicated operators injected boric acid and limited the power increase to approximately 20.3 percent. TSs 3.2.1, 3.2.3, and 3.2.4 require surveillance tests to be performed to verify that the core operating limits supervisory system is operable prior to exceeding 20 percent reactor power. TS SR 3.0.4 requires that those surveillances be completed prior to entry into a mode or other specified condition in the applicability of a limiting condition for operation. Approximately one hour after the power excursion was mitigated, all required TS surveillance tests were performed on the core operating limits supervisory system satisfactorily.

Operations management issued a Priority 1 reading within 24 hours of the event to emphasize to operations personnel the expectations for performing power increases in accordance with procedural requirements, and for proper oversight by the shift manager and control room supervisor during reactivity additions. The licensee also initiated a root cause evaluation for this event, which was still in progress at the end of the inspection period.

The inspectors concluded that a lack of oversight by the shift manager and Unit 3 control room supervisory personnel significantly contributed to this event. The inspectors noted that Procedure SO123-RX-1, "Reactivity Management Order," Revision 1 directs that the shift manager "shall ensure all reactivity changes are properly planned and briefed prior to execution." In addition to poor oversight, the inspectors also concluded that a poor pre-job brief and lack of clear management expectations for performing reactivity additions contributed to the event.

Analysis. The failure of Unit 3 operations personnel to perform a controlled reactor power increase in accordance with established procedural requirements was considered a performance deficiency. The finding was determined to be more than minor because unplanned reactivity excursions could be reasonably viewed as a precursor to a significant event, in that they could lead to more serious situations where reactor protection equipment may be required. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheet, the finding was determined to have very low safety significance (Green) because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. The core operating limits supervisory system was verified operable within approximately one hour after the event, and all other mitigating equipment and functions remained available.

The cause of the finding has a crosscutting aspect in the area of human performance associated with work practices in that Unit 3 control room operators did not perform a controlled reactor power increase in accordance with established procedural requirements. In addition, supervisory oversight failed to ensure that the reactivity change was properly planned and briefed prior to execution.

Enforcement. TS 5.5.1.1 requires that written procedures be established, implemented, and maintained for activities specified in appendix A, "Typical Procedures for Pressurized Water Reactors and Boiling Water Reactors," Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operations)," dated February 1978. Regulatory Guide 1.33, Appendix A, Section 2.g, requires procedures for power operations. Procedure S023-5-1.7, "Power Operations," required that formal calculations be performed for water additions. Contrary to this, on December 11, 2006, operations personnel did not perform a formal calculation prior to adding water to the reactor coolant system. This resulted in an increase in reactor power above 20 percent without performing the required surveillance tests on the core operating limits supervisory system in accordance with TSs 3.2.1, 3.2.3, and 3.2.4. Because this finding is of very low safety significance and has been entered into the licensee's corrective action program as AR 061200640, this violation is being treated as an NCV consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000362/2006005-02, "Unplanned Power Increase Results in Violation of Technical Specifications."

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

The inspectors reviewed the UFSAR, plant drawings, procedure requirements, and TSs to ensure that the listed temporary modification was properly implemented. The inspectors:

(1) verified that the modifications did not have an affect on system operability/availability; (2) verified that the installation was consistent with modification documents; (3) ensured that the post-installation test results were satisfactory and that the impact of the temporary modifications on permanently installed SSC's were supported by the test; (4) verified that the modifications were identified on control room drawings and that appropriate identification tags were placed on the affected drawings; and (5) verified that appropriate safety evaluations were completed. The inspectors verified that the licensee identified and implemented any needed corrective actions associated with temporary modifications.

- November 1, 2006, Unit 3 temporary seal ring installed on the reactor vessel annulus during refueling operations

Documents reviewed by the inspectors are listed in the attachment.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)

a. Inspection Scope

The inspector performed an in-office onsite review of Section 1, "Definitions and Acronyms," Revision 16; Section 5, "Organizational Control of Emergencies," Revision 19; Section 6, "Emergency Measures," Revision 17; Section 8, "Emergency Facilities and Equipment," Revision 17; Appendix A, "Letters of Agreement," Revision 14; Appendix C, "Vendor Support," Revision 12; Appendix D, "NUREG-0654 Cross-Reference," Revision 13; and Appendix E, "List of Procedures Implementing the Emergency Plan," Revision 15, of the San Onofre Nuclear Generating Station Emergency Plan, received October 2006. These revisions updated the title of an offsite hospital, added a letter of agreement with a local physician group, updated a vendor letter of agreement following a change of ownership, added information about control room capabilities to access environmental data, and changed the description of a radioactive liquid-release monitoring path for Unit 1 following a plant modification.

The revisions were compared to their previous revisions, to the criteria of NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, and to the standards in 10 CFR 50.47(b) to determine if the revisions were adequately conducted following the requirements of 10 CFR 50.54(q). This review was not documented in a safety evaluation report and did not constitute approval of licensee changes; therefore, these revisions are subject to future inspection.

The inspector completed one sample during the inspection.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY
Cornerstone: Occupational Radiation Safety [OS]

2OS1 Access Control To Radiologically Significant Areas (71121.01)

a. Inspection Scope

This area was inspected to assess licensee performance in implementing physical and administrative controls for airborne radioactivity areas, radiation areas, high radiation areas, and worker adherence to these controls. The inspectors used the requirements in 10 CFR Part 20, the TSs, and licensee's procedures required by TSs as criteria for determining compliance. During the inspection, the inspectors interviewed the radiation protection manager, radiation protection supervisors, and radiation workers. The inspectors performed independent radiation dose rate measurements and reviewed the following items:

- Performance indicator events and associated documentation packages reported by the licensee in the Occupational Radiation Safety Cornerstone
- Controls (surveys, posting, and barricades) of three radiation, high radiation, or airborne radioactivity areas
- Radiation work permits, procedures, engineering controls, and air sampler locations
- Conformity of electronic personal dosimeter alarm set points with survey indications and plant policy; workers' knowledge of required actions when their electronic personnel dosimeter noticeably malfunctions or alarms.
- Barrier integrity and performance of engineering controls in airborne radioactivity areas
- Physical and programmatic controls for highly activated or contaminated materials (non-fuel) stored within spent fuel and other storage pools.
- Radiation worker and radiation protection technician performance with respect to radiation protection work requirements

The inspectors completed 8 of the required 21 samples.

b. Findings

No findings of significance were identified.

2OS2 ALARA Planning and Controls (71121.02)

a. Inspection Scope

The inspectors assessed licensee performance with respect to maintaining individual and collective radiation exposures as low as is reasonably achievable (ALARA). The inspectors used the requirements in 10 CFR Part 20 and the licensee's procedures required by TSs as criteria for determining compliance. The inspectors interviewed licensee personnel and reviewed:

- Five outage work activities scheduled during the inspection period and associated work activity exposure estimates that were likely to result in the highest personnel collective exposures

- Site specific ALARA procedures

- Interfaces between operations, radiation protection, maintenance, maintenance planning, scheduling and engineering groups

- Integration of ALARA requirements into work procedure and radiation work permit (or radiation exposure permit) documents

- Person-hour estimates provided by maintenance planning and other groups to the radiation protection group with the actual work activity time requirements

- Shielding requests and dose/benefit analyses

- Dose rate reduction activities in work planning

- Use of engineering controls to achieve dose reductions and dose reduction benefits afforded by shielding

- Workers use of the low dose waiting areas

- First-line job supervisors' contribution to ensuring work activities are conducted in a dose efficient manner

- Radiation worker and radiation protection technician performance during work activities in radiation areas, airborne radioactivity areas, or high radiation areas

- Corrective action documents related to the ALARA program and follow-up activities such as initial problem identification, characterization, and tracking

The inspectors completed 12 of the required 29 samples.

b. Findings

Introduction: The inspectors identified a noncited violation of 10 CFR 20.1904(a) because the licensee failed to adequately label a container of radioactive material. The violation had very low safety significance.

Description: On August 4, 2006, a vial containing approximately 14 microcuries of fission and activation products (primarily cesium-137 and cobalt-60) was found in the reactor chemistry lab "clean" non-radioactive trash. This container of radioactive material was not adequately labeled because it did not provide sufficient information to permit individuals to take precautions to minimize exposures.

After the radioactive material was recovered from the trash, a corrective action was assigned to the health physics department to determine if this event should be trended for inadequate labeling because it did not meet the chemistry department's expectations for labeling. The health physics department canceled the corrective action because they determined that when the material was transferred to the reactor chemistry lab on July 26, 2006, the material was in a plastic bag that was appropriately labeled. The label included the words "Caution Radioactive Material" and had additional information about the radiation hazards as required by 10 CFR 20.1904(a). However, the health physics department did not follow up with the chemistry department to determine why the corrective action was assigned and what expectations were not met prior to canceling the corrective action.

After the inspector questioned the adequacy of the label and the reasons for canceling the corrective action, the licensee performed an apparent cause evaluation to determine the exact details of the events and actions associated with the discovery of radioactive material in the reactor chemistry lab "clean" non-radioactive trash. The following is a description of these events and actions.

On July 26, 2006, health physics personnel prepared two 1-cm^3 vials of spent resin samples, placed each sample vial into a plastic bag, closed them with "Caution Radioactive Material" tape, and attached a sample label that indicated spent resin. These plastic bags were transported to the reactor chemistry lab in a larger bag with a "health physics label" that included the words "Caution Radioactive Material" and dose rates of 10 millirem per hour on contact and 1 millirem per hour at 30 centimeters. The "health physics label" also contained a warning to "Contact HP Before Opening." Due to space limitations, health physics personnel removed the plastic bags containing the two sample vials from the larger bag with the "health physics label" and placed them into a lead pig until it was time for them to be counted.

On July 27, 2006, chemistry personnel removed sample vial No. 1 from the plastic bag, counted it, and returned it to the lead pig. Sample vial No. 2 was removed from its bag and placed on the counter. While sample vial No. 2 was counting, a chemistry shift turnover occurred and instructions were provided to the oncoming shift to finish the count and return the sample to the lead pig. Contrary to these instructions, chemistry personnel removed the vial from the counter, placed it back in the plastic bag, and placed the bag into a seven day storage bin that is normally used to store health physics air samples, not resin samples.

Seven days later, on August 3, 2006, the seven day storage bin with the resin sample bag was emptied into the "clean" trash can that was under the desk where the lab's counting equipment was located. Procedures require items that are identified as radioactive, either by a radioactive material sticker or label, or by a survey, are controlled as such, and are discarded into the lab's radioactive trash. Based on the dose rates on the bag, it became apparent that a survey was not performed prior to discarding the bin's contents into the lab's "clean" trash. Additionally, chemistry personnel had become accustomed to seeing the "health physics label" on resin sample bags, however the "health physics label" was not on this resin sample bag.

Later that day, when chemistry personnel performed a background count check on a beta detector in the reactor chemistry lab, they noticed the detector was measuring high background counts. The chemistry instrument specialist was contacted to verify the beta detector was operating properly.

On August 4, 2006, after concluding that the detector was operating properly and high background counts did exist in the room, the chemistry instrument specialist contacted the health physics department to survey the room for potential sources. Health physics personnel surveyed the room and discovered the resin sample bag in the trash can under the desk where the beta detector was situated. The dose rates at the time of discovery were 5 millirem per hour on contact with the bag and 0.4 millirem per hour at 30 centimeters.

Although it was apparent that reactor chemistry lab procedures and instructions were not followed, the inspector determined that the labeling on this container of radioactive material was not adequate because it did not meet the requirements of 10 CFR 20.1904(a). The label did not provide sufficient information to permit individuals handling, using, or working in the vicinity of this material to take precautions to avoid or minimize their exposure. Specifically, housekeeping personnel who remove trash from the room would not have been able to recognize the hazards associated with the material.

<u>Analysis</u>: The failure to adequately label a container of radioactive material was a performance deficiency. The finding was greater than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute of Exposure Control, and affected the cornerstone objective to ensure the adequate protection of a worker's health and safety from exposure to radiation from radioactive materials because workers could have received additional exposure. Because the finding involved the potential for unplanned, unintended dose resulting from conditions that were contrary to NRC regulations, it was evaluated using the Occupational Radiation Safety Significance Determination Process. The finding was determined to be of very low safety significance because: (1) it was not an ALARA finding, (2) there was no personnel overexposure, (3) there was no substantial potential for personnel overexposure, and (4) the finding did not compromise licensee's ability to assess dose. Additionally, this finding had a cross-cutting aspect in the area of human performance related to work practices because the licensee's staff did not perform self checking to ensure the container of radioactive material was adequately labeled.

<u>Enforcement</u>: 10 CFR Part 20.1904(a) requires the licensee ensure that each container of licensed material bears a durable, clearly visible label bearing the radiation symbol and the words "Caution, Radioactive Material" or "Danger, Radioactive Material." The label must also provide sufficient information (such as the radionuclide(s) present, an estimate of the quantity of radioactivity, the date for which the activity is estimated, radiation levels, kinds of materials, and mass enrichment) to permit individuals handling or using the containers, or working in the vicinity of the containers, to take precautions to avoid or minimize exposures. Contrary to this requirement, on August 4, 2006, a container of licensed radioactive material was found in the reactor chemistry lab "clean" non-

radioactive trash without an adequate label. This violation was entered into licensee's corrective action program as Action Request 060800249. Because this finding is of very low safety significance and was entered into licensee's corrective action program, it is being treated as a noncited violation, consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000361;362/2006005-03, Failure to Adequately Label a Container of Radioactive Material.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification (71151)

a. Inspection Scope

Cornerstone: Barrier Integrity

The inspectors sampled licensee submittals for the two PIslisted below for the period October 1, 2004, to September 30, 2006, for Units 2 and 3. The definitions and guidance of Nuclear Energy Institute 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 4, were used to verify the licensee's basis for reporting each data element in order to verify the accuracy of PI data reported during the assessment period. The inspectors: (1) reviewed reactor coolant system (RCS) chemistry sample analyses for dose equivalent Iodine-131 and compared the results to the TS limit; (2) observed a chemistry technician obtain and analyze a RCS sample; (3) reviewed operating logs and surveillance results for measurements of RCS identified leakage; and (4) observed a surveillance test that determined RCS identified leakage

- Reactor Coolant System Specific Activity
- Reactor Coolant System Leakage

Documents reviewed by the inspectors are listed in the attachment.

b. Findings

No findings of significance were identified.

Occupational Radiation Safety Cornerstone

- Occupational Exposure Control Effectiveness

The inspectors reviewed licensee documents from July 1 through September 30, 2006. The review included corrective action documentation that identified occurrences in locked high radiation areas (as defined in Licensee's TSs), very high radiation areas (as defined in 10 CFR 20.1003), and unplanned personnel exposures (as defined in NEI 99-02). Additional records reviewed included ALARA records and whole body counts of selected individual exposures. The inspectors interviewed licensee personnel that were accountable for collecting and evaluating the performance indicator data. In addition, the inspectors toured plant areas to verify that high radiation, locked high radiation, and very high radiation areas were properly controlled. Performance indicator definitions and guidance contained in NEI 99-02, "Regulatory Assessment Indicator Guideline," Revision 4, were used to verify the basis in reporting for each data element.

The inspector completed the required one sample in this cornerstone.

Public Radiation Safety Cornerstone

- Radiological Effluent Technical Specification/Offsite Dose Calculation Manual Radiological Effluent Occurrences

The inspectors reviewed licensee documents from July 1 through September 30, 2006. Licensee records reviewed included corrective action documentation that identified occurrences for liquid or gaseous effluent releases that exceeded performance indicator thresholds and those reported to the NRC. The inspectors interviewed licensee personnel that were accountable for collecting and evaluating the performance indicator data. Performance indicator definitions and guidance contained in NEI 99-02, "Regulatory Assessment Indicator Guideline," Revision 4, were used to verify the basis in reporting for each data element.

The inspectors completed the required one sample in this cornerstone.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Routine Review of Identification and Resolution of Problems

a. Inspection Scope

The inspectors performed a daily screening of items entered into the licensee's CAP. This assessment was accomplished by reviewing maintenance orders, action requests, the management focus list, and attending corrective action review and work control meetings. The inspectors: (1) verified that equipment, human performance, and program issues were being identified by the licensee at an appropriate threshold and that the issues were entered into the corrective action program; (2) verified that corrective actions were commensurate with the significance of the issue; and (3) identified conditions that might warrant additional follow-up through other baseline inspection procedures.

b. Findings

No findings of significance were identified.

.2 Selected Issue Follow-up Inspection

a. Inspection Scope

In addition to the routine review, the inspectors selected the listed issue for a more in-depth review. The inspectors considered the following during the review of the licensee's actions: (1) complete and accurate identification of the problem in a timely manner; (2) evaluation and disposition of operability/reportability issues; (3) consideration of extent of condition, generic implications, common cause, and previous occurrences; (4) classification and prioritization of the resolution of the problem; (5) identification of root and contributing causes of the problem; (6) identification of corrective actions; and (7) completion of corrective actions in a timely manner.

- September 24 - December 1, 2006, Units 2 and 3, thermal overload protection for safety-related equipment

Documents reviewed by the inspectors are listed in the attachment.

b. Findings

Introduction. The inspectors identified a Green NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the failure to prevent recurrence of premature tripping of Square D thermal overloads used for equipment protection on safety-related equipment. This deficiency had not been properly evaluated or corrected since 2001.

Description. On October 17, 2006, the Unit 2 fuel handling building pump room emergency air conditioning Unit 2E441 Phase B thermal overload tripped for no apparent reason with the fan turned off. The inspectors noted that six spurious trips of other thermal overloads had occurred since December 2005. These overloads were associated with the Unit 3 fuel handling building post accident cleanup room emergency air conditioning Unit 3E371, the Unit 2 fuel handling building pump room emergency air conditioning Units 2E441 and 2E442, and the Unit 2 component cooling water Pump 2P024 room emergency air conditioning Unit 2E453. All of these thermal overloads were changed out for larger devices in 2005 because of chronic problems with spurious trips.

The inspectors reviewed the history of spurious thermal overload trips and discovered that five previous apparent cause assessments (ACEs) had been performed since January 2001 to identify and correct spurious trips associated with thermal overloads. A 2001 ACE identified equipment aging as the cause, and directed that replacement thermal overloads be installed. A 2002 ACE identified degraded cabling lugs as the cause, and the lugs were replaced. A 2003 ACE identified the cause as insufficient margin in the trip settings, which were adjusted. A 2004 ACE attributed a series of spurious trips to warm weather. Finally, A 2005 ACE identified that the thermal overloads were undersized, and that new, larger thermal overloads should be installed. The licensee upgraded 64 thermal overloads to a larger capacity model in December 2005. However, the inspectors concluded that the ACEs and the associated corrective actions generated by the licensee were ineffective in resolving the problem.

The inspectors met regularly with engineering personnel to ensure a thorough and comprehensive ACE was performed to pinpoint the actual root cause of the spurious thermal overload trips. The licensee implemented a detailed plan for testing the thermal overloads, and X-rayed the internals to determine if a design defect had previously gone undetected. The licensee discovered that two mechanisms in concert with each other were causing the spurious trips. Thermal overloads associated with small motors had a tendency to trip early due to higher than expected current levels going through the overloads while the associated line voltage was high in the normal band. Also, the X-ray analysis revealed that approximately 20 percent of the sample had insufficient melting alloy, contributing to a thermal overload tripping on lower current.

The licensee established a plan to replace the affected thermal overloads with properly sized components that would be X-rayed for sufficient melting alloy verification prior to installation. The licensee placed the affected components into three groups, prioritized based on the margin to failure available. The first phase, which included the components that had failed since December 2005 was completed in November 2006. Phases 2 and 3 of the replacement were scheduled to be implemented in March and July 2007, respectively.

Analysis. The failure of the licensee to take timely corrective actions to prevent the premature tripping of thermal overloads for safety-related equipment was considered a performance deficiency. The finding was determined to be more than minor because it was associated with the equipment performance attribute of the mitigating systems cornerstone and it affected the cornerstone objective by challenging the availability and capability of safety-related components. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheet, the finding was determined to have very low safety significance (Green) because it did not result in an actual loss of safety function for affected systems. The cause of the finding has a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program because the licensee failed to thoroughly evaluate and correct the problem in a timely manner.

Enforcement. 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," states, in part, that measures shall be established to ensure that for significant conditions adverse to quality, corrective actions are taken to preclude repetition. Contrary to this, the licensee failed to take appropriate corrective actions to prevent the premature tripping of thermal overloads for safety-related equipment from 1999 to 2006. Because the finding is of very low safety significance and has been entered into the licensee's corrective action program as AR 061000859, this violation is being treated as an NCV consistent with Section VI.A of the Enforcement Policy: NCV 05000361;362/2006005-04, "Failure to Prevent Recurrence of Premature Tripping of Square D Thermal Overloads."

.3 Semiannual Trend Review

a. Inspection Scope

The inspectors completed a semi-annual trend review of repetitive or closely related issues that were documented in direct cause evaluations to identify trends that might indicate the existence of more safety significant issues. Direct cause evaluations were added to the licensee's corrective action program approximately one year ago to better evaluate issues that do not rise to the level of an apparent cause evaluation, but require more attention than trend assignment. The inspectors review consisted of the 6 month period of June 1 to December 1, 2006. Documents reviewed by the inspectors are listed in the attachment.

b. Findings

No findings of significance were identified.

.3 Cross-References to Problem Identification and Resolution Findings Documented Elsewhere

Section 2OS2 discusses a finding for the failure to label radioactive material that was identified by the inspector because the licensee did not accurately and completely evaluate a corrective action assignment

4OA5 Other Activities

.1 (Closed) Temporary Instruction 2515/160: Pressurizer Penetration Nozzles and Steam Space Piping Connections in U.S. Pressurized Water Reactors (NRC Bulletin 2004-01)

a. Inspection Scope

The inspectors observed and reviewed licensee activities associated with the Unit 3 pressurizer penetration nozzles and steam space piping connections inspections that were implemented in accordance with the licensee's response to Bulletin 2004-01.

The licensee performed a visual inspection of the bare metal surfaces of the Unit 3 pressurizer and pressurizer penetrations during the Cycle 14 refueling outage that occurred during this inspection period. The inspections were completed before the licensee replaced and/or overlaid all of the Alloy 82/182/600 pressurizer penetrations and connections referenced in Bulletin 2004-01 with Alloy 52/690.

The inspectors performed an independent visual inspection of the pressurizer prior to the Alloy 52/690 modifications. The inspectors verified that the entire circumference of each pressurizer penetration was examined and that no evidence of boron crystals or cracking were present. The inspectors also verified that qualified licensee personnel conducted the inspection and that their training was current.

The licensee also performed nondestructive examinations of the pressurizer safety valve header and spray line. Section 1R08 of this report documents the scope and findings of the NRC inspection activities in that area.

Documents reviewed by the inspectors are listed in the attachment.

The inspectors have completed TI 2515/160 for Unit 3. The inspection requirements of TI 2515/160 have also been completed for Unit 2 as documented in San Onofre Nuclear Generating Station - NRC Integrated Inspection Report 05000361/2006002; 05000362/2006002.

b. Findings

No findings of significance were identified.

.2 Third-Party Reviews

The inspectors reviewed a third-party assessment dated August 21, 2006. The biennial assessment was performed from June 12 - 23, 2006. The inspectors noted that the assessment was consistent with performance observed by the NRC staff.

4OA6 Meetings, Including Exit

On September 29, 2006, a senior reactor inspector presented the maintenance effectiveness inspection results to Dr. R. W. Waldo, Vice President Nuclear Generation, and other members of licensee management at the conclusion of the onsite inspection.

On October 17, 2006, the emergency preparedness inspector presented the inspection results to Mr. B. Ashbrook, Manager, Emergency Planning, who acknowledged the findings.

On November 16, 2006, the inspectors presented the occupational radiation safety inspection results to Mr. R. Waldo, Vice President, Nuclear Generation, and other members of the licensee's staff who acknowledged the findings. Additional information provided by the licensee after the on-site inspection resulted in a modification to the findings. On December 21, 2006, the inspectors re-exited by telephone with Mr. A. Scherer, Manager, Nuclear Regulatory Affairs, and other members of the staff who acknowledged the findings.

On November 17, 2006, the engineering inspectors presented the results of the inservice inspection to Mr. R.W. Waldo, Vice President of Nuclear Generation, and other members of licensee management.

On December 6, 2006, the examiners discussed the preliminary inspection results of the licensed operator biennial requalification program inspection with Mr. C. Williams, Manger, Compliance. A final telephone exit meeting was held with Mr. C. Williams on December 11, 2006.

On December 20 and 21, 2006, the resident inspectors presented the inspection results to Dr. R. Waldo and others who acknowledged the findings.

The inspectors verified that no proprietary information was reviewed during the inspection.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

T. Adler, Manager, Work Control
R. Allen, Manager, System Engineering Programs
C. Anderson, Manager, Work Control
B. Ashbrook, Manager, Emergency Planning
D. Axline, Licensing Engineer
J. Barrow, ALARA Supervisor, Health Physics
D. Breig, Station Manager
R. Burton, Supervisor, Chemistry
S. Chun, System Engineer
B. Corbett, Manager, Health Physics
M. Farmer, General Foreman, Health Physics
D. Goodwin, Probabilistic Risk Analyst
A. Hagemeyer, Supervisor, Operations Training
G. Johnson, Supervisor, Maintenance Engineering
K. Johnson, Manager, Design Engineering
B. Katz, Vice President, Nuclear Oversight and Regulatory Affairs
L. Kelly, Engineer, Nuclear Regulatory Affairs
M. Love, Manager, Maintenance
A. Martinez, Manager, Health Physics Operational Support
C. McAndrews, Manager, Nuclear Oversight and Assessment
M. McDevitt, Senior Engineer
A. Mahindrakar, ISI Engineer
A. Martinez, Manager, Health Physics Operations
A. Matheny, Steam Generator System Engineer
A. Meichler, Manager, Maintenance Engineering
J. Osbonne, Manager, Corrective Action Program
N. Quigley, Manager, Mechanical/Nuclear Maintenance Engineering
J. Ramsdell, Supervisor, Engineering Programs
K. Rauch, Manager, Operations Training
R. Sandstrom, Manager, Training
A. Scherer, Manager, Nuclear Regulatory Affairs
G. Shelton, System Engineer
M. Short, Manager MTE
W. Strom, Maintenance Engineer
R. Sutton, Maintenance Rule Coordinator
V. Thomas, System Engineer
T. Vogt, Manager, Operations
R. Waldo, Vice President, Nuclear Generation
D. Wilcockson, Manager, Plant Operations
C. Williams, Manager, Compliance
T. Yackle, Manager, Maintenance and System Engineering

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Opened and Closed

05000362/2006005-01	NCV	Inadequate Containment Airborne Radioactivity Briefing (Section 1R20)
05000362/2006005-02	NCV	Unplanned Power Increase Results in Violation of Technical Specifications (Section 1R22)
05000361;362/2006005-03	NCV	Failure to Adequately Label a Container of Radioactive Material (Section 2OS2)
05000361;362/2006005-04	NCV	Failure to Prevent Recurrence of Premature Tripping of Square D Thermal Overloads (Section 4OA2)

Closed

None

Discussed

None

LIST OF DOCUMENTS REVIEWED

In addition to the documents called out in the inspection report, the following documents were selected and reviewed by the inspectors to accomplish the objectives and scope of the inspection and to support any findings:

Section 1R01: Adverse Weather Protection

Procedures

SO23-13-8	"Severe Weather"	Revision 16

Section 1R04: Equipment Alignment

Procedures

SO123-XV-4.13	"Control of Work and Storage Areas Within the Protected Area"	Revision 15
SO23-3-2.11	"Spent Fuel Pool Operations"	Revision 19
SO23-13-23	"Loss of Spent Fuel Pool Cooling"	Revision 8
SO23-2-4,	"Auxiliary Feedwater System Operation"	Revision 21

Drawings and Calculations

40127G	"Component Cooling Water System"	Revision 14
40127F	"Component Cooling Water System"	Revision 33
40127A	"Component Cooling Water System (Pumps)"	Revision 28
40122ASO3	"Fuel Pool Cooling System"	Revision 15
40122BSO3	"Fuel Pool Cooling System"	Revision 18
40122CSO3	"Fuel Pool Cooling System"	Revision 12
40122XSO3	"Fuel Pool Cooling System"	Revision 4
40160ASO3	"Unit 3 Auxiliary Feedwater System"	Revision 21

Action Requests

061000228	060700385	061000846	060901363	060900493	061001379
060801030	060400097	060700471	061201230		

Miscellaneous

06100013	"Fire Impairment"

Section 1R08: Inservice Inspection Activities

Action Requests

AR 061001459	AR 040201366	AR 061100078	AR 050500027
AR 041001088	AR 061001144	AR 050100149	AR 041000794
AR 060600130	AR 041000682	AR 061100264	AR 040202658
AR 041000767	AR 061100893	AR 041001087	AR 041001090
AR 060700246			

Procedures

Number	Title	Revision
SO23-XVII-1ISS2	Inservice Inspection Procedure	1
SO23-XXVII-23.1	Multi-Frequency Eddy Current Examination of Steam Generator Tubing for SONGS 2 & 3	19
SO123-IN-1	Inservice Inspection/Inservice Test Programs	7
SO23-XVII-1	Inservice Inspection Program Implementation	1
SO23-XVII-1.1	Inservice Inspection Program Maintenance	3
SO23-XVII-3.1	Inservice Inspection of Class 1 Components	6
SO23-XVII-3.2	Inservice Inspection of Class 2 Components and their supports	3
SO23-XVII-3.3	Inservice Inspection of Class 3 Components and their supports	3
SO23-XXVII-20.48	Liquid Penetrant Examination (PT-10)	1
SO23-XXVII-49	Visual Examination Procedure to Determine the Condition of Nuclear Parts, Components, or Surfaces (VT-1)	2
SO23-XXVII-20.52	Ultrasonic Examination of Nozzle Inner Radius Areas	2
SO23-XXVII-20.64	Ultrasonic Examination of Nuclear Coolant System Austenitic Piping	1
SO23-XXVII-20.66	Ultrasonic Examination of Vessel Welds and Adjacent Base Metal	3
SO23-XXVII-30.7	Ultrasonic Examination of Bolts and Studs	1
SO23-XXVII-30.9	Ultrasonic Examination of Dissimilar Metal Piping Welds	2
SO23-XXVII-30.12	Risk-Informed Ultrasonic Examination of Class 1 Ferric Piping Welds	0
SO23-XXVII-30.13	Risk-Informed Ultrasonic Examination of Class 1 Austenitic Piping Welds	0
SO23-XXXIII-8.16	Reactor Coolant System Alloy 600 Inspection	5

Miscellaneous Documents

Number	Title	Revision
SO23-SSVII-25.20	Examination Technique Specification Sheets	5
51-9027298-001	Condition Monitoring Limits for SONGS Unit 3	0
October 25, 2004	Special Report: Inservice Inspection of Steam Generator Tubes, Cycle 13, SONGS Unit 3	0
May 11, 2006	Third Ten-Year Inservice Inspection (ISI) Interval Relief Request ISI-3-21 Request for Alternative to ASME Code Rules for the embedded flaw repair process for Control Element Drive Mechanism (CEDM) #56 San Onofre Nuclear Generating Station Unit 3.	
R-3675-00-1	Tube Degradation Prediction for the San Onofre Nuclear Generating Station Unit 3 Steam Generators– 2005 Update	0
	Maintenance Order # 06051653000 Unit 3 Weld Record - ASME Welding Reference SO123 -V- 7.4	
	Maintenance Order # 05050721000 Unit 3 Weld Record - ASME Welding Reference SO123 -V- 7.4	
WR3-06-094	Weld Record	
WR3-06-095	Weld Record	
WR3-06-096	Weld Record	
WR3-06-097	Weld Record	
WR3-06-098	Weld Record	
WR3-06-099	Weld Record	
WR3-06-100	Weld Record	
WR3-06-151	Weld Record	
WR3-06-152	Weld Record	
WPS 8-GT-SM	Welding Procedure Specifications	0
WPS 8-GT	Welding Procedure Specifications	1
3 PT-031-06	Nondestructive Examination Data Report - Penetrant Examination	10/16/06
3 PT-032-06	Nondestructive Examination Data Report - Penetrant Examination	10/16/06

Section 1R11: Licensed Operator Requalification

SO123-XXI-1.11.7, "Licensed Operator Requalification Training Program Description," Revision 15

SO123-XXI-8.4, "Licensed Operator Requalification Examinations," Revision 12

Action Requests (AR)
0505014401, 051000020, 051000550, 051000550, 060301125

Section 1R12: Maintenance Effectiveness (Quarterly)

Procedures

SO23-I-8.194	"Fisher 9200 Series Butterfly Valve Overhaul and Type 650, 656, and 656NS Actuator Adjustment"	Revision 13
SO23-I-6.16	"Target Rock Type 74R-008 Motor Operated Globe Valve Overhaul"	Revision 4

Drawings and Calculations

SO23-507-2-1-413	"18" Type 9211 Valve Fisher 486U-1-16-60 Piston Actuator & Williams CM-T Manual Actuator"	Revision 3
40127ESO3	"Component Cooling Water System (Return Header)"	Revision 20
5145340	"220kV Switchyard Electrical Equipment Plot Plan"	Revision 10
5145353	"220kV Switchrack Plan & Elevation Position No. 15"	Revision 4
5292933	"220kV Switchrack Risers Elev. Pos. 15"	Revision 1

Action Requests

061100268 050201707

Maintenance Orders

05030277000 05031251000

Section 1R12: Maintenance Effectiveness (Triennial)

Procedures

SO123-XV-5.3	"General Systems Engineering Procedure - Maintenance Rule Program"	Revision 9
SO123-XX-10	"Maintenance Rule Risk Management Program Implementation"	Revision 3

SO123-XXIV-20.2	"Maintenance Rule For Structures"	Revision 3

Drawings and Calculations

C-502-01.04	"Maintenance Rule - Intake Structure U2C12 Inspection Report"	Revision 0
C-502-02.04	"Maintenance Rule - Intake Structure U3C12 Inspection Report"	Revision 0

Action Requests

060700254	040600138	060401223	060701045	060700927	060500218
050300944	060600602	060301248			

Maintenance Rule Evaluations

060500218-3	060401223-4	040401316-1	060500131-34	060501042-1
060401260-23	050700064-1	050201538-14	050200761-69	060401630-1
020101538-1	030401327-1	031101253-1	040401316-1	

Miscellaneous

Independent Maintenance Rule Assessment	April 2004
Maintenance Rule Periodic Assessment	July 2003 through June 2005
Maintenance Rule Quarterly Performance Summary Report	2nd Quarter 2006
Meeting Minutes - Maintenance Rule Expert Panel	January 19, 2006
Meeting Minutes - Maintenance Rule Expert Panel	March 23, 2006
Meeting Minutes - Maintenance Rule Expert Panel	April 27, 2006
Meeting Minutes - Maintenance Rule Expert Panel	May 18, 2006
Meeting Minutes - Maintenance Rule Expert Panel	June 22, 2006
Meeting Minutes - Maintenance Rule Expert Panel	July 20, 2006
Meeting Minutes - Maintenance Rule Expert Panel	August 24, 2006
PQS # ENGMRL - Determine SSC Unavailability and Functional Failures	Revision 1-1
PQS # 223190 - Maintenance Rule Evaluation (MRE)	Revision 2-1
System Health Reports	2005 - 2nd Quarter
System Health Reports	2006 - 2nd Quarter

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Action Requests

060900409 060500766 060901232 061200594

Section 1R15: Operability Evaluations

Action Requests

060900500 060701289 061001105

Section 1R19: Postmaintenance Testing

Procedures

SO23-3-3.51.4	"Containment Penetration Leak Rate Testing - Pressurizer and RCDT Penetrations"	Revision 8
NDEDR-010	"Nondestructive Examination Data Report"	Revision 5
SO123-I-6.17	"Kerotest Y-Type Check Valve Overhaul"	Revision 6
SO23-XII-9.603	"ASME Section XI Inservice Inspections"	Revision 1
SO23-I-6.113	"Removal and Installation of Steam Generator (Primary) and Pressurizer Manway Covers"	Revision 21
SO123-I-7.19	"Monitoring of Threaded Fasteners in (Bolts/Studs) in the Reactor Coolant Pressure Boundary"	Revision 7

Drawings and Calculations

SO23-405-9-114	"Installation, Operation, and Maintenance Instruction - Goulds Model 3415 Pump"	Revision 2

Action Requests

061001497 061101577

Maintenance Orders

06100214001 05100953000 06110129001 06101926000 06101887000

Section 1R20: Refueling and Outage Activities

Procedures

SO23-5-1.4	"Plant Shutdown to Hot Standby"	Revision 12
SO23-5-1.5	"Plant Shutdown from Hot Standby to Cold Shutdown"	Revision 27
SO23-3-1.8	"Draining the Reactor Coolant System"	Revision 23
SO23-5-1.8	"Shutdown Operations (Mode 5 and 6)"	Revision 17
SO23-I-3.5	"Refueling Sequence"	Revision 11
SO23-V-8.15	"Containment Boric Acid Leak Inspection"	Revision 2
SO23-5-1.3	"Plant Startup from Cold Shutdown to Hot Standby"	Revision 29
SO23-5-1.3.1	"Plant Startup from Hot Standby to Minimum Load"	Revision 25
SO23-X-7	"Nuclear Fuel Movement for Refueling Cycles"	Revision 13
SO23-3-2.11	"Spent Fuel Pool Operations"	Revision 19

Action Requests

060701352	060301851	060701353	061000759	061000769	061000770
061000767	061000768	060701354	061000772	061000763	061000762
061000761	061000773	061000776	061000780	061000783	061000784
061000777	061000779	061000765	050500999	061001435	

Miscellaneous

Health Physics Division Performance Standard HP-S-21, "Health Physics Control Point Protocol - Radiological Requirements"	Revision 6

Section 1R22: Surveillance Testing

Procedures

SO23-3-3.43.33	"ESF Subgroup Relays K-211A, K-624A and K-724A Semiannual Test"	Revision 4
SO23-3-3.43-6	"ESF Subgroup Relays K-108A and K-108B Semiannual Test"	Revision 10
SO23-3-3.60.7	"Containment Spray and Valve Testing"	Revision 9

Action Requests

0612000640

Section 1R23: Temporary Plant Modifications

Procedures

SO23-I-3.30	"Refueling - Cavity Seal Installation, Test, and Removal"	Revision 12
SO23-3-2.11	"Spent Fuel Pool Operations"	Revision 19
SO23-13-20	"Fuel Handling Accidents / Loss of Cavity of SFP Level Control"	Revision 8

Drawings and Calculations

SO23-936-20	"Reactor Vessel to Pool Seal Ring Assembly"	Revision 3
40191GSO3	"Instrument Air Distribution (Containment Area)"	Revision 7
40117ASO3	"Sump and Drain Systems"	Revision 8

Action Requests

061001659

Miscellaneous

U3C14 Core Off-load Pre-Job Brief	October 27, 2006

Section 2OS1: Access Controls to Radiologically Significant Areas (71121.01)

Action Requests
050400906, 061100866, and 061001435

Procedures

SO123-VII-20.9	Radiological Surveys, Revision 7
SO123-VII-20.11	Access Control Program, Revision 9
SO123-VII-20.11.1	Radiological Posting, Revision 8

Section 2OS2: ALARA Planning and Controls (71121.02)

Audits and Assessments
Division Self-Assessment Report for the Third Quarter 2006, Health Physics Division, October 31, 2006

Action Requests
060700726, 060800249, 060801427, 060900262, 060900598, 060901412, 061000011, 061001544, 061001595, and 061001749

Procedures

SO123-III-0.5.5	Chemical Hygiene, Revision 7
SO123-VII-8	Control of Radioactive Material, Revision 11
SO123-VII-8.1.14	Radioactive Material Container Labeling, Revision 2
SO123-VII-20.4	ALARA Program, Revision 3
SO123-VII-20.10	Radiological Work Planning and Controls, Revision 10
SO123-VII-20.10.2	Health Physics Pre-Job Briefings/Pre-Job Meetings, Revision 4
SO123-VII-20.10.3	Health Physics Work Control Plans, Revision 3

ALARA Work Control Plans/Packages
Primary Side Steam Generator Work
U3C14 ICI Thimble Replacement
U3C14 Refueling Maintenance
Pressurizer Weld Overlay
In-Service Inspection Insulation and Scaffolding

ALARA Meeting Minutes
August 14, 2006 through November 1, 2006

Section 4OA1: Performance Indicator Verification (71151)

Procedures

SO23-XV-24	Quarterly NRC Performance Indicator (PI) Process, Revision 5

Section 4OA1: Performance Indicator Verification

Procedures

SO23-XV-24	"Quarterly NRC Performance Indicator (PI) Process"	Revision 5
SO23-NI-1	"NRC Performance Indicator (PI) Program"	Revision 6

Section 4OA2: Identification and Resolution of Problems

Action Requests

060600536	060600625	060600703	060600826	060600827	060601087
060601146	060601165	060601355	060601397	060700371	060700389
060700420	060700422	060700556	060700591	060700612	060700615
060700689	060700695	060800615	060800647	060800692	060800702
060800758	060800781	060800802	060800820	060800859	060800867
060900582	060900583	060900605	060900619	060900625	060900632
060900635	060900673	061100546	060900703	060900744	061000607

061000651	061000668	061000690	061000703	061000736	061000764
061000782	061000820	061000831	061100264	061100267	061100268
061100297	061100324	061100337	061100396	061100429	061100533

Section 4OA5: Other

Procedures

SO23-XXXIII-8.16	"Reactor Coolant System Alloy 600 Inspection"	Revision 5

Miscellaneous

Southern California Edison response to Bulletin 2004-01	July 23, 2004
Personnel Qualification Standard T4EN51, "Boric Acid Leakage and/or Inconel 600 Inspections "	Revision 0

LIST OF ACRONYMS

ASME	American Society of Mechanical Engineers
ACE	apparent cause assessment
AR	Action Request
BACC	boric acid corrosion control
CAP	Corrective Action Program
CEDM	control element drive mechanism
CFR	*Code of Federal Regulations*
ESF	Engineered Safety Feature
ET	eddy current testing
ICI	incore instrumentation
ISI	inservice inspection
LER	Licensee Event Report
NCV	Non-cited Violation
NDE	non destructive examination
PI	performance indicator
RCS	reactor coolant system
RPV	reactor pressure vessel
SG	steam generator
SR	Surveillance Requirement
SSC	Structure, System, and Component
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
UT	ultrasonic testing