



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
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October 17, 2002

Harold B. Ray, Executive Vice President
San Onofre, Units 2 and 3
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P.O. Box 128, Mail Stop D-3-F
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**SUBJECT: SAN ONOFRE NUCLEAR GENERATING STATION - NRC INTEGRATED
INSPECTION REPORT 50-361/02-05; 50-362/02-05**

Dear Mr. Ray:

On September 21, 2002, the NRC completed an inspection at your San Onofre Nuclear Generating Station, Units 2 and 3, facility. The enclosed report documents the inspection findings which were discussed on July 19, 2002, and September 20, 2002, with Messrs. D. Nunn and J. Wambold 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. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel.

Based on the results of this inspection, the NRC has identified issues that were evaluated under the Significance Determination Process as having very low safety significance (Green). The NRC has determined that a violation is associated with one of these issues. The violation is being treated as a noncited violation (NCV), consistent with Section VI.A of the Enforcement Policy. The NCV is described in the subject inspection report. If you contest the violation or significance of the NCV, 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; 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 2.790 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).

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

Sincerely,

/RA/

Claude E. Johnson, Chief
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Dockets: 50-361
50-362
Licenses: NPF-10
NPF-15

Enclosure:
NRC Inspection Report
50-361/02-05; 50-362/02-05

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ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Dockets: 50-361
50-362

Licenses: NPF-10
NPF-15

Report No.: 50-361/02-05
50-362/02-05

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: June 23 through September 21, 2002

Inspectors: C. C. Osterholtz, Senior Resident Inspector
M. A. Sitek, Resident Inspector
R. V. Azua, Project Engineer
J. S. Dodson, Project Engineer / Health Physicist
J. L. Taylor, Reactor Engineer
G. G. Warnick, Resident Inspector

Approved By: C. E. Johnson, Chief, Project Branch C

SUMMARY OF FINDINGS
San Onofre Nuclear Generating Station, Units 2 and 3
NRC Inspection Report 50-361/02-05; 50-362/02-05

IR05000361-02-05, IR05000362-02-05; Southern California Edison; 06/23-09/21/2002; San Onofre Nuclear Generating Station, Units 2 & 3; Integrated Resident and Regional Report; Emergent Work

The inspection was conducted by resident and Regional office reactor inspectors. This inspection identified two Green findings, one of which was a noncited violation. The significance of the issues is indicated by its color and was determined by the Significance Determination Process in NRC Inspection Manual Chapter 0609.

A. NRC-Identified Findings

Cornerstone: Mitigating Systems

- Green. The inspectors identified a noncited violation after the licensee implemented an inadequate procedure which resulted in a loss of inventory from the Unit 2 safety injection system to the refueling water storage tank. This was a violation of 10 CFR Part 50, Appendix B, Criterion V.

The event was considered more than minor because use of the inadequate procedure caused an unnecessary loss of inventory from the safety injection system and rendered a safety injection tank inoperable earlier than the licensee intended. The finding, however, was determined to have very low safety significance because the transfer of water lasted for only 10 minutes and the safety injection tank did not exceed its Technical Specification allowed outage time. The end point of the procedure resulted in the safety injection tank being refilled, and the other three safety injection tanks remained operable throughout the event.

The inspectors considered an apparent cause to the event to be poor procedure development and review. The inspectors concluded that there was a crosscutting aspect of human performance that directly contributed to the event (Section 1R13.1).

Cornerstone: Initiating Events

- Green. The inspectors determined that the licensee implemented an inadequate procedure to calibrate the Unit 2 steam bypass control system, causing the system to malfunction, resulting in an automatic main steam isolation and reactor trip.

The issue was considered more than minor because it resulted in an excessive secondary system cooldown and posed an unnecessary challenge to the reactor protection system. However, the finding was considered to have very low safety significance because the reactor trip was uncomplicated, operations personnel quickly placed the plant in a stable shutdown condition, and secondary mitigation equipment remained available.

The inspectors considered an apparent cause to the event to be poor procedure development and review. The inspectors concluded that there was a crosscutting aspect of human performance that directly contributed to the event (Section 1R13.2).

B. Licensee-Identified Finding

- A violation of very low safety significance, which was identified by the licensee, has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. This violation and the corrective action tracking number is listed in Section 4OA7 of this report.

Report Details

Summary of Plant Status:

Unit 2 began this inspection period in Mode 5 with primary temperature at approximately 100°F following a refueling outage. On June 26, 2002, Unit 2 entered Mode 4, and one day later entered Mode 3. Unit 2 reactor startup was commenced on June 29, 2002, and Mode 1 was entered on June 30, 2002. On the evening of June 30, Unit 2 received an automatic main steam isolation and reactor trip due to a miscalibration of the steam bypass control system (SBCS). Unit 2 control room operators entered Procedure SO23-12-1, "Standard Post Trip Actions," and stabilized the plant in Mode 3. The steam bypass control system was recalibrated and a reactor startup was commenced on July 1, 2002. Unit 2 entered Mode 1 on July 2 and reached approximately full power on July 6, 2002. On July 26, 2002, control room operators reduced Unit 2 power to approximately 75 percent as a precautionary measure in response to an inadvertent vent of hydrogen from the turbine generator cooling system. The vent path was isolated and Unit 2 returned to essentially full power operation the same day. Unit 2 remained at approximately 100 percent power throughout the rest of this inspection period.

Unit 3 began this inspection period at approximately 100 percent power. On August 30, 2002, control room operators reduced Unit 3 power to approximately 75 percent to perform a motor replacement on Circulating Water Pump 3P118. The replacement was completed and Unit 3 was returned to full power on September 3, 2002. Unit 3 remained at approximately 100 percent power throughout the rest of this inspection period.

1. **REACTOR SAFETY**

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness

1R04 Equipment Alignments (71111.04)

a. Inspection Scope

The inspectors performed three partial walkdowns of the following trains of equipment during maintenance outages of their redundant trains:

- Auxiliary feedwater system during maintenance and testing of Auxiliary Feedwater Pump Turbine 3K007, on July 10, 2002 (Unit 3)
- High pressure safety injection (HPSI) trains during maintenance and testing of HPSI Pump 3P019 on July 30, 2002 (Unit 3)
- Component cooling water trains during maintenance and testing of Component Cooling Water Pump 2P026 on September 17, 2002 (Unit 2)

The inspectors physically verified critical portions of the trains to identify any discrepancies between the existing and the proper alignment as determined by system piping and instrumentation drawings and plant procedures.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Routine Fire Inspection Tours - Units 2 and 3

a. Inspection Scope

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

- Train A emergency chilled water Chiller ME335 room (Units 2 and 3)
- Train B emergency chilled water Chiller ME336 room (Units 2 and 3)
- Train A Class 1E switchgear room (Unit 3)
- Emergency Diesel Generator 2G002 room (Unit 2)
- Emergency Diesel Generator 2G003 room (Unit 2)
- Technical Support Center

The inspectors observed the material condition of plant fire protection equipment, the control of transient combustibles, and the operational status of barriers. The inspectors compared in-plant observations with commitments in the portions of the Updated Fire Hazards Analysis Report.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

The inspectors performed an annual visual inspection of the plant intake structure (Units 2 and 3) to determine the operational status of seals, barriers, sumps, drains, and alarms to identify the existence of any unanalyzed flooding hazards. The inspectors also reviewed Updated Final Safety Analysis Report Chapter 3.4, "Water Level (Flood) Design," Revision 13, and other design documentation.

The inspectors also performed periodic visual inspections to determine adequate safeguards were in place for the associated risk significant structures, systems, and components. The following two areas were inspected:

- Auxiliary feedwater pump room (Unit 2)
- Auxiliary feedwater pump room (Unit 3)

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11)

a. Inspection Scope

The inspectors observed licensed operator requalification training activities performed in the simulator on August 26, 2002, including the licensed operators' performance and the evaluators' critique. The inspectors compared performance in the simulator with performance observed in the control room during this inspection period.

The inspectors placed an emphasis on high-risk licensed operator actions, operator activities associated with the emergency plan, and previous lessons learned items. These items were evaluated to ensure that operator performance was consistent with protection of the reactor core during postulated accidents.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation (71111.12)

a. Inspection Scope

The inspectors reviewed the implementation of the requirements of the Maintenance Rule (10 CFR 50.65) to verify that the licensee had conducted appropriate evaluations of equipment functional failures, maintenance preventable functional failures, unplanned capacity loss factor, and system unavailability. The inspectors reviewed root causes and corrective action determinations for equipment failures and reviewed performance goals for ensuring corrective action effectiveness. The inspectors discussed the evaluations with the reliability engineering supervisor and the system engineers. The following four systems were reviewed:

- Control room emergency air cleanup system Train A (Units 2 and 3)
- Control room emergency air cleanup system Train B (Units 2 and 3)
- Emergency chilled water system Train A (Units 2 and 3)
- Emergency chilled water system Train B (Units 2 and 3)

b. Findings

No findings of significance were identified.

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

.1 Safety Injection Tank (SIT) 2T007 Water Movement to Refueling Water Storage Tank (RWST) 2T005

a. Inspection Scope

The inspectors reviewed emergent work on Unit 2 associated with a lowering water level in SIT 2T007 that resulted in water being transferred to RWST 2T005 from SIT 2T007.

b. Findings

Introduction

The inspectors determined that the licensee implemented an inadequate procedure which resulted in a loss of inventory from the safety injection system to the RWST. The finding is being documented as a noncited violation with a very low risk significance (Green).

Description

On July 12, 2002, a licensee system engineer documented that SIT 2T007 was slowly losing inventory and recommended back-seating Check Valves 2MU019 and 2MU073 to stop the loss of water. Procedure SO23-3-3.8, "Safety Injection Monthly Checks," directs back-seating of Check Valve 2MU073, which is on the discharge line (safety injection line to reactor coolant Loop 1B) of the low pressure safety injection pumps. However, no procedure existed for back-seating Check Valve 2MU019, which is on the discharge line (Loop 1B) of the HPSI pumps. A one-time-use procedure modification permit (PMP) was approved to combine steps to back-seat Check Valve 2MU019 with steps from existing Procedures SO23-3-3.8 and SO23-3.2.7.1 "Safety Injection Tank Operations," which included guidance to: (1) back-seat Check Valve 2MU073; (2) circulate water in the SIT fill/drain header to remove entrained nitrogen and to ensure correct boron concentration; and (3) fill SIT 2T007.

On July 24, 2002, the PMP was implemented. Back-seating of Check Valve 2MU073 was completed by opening Drain Valve 2HV9327 with HPSI Pump 2P017 running. This manipulation allowed water to flow through Loop 1B to Check Valve 2MU073. In order to back-seat Check Valve 2MU019, Drain Valve 2HV9333 was opened. This manipulation allowed water to flow through the safety injection line to reactor coolant Loop 2B to SIT 2T010 Drain Valve 2HV9371. Drain Valve 2HV9371 was then opened to allow water to flow through the SIT fill/drain header and through SIT 2T007 Drain Valve HV9351, in order to reseat Check Valve 2MU019.

Valve manipulations to back-seat Check Valves 2MU019 and 2MU073 placed the safety injection system into a configuration that resulted in two HPSI loop injection paths filling and pressurizing the SIT fill/drain header. Normally, only one path is used to pressurize the SIT fill/drain header through Drain Valves 2HV9327 and 2HV9351 of Loop 1B. The PMP called for Drain Valve 2HV9327 to be closed so that only one HPSI loop would be

used to pressurize the SIT fill/drain header. When Drain Valve 2HV9327 was closed, the SIT fill/drain header began to depressurize to the point where the back pressure on the discharge check valve to SIT 2T007 was no longer sufficient to maintain the water level in SIT 2T007. The pressure in the SIT fill/drain header lowered because of throttling across open Drain Valve 2HV9351. The PMP author and reviewers failed to recognize that a pressure drop across Drain Valve 2HV9351 would exist sufficient enough to allow SIT 2T007 to begin to drain. Operations personnel reversed the last step and reopened Drain Valve 2HV9327 to repressurize the SIT fill/drain header to stop the lowering of the water level in SIT 2T007. The loss of water from SIT 2T007 was sufficient to cause nitrogen pressure in the tank to lower to a point that rendered the tank inoperable.

The Operations crew conferred with the Manager of Plant Operations to ensure that continuing with the evolution would not worsen the event. The licensee at that time was unaware of the specific cause of the loss of inventory to SIT 2T007. However, the licensee indicated that trying to back out of the procedure at that point might have caused more problems which may not have been easily discernable. The licensee concluded that completing the procedure as written would return SIT 2T007 to operable status.

The PMP then required operators to open Drain Valve 2HV9334 to allow water into Loop 2B and the SIT fill/drain header to circulate through the RWST for 10 minutes to equalize the boron concentration in the water that would be used to fill SIT 2T007. In addition, this recirculation served to remove any entrained nitrogen that entered the system when the SIT discharge check valve opened. When Drain Valve 2HV9334 was opened, the level in SIT 2T007 began to lower again because of throttling once again across Drain Valve 2HV9351, which had not been corrected. The loss of pressure in the fill/drain header allowed water to flow from SIT 2T007 to RWST 2T005 through open Drain Valve 2HV9334. The level in SIT 2T007 dropped to 72.9 percent during the 10-minute loop recirculation evolution. Technical Specification 3.5.1 requires a minimum SIT volume of 1680 ft³ (77.9 percent). The remainder of the PMP was completed and nitrogen pressure and SIT 2T007 level were returned to within Technical Specification 3.5.1 limits.

Analysis

The inspectors evaluated the significance of the finding using the Significance Determination Process. The inspectors determined that the issue had a credible impact on the mitigating systems cornerstone because approximately 6 percent of the volume of SIT 2T007 was inadvertently transferred to the RWST. The event was considered more than minor because use of the errant PMP caused an unnecessary loss of inventory from the safety injection system and rendered a safety injection tank inoperable before the licensee had intended. However, the finding was determined to have very low safety significance because the transfer of water lasted for only 10 minutes and the safety injection tank did not exceed its Technical Specification allowed outage time. The end point of the procedure resulted in the SIT being refilled, and the other three SITs remained operable throughout the event.

Enforcement

The regulations in 10 CFR Part 50, Appendix B, Criterion V, state, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances. Contrary to this criterion, the licensee temporarily modified Procedure SO23-3-3.8 to back-seat two suspected leaking check valves and fill SIT 2T007. The procedure was not appropriate to the circumstances because it resulted in the inadvertent transfer of water out of SIT 2T007 to the RWST. This violation of 10 CFR Part 50 is being treated as a noncited violation (NCV 361/2002005-01) consistent with Section VI.A of the Enforcement Policy. This violation is in the licensee's corrective action program as Action Request (AR) 020701228. The licensee has also included this event in AR 020701529, which combines two other events with this one to determine whether or not there is a common cause among the three events. The licensee indicated that an additional review of unique or complex Operations procedures would be performed by an experienced senior reactor operator until the evaluation of AR 020701529 is complete.

The inspectors considered an apparent cause of the event to be poor procedure development and review. The inspectors concluded that there was a crosscutting aspect of human performance that directly contributed to the event.

.2 Steam Bypass Control System (SBCS) Miscalibration

a. Inspection Scope

The inspectors reviewed the emergent work associated with a miscalibration of the Unit 2 SBCS that resulted in an automatic actuation of the reactor protection system.

b. Findings

Introduction

The inspectors determined that the licensee implemented an inadequate procedure to calibrate the Unit 2 SBCS, causing it to malfunction, resulting in an automatic main steam isolation and reactor trip. This issue is being documented as a finding of very low safety significance (Green).

Description

On June 30, 2002, Unit 2 was in Mode 1. A plant startup was in progress and reactor power was approximately 18 percent. Control room operators were in the process of beginning overspeed testing of the main turbine. The turbine was rolling at 1800 rpm with main feedwater in service. The SBCS, which includes four control valves that allow steam to be dumped to the main condenser, was in service in automatic control. SBCS Valves 2HV8423 and 2HV8425 were partially open and SBCS Valves 2HV8424 and 2HV8426 were shut, which maintained steam generator pressure at approximately 1000 psia.

SBCS Valves 2HV8424 and 2HV8426 suddenly fully opened. SBCS Valves 2HV8423 and 2HV8425 initially shut, then reopened to 100 percent. Steam generator pressure rapidly decreased to the main steam isolation and reactor trip setpoint of 741 psia. The reactor tripped, the turbine tripped, and the main steam isolation valves closed automatically. Control room operators entered Procedure SO23-12-1, "Standard Post Trip Actions," and subsequently entered Procedure SO23-12-2, "Reactor Trip Recovery," placing the plant in a safe, stable, shutdown condition. The licensee assembled a technical team to initiate testing of the SBCS to discover and repair any problems with the system.

The licensee initiated a root cause evaluation and concluded that the fast open feature of the SBCS inadvertently actuated because the SBCS had been miscalibrated during the Unit 2 Cycle 12 refueling outage in June 2002. The miscalibration caused the rate of change of steam flow signal to the SBCS to be excessively amplified. This amplification caused the SBCS to react to a small decrease in steam flow as if it were a large steam flow decrease, which is consistent with that of a turbine trip.

The licensee's root cause evaluation concluded that the procedure to calibrate the SBCS, Procedure SO23-II-8.32, "Steam Bypass Control System Functional Test," was inadequate. The procedure had been modified in October 2000 to provide instructions to perform individual module calibrations (vice an overall system calibration) to ensure all modules in the system were properly calibrated. The SBCS modules consist of I/E converters, a square root extractor, a summing module, a dynamic response module, and a peak remembering module. The licensee indicated that the intent of the modification had been to prevent a miscalibrated module to be improperly compensated for by another module. However, the procedure was considered inadequate because it directed technicians to perform adjustments on dynamic response module time constants without considering the effect those adjustments would have on the gain. The procedure was also considered inadequate because it did not verify integrated system operation as a postmaintenance test, just individual module checks. Therefore, the technicians unknowingly increased the system gain without the error being detected during postmaintenance testing.

The root cause evaluation indicated that corrective actions would include revising Procedure SO23-II-8.32 to require measuring and recording of as-found and as-left dynamic response module gains. Additionally, a postmaintenance verification would be included to ensure proper calibration of the entire SBCS. The licensee's evaluation also indicated that engineering guidance would be developed to support the review of maintenance calibration procedures, especially for those for systems and equipment that are safety related or important to plant reliability.

The licensee performed a recalibration of the Unit 2 SBCS, and Unit 2 was successfully returned to power operations on July 2, 2002. The inspectors questioned the operability of the Unit 3 SBCS, as it had also been calibrated under the October 2000 version of Procedure SO23-II-8.32 in the Unit 3 Cycle 11 refueling outage. The licensee verified that previous adjustments made to the Unit 3 SBCS were not sufficient to cause past inoperability. In addition, the licensee performed a recalibration of the Unit 3 SBCS.

Analysis

The inspectors evaluated the significance of the finding using the Significance Determination Process. The inspectors determined that the issue had a credible impact on the initiating events cornerstone because both an automatic main steam isolation and a reactor trip event occurred. The issue was considered more than minor because it resulted in an excessive secondary system cooldown and posed an unnecessary challenge to the reactor protection system. However, the finding was considered to have very low safety significance because the reactor trip was uncomplicated, operations personnel quickly placed the plant in a stable shutdown condition, and secondary mitigation equipment remained available.

Enforcement

No violation of regulatory requirements occurred. This finding (FIN 361/2002005-02) is in the licensee's corrective action program as AR 020602197.

The inspectors considered an apparent cause to the event to be poor procedure development and review. The inspectors concluded that there was a crosscutting aspect of human performance that directly contributed to the event.

.3 Quarterly Review

a. Inspection Scope

The inspectors verified the accuracy and completeness of assessment documents and verified that the licensee's program was being appropriately implemented. The inspectors also ensured that plant personnel were aware of the appropriate licensee-established risk category, according to the risk assessment results and licensee program procedures.

In addition, the inspectors reviewed selected emergent work items to ensure that overall plant risk was being properly managed and that appropriate corrective actions were being properly implemented.

The inspectors reviewed the effectiveness of risk assessment and risk management for the following five emergent work activities:

- Early replacement of reactor coolant pump seal packages for Unit 2 Reactor Coolant Pumps 2P001 and 2P003 during the June 2002 Unit 2 Cycle 12 refueling outage (AR 020401400)
- Failure of a Unit 2 heated junction thermocouple on June 24, 2002 (AR 020601682)
- Unit 2 vital dc battery cell replacement on June 28, 2002 (AR 020602091)
- Hydrogen leak on the Unit 2 turbine generator on July 26, 2002 (AR 020701390)

- Inadvertent opening of Unit 3 reactor trip Breaker 3-7 on August 21, 2002 (ARs 020800755 and 030800993)

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Nonroutine Plant Evolutions (71111.14)

a. Inspection Scope

The inspectors observed operator response to two nonroutine events during the inspection period. In addition to direct observation of operator performance, the inspectors reviewed procedural requirements, operator logs, and plant computer data to determine that the response was appropriate with that required by procedures and training. The following two operator responses were reviewed:

- Unit 2 main steam isolation and automatic reactor trip on June 30, 2002
- Loss of hydrogen pressure in the Unit 2 turbine generator on July 26, 2002

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed selected operability evaluations to evaluate technical adequacy and to verify that operability was justified. The inspectors considered the impact on compensatory measures for the condition being evaluated, and referenced the Updated Final Safety Analysis Report and Technical Specifications. The inspectors also discussed the evaluations with cognizant licensee personnel.

The inspectors reviewed the operability evaluations and cause assessments documented in the following seven ARs to ensure the operability was properly justified:

- AR 020502054: Excore Channel D failed and recovered twice (Unit 3)
- AR 020401400: Saltwater cooling Train A hi/lo flow alarm with ground (Unit 3)
- AR 020502016: Failure to provide temporary power to containment purge damper (Unit 2)
- AR 020800635: Emergency Operations Facility emergency diesel generator failure (Units 2 and 3)
- AR 020800129: Weld leak on spent fuel pool drain valve (Unit 3)

- AR 020801305: Control element drive mechanism fan failure (Unit 3)
- AR 020801404: Common cause analysis for emergency diesel generators (Units 2 and 3)

b. Findings

No findings of significance were identified.

1R16 Operator Workarounds (71111.16)

a. Inspection Scope

The inspectors reviewed operator workarounds to evaluate their cumulative effect on the operators' ability to implement abnormal or emergency procedures. The inspection included a review of criteria and processes used for identifying and tracking deficiencies as operator workarounds. The review also focused on the length of time the identified workarounds had been in existence and the efforts initiated to resolve them.

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 four activities to verify that the test procedures and activities adequately demonstrated system operability:

- Unit 3 Turbine-Driven Auxiliary Feedwater Pump 3P140 postmaintenance test per Procedure SO23-2-4, "Auxiliary Feedwater System Operation," Revision 18, performed on July 11, 2002, following routine scheduled maintenance
- Unit 3 Emergency Diesel Generator 3G003 postmaintenance test per Procedure SO23-3-3.23.1, "Diesel Generator Refueling Interval Tests," Revision 18, performed on July 17, 2002, following scheduled maintenance activities
- Unit 3 Emergency Diesel Generator 3G003 postmaintenance test per Maintenance Order 02081661000 following corrective maintenance on the speed adjustment potentiometer circuit on August 26, 2002
- Unit 2 Diesel-Driven Fire Pump 2P220 postmaintenance test per Procedure SO23-I-2.21, "Diesel Driven Fire Pump Surveillance," Revision 7, performed on September 3, 2002, following routine scheduled maintenance

The inspectors determined that the affect of testing on the plant had been adequately addressed, that the tests were adequate for the scope of the maintenance work performed, and that the acceptance criteria were clear and consistent with design and licensing basis documents.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors observed and/or reviewed performance and documentation for the following four surveillance tests to verify that the structures, systems, and components were capable of performing their intended safety functions and to assess their operational readiness:

- Unit 2 Core Operating Limit Supervisory System 31-day alarm surveillance per Procedure SO23-3-3.41, "COLSS/CBCS Operability and Computer Surveillances," Revision 7, on July 2, 2002
- Unit 2 HPSI Pump 2MP019 quarterly surveillance test per Procedure SO23-3-3.60.1, "High Pressure Safety Injection Pump 2MP-019 and Valve Testing," Revision 3, July 17, 2002
- Unit 3 Emergency Diesel Generator 3G003 monthly surveillance test per Procedure SO23-3-3.23, "Diesel Generator Monthly and Semi-Annual Testing," Revision 20, on August 24, 2002
- Unit 3 Reactor Coolant System Cold Leg Loop 2A Wide-Range Temperature 3TE0125-1 loop verification per Procedure SO23-11-9.661, "Surveillance Requirement Reactor Coolant Loops 1B and 2A Cold Leg Temperature to Plant Computer Channel Calibration," Revision 6, performed on September 11, 2002

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

The inspectors reviewed the following temporary plant modification to verify that the safety functions of safety systems were not affected:

- Temporary Facility Modification per AR 020602197-17, Revision 0; “Non-Conformance Report for Unit 2 Steam Bypass Control System Low Power Maloperation in Support of Unit Return to Service”

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

The inspectors observed two Emergency Preparedness drills to evaluate the drill conduct and the adequacy of the licensee’s performance critique. The inspectors observed the site-wide drills in both the simulator and the Emergency Operations Facility on the following dates:

- September 4, 2002
- September 11, 2002

b. Findings

No findings of significance were identified.

2. **RADIATION SAFETY**

2OS2 ALARA Planning and Controls (71121.02)

a. Inspection Scope

The inspectors interviewed radiation workers and radiation protection personnel involved in high dose rate and high exposure jobs in the radiologically controlled areas during normal operations. Field observations of selected work areas within the radiologically controlled areas were conducted. The following 12 items were reviewed and compared with regulatory requirements to determine whether the licensee had an adequate program to maintain occupational exposure as low as is reasonably achievable (ALARA):

- 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
- Fourteen radiation exposure permit packages (200102, 200104, 200107, 200112, 200117, 200118, 200119, 200123, 200125, 200128, 200163, 200171,

200172, and 200191) and the associated work packages for outage and online maintenance activities with the highest personnel collective exposures during the inspection period

- Three jobs (Unit 3 Charging Pump 3P191 maintenance, Unit 3 emergency core cooling system Train A pump room emergency ac unit, and Unit 2 HPSI operational test run) were observed, and tours were conducted in various areas of the plant
- Exposures of selected work groups (Health Physics, Engineering, and Maintenance)
- Hot spot tracking and reduction program
- Radiological work planning
- One quality audit (NORAD Audit SCES-003-02), the 2001 ALARA Annual Report, Health Physics Division Self-Assessment (1st Quarter 2002), and 15 quality field observations (2/22/02, 3/1/02, 5/10/02, 5/13/02, 5/21/02, 5/22/02, 5/31/02, 6/3/02, 6/5/02, 6/6/02, 6/13/02, 6/14/02, 6/17/02, 6/20/02, and 6/24/02)
- ALARA Committee meeting minutes (1st quarter 2002, dated 3/28/02 and 2nd quarter 2002, dated 6/27/02)
- Selected corrective action documents involving the ALARA program and radiation worker practice deficiencies (ARs 020200137, 020200669, 020300195, 020300385, 020300527, 020300960, 020400259, 020400406, 020401728, 020500079, 020501227, 020600788, and 020602003)
- Declared pregnant worker dose monitoring controls

b. Findings

No findings of significance were identified.

3. **SAFEGUARDS**

Cornerstone: Physical Protection

3PP3 Response to Contingency Events (71130.03)

The Office of Homeland Security developed a Homeland Security Advisory System (HSAS) to disseminate information regarding the risk of terrorist attacks. The HSAS implements five color-coded threat conditions with a description of corresponding actions at each level. NRC Regulatory Information Summary 2002-12a, dated August 19, 2002, "NRC Threat Advisory and Protective Measures System," discusses the HSAS and provides additional information on protective measures to licensees.

a. Inspection Scope

On September 10, 2002, the NRC issued a Safeguards Advisory to reactor licensees to implement the protective measures described in Regulatory Information Summary 2002-12a in response to the Federal government declaration of threat level "orange." Subsequently, on September 24, 2002, the Office of Homeland Security downgraded the national security threat condition to "yellow" and a corresponding reduction in the risk of a terrorist threat.

The inspector interviewed licensee personnel and security staff, observed the conduct of security operations, and assessed licensee implementation of the protective measures. Inspection results were communicated to the Region IV and Headquarters security staff for further evaluation.

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 four performance indicators to ensure that the performance indicator color was correct for both Units 2 and 3:

- MS1 Emergency AC Power Unavailability
- MS2 High Pressure Injection System Unavailability
- MS3 Residual Heat Removal System Unavailability
- MS4 Auxiliary Feedwater System Unavailability

The inspectors reviewed the performance indicator data for the last four quarters. The inspectors reviewed NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," and licensee operating logs. The inspectors discussed the status of the performance indicators and compilation of data with Engineering personnel.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

a. Inspection Scope

The inspectors reviewed the licensee's followup to NRC Information Notice 2002-22, "Degraded Bearing Surfaces in GM/EMD Emergency Diesel Generators," to determine if the licensee's evaluation was acceptable. The inspectors discussed the status of the evaluation with the emergency diesel generator cognizant engineer. The inspectors also verified that the licensee's corrective actions to address the issue identified in the Information Notice were appropriate.

b. Findings

No findings of significance were identified.

4OA3 Event Followup (71153)

- .1 (Closed) Licensee Event Report (LER) 362/2002-001-00: loss of offsite power with consequential RPS/ESF actuations due to maintenance error

This issue was dispositioned in NRC Special Inspection Report 50-361; 362/2002-08. This LER is closed.

- .2 (Closed) LER 361; 362/2002-003-00: inadequate procedure results in incorrect adjustment of the SBCS causes a reactor trip

This issue was dispositioned in Section 1R13.2 of this report. This LER is closed.

- .3 (Closed) LER 361/2002-004-00: missed core operating limit supervisory system surveillance

The inspectors reviewed this LER and determined that it was of minor significance. The inspectors concluded that the licensee's root cause determination and proposed corrective actions were appropriate. This LER is closed.

4OA4 Crosscutting Issues

The inspectors determined that human performance deficiencies directly contributed to the NCV and finding documented in Sections 1R13.1 and 1R13.2, respectively. Both aspects of human performance exhibited procedural review deficiencies by licensee personnel that resulted in an inappropriate plant configuration and a miscalibration of nonsafety-related equipment.

4OA6 Meetings

Exit Meeting Summary

The inspectors presented the inspection results to Mr. D. Nunn and other members of licensee management on July 19, 2002, and to Mr. J. Wambold and other members of licensee management at an exit meeting on September 20, 2002. The licensee acknowledged the findings presented.

The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

4OA7 Licensee Identified Violations

The following violation of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as an NCV.

Technical Specification 5.5.1 requires the implementation of procedures listed in Regulatory Guide 1.33, Appendix A. Section 6.10.6.5 of Procedure SO123-VII-20, "Health Physics Program," states, in part, that individuals entering a radiologically controlled area sign up on an appropriate radiation exposure permit, acknowledging that they agree to comply with the radiological controls specified on the radiation exposure permit. On March 15, 2002, an individual did not comply with the instructions on his radiation exposure permit when his electronic dosimeter alarmed, as documented in the licensee's corrective action program as AR 020300960. On April 8, 2002, an individual entered a radiologically controlled area without signing-in on a radiation exposure permit, as documented in the licensee's corrective action program as AR 020400406. On May 21, 2002, two workers entered a posted high radiation area which was not allowed by their radiation exposure permit, as documented in the licensee's corrective action program as AR 020501227. Because the ability to assess dose was not compromised, and there was no overexposure, or potential for an overexposure, these three examples of this violation are of very low significance and are being treated as an NCV.

ATTACHMENT

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

R. Allen, Supervisor, Reliability Engineering
C. Anderson, Manager, Site Emergency Preparedness
J. Austin, Planner, Health Physics
J. Barrow, Supervisor, Health Physics
E. Bennett, Auditor, Nuclear Oversight and Regulatory Affairs
D. Brieg, Manager, Maintenance Engineering
B. Corbett, Acting Manager, Health Physics
M. Farmer, Supervisor, Health Physics
J. Fee, Manager, Maintenance
G. Ferrigno, Planner, Health Physics
K. Gallion, Planner, Health Physics
M. Goettel, Manager, Business Planning and Financial Services
J. Hirsch, Manager, Chemistry
J. Madigan, Manager, Health Physics
A. Martinez, Supervisor, Health Physics
M. McBrearty, Compliance Engineer, Regulatory Affairs
D. Nunn, Vice President, Engineering and Technical Services
R. Richter, Supervisor, Fire Protection Engineering
A. Scherer, Manager, Nuclear Oversight and Regulatory Affairs
M. Short, Manager, Systems Engineering
T. Vogt, Manager, Operations
R. Waldo, Station Manager, Nuclear Generation
J. Wambold, Vice President, Nuclear Generation

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

361/2002005-01	NCV	SIT 2T007 water movement to RWST 2T005 (Section 1R13.1)
361/2002005-02	FIN	SBCS miscalibration (Section 1R13.2)

Previous Items Closed

362/2002-001-00	LER	Loss of offsite power with consequential RPS/ESF actuations due to maintenance error (Section 4OA3.1)
361; 362/2002-003-00	LER	Inadequate procedure results in incorrect adjustment of the steam bypass control system causing a reactor trip (Section 4OA3.2)

361/2002-004-00

LER Missed core operating limit supervisory system
surveillance (Section 40A3.3)

LIST OF ACRONYMS USED

ALARA	as low as reasonably achievable
AR	action request
CFR	Code of Federal Regulations
FIN	finding
HPSI	high pressure safety injection
HSAS	Homeland Security Advisory System
LER	licensee event report
NCV	noncited violation
NRC	Nuclear Regulatory Commission
PMP	procedure modification permit
RWST	refueling water storage tank
SCBS	steam bypass control system
SIT	safety injection tank