UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-8064

January 30, 2001

EA-00-301

Harold B. Ray, Executive Vice President
Southern California Edison Co.
San Onofre Nuclear Generating Station
P.O. Box 128
San Clemente, California 92674-0128

SUBJECT: NRC INTEGRATED INSPECTION REPORT 50-361/00-15; 50-362/00-15

Dear Mr. Ray:

On January 6, 2001, the NRC completed an inspection at your San Onofre Units 2 and 3 facility. On January 9, 2001, the inspectors discussed the inspection findings documented in the enclosed integrated report with Mr. R. Krieger and other members of your staff.

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

Since the completion of this inspection period, circumstances affecting the financial viability of Southern California Edison Co. have evolved. Actions have been initiated by the state of California and Southern California Edison Co. to address the impacts of these financial challenges. The NRC has exercised communications channels to better understand your planned and implemented actions, especially as they relate to your responsibility to safely operate the San Onofre reactors. NRC inspections, to date, have confirmed that you are operating these reactors safely and that public health and safety is, thus far, assured.

In response to these conditions of economic stress, there will be two differences in how the Region communicates its inspection findings. First, we will continue the 6-week periodicity of our integrated inspection reports (the other reactors in Region IV will be transitioning to a quarterly report frequency, with the exception of Diablo Canyon). Second, the description of the scope of the individual inspection activities will be significantly more detailed. This is being done to keep the public more fully informed of the breadth and depth of the NRC's inspection and oversight activities.

Based on the results of this inspection, the inspectors identified one noncited violation and one finding of very low safety significance (Green). Additionally, two noncited Severity Level IV violations were identified. All of these issues were determined to involve violations of NRC

requirements. However, because of their very low safety significance and because they have been entered into your corrective action program, the NRC is treating the issues as noncited violations, in accordance with Section VI.A of the NRC Enforcement Policy. If you deny these noncited violations, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC, 20555-0001, with copies to the Regional Administrator, Region IV; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC, 20555-0001; and the NRC Resident Inspector at the San Onofre facility.

In accordance with 10 CFR 2.790 of the NRC's “Rules of Practice,” a copy of this letter and its enclosure 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/NRC/ADAMS/index.html (the Public Electronic Reading Room).

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

Sincerely,

/RA/

Charles S. Marschall, Chief
Project Branch C
Division of Reactor Projects

Docket: 50-361
50-362
License: NPF-10
NPF-15

Enclosure:
NRC Inspection Report
50-361/00-15; 50-362/00-15

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

Alan R. Watts, Esq.
Woodruff, Spradlin & Smart
701 S. Parker St. Suite 7000
Orange, California 92868-4720

Sherwin Harris, Resource Project Manager
Public Utilities Department
City of Riverside
3900 Main Street
Riverside, California 92522

R. W. Krieger, Vice President
Southern California Edison Company
San Onofre Nuclear Generating Station
P.O. Box 128
San Clemente, California 92674-0128

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

Michael R. Olson
Sr. Energy Administrator
San Diego Gas & Electric Company
P.O. Box 1831
San Diego, California 92112-4150

Ed Bailey, Radiation Program Director
Radiologic Health Branch
State Department of Health Services
P.O. Box 942732 (MS 178)
Sacramento, California 94327-7320

Steve Hsu
Radiologic Health Branch
State Department of Health Services
P.O. Box 942732
Sacramento, California 94327-7320

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

Truman Burns/Robert Kinosian
California Public Utilities Commission
505 Van Ness, Rm. 4102
San Francisco, California 94102

Robert A. Laurie, Commissioner
California Energy Commission
1516 Ninth Street (MS 31)
Sacramento, California 95814

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

Dwight E. Nunn, Vice President
Southern California Edison Company
San Onofre Nuclear Generating Station
P.O. Box 128
San Clemente, California 92674-0128

Electronic distribution from ADAMS by RIV:
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Senior Resident Inspector **(JAS7)**
Branch Chief, DRP/C **(CSM)**
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Branch Chief, DRP/TSS **(PHH)**
RITS Coordinator **(NBH)**

Only inspection reports to the following:
Scott Morris **(SAM1)**
NRR Event Tracking System **(IPAS)**
SONGS Site Secretary **(SFN1)**
Dale Thatcher **(DFT)**

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ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket Nos.:	50-361 50-362
License Nos.:	NPF-10 NPF-15
Report No.:	50-361/00-15 50-362/00-15
Licensee:	Southern California Edison Co.
Facility:	San Onofre Nuclear Generating Station, Units 2 and 3
Location:	5000 S. Pacific Coast Hwy. San Clemente, California
Dates:	November 26, 2000, through January 6, 2001
Inspectors:	J. A. Sloan, Senior Resident Inspector J. G. Kramer, Resident Inspector J. B. Nicholas, Senior Health Physicist L. T. Ricketson, Senior Health Physicist M. F. Runyan, Senior Reactor Inspector
Approved By:	Charles S. Marschall, Chief, Project Branch C

ATTACHMENTS:

Attachment 1: Supplemental Information

Attachment 2: NRC's Revised Reactor Oversight Process

SUMMARY OF FINDINGS

San Onofre Nuclear Generating Station, Units 2 and 3
NRC Inspection Report 50-361/00-15; 50-362/00-15

IR 05000361-00-15, IR 05000362-00-15 on 11/26/2000-01/06/2001; Southern California Edison; San Onofre Nuclear Generating Station, Units 2 & 3; Integrated Resident and Regional Report; Evaluation of Changes, Equipment Alignment, Event Followup.

The inspection was conducted by resident inspectors and regional specialist inspectors. The inspection identified two Green findings and two findings of No Color. The significance of issues is indicated by their color (green, white, yellow, red) and was determined by the Significance Determination Process in Inspection Manual Chapter 0609.

Cornerstone: Mitigating Systems

- Green. The inspectors identified that, although the licensee discovered deficiencies in the performance of the containment spray monthly alignment checks in both units (Technical Specification Surveillance Requirement 3.6.6.1.1), the licensee failed to implement corrective actions to correct the deficiencies. Therefore, for the next 6 months, the licensee did not always conduct the system monthly alignment as required by Technical Specifications. The licensee ultimately re-identified the same deficiencies in the monthly alignment check and corrected the problem. This was a violation of 10 CFR Part 50, Appendix B, Criterion XVI, which requires that conditions adverse to quality be promptly identified and corrected. This violation is being treated as a noncited violation, consistent with Section VI.A.1 of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as Action Request 001201139. Additionally, during review of the second occurrence, the licensee failed to discover that the issue had been previously identified until so informed by the inspectors. Human performance in the review of the initial Action Request was inadequate and directly caused the failure to implement corrective actions.

  Using the significance determination process the inspectors determined that the issue was of very low significance because the system was in the correct valve alignment and remained operable (Section 1R04).

- The licensee failed to submit a licensee event report within 30 days of the discovery of a reportable condition in both units. The licensee ultimately reported the condition 6 months later when the same situation was re-identified. This was a violation of 10 CFR 50.73(d). This Severity Level IV violation is being treated as a noncited violation, consistent with Section VI.A.1 of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as Action Request 001201139. Human performance in the review of the initial Action Request was inadequate and directly caused the failure to submit a licensee event report.

  This issue had no credible impact on safety and was not evaluated using the significance determination process. However, this issue had the potential for impacting the NRC's ability to perform its regulatory function and is therefore being documented (Section 1R04).

- Green. Operators rendered both boration flowpaths required by Technical Specification 3.1.9 inoperable by closing a normally locked-open valve in the common flowpath during Mode 4 valve testing. This event occurred during the Cycle 10 refueling outages (1998) for both Units 2 and 3. At the time, the licensee did not realize that the condition was not allowed and therefore did not enter Technical Specification 3.0.3. However, the licensee satisfied the required actions of Technical Specification 3.0.3, so a violation did not occur.

  Although required by the licensee's Technical Specifications, boration capability is not required in Mode 4 in the current Generic Standard Technical Specifications, as boration is not important or urgent in accident mitigation from Mode 4 conditions. Using the significance determination process the inspectors determined that the issue was of very low significance (Section 4OA3).

- The licensee failed to perform an adequate written safety evaluation for a change made to the facility as described in the Updated Final Safety Analysis Report. The licensee issued a use-as-is disposition for a malfunctioning vent valve on Unit 2 Safety Injection Tank 2T008. The licensee's written safety evaluation was inadequate in that it did not recognize that the condition resulted in a unreviewed safety question. Specifically, the valve's condition created the possibility of a malfunction of equipment important to safety of a different type than any evaluated in the Updated Final Safety Analysis Report because it created a situation where a single failure of the tank isolation valve to close could result in a 4-hour delay in reaching conditions needed for shutdown cooling, increasing dose consequences and complicating recovery actions following a loss-of-coolant accident.

  The safety significance of the malfunctioning safety injection tank vent valve was very low because the tank isolation valve was functional and could have been used to offset the venting problem. Also, an accident recovery could have proceeded successfully, though possibly delayed by up to 4 hours, even if the safety injection tank could not have been vented or isolated (i.e., the isolation valve failed to close). Therefore, the violation of 10 CFR 50.59 (b)(1) identified above is categorized at Severity Level IV and is being treated as a noncited violation consistent with Section VI.A.1 of the NRC Enforcement Policy (EA 00-301). This violation was entered into the licensee's corrective action program as Action Request 001201281 (Section 1R02).

Report Details

Summary of Plant Status:

Unit 2 began this inspection period operating at 75 percent power because one circulating water pump motor had tripped on overcurrent. On November 29, 2000, operators increased power to 80 percent and, following repairs to the motor, they returned power to 100 percent on December 5. The motor tripped again on December 23, and was replaced with a motor taken from Unit 3. Power was returned to 100 percent on December 25, where it remained for the rest of the inspection period.

Unit 3 operated at essentially 100 percent power until a power coastdown was initiated on December 19. On December 23, power was reduced to 85 percent to support removal of a circulating water pump motor to be installed in Unit 2. Power remained at 85 percent until January 2, 2001, when the reactor was shut down to begin the Cycle 11 refueling outage. The unit was in Mode 6 at the end of this inspection period.

1. REACTOR SAFETY
   Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness

1R01 Adverse Weather (71111.01)

a. Inspection Scope

The inspectors performed a review of the adverse weather protection and Abnormal Operating Instruction SO23-13-8, “Severe Weather,” Revision 1.

b. Findings

No findings of significance were identified.

1R02 Evaluations of Changes, Tests, or Experiments (71111.02)

a. Inspection Scope

The inspector reviewed a selected sample of safety evaluations to verify that the licensee had appropriately considered the conditions under which the licensee may make changes to the facility or procedures or conduct tests or experiments without prior NRC approval.

The inspector reviewed a selected sample of safety evaluation screenings in which the licensee determined that safety evaluations were not required to ensure that the licensee’s exclusion of a full evaluation was consistent with the requirements of 10 CFR 50.59.

The inspector reviewed action requests (ARs) and other related documents initiated by the licensee that addressed problems or deficiencies associated with 10 CFR 50.59 to ensure that appropriate corrective actions were being taken.

b. Findings

The inspector reviewed Nonconformance Report 990500775, which documented that on May 9, 1999, while attempting to vent the Unit 2 Safety Injection Tank 2T008, Vent Valve 2HV9345 failed to open. The valve is required to open within 2 seconds under the inservice testing program, but the nonconformance report accepted the condition "use-as-is." The basis for this disposition was that, while the main valve plug failed to move, the valve's pilot valve opened successfully and provided sufficient venting of the tank to meet safety analysis assumptions. After several cycles, the main valve plug was observed to be operating normally but, because the cause of the as-found failure to open could not be found, the valve was considered to remain vulnerable to a similar failure. The nonconformance report directed that the valve be checked two times during and once at the end of Operating Cycle 10 (which ended in October 2000). The nonconformance report also directed that a maintenance order be written to rework the valve during the Cycle 11 refueling outage if the aforementioned testing indicated a chronic condition.

The Updated Final Safety Analysis Report, Section 6.3.2.2.1, states "Two independent and diverse methods, SIT [safety injection tank] venting and SIT isolation, are available to prevent inadvertent overpressurization of the shutdown cooling system by the SITs in the post accident mode when the shutdown cooling system is utilized for small break LOCAs. Prior to initiation of the shutdown cooling mode post-LOCA, the SITs are vented via the tank nitrogen vent valves. Should a single active failure preclude venting, the alternate method of tank isolation is utilized whereby the tank isolation valve is closed. Power to the valve is locked out in the closed position to prevent inadvertent or spurious opening. The tank isolation and nitrogen vent valves on a common tank are powered from separate ESF buses." By accepting the malfunction of the SIT vent valve, the facility was changed because the redundancy of methods available to isolate the SIT, as described in the Updated Final Safety Analysis Report, was altered and to some degree eliminated.

The failure of the vent valve to open as designed had an operational impact if the single failure of the safety injection tank isolation valve (HV39340) was considered. In this case, with only the pilot valve available to vent the pressurized nitrogen gas blanket, it would take almost 4 hours to depressurize the tank to meet required shutdown cooling entry conditions. This restriction could complicate recovery operations, depending on the operators' ability to detect and properly respond to the problem. Under worst case conditions, the contents of the SIT and its nitrogen gas could enter the primary system and cause a degradation of the steam generator heat sink. However, it is likely that the operators would recognize the problem and prevent this from occurring. It is also likely that the delays caused by the venting problem would result in additional offsite release of radioactivity in the event of a steam generator tube rupture, since leakage release could be extended by a period of 4 hours. This could occur because, even though the faulted steam generator would be immediately isolated, the time it would take to depressurize the reactor coolant system to the point where no additional leakage would occur past the steam generator isolation boundary valves would be increased by 4 hours. The licensee calculated the increased dose to be approximately 3 percent greater than that reported in the Updated Final Safety Analysis Report.

The vent valve was checked on two subsequent occasions and was found to stick as in the original instance. The valve was replaced in November 2000.

The inspector noted the licensee could possibly have dispositioned this issue under Generic Letter 91-18 (Information to Licensees Regarding NRC Inspection Manual Section on Resolution of Degraded and Nonconforming Conditions), since it involved a degraded condition for which restoration of the original condition was intended. However, the licensee instead issued a use-as-is disposition that required the performance of a 10 CFR 50.59 evaluation. In review of this safety evaluation, the inspector questioned the licensee's position that Question 6, "May the proposed activity create the possibility of a malfunction of equipment important to safety of a different type than any evaluated in the SAR," should be answered "no." The discussion under this question focused on the action of the pilot valve as expressing the complete and proper function of the venting operation, but did not consider the failure of the SIT to vent in its prescribed 2-second time frame, or the possibility of this venting process taking up to 4 hours, to constitute a malfunction of the SIT system. The inspector disagreed with the licensee's position, considering the failure of the tank to vent for up to 4 hours, resulting in operational difficulties and dose considerations, to constitute a malfunction not previously evaluated in the Updated Final Safety Analysis Report (i.e., this malfunction, which would have required a double failure without the preexisting condition, became a scenario within the design basis, requiring only a single failure). Therefore, the inspector concluded that because of an inadequate safety evaluation an unreviewed safety question existed.

The inspector concluded that, although the licensee intended to repair the valve, the issuance of the use-as-is disposition in the nonconformance report changed the formal status of the condition to one commensurate with a design change. That is, the maintenance order to replace the valve could have been canceled based on the use-as-is disposition (lacking a formal deadline). Under Generic Letter 91-18, the licensee would have had to restore the valve to original conditions within a period of time consistent with the risk implications (generally, at the next available opportunity as dictated by normal operating practices). Because the degraded valve was discovered during a plant startup, it was not certain that Generic Letter 91-18 could have been used to justify the continuation of the startup, given the potential operational implications. However, the NRC did not formally review this question.

10 CFR 50.59 allows licensees to change the facility as described in the Updated Final Safety Analysis Report without prior Commission approval as long as the change does not create an unreviewed safety question. The inspector determined that the issuance of a use-as-is disposition for the sticking SIT vent valve created an unreviewed safety question because it created a malfunction of equipment important to safety of a different type than any evaluated in the Updated Final Safety Analysis Report. This was determined to be a violation of 10 CFR 50.59. Because the licensee had repaired the valve, the licensee will not be required to submit a license amendment in response to this violation. The principal focus of this issue is on the inadequate safety evaluation.

The safety significance of the malfunctioning SIT vent valve was very low because the tank isolation valve was functional and could have been used to offset the venting

problem. Also, an accident recovery could have proceeded successfully, though possibly delayed by up to 4 hours, even if the SIT could not have been vented or isolated (i.e., the isolation valve failed to close). Based on the very low safety significance of the malfunctioning SIT vent valve, the violation of 10 CFR 50.59 (b)(1) identified above is categorized at Severity Level IV and is being treated as a noncited violation consistent with Section VI.A.1 of the NRC Enforcement Policy. This violation (50-361/200015-01) (EA 00-301) was entered into the licensee's corrective action program as AR 001201281.

1R04 Equipment Alignments (71111.04)

a. Inspection Scope

The inspectors performed a partial walkdown during an outage of the following system to confirm the operability of the redundant train:

- Train B emergency diesel generator outage (Unit 2)

The inspectors performed a complete walkdown of the following system:

- Containment spray system (Unit 2)

b. Findings

The licensee failed to implement corrective actions to prevent continued missing of a Technical Specification surveillance requirement. This was a violation of 10 CFR Part 50, Appendix B, Criterion XVI. The licensee failed to submit a licensee event report (LER) within 30 days of the discovery of a reportable condition. This was a violation of 10 CFR 50.73(d). Human performance in the review of the initial AR was inadequate and directly caused both violations.

The inspectors performed a sample review of the licensee’s corrective action program to verify that the licensee was identifying equipment alignment problems at an appropriate threshold and properly resolving the issues. The inspectors reviewed ARs 000100205 and 000600036 and observed that the ARs described the same issue. Both ARs describe that Technical Specification Surveillance Requirement 3.6.6.1.1, for the containment spray monthly alignment check, required a system walkdown to perform the surveillance. The details on how and where to perform the surveillance were in the Technical Specification Bases. Procedure SO23-3-3.13, “Containment Cooling/Spray Monthly Tests,” Revision 9, implemented the surveillance requirement and did not indicate that the surveillance was required to be performed by a system walkdown.

The inspectors identified that, although the licensee discovered deficiencies with the performance of the containment spray monthly alignment check (documented in AR 000100205), the licensee failed to implement corrective actions to fix the deficiencies. Therefore, for the next 6 months, the licensee did not always conduct the system monthly alignment as required by Technical Specifications. The licensee ultimately re-identified the same deficiencies in the monthly alignment check

(AR 000600036), corrected the problem, and submitted LER 361; 362/2000-007-00 (discussed in NRC Inspection Report 50-361; 362/2000-07). In addition, when addressing the issues of AR 000600036, the licensee failed to discover the previously identified occurrence of the same issue until informed by the inspectors.

10 CFR Part 50, Appendix B, Criterion XVI, requires, in part, that conditions adverse to quality be promptly identified and corrected. Contrary to the above, the licensee identified a condition adverse to quality and failed to take corrective action to prevent the incorrect performance of the Technical Specification surveillance requirement. This violation is being treated as a noncited violation (NCV 361; 362/2000015-02) consistent with Section VI.A.1 of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as AR 001201139. Using the significance determination process, the inspectors determined that the issue was of very low significance (Green) because the system was in the correct valve alignment and remained operable.

The inspectors reviewed the reportability aspects of the missed surveillance and identified that the licensee failed to submit an LER within 30 days of the discovery of the reportable condition documented in AR 000100205. The licensee ultimately reported the condition 6 months later when the same situation was re-identified.

10 CFR 50.73(d) requires, in part, that LERs must be submitted within 30 days of discovery of a reportable event. 10 CFR 50.73(a)(2)(i)(B) states, in part, that any operation or condition prohibited by the plant's Technical Specifications is reportable. Contrary to the above, the licensee identified a reportable event (AR 000100205) and failed to submit an LER within 30 days. This Severity Level IV violation is being treated as a noncited violation (NCV 361; 362/2000015-03) consistent with Section VI.A.1 of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as AR 001201139. This issue had no credible impact on safety and was not evaluated using the significance determination process. However, this issue had the potential for impacting the NRC's ability to perform its regulatory function and is therefore being documented.

The inspectors determined that the failure to adequately review and resolve the condition identified in AR 000100205 was a human performance deficiency that directly caused the failures to correct and report the condition. This cross-cutting issue is also addressed in Section 4OA4 of this report.

1R05 Fire Protection (71111.05)

a. Inspection Scope

The inspectors performed routine fire inspection tours, and reviewed relevant records, for the following plant areas important to reactor safety:

- Diesel Generator 3G002 (Unit 3)
- Diesel Generator 3G003 (Unit 3)

The inspectors observed the material condition of plant fire protection equipment, the control of transient combustibles, and the operational status of barriers.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

The inspectors performed a seasonal walkdown of the Unit 3 safety equipment building to determine the operational status of flooding seals and barriers, sumps and drains, and level alarms and to identify the existence of other potentially unanalyzed internal flooding hazards. The inspectors also reviewed the following ARs to verify corrective actions for previous flooding-related issues: 990901171, 970601813, 000601740, and 950900062.

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Nonroutine Plant Evolutions (71111.14)

a. Inspection Scope

The inspectors observed portions of the Unit 3 reactor downpower and shutdown on January 2, 2001.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the operability evaluation documented in the following AR to ensure the operability was properly justified:

- Emergency core cooling system nitrogen (AR 001101102) (Unit 3)

b. Findings

No findings of significance were identified.

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

The inspectors observed and/or reviewed postmaintenance testing for the following activities to verify that the test procedures and activities adequately demonstrated system operability:

- Charging Pump 3P191 repack (Unit 3)
- Main Steam Isolation Valve 2HV8204 overhaul (Unit 2)

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities (71111.20)

a. Inspection Scope

The inspectors reviewed the Unit 3 refueling outage schedule and the licensee's associated shutdown risk assessment. Additionally, the inspectors periodically observed the configuration of the electrical distribution system, the shutdown cooling system, and other significant safety systems. The inspectors also observed the following evolutions:

- portions of the reactor downpower and shutdown on January 2, 2001
- portions of the reactor coolant system cooldown and depressurization
- the preparations for and conduct of the draining of the reactor coolant system to midloop conditions on January 4

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors observed and reviewed documentation for the following surveillance test to verify that the systems and components are capable of performing their intended safety functions and to assess their operational readiness:

- Plant protection system channel functional test (Unit 2)

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY
Cornerstone: Occupational Radiation Safety

2OS1 Access Controls to Radiologically Significant Areas (71121.01)

a. Inspection Scope

Radiation workers and radiation protection personnel were interviewed concerning their radiation protection work requirements. A number of tours of the radiologically controlled area were conducted. The following items were reviewed to ensure that the physical and administrative controls for airborne areas, radiation areas, high radiation areas, locked high radiation areas, and worker adherence to these controls were accomplished in accordance with regulatory requirements:

- Quality Assurance Audit SCES-909-99
- Nuclear Oversight Surveillance Reports SOS-018-99, SOS-061-99, and SOS-020-00
- Health Physics Division quarterly self-assessments for the second quarter 1999 through third quarter 2000
- Radiation Protection directed site assessment performed May 8-12, 2000
- Access controls and surveys of four high dose work areas in the radiologically controlled area: reactor coolant pump seal rebuild in the hot machine shop, low pressure safety injection header motor-operated valve packing adjustment, spent resin transfer, and charging pump packing replacement
- The job-in-progress review for the reactor coolant pump seal rebuild
- Selected radiation exposure permits and specified electronic dosimeter setpoints
- Placement of personnel dosimetry
- Radiation postings and barricades at entrances to high radiation areas and very high radiation areas
- Job coverage by radiation protection personnel for the spent resin transfer and charging pump packing replacement
- Radiation protection program procedures
- Radiation protection ALARA prejob briefing (tailboard) for a spent resin transfer
- A summary of radiological ARs written between April 1, 1999, and December 2, 2000. Ten of these ARs dealing specifically with high radiation areas and radiation worker performance were reviewed in detail.

b. Findings

No findings of significance were identified.

2OS2 ALARA Planning and Controls (71121.02)

a. Inspection Scope

The inspector interviewed radiation workers and radiation protection personnel involved in high dose rate and high exposure jobs in the radiologically controlled areas during refueling outages. Independent radiation surveys of selected work areas within the radiologically controlled area were conducted. No high exposure jobs or work in high radiation areas were performed during the inspection. The following items were reviewed and compared with regulatory requirements:

- ALARA program procedures
- Processes used to estimate and track exposures
- Plant collective exposure history for the past 3 years, current exposure trends, and 3-year rolling average dose information
- Four ALARA/radiation work permit packages from the Unit 2 Cycle 11 Refueling Outage (motor-operated valves, pressurizer heaters, refueling, and primary-side steam generator work) which resulted in the highest personnel collective exposures during the inspection period
- Use of engineering controls to achieve dose reductions
- Individual exposures of selected work groups (health physics and maintenance)
- Plant-related source term data, including source term control strategy
- Radiological work planning
- Selected corrective action documentation involving higher than planned exposure levels and radiation worker practice deficiencies since the last inspection in this area
- ALARA Committee meeting minutes and presentations

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

a. Inspection Scope

The inspectors verified the accuracy of data reported by the licensee for the following performance indicators to ensure that the performance indicator color was correct:

- PR1 Radiological Effluent Technical Specifications [RETS]/Offsite Dose Calculation Manual [ODCM] Radiological Effluents (Units 2 and 3)
- OR1 Occupational Exposure Control Effectiveness (Units 2 and 3)

The inspector reviewed corrective action program records for high radiation areas, locked high radiation areas, and unplanned exposure occurrences for the past 12 months to confirm that these occurrences were properly recorded as performance indicators. Radiologically controlled area exit transactions with exposures greater than 100 millirems for the past 12 months were reviewed. Selected examples were investigated to determine whether they were within the dose projections of the governing radiation work permits. Radiological effluent release program corrective action records, licensee event reports, and annual effluent release reports documented during the past four quarters were reviewed to determine if any events exceeded the performance indicator thresholds.

b. Findings

No findings of significance were identified.

4OA3 Event Followup (71153)

.1 (Closed) LER 361; 362/2000-012-00: common boration flow path closed during Mode 4 - potential nonconformance with Technical Specification 3.1.9, “Boration Systems - Operating.”

a. Inspection Scope

The inspectors reviewed LER 361; 362/2000-012-00 and the system alignments that were in use during the Units 2 and 3 Cycle 10 refueling outages and the Unit 2 Cycle 11 refueling outage.

b. Findings

The licensee reported that a common valve in the charging header had been closed during charging check valve testing, rendering both boration flowpaths inoperable while in Mode 4 during the Cycle 10 refueling outages. Technical Specification 3.1.9 requires two boration flowpaths to be operable in Modes 1-4 and does not address the condition of no flowpaths being inoperable. At the time the licensee did not realize that the

condition was not permitted and did not enter Technical Specification 3.0.3. However, the actions required by Technical Specification 3.0.3 were satisfied, so a violation did not occur.

This issue was further complicated by a statement in the Bases for Technical Specification 3.1.9 that a boration flowpath is not operable if it is not capable of performing its boron injection function in response to a safety injection actuation signal. As allowed by Technical Specification 3.5.2, the automatic safety injection actuation signal was disabled in Mode 4 with pressurizer pressure less than 400 psia. The Bases is unclear as to whether a manually-initiated safety injection isolation signal would satisfy the requirement. This issue is in the licensee's corrective action program as AR 001000250.

The inspectors discussed the circumstances with a representative of the Reactor Systems Branch in the Office of Nuclear Reactor Regulation. In Mode 4, boration is not very important or time-critical. Additionally, the current Standard Technical Specifications do not require boration flowpaths to be operable in Mode 4, although the licensee's Technical Specifications do include that requirement. Using the significance determination process, the inspectors determined that the issue was of low safety significance (Green).

.2 (Closed) LER 361/2000-011-00: manual start of a containment emergency cooler, engineered safety features actuation. This was a minor issue and was closed.

4OA4 Cross-Cutting Issues

The inspectors determined that human performance deficiencies directly caused the failures to correct and report a deficiency as a result of an inadequate review of issues identified in AR 000100205 (Section 1R04).

4OA6 Meetings

.1 Exit Meeting Summary

The inspectors presented the inspection results of the radiation protection inspections to Mr. R. Krieger, Vice President, Nuclear Generation, and other members of licensee management at the conclusion of the inspection on December 8, 2000. The licensee acknowledged the findings presented.

The inspectors presented the changes to license condition and safety analysis report inspection results to Mr. D. Nunn and other members of licensee management at the conclusion of the inspection on December 8, 2000. The licensee acknowledged the findings presented.

A supplemental exit meeting was conducted by telephone on December 27, 2000, with Mr. G. Cook and other licensee representatives to inform the licensee of the identification of the noncited violation. On December 28, 2000, Mr. G. Cook called and informed the NRC that they intended to deny the noncited violation. The basis for the

licensee's denial was that they did not consider the failure of the SIT to be vented or isolated to constitute a malfunction under 10 CFR 50.59 because it would not produce a different result within the accident analysis.

A second telephone call was conducted on December 29, 2000, with Mr. G. Cook and other licensee technical staff members to discuss this issue further.

The inspectors presented the remaining inspection results to Mr. R. Krieger and other members of licensee management at an exit meeting on January 9, 2001. The licensee acknowledged the findings presented.

The inspectors asked the licensee whether or not any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT 1

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

R. Allen, Supervisor, Reliability Engineering
C. Anderson, Manager, Site Emergency Preparedness
D. Axline, Engineer, Nuclear Oversight and Regulatory Affairs
J. Barrow, Project Manager, Health Physics
E. Bennett, Auditor, Nuclear Oversight and Regulatory Affairs
R. Boyer, Technical Specialist, Health Physics
D. Brieg, Manager, Station Technical
G. Cook, Supervisor, Nuclear Oversight and Regulatory Affairs
D. Dick, Supervisor, Chemistry
M. Farmer, Supervisor, Health Physics
J. Fee, Manager, Maintenance
J. Hirsch, Manager, Chemistry
M. Hunter, Technical Specialist, Health Physics
R. Krieger, Vice President, Nuclear Generation
J. Madigan, Manager, Health Physics
A. Martinez, Supervisor, Health Physics
M. McBrearty, Engineer, Nuclear Oversight and Regulatory Affairs
J. McGaw, 10 CFR 50.59 Program Manager
D. Naylor, General Foreman, Health Physics
D. Nunn, Vice President, Engineering and Technical Services
J. Rainsberry, Manager, Plant Licensing
A. Scherer, Manager, Nuclear Oversight and Regulatory Affairs
S. Schofield, Supervisor, Health Physics Self Assessment
M. Short, Manager, Site Technical Support
T. Vogt, Plant Superintendent, Units 2 and 3 Operations
R. Waldo, Manager, Operations

NRC

B. Baca, Health Physicist, Region IV
C. Liang, Reactor Systems Branch, Office of Nuclear Reactor Regulation

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed During this Inspection

361/2000015-01	NCV	failure to perform an adequate written safety evaluation (Section 1R02)
361; 362/2000015-02	NCV	inadequate corrective actions for containment spray alignment verification (Section 1R04)

361; 362/2000015-03	NCV	failure to report missed surveillance (Section 1R04)

Previous Items Closed

361; 362/2000-012-00	LER	common boration flowpath closed during Mode 4 - potential nonconformance with Technical Specification 3.1.9, “Boration Systems, Operating” (Section 4OA3)
361/2000-011-00	LER	manual start of a containment emergency cooler, engineered safety features actuation (Section 4OA5)

LIST OF DOCUMENTS REVIEWED

Procedures

SO123-VII-8 “Control of Radioactive Material,” Revision 8
SO123-VII-20.4 “ALARA Program,” Revision 2
SO123-VII-20.4.3 “ALARA Job Reviews,” Revision 1
SO123-VII-20.9 “Radiological Surveys,” Revision 5
SO123-VII-20.10 “Radiological Work Planning and Controls,” Revision 4
SO123-VII-20.11 “Access Control Program,” Revision 5
SO123-VII-20.11.1 “Radiological Posting,” Revision 5

Action Requests

AR-001001670	AR-001002602	AR-001100416	AR-001100703
AR-001101899	AR-991001267	AR-990401271	AR-000300033
AR-000300144	AR-000501265	AR-000701015	AR-000701255
AR-001000679	AR-001101250	AR-001200304	AR 991200682-2
CAR 970901009-4	AR/NCR 981100386	PRR 981201034-9	AR 990900201

Safety Evaluations

Evaluation of NCR 990500775 (While Attempting to Vent 2T008 on 5/9/99, 2Hv9345 Failed to Open)

Evaluation of TFM 2-00-SBB-1, “Add Zener diode and resistor at OTC3-11 & 12 in Cabinet 2L091 CPC/CEAC Channel C to Maintain CEA 40's position under 150 inches”

Evaluation of FCN F20622M (Replace existing Auxiliary Feedwater Tilting Disc Check Valves S2-1301-MU-003 and -005 (Mark 620) with a spring-loaded nozzle check valve (Mark 719))

Evaluation of Abnormal Alignment/Evolution 3-00-095 (Document defeating Negative Phase Sequence for 3G003, Train B EDG)

Evaluation of Revision 15 to Procedure SO23-V-3.13, “Containment Penetration Leak Rate Testing.”

Evaluation of Facility Change Evaluation 2-00-002, “Unit 2 Cycle Reload.”

Evaluation of Procedure SO23-3-1.1, “Reactor Startup,” Revision 21

Evaluation of FCN F20194M (Replace Check Valve with Different Design)

Evaluation of FCN F21197J (Replace Inverter Voltmeter)

Evaluation of Procedure SO123-III-1.1.23, “Units 2/3 Chemical Control of Primary Plant and Related Systems,” Revision 35

Evaluation of FCN F21812E (Add Fuses to Boric Acid Makeup Pump Circuit)

10 CFR 50.59 Screenings

Evaluation of NCR 990500628 (Heated Junction Thermocouples for Levels 4 and 6 are erratic)

Evaluation of NCR 001001489 (Silicon Bronze Fasteners inadvertently ordered for ASME Class II applications)

Evaluation of NCR 990502160 (Failure of Steam Generator Blowdown containment isolation valve)

Evaluation of Revision 1 to Procedure SO123-II-11.9, “CV Relay Test/Calibration”

Evaluation of Revision 3 to Procedure SO123-V-5.17, “Snubber Service Life Monitoring”

Evaluation of Abnormal Alignment/Evolution 2-00-039 (Throttle S21301MU896, 2PCV4716 Inlet Isolation, to maintain about 100 psig steam pressure for proper eductor operation)

Evaluation of Abnormal Alignment/Evolution 2-00-064 (Relief is gagged and slated for replacement during outage)

Evaluation of FCN F15307M (Saltwater Cooling Pump 33WX-1 Stage Vertical Circulator Discharge Head S/N 94-WL-0055)

San Onofre Nuclear Generating Station ALARA Outage Reports

Unit 2 Cycle 8
Unit 2 Cycle 10
Unit 2 Cycle 11
Unit 3 Cycle 10

Unit 2 Cycle 11 Refueling Outage ALARA Packages

MOVATS
Steam Generator Primary Side Work
Refueling
Pressurizer Heaters

ALARA Pre Job Reviews

Refueling U3C10 Outage, REP Numbers: 200117, 200118, 200125, 200128, 200129, 200130, 200131, 200134

Emergent S/G Eddy Current Testing Scope Expansion, Activity: A0808000026

U2C11 Primary Steam Generator Work, Activity: A0808000026

Unit 2 Cycle 11 MOVATS, Activity: A0808000029

Unit 2 Cycle 11 Pressurizer Heater Project, Activity: A100300001

U2C11 Refueling Outage, Activities: A080800001, A080800002, A080800003, A080800004, A080800005, A080800006, A080800007, A080800008, A080800009, A080800010, A080800011, A080800012, A080800013, A080800014, A080800015, A080800016, A080800017, A080800018, A080800019, A080800022

ALARA Committee Meeting Reports

Second Quarter 1999 through Third Quarter 2000
Source Term Reduction Strategy Outline
EPRI Trending and Analysis
SONGS EPRI Data

Surveillances, Audits, and Site Assessment Reports

Surveillance Report Number SOS-018-00 - ALARA Program

Radiation Protection Directed Site Assessment of San Onofre Nuclear Generating Station

SCE Quality Assurance Audit Report SCES-909-99 “Health Physics/Radiation Protection Program”

Radiation Exposure Permits

200101, 200105, 200114, 200117, 200123, 200128, and 200129

LIST OF ACRONYMS USED

AR	action request
CFR	Code of Federal Regulations
ESF	engineered safety features
LER	licensee event report
LOCA	loss-of-coolant accident
NCV	noncited violation
NRC	Nuclear Regulatory Commission
SAR	safety analysis report
SIT	safety injection tank

ATTACHMENT 2

NRC's REVISED REACTOR OVERSIGHT PROCESS

The federal Nuclear Regulatory Commission (NRC) recently revamped its inspection, assessment, and enforcement programs for commercial nuclear power plants. The new process takes into account improvements in the performance of the nuclear industry over the past 25 years and improved approaches of inspecting and assessing safety performance at NRC licensed plants.

The new process monitors licensee performance in three broad areas (called strategic performance areas): reactor safety (avoiding accidents and reducing the consequences of accidents if they occur), radiation safety (protecting plant employees and the public during routine operations), and safeguards (protecting the plant against sabotage or other security threats). The process focuses on licensee performance within each of seven cornerstones of safety in the three areas:

Reactor Safety	Radiation Safety	Safeguards
● Initiating Events	● Occupational	● Physical Protection
● Mitigating Systems	● Public	
● Barrier Integrity		
● Emergency Preparedness		

To monitor these seven cornerstones of safety, the NRC uses two processes that generate information about the safety significance of plant operations: inspections and performance indicators. Inspection findings will be evaluated according to their potential significance for safety, using the Significance Determination Process, and assigned colors of GREEN, WHITE, YELLOW, or RED. GREEN findings are indicative of issues that, while they may not be desirable, represent very low safety significance. WHITE findings indicate issues that are of low to moderate safety significance. YELLOW findings are issues that are of substantial safety significance. RED findings represent issues that are of high safety significance with a significant reduction in safety margin.

Performance indicator data will be compared to established criteria for measuring licensee performance in terms of potential safety. Based on prescribed thresholds, the indicators will be classified by color representing varying levels of performance and incremental degradation in safety: GREEN, WHITE, YELLOW, or RED. GREEN indicators represent performance at a level requiring no additional NRC oversight beyond the baseline inspections. WHITE corresponds to performance that may result in increased NRC oversight. YELLOW represents performance that minimally reduces safety margin and requires even more NRC oversight. And RED indicates performance that represents a significant reduction in safety margin but still provides adequate protection to public health and safety.

The assessment process integrates performance indicators and inspection so the agency can reach objective conclusions regarding overall plant performance. The agency will use an Action Matrix to determine in a systematic, predictable manner which regulatory actions should be taken based on a licensee's performance. The NRC's actions in response to the significance (as represented by the color) of issues will be the same for performance indicators as for inspection findings. As a licensee's safety performance degrades, the NRC will take more and increasingly significant action, which can include shutting down a plant, as described in the Action Matrix.

More information can be found at: http://www.nrc.gov/NRR/OVERSIGHT/index.html.