ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket Nos.:	50-361 50-362
License Nos.:	NPF-10 NPF-15
Report No.:	50-361/99-15 50-362/99-15
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:	September 19 through October 30, 1999
Inspectors:	J. A. Sloan, Senior Resident Inspector J. G. Kramer, Resident Inspector J. J. Russell, Resident Inspector P. A. Goldberg, Reactor Inspector
Approved By:	Linda J. Smith, Chief Branch E, Division of Reactor Projects

ATTACHMENT: Supplemental Information

EXECUTIVE SUMMARY

San Onofre Nuclear Generating Station, Units 2 and 3
NRC Inspection Report No. 50-361/99-15; 50-362/99-15

This routine announced inspection included aspects of licensee operations, maintenance, engineering, and plant support. This report covers a 6-week period of resident inspection.

Operations

- Operators thoroughly and methodically prepared for and conducted evolutions. Management and supervisors provided close oversight of operational activities. Procedure use and operator communications were generally consistent with written licensee management expectations (Section O1.1).

- Operator response to the magnitude 7.1 Hector Mine earthquake was good. The applicable procedure was entered, walkdowns of all operators' watch stations were accomplished, and a determination of the maximum plant acceleration was quickly made. The appropriate event classification and notifications were made. No plant damage occurred (Section O1.2).

- An operator displayed a high attention to detail when performing equipment walkdowns by identifying and documenting a significant number of equipment deficiencies (Section O1.3).

- A violation of Technical Specification 5.5.1.1.a, resulted from the failure of an operator to properly rack out a 4160 V breaker to a seismically qualified position. This Severity Level IV violation is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy. This violation was in the licensee's corrective action program as Action Request 991001107. This example, and another observed during this inspection period, demonstrated that operators continued to have difficulty operating breakers properly (previous occurrences were documented in NRC Inspection Reports 50-361/98-07; 50-362/98-07 and 50-361/98-03; 50-362/98-03) (Section O4.1).

Maintenance

- Licensee personnel performed maintenance and surveillance activities in a thorough manner with work packages present and in active use. Technicians were knowledgeable and professional. Supervisors and system engineers frequently monitored job progress and quality control personnel were present whenever required by procedure. When applicable, appropriate radiation controls were in place (Sections M1.1 and M1.2).

- An equipment operator demonstrated poor attention to detail by not observing an apparent deficiency in a train of air-start motors during an emergency diesel generator fast start surveillance, until the deficiency was pointed out by the inspectors. The licensee's actions to enhance the maintenance program for the air-start motor oilers was good (Section M1.3).

- Operator performance in draining the piping associated with swing high pressure safety injection Pump 2P018 was weak in that the vent and drain path was not verified to function as expected. When maintenance activities commenced, a large volume of potentially contaminated water unexpectedly gushed from the pump casing drain and flooded a large portion of the pump room floor. Operations' communications regarding the occurrence were weak in that control room personnel were not notified in a timely manner (Section M1.4).

- A violation of 10 CFR Part 50, Appendix B, Criterion V, resulted from the failure of the licensee to provide appropriate documented instructions to maintenance personnel during the replacement of a linestarter that ultimately caused a breaker malfunction. In addition to the malfunctioned breaker, 38 of 172 breakers had misaligned linestarter coils as a result of the inadequate instructions. This Severity Level IV violation is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy. This violation was in the licensee's corrective action programas Action Request 990900647 (Section M4.1).

Engineering

- A violation of 10 CFR Part 50, Appendix R, Section III.O, occurred because the oil collection system for a Unit 2 reactor coolant pump was not collecting oil that occasionally leaked from the pump motor when the lower motor oil bearing reservoir was overfilled. The oil collection system was only determined to be deficient while the system was being operated without sufficient controls to prevent overfilling. Fire loading limits were not exceeded. This Severity Level IV violation is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy. This violation was in the licensee's corrective action program as Action Request 990300146 (Section E8.1).

Plant Support

- Health Physics' response to a spill of potentially contaminated water in the Unit 2 swing high pressure safety injection pump room was adequate (Section M1.4).

Report Details

Summary of Plant Status

Both units operated at essentially 100 percent reactor power during this inspection period.

I. Operations

O1 Conduct of Operations

O1.1 General Comments (71707)

The inspectors observed routine and nonroutine operational activities throughout this inspection period. Some of the activities observed included:

- Turbine stop valve testing (Unit 3)
- Shift turnover (Units 2 and 3)
- Transfer of Train B Emergency Chiller ME335 component cooling water to Unit 2 (Units 2 and 3)
- Prejob briefing for maintenance of Main Feedwater Isolation Valve 3HV4048 (Unit 3)

Operators thoroughly and methodically prepared for and conducted evolutions. Management and supervisors provided close oversight of operational activities. Procedure use and operator communications were generally consistent with written licensee management expectations.

O1.2 Earthquake Response - Units 2 and 3

a. Inspection Scope (93702)

The inspectors assessed Operations' and support organizations' responses to the magnitude 7.1 Hector Mine earthquake, centered approximately 115 miles northeast of the site and felt at the site. The inspectors reviewed portions of Abnormal Operating Instruction SO23-13-3, "Earthquake," Temporary Change Notice 5-2 and discussed the event with Operations personnel. The inspectors walked down Units 2 and 3 main control boards, portions of Units 2 and 3 secondary plants, the Unit 3 nuclear steam supply system, and the Unit 3 tendon gallery several hours after the event.

b. Observations and Findings

On October 16, 1999, at 2:47 a.m., operators received annunciation indicating a triggering of the seismic monitoring system. Ground movement was felt in the control room and throughout the site. Unit 2 operators received annunciation for various tank levels while Unit 3 operators received heater drain pump seal annunciation and a main turbine high thrust annunciation. All of the annunciators subsequently cleared. Control

room operators entered Abnormal Operating Instruction SO23-13-3 and declared a Notice of Unusual Event. The shift technical advisor calculated a maximum acceleration of 0.024g, an acceleration which is well within design limits. Operators and emergency services personnel conducted walkdowns of both units. No damage was noted by the licensee or the inspectors. The Notice of Unusual Event was exited at 3:30 a.m.

c. Conclusions

Operator response to the earthquake was good. The applicable procedure was entered, walkdowns of all operators' watch stations were accomplished, and a determination of the maximum plant acceleration was quickly made. The appropriate event classification and notifications were made. No plant damage occurred.

O1.3 Operator-Identified Deficiencies - Units 2 and 3

a. Inspection Scope (71707)

The inspectors performed a routine review of action requests (ARs) to monitor deficiencies and the status of equipment.

b. Observations and Findings

On October 5, 1999, a reactor operator, performing duties outside the control room as a nuclear plant equipment operator, identified approximately 15 equipment deficiencies and documented these deficiencies in the corrective action system. The inspectors observed that this was a high number of deficiencies identified and documented by an individual during a shift.

c. Conclusions

An operator displayed a high attention to detail when performing equipment walkdowns by identifying and documenting a significant number of equipment deficiencies.

O4 Operator Knowledge and Performance

O4.1 Breaker Operation - Units 2 and 3

a. Inspection Scope (71707)

The inspectors observed 4160 V breaker racking evolutions, reviewed AR 991001107 and Procedure SO23-6-2.1, "4160 Volt Air Circuit Breakers," Revision 3, and discussed operator breaker racking performance with operations management.

b. Observations and Findings

On October 4, 1999, the inspectors observed an Operations Test Group operator transfer Train B saltwater cooling (SWC) pumps on Unit 2. The evolution involved racking out the breaker for Pump 2P113 and racking in the breaker for Pump 2P114. During the racking evolutions, the operator did not have the procedure "in hand," which was acceptable for this type of evolution. The operator performed the racking evolutions with the cubicle door open, instead of performing the evolutions with the cubicle door closed through a small sliding door in the cubicle door. This contradicted the recommended guidance of Procedure SO23-6-2.1.

While transferring SWC pump breakers on October 24, the licensee identified that Breaker 3A0610 for SWC Pump 3P113 was nonseismically restrained. The breaker was racked out beyond the seismic "disconnect" position and, therefore, was free to move about in the breaker cubicle. The licensee identified that the breaker had been incorrectly racked out by an Operations Test Group operator on September 28.

The inspectors discussed the as-found condition of the Breaker 3A0610 with a Station Technical engineer. The engineer indicated that, although the breaker was not in a seismically qualified position, the breaker could not damage adjacent breakers or the 4160 V bus. This conclusion was based on the cubicle construction and the limited amount of travel available to the breaker with the cubicle door closed. In addition, the engineer indicated that no damage occurred to the breaker or the bus from the seismic activity felt at the site on October 16 (Section O1.2).

Unit 3 Technical Specification 5.5.1.1.a requires that written procedures be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Regulatory Guide 1.33, Appendix A, recommends procedures for the electrical AC system. Procedure SO23-6-2.1 provides instructions for the operation of 4160 V breakers and step 6.3.8.1, in part, directs the operator to place the breaker in the disconnect position when leaving a racked out breaker in a cubicle. The failure of an operator to place the breaker in the disconnect position was a violation of Technical Specification 5.5.1.1.a. This Severity Level IV violation is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy (NCV 50-362/9915-01). This violation was in the licensee's corrective action program as AR 991001107.

The inspectors documented previous weaknesses in operator performance during 4160 V breaker operation in NRC Inspection Report 50-361/98-03; 50-362/98-03. In addition, NRC Inspection Report 50-361/98-07; 50-362/98-07 documented weaknesses in the operator performance when racking out 480 V breakers. The inspectors concluded that operators are continuing to have performance weaknesses in breaker operations.

c. Conclusions

A violation of Technical Specification 5.5.1.1.a, resulted from the failure of an operator to properly rack out a 4160 V breaker to a seismically qualified position. This Severity Level IV violation is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy. This violation was in the licensee's corrective action program as AR 991001107. This example, and another example observed during this inspection period, demonstrated that operators continued to have difficulty operating breakers properly (previous occurrences were documented in NRC Inspection Reports 50-361/98-03; 50-362/98-03 and 50-361/98-07; 50-362/98-07).

II. Maintenance

M1 Conduct of Maintenance

M1.1 General Comments

a. Inspection Scope (62707)

The inspectors observed all or portions of the following work activities:

- Trip test 480 V molded-case Circuit Breaker 2BZ30 (Unit 2)
- Perform electronic/isotopic channel function test on replacement component cooling water Radiation Monitor 2RE7819 (Unit 2)
- Modify back pressure Control Valve 2PV0201B internals (Unit 2)
- Linestarter inspection (Units 2 and 3)
- Install temporary sight glass and add oil to Reactor Coolant Pump (RCP) 2P004 (Unit 2)
- Replace swing high pressure safety injection (HPSI) Pump 2P018 Suction Relief Valve 2PSV8156 (Unit 2)
- Replace control room emergency air cleanup system boundary control room complex emergency ventilation Unit MA207 charcoal (Units 2 and 3)
- Inspect control room remote emergency air conditioning Unit ME418 filter (Units 2 and 3)
- Control room complex heater humidity Controller 2/3MCH9759-1 calibration (Units 2 and 3)
- Auxiliary Feedwater Pump 2P140 packing adjustment (Unit 2)

- Test motor-operated valve Actuator 2HV4706 (Unit 2)
- Repair Feedwater Isolation Valve 2HV4048 hydraulic controller (Unit 2)

b. Observations and Findings

The inspectors found the work performed under these activities to be thorough. All work observed was performed with the work package present and in active use. Technicians were knowledgeable and professional. The inspectors frequently observed supervisors and system engineers monitoring job progress and Quality Control personnel were present whenever required by procedure. When applicable, appropriate radiation controls were in place.

In addition, see the specific discussions of maintenance observed under Section M1.4 below.

M1.2 General Comments on Surveillance Activities

a. Inspection Scope (61726)

The inspectors observed all or portions of the following surveillance activities:

- Train B Emergency Diesel Generator (EDG) 3G003 semiannual fast start and subgroup relay test (Unit 3)
- High pressure turbine stop and governor valve testing (Unit 3)
- Train B EDG 2G003 monthly test (Unit 2)
- Qualified safety parameter display system 18-month test (Unit 2)

b. Observations and Findings

The inspectors found all surveillances performed under these activities to be thorough. All surveillances observed were performed with the work package present and in active use. Technicians were knowledgeable and professional. The inspectors frequently observed supervisors and system engineers monitoring job progress, and quality control personnel were present whenever required by procedure. When applicable, appropriate radiation controls were in place.

In addition, see the specific discussions of surveillances observed under Section M1.3 below.

M1.3 EDG Fast Start - Unit 3

a. Inspection Scope (61726)

On October 13, 1999, the inspectors observed a semiannual fast start of Unit 3 Train B EDG 3G002, performed in accordance with Procedure SO23-3-3.23, "Diesel Generator Operation," Temporary Change Notice 15-1, Attachment 1. The inspectors reviewed portions of Procedure SO23-V-3.5, "Inservice Testing of Valves Program," Revision 18, and discussed EDG air-start motor performance with Operations and Station Technical personnel.

b. Observations and Findings

The EDGs are tandem engine, single generator units. Each engine has two Train A and two Train B air-start motors. An oiler lubricates each set of two air-start motors by injecting oil into the air used to turn the air-start motor. During monthly EDG starts, one train of starting air was normally isolated and, during semiannual fast starts, both trains of starting air were used. By design, the EDG should start with only one train of starting air in service.

During the EDG fast start, the inspectors observed that the Engine 1, Train B air-start motors did not exhaust oil from the motor exhaust ports. No oil film was present on the metal surfaces below the exhaust ports. All other air-start motors evidenced oil on surfaces below the air-start motor exhaust ports. The inspectors found that an equipment operator demonstrated poor attention to detail, by initialing a working copy as "SAT" for proper operation of the air-start system when no oil sheen existed; however, that section of the procedure was not required to have been performed and should have been marked "N/A."

The licensee determined that the air-start motors were operable, despite the absence of oil, based on contact with the vendor and information in the vendor manual. Only 3 drops per minute of oil was needed, which may not be evidenced in the exhausted air (the motors usually run for less than 5 seconds). Additionally, the air-start motors had functioned properly during the last quarterly inservice test; and the EDG had started within the required time, indicating that the air-start system functioned satisfactorily overall. The licensee had previously determined, in AR 980101178, that the oiling of the motor was only a long-term degradation issue and not an immediate operability issue. However, Station Technical personnel determined that the maintenance program should be enhanced to periodically verify that the oilers were functioning properly. The licensee also planned to inspect the oiler for the Engine 1, Train B air-start motors.

c. Conclusions

An equipment operator demonstrated poor attention to detail by not observing an apparent deficiency in a train of air-start motors during an EDG fast start surveillance until the deficiency was pointed out by the inspectors. The licensee's actions to enhance the maintenance program for the air-start motor oilers was good.

M1.4 HPSI System Breach (Unit 2)

a. Inspection Scope (62707, 71707, 71750)

The inspectors observed maintenance and health physics activities on October 12, 1999, associated with replacing swing HPSI Pump 2P018 Suction Relief Valve 2PSV8156. The inspectors reviewed Work Authorization Record (WAR) 2-9902319 and Procedures SO23-3-2.7, "Safety Injection System Operations," Revision 16, and SO123-XX-5, "Work Authorizations," Temporary Change Notice 8-1.

b. Observations and Findings

In preparation for system breach work associated with HPSI Pump 2P018, operators removed the pump from service in accordance with Procedure SO23-3-2.7, Attachment 3. The procedure required that the system be drained and directed that a vent path be established at Suction Vent Valve S21204MR430 and a drain path be established, with a hose to a floor drain, at Discharge Drain Valve S21204MR104. The procedure further directed, after water stopped flowing from the discharge drain valve, that the pump casing drain be unsealed to allow the remaining water to drain into the pump berm. WAR 2-9902319 directed that the vent and drain valves then be tagged open. These actions were accomplished as required.

When Maintenance technicians loosened the flange for the suction relief valve, water began to gush at a high rate from pump casing drain. The potentially-contaminated water overshot the pump berm and splattered on the floor, wetting approximately half of the room. Water also overflowed the berm, which was posted as a contaminated area. A Health Physics technician was covering the job. He promptly took wet swipes and determined that the water was not contaminated above acceptable limits, and that the personnel who got wet from the splatter did not become contaminated. The technician observed that the swipes were not very accurate because of the shielding effects of the water. Maintenance personnel, who were not dressed in anticontamination clothing, donned plastic booties and rubber gloves and attempted to use absorbent materials to soak up the water outside the berm, but they were unprepared for the volume of leakage. After approximately 20 minutes, the Health Physics technician directed that the original relief valve be tightened, which resulted in the flow rate rapidly diminishing. Additional absorbent materials were obtained and the Health Physics technician expanded the contaminated area posting to encompass the wetted area.

The inspectors left the area and determined that neither operations or Health Physics supervision had been notified of the unexpected conditions. Because the Health Physics technician had determined that radiological conditions were acceptably controlled, the licensee determined that Health Physics supervision did not need to be promptly notified. Licensee management expectation was that Operations should have been notified.

As of the end of the inspection period, the licensee had not determined the cause of the failure of the system to drain as expected, although some potential causes had been

identified. One probable cause was that operators had attached a hose to the pump suction vent. Use of a hose was not discussed in the procedure, but its use was intended, as a good practice, to direct the small volume of water in the vent line to a floor drain. However, the hose was fairly long and coiled up on the floor and apparently contained enough residual water from previous usage that it prevented the vent path from properly functioning. Licensee procedures did not specifically require operators to verify that the system drained as expected or to verify that the volume drained was consistent with the volume that should have been drained by the draining alignment. Other potential causes were that water in the suction tubing could have interfered with the siphoning and the Kerotest vent valve may have functioned unacceptably as it was designed to pass flow in the other direction. The operators' performance was weak in that the vent and drain path was not verified to function as expected.

Although the WAR included a warning that the piping system may not be completely drained, the licensee personnel involved expected that the systems would have been substantially drained prior to the system being released to Maintenance for work. The procedures and WAR were determined to be adequate for the task being performed.

The licensee documented the event in AR 991000553. As a corrective action, the licensee planned to revise Procedure SO123-XX-5 to ensure that hoses are not generally connected to vent paths. Additionally, Operations planned to perform volumetric estimates of systems being drained so that sump level changes could be used to assess the effectiveness of draining evolutions.

c. Conclusions

Operator performance in draining the piping associated with swing HPSI Pump 2P018 was weak in that the vent and drain path was not verified to function as expected. When maintenance activities commenced, a large volume of potentially contaminated water unexpectedly gushed from the pump casing drain and flooded a large portion of the pump room floor. Operations communications regarding the occurrence were weak in that control room personnel were not notified in a timely manner. Health Physics' response to the spill of potentially contaminated water was adequate.

M4 Maintenance Staff Knowledge and Performance

M4.1 Linestarters - Units 2 and 3

a. Inspection Scope (62707)

The inspectors reviewed the circumstances surrounding misaligned 480 V circuit breaker linestarters, ARs 990900517 and 990900647, and Maintenance Order 95110691. The inspectors observed inspection of the breakers and realignment of linestarters.

b. Observations and Findings

On September 11, 1999, the licensee identified that the interlock mechanism for the reversing linestarter for Unit 2 Breaker 2BY35, the saltwater from component cooling water Heat Exchanger 2HV6497 feeder breaker, was sticking. An investigation revealed that a misalignment between the reversing interlock mechanical mechanism and the operating coil mechanism caused the problem.

The licensee had replaced the linestarter associated with Breaker 2BY35 in November 1997 as a result of a previous licensee-identified issue concerning galling of the sliding cams on the interlocks. The inspectors reviewed Maintenance Order 95110691 that was used to replace the linestarter for Breaker 2BY35 and found that the instructions in the maintenance order for replacing the linestarter were inadequate. The maintenance order instructions did not provide guidance regarding alignment of the coils.

10 CFR Part 50, Appendix B, Criterion V, states, in part, that activities affecting quality shall be prescribed by documented instructions of a type appropriate to the circumstances. The failure of the licensee to provide appropriate documented instructions to Maintenance personnel during the replacement of a linestarter that ultimately caused a breaker malfunction was a violation of 10 CFR Part 50, Appendix B, Criterion V. This Severity Level IV violation is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy (NCV 50-361/9915-02). This violation was in the licensee's corrective action program as AR 990900647.

The licensee had previously replaced the linestarters in 172 breakers (86 breakers per unit) and, therefore, inspected all 172 breakers for potential misalignment. Each breaker had an open and a close coil attached to the reversing interlock Mechanical mechanism. When finding a misaligned coil, the licensee performed an as-found test to determine past operability. In all cases, other than the initial failure, the linestarters passed the as-found test. The licensee then realigned the linestarters and performed an as-left test. The licensee found an additional 19 breakers in Unit 2 and 19 breakers in Unit 3 that had misaligned coils. Five of the breakers had both the open and close coil misaligned. In conclusion, 44 coils were misaligned out of a total of 344 coils. One failure, the initial failure, was identified.

c. Conclusions

A violation of 10 CFR Part 50, Appendix B, Criterion V, resulted from the failure of the licensee to provide appropriate documented instructions to Maintenance personnel during the replacement of a linestarter that ultimately caused a breaker malfunction. In addition to the malfunctioned breaker, 38 of 172 breakers had misaligned linestarter coils as a result of the inadequate instructions. This Severity Level IV violation is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy. This violations was in the licensee's corrective action program as AR 990900647.

M8 Miscellaneous Maintenance Issues (92700)

M8.1 (Closed) Licensee Event Report (LER) 361; 362/1999-004-00: automatic toxic gas isolation system (TGIS) actuation.

The inspectors reviewed the circumstances regarding the July 8, 1999, TGIS actuation, documented in LER 50-361/1999-004-00; 50-362/1999-004-00. The inspectors reviewed the maintenance history of the sample pumps as documented in several maintenance orders and discussed the cause of the event, documented in AR 990300146, with Station Technical and Maintenance personnel.

This LER described an actuation of the Train B TGIS. The actuation was caused by freon gas entering the suction of the toxic gas analyzer sample pump, which is located on the 9-foot level of the control building. Freon gas was released into a hallway on the 9-foot level of the control building when a maintenance technician vented a hose that had been used for emergency chiller maintenance. The freon gas registered as elevated ammonia levels because of the sensitivity of the toxic gas analyzer to the freon gas. This caused the detector to indicate elevated ammonia levels and to generate the TGIS.

By design, the toxic gas analyzer sample pump takes a suction from a control room air intake duct located on the 30-foot level of the turbine building. However, loose bolts securing the sample pump air intake chamber allowed air to be drawn into the sample pump suction locally from the 9-foot level. This identified inleakage led the licensee to question previous actuation setpoints. The leak on the sample pump suction provided for a dilution of the sample air from the control room intake. In the LER, the licensee concluded that TGIS actuation set points were effectively raised above set point limits specified in Licensee-Controlled Specification 3.3.101 for butane and ammonia because of the sample pump suction dilution.

The inspectors reviewed 1998 and 1999 Train B TGIS sample pump maintenance history. The inspectors could not establish when the bolts securing the sample pump air intake chamber became loose. Consequently, no violation for failing to comply with the required actions of Licensee-Controlled Specification 3.3.101, for one train of TGIS inoperable, was identified. To prevent recurrence of this problem, the licensee incorporated a puff test to check for local pump suction leakage during the monthly surveillance. The licensee also planned to change the diaphragms in the TGIS sample pumps to a Teflon material and to use a metallic diaphragm plate to enhance diaphragm durability. The inspectors determined that the licensee's corrective actions were comprehensive.

III. Engineering

E8 Miscellaneous Engineering Issues (92903)

E8.1 (Closed) Unresolved Item 361/99012-03: unaccounted for loss of Unit 2 RCP 2P004 oil

a. Inspection Scope

This unresolved item was opened to monitor licensee resolution of unaccounted for the Unit 2 RCP 2P004 oil loss and to determine the safety significance of a deficiency in the RCP 2P004 oil collection system. The inspectors observed licensee personnel install a temporary sight glass on the RCP 2P004 oil collection tank to confirm tank level. The inspectors discussed this issue with Station Technical and Maintenance personnel and reviewed Maintenance Order 99070449, the instruction used to add oil to RCP 2P004.

b. Observations and Findings

Since Unit 2 startup from refueling in February 1999, RCP 2P004 lower motor bearing oil reservoir level had been lowering, necessitating containment entries and additions to the oil reservoir. During oil additions, the inspectors had observed standing oil on the floor below the pump and on horizontal lagging surfaces; oil that was not captured by the oil collection system. There were three instances in which oil had been flung out by the rotating pump motor shaft as a result of overfilling the lower oil reservoir. In addition, when the licensee read the level in the associated oil collection system tank using an installed sight glass, and compared the amount of oil in the tank with the amount of oil added to the reservoir, approximately 14 gallons less oil was in the tank than had been expected.

On October 6, 1999, the inspectors observed licensee personnel install a temporary sight glass on the RCP 2P004 oil collection tank. The temporary sight glass was installed on a drain line from the tank and indicated approximately 9½ inches of oil from the bottom of the drain line. Using a scale of 5 gallons of oil equaling approximately 1 inch of tank level, this represented approximately 47 gallons of oil that was captured in the oil collection tank from unknown leakages. Between refueling startup and October 6, 1999, the licensee had added approximately 45 gallons of oil. During this evolution, the normal sight glass was placed in service and indicated no appreciable oil level; the sight glass had been obstructed in some manner. Consequently, the inspectors found that the previously unaccounted for oil loss was actually being captured by the oil collection system. The exact source of the oil leakage was not observed. A detailed walkdown of possible leakage sites associated with the lower oil bearing reservoir was not practical as a result of high radiation levels in the area.

During the October 6, 1999, temporary sight glass installation, the inspectors again observed standing oil on the floor beneath the pump, on horizontal lagging surfaces, on structural supports, and oil caked on the top of the seal package. As described in NRC Inspection Report 50-36/99-12; 50-362/99-12, Section E2.1, overfilling the lower motor bearing oil reservoir resulted in a small amount of oil being flung out from the motor

shaft. Oil not captured by the oil collection system represented a violation of 10 CFR Part 50, Appendix R, Section III.O. The safety significance of the standing oil was low because, as described in the same inspection report, the amount was below acceptable fire loading for the space, fire detection and suppression equipment were available in the area, and safe shutdown of Unit 2 was analyzed given a fire at this location. This Severity Level IV violation is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy (NCV 50-361/9915-03). This violation was in the licensee's corrective action program as AR 990300146. The corrective action was to decrease the amount of oil added during periodic oil additions to avoid overfilling the oil reservoir, thereby, administratively preventing the leakage.

c. Conclusions

A violation of 10 CFR Part 50, Appendix R, Section III.O, occurred because the oil collection system for a Unit 2 RCP was not collecting oil that occasionally leaked from the pump motor when the lower motor oil bearing reservoir was overfilled. The oil collection system was only determined to be deficient while the system was being operated without sufficient controls to prevent overfilling. Fire loading limits were not exceeded. This Severity Level IV violation is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy. This violation was in the licensee's corrective action program as AR 990300146.

E8.2 (Closed) Inspection Followup Item 50-361/98014-04; 50-362/98014-04: review licensee's determination of the differences in stroke time during the static and dynamic testing of air-operated valves.

This item was generated to review the licensee's determination of the cause of the differences in closing stroke times during static and dynamic testing of air-operated valves. Specifically, the component cooling water noncritical loop, 28-inch, air-operated butterfly supply and return valves closed significantly slower during a special test performed at power in September 1998 under flow conditions than the inservice tests conducted with no flow during shutdown.

The inspectors reviewed AR 981201116, dated December 18, 1998, which addressed this issue. The licensee determined that, in September 1998, the valves were tested under normal conditions and not by an induced containment isolation actuation signal. During normal sequencing of the noncritical loop valves, when critical trains are swapped, the valves in one train go to the closed position after receiving a permissive logic signal from the other train's valves as they are being opened. This means that the closure time for one train's valves includes whatever time delay that was built into the permissive logic signal. During a containment isolation actuation signal, both trains of noncritical loop valves would go closed so there would be no time delay from a permissive logic signal. The licensee determined that the slower response time observed in September 1998 was caused by the additional time delay from the permissive.

The inspectors reviewed test data from the tenth refueling outage and found that the Unit 2 and 3 valves closed well within the Technical Specifications 20.9-second closure

time requirement. The valves were tested under flow and no flow conditions. Closing times were measured from the control room by remote indication and locally using a stop watch. The inspectors noted that all the test results were well within the 20.9-second requirement. The inspectors determined that test method used in the September 1998 test did not accurately measure the closing time of the component cooling water noncritical loop isolation valves because the permissive time delay was not measured. However, meeting the test acceptance criterion conservatively ensured that the valves were within the 20.9-second requirement. Therefore, the test method was acceptable and conservative.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the exit meeting on November 2, 1999. The licensee acknowledged the findings presented, and provided some clarification regarding the potential causes of the HPSI pump maintenance activity discussed in Section M1.4, which has been subsequently incorporated.

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

ATTACHMENT

PARTIAL LIST OF PERSONS CONTACTED

Licensee

D. Brieg, Manager, Station Technical
J. Fee, Manager, Maintenance
R. Krieger, Vice President, Nuclear Generation
J. Madigan, Manager, Health Physics
D. Nunn, Vice President, Engineering and Technical Services
A. Scherer, Manager, Nuclear Regulatory Affairs
K. Slagle, Manager, Nuclear Oversight
T. Vogt, Units 2 and 3 Plant Superintendent, Operations
R. Waldo, Manager, Operations

INSPECTION PROCEDURES USED

IP 37551:	Onsite Engineering
IP 61726:	Surveillance Observations
IP 62707:	Maintenance Observations
IP 71707:	Plant Operations
IP 71750:	Plant Support Activities
IP 92700:	On Site LER Review
IP 92903:	Followup - Engineering
IP 93702:	Prompt Onsite Response to Events at Operating Power Reactors

ITEMS OPENED AND CLOSED

Opened and Closed

362/99015-01	NCV	failure to follow breaker operations procedure (Section O4.1)
361/99015-02	NCV	inadequate instructions for linestarter maintenance (Section M4.1)
361/99015-03	NCV	inadequate RCP motor oil collection system during abnormal operation (Section E8.1)

Closed

361; 362/1999-004-00	LER	TGIS actuation (Section M8.1)
361/99012-03	URI	unaccounted for loss of Unit 2 RCP 2P004 oil (Section E8.1)

361; 362/98014-04	IFI	review licensee's determination of the differences in stroke time during the static and dynamic testing of air-operated valves (Section E8.2)

LIST OF ACRONYMS USED

AR	action request
CFR	Code of Federal Regulations
EDG	emergency diesel generator
HPSI	high pressure safety injection
LER	licensee event report
NRC	Nuclear Regulatory Commission
RCP	reactor coolant pump
SWC	saltwater cooling
TGIS	toxic gas isolation signal
WAR	work authorization record