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

July 21, 2003

Garry L. Randolph, Senior Vice
President and Chief Nuclear Officer
Union Electric Company
P.O. Box 620
Fulton, Missouri 65251

SUBJECT: CALLAWAY PLANT - NRC INTEGRATED INSPECTION REPORT 05000483/2003004

Dear Mr. Randolph:

On June 21, 2003, the NRC completed an integrated inspection at your Callaway Plant. The enclosed report documents the inspection findings which were discussed on June 20, 2003, with Mr. M. Evans, Manager, Nuclear Engineering, 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 two issues that were evaluated under the risk significance determination process as having very low safety significance (Green). The NRC has also determined that violations are associated with these issues. These violations are being treated as noncited violations (NCVs), consistent with Section VI.A of the Enforcement Policy. These NCVs are described in the subject inspection report. Two licensee-identified violations which were determined to be of very low safety significance are listed in Section 4OA7 of this report. If you contest the violations or significance of these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 611 Ryan Plaza Drive, Suite 400, Arlington, Texas 76011; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Callaway Plant facility.

Since the terrorist attacks on September 11, 2001, NRC has issued five Orders and several threat advisories to licensees of commercial power reactors to strengthen licensee capabilities, improve security force readiness, and enhance controls over access authorization. In addition to applicable baseline inspections, the NRC issued Temporary Instruction 2515/148, "Inspection of Nuclear Reactor Safeguards Interim Compensatory Measures," and its subsequent revision, to audit and inspect licensee implementation of the interim compensatory measures required by

order. Phase 1 of TI 2515/148 was completed at all commercial power nuclear power plants during Calender Year 2002. The NRC will continue to monitor overall safeguards and security controls at Callaway Plant.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records 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/

David N. Graves, Chief
Project Branch B
Division of Reactor Projects

Docket: 50-483
License: NPF-30

Enclosure:
NRC Inspection Report
05000483/2003004
w/attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket:	50-483
License:	NPF-30
Report:	05000483/2003004
Licensee:	Union Electric Company
Facility:	Callaway Plant
Location:	Junction Highway CC and Highway O Fulton, Missouri
Dates:	March 23 through June 21, 2003
Inspectors:	M. S. Peck, Senior Resident Inspector J. D. Hanna, Resident Inspector G. A. Pick, Physical Security Inspector R. E. Lantz, Senior Emergency Preparedness Inspector P. J. Elkmann, Emergency Preparedness Inspector P. A. Goldberg, Senior Reactor Inspector
Approved By:	D. N. Graves, Chief, Project Branch B

Enclosure

SUMMARY OF FINDINGS

IR 05000483/2003004; 03/23 - 06/21/2003; Callaway Plant. Identification and Resolution of Problems and Event Followup.

This report covered a 13-week period of inspection by resident inspectors and announced inspections by regional physical security, emergency preparedness, and reactor inspectors. Two findings of significance were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter 0609, "Significance Determination Process." Findings for which the significance determination process does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG - 1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. Inspector Identified Findings

Cornerstone: Mitigating Systems

- Green. The inspectors concluded that voiding of the containment spray suction header occurred on two occasions during the inspection period. The voiding occurred because the licensee failed to properly fill and vent the suction piping following maintenance. The inspectors concluded that this condition was a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, and was a finding of very low safety significance.

  This finding had actual safety significance because the condition resulted in repeated air voiding of a safety-related pump. This finding was greater than minor because it was similar to Example 2C of Appendix E of Inspection Manual Chapter 0612 (i.e., a repetitive issue involving degradation of a safety-related pump). This finding was of very low safety significance because the condition was not a design or qualification deficiency, did not represent the actual loss of a safety function of a system, did not represent the actual loss of a safety function of a single train for greater than its Technical Specification allowed outage time, did not represent the loss of a non-Technical Specification related train for greater than 24 hours, or did not screen as potentially risk significant due to a seismic, fire, flooding, or severe weather initiating event (Section 4OA2).

- Green. The inspectors concluded that the pressurizer safety valve seat leakage, and subsequent plant shutdown, was the result of incorrect valve reassembly during the previous refueling outage. The inspectors concluded that this condition was a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, and a finding of very low safety significance.

  This finding was greater than minor because it was associated with the mitigating system equipment performance cornerstone attributes and it affected the availability/reliability cornerstone objective. This finding was of very low safety significance because the condition was not a design or qualification deficiency, did not represent the actual loss of a safety function of a system, did not represent the actual

loss of a safety function of a single train for greater than its Technical Specification allowed outage time, did not represent the loss of a non-Technical Specification related train for greater than 24 hours, or did not screen as potentially risk significant due to a seismic, fire, flooding, or severe weather initiating event (Section 4OA3).

B. Licensee Identified Violations

Violations of very low safety significance, which were identified by the licensee, have been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. These violations and corrective action tracking numbers are listed in Section 4OA7.

REPORT DETAILS

Summary of Plant Status:

At the beginning of the inspection period, the plant was shut down to repair a leaking pressurizer safety valve. The licensee restarted the unit and reached full power on April 2, 2003. The unit remained at full power for the remainder of the inspection period.

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

1R04 Equipment Alignment (71111.04)

a. Inspection Scope

Partial System Walkdowns. The inspectors performed four partial system walkdowns during the inspection period. On April 9, 2003, the inspectors walked down Train B of the vital 125 volt dc system, while the redundant train was out of service for maintenance. On April 21 and 24 the inspectors walked down Train A of the emergency diesel generator while the redundant train was out of service for maintenance. On May 6, the inspectors walked down both motor-driven auxiliary feedwater (AFW) trains following the unplanned inoperability of the turbine-driven AFW pump. On May 13 and 15, the inspectors walked down Train A of the high head safety injection system while the redundant train was removed from service for maintenance. In each case, the inspectors checked for correct component alignment and evaluated operability by comparing the selected equipment to the procedures and drawings listed in the attachment and applicable sections of the Final Safety Analysis Report (FSAR).

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Routine Fire Protection Walkdowns

a. Inspection Scope

The inspectors walked down the accessible portions of the six areas described below to assess the licensee's control of transient combustible materials and ignition sources, fire detection and suppression capabilities, fire barriers, and any related compensatory measures. As part of the inspection, the inspectors reviewed commitments described in FSAR Section 9.5.1, "Fire Protection System," and Appendix 9.5B, "Fire Hazard Analysis," to determine requirements for fire protection design features, fire area boundaries, and combustible loading requirements. Documents reviewed during the inspection are listed in the attachment.

- Fire Areas C-15 and C-16, north and south battery and switchboard rooms, and Fire Areas C-17 and C-18, north and south vertical cable chase rooms, completed on April 9, 2003
- Fire Area RB, reactor building, completed on April 10, 2003
- Fire Areas C-22 and C-23, upper and lower cable spreading rooms, completed on April 10, 2003
- Fire Area C-1, essential service water piping room, completed on April 20, 2003
- Fire Area A-21, control room air conditioning and filtration units Room B, completed on April 22, 2003
- Fire Area A-27, load center and motor generator set room, completed on April 21-22, 2003

b. Findings

No findings of significance were identified.

.2 Fire Drill Observation

a. Inspection Scope

On May 5, 2003, the inspectors observed an unannounced fire drill. The purpose of the drill was to evaluate the fire brigade's response to a fire using foam as a firefighting agent. The simulated fire occurred outside the power block buildings at the startup transformer. The inspectors observed the drill to evaluate fire brigade members don protective clothing, enter the fire area, and utilize fire preplan strategies. The inspectors evaluated the fire brigade and control room communications and whether sufficient firefighting equipment was available. The fire drill was conducted using fire drill Scenario 03A02, which the inspectors reviewed for objectives and acceptance criteria. The inspectors also reviewed the results of the critique subsequent to the fire drill. Critique items were documented in Callaway Action Request (CAR) 200303668.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

The inspectors completed walkdowns of the auxiliary building safety injection pump rooms between April 28 and May 8, 2003. The inspectors conducted the walkdowns to

verify that the licensee implemented adequate equipment flood protection, including electrical conduits and wall penetrations. The inspectors also walked down the common drain system and sumps to verify sump pumps, level alarms, and control circuits were operable. The inspectors used Request for Resolution 16409, "Watertight Door Matrix," November 14, 1996, and FSAR Section 3.4, "Water Level Flood Design," as the bases for acceptability of the plant configuration.

b. Findings

No findings of significance were identified.

1R07 Biennial Heat Sink Performance (71111.07B)

.1 Performance of Testing, Maintenance, and Inspection Activities

a. Inspection Scope

The inspectors reviewed the licensee's test and cleaning methodology for the residual heat removal heat exchanger, the component cooling heat exchanger, and the safety injection, containment spray, and residual heat removal pump room coolers. In addition, the inspectors reviewed test data for the heat exchangers and design and vendor-supplied information to assure that the heat exchangers were performing within their design bases. The inspectors also reviewed the heat exchanger inspection and test results. Specifically, the inspectors assessed extrapolation of test conditions to design conditions to assure appropriate use of test instrumentation and appropriate accounting for instrument inaccuracies. Additionally, the inspectors reviewed documentation to assure that the licensee appropriately trended these inspection and test results, assessed the causes of the trends, and took necessary actions for any step changes in these trends. The inspectors reviewed the methods and results of heat exchanger inspection and cleaning to assure that the methods used to inspect and clean the components were consistent with industry standards and as-found results were appropriately dispositioned such that the final condition was acceptable.

b. Findings

No findings of significance were identified.

.2 Verification of Conditions and Operations Consistent with Design Bases

a. Inspection Scope

For the selected heat exchangers, the inspectors reviewed the licensee-established heat sink and heat exchanger condition, operation, and test criteria to assure they were consistent with the design assumptions. Specifically, the inspectors reviewed the applicable calculations to assure that the thermal performance test acceptance criteria

for the heat exchangers were being applied consistently throughout the calculations. The inspectors also reviewed the appropriate acceptance values for fouling and tube plugging for the component cooling water heat exchangers to assure they remained consistent with the values used in the design-basis calculations. Finally, the inspectors reviewed the parameters measured during the thermal performance tests for the component cooling water heat exchangers to assure they were consistent with those assumed in the design bases.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalifications (71111.11)

a. Inspection Scope

The inspectors observed a licensed operator training exercise to assess operator performance and the scenario critique. The inspectors placed an emphasis on observing high-risk operator actions, activities associated with the emergency plan, lessons learned items, and plant operational experiences. The inspectors observed licensed operator continued training examination Scenario URO-SGK-01, “Steam Generator Tube Rupture (SGTR),” on May 9, 2003.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation (71111.12)

a. Inspection Scope

The inspectors reviewed the licensee's implementation of the maintenance rule to assess the effectiveness of maintenance efforts. The inspectors performed the review to verify that the licensee used appropriate structure and component scoping, characterization, safety significance, performance criteria, goals, and corrective actions. The inspectors compared the April 9, 2003, expert panel meeting minutes and Maintenance Rule Status Report, November 26, 2002, through March 31, 2003, against the criteria in Regulatory Guide 1.160, "Monitoring the Effectiveness of Nuclear Power Plants," Revision 2. The inspectors reviewed the following components:

- Turbine-driven AFW pump exceeded maintenance rule performance criteria (CAR 200302861)

- Turbine-driven AFW pump steam supply warm-up valves found closed, a maintenance preventable functional failure (CAR 200300381)

- Class 1E air conditioner inadvertently secured, a maintenance preventable functional failure (CAR 200300856)

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors completed in-office reviews and control room inspections of the licensee's risk assessment of four emergent or planned maintenance activities. The inspectors compared the licensee's risk assessment and risk management activities against the requirements of 10 CFR 50.65(a)(4); the recommendations of Nuclear Management and Resource Council 93-01, "Industry Guidelines for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Revision 3; and Engineering Department Procedure EDP-ZZ-01129, "Callaway Plant Risk Assessment," Revision 2. The inspectors also reviewed the effectiveness of the licensee's contingency actions to mitigate increased risk resulting from the degraded equipment. The inspectors evaluated the following risk assessments during the inspection:

- Surveillance S703293 and Operations Surveillance Procedure OSP-EJ-V001A. The inspectors reviewed the licensee's risk mitigation and compensatory measures from the control room on April 8, 2003.

- Unplanned inoperability of the turbine-driven AFW pump as described in CAR 200302960. The inspectors verified the licensee's risk mitigation and compensatory measures from the control room on April 14, 2003.

- Unplanned inoperability of the turbine-driven AFW pump Steam Generator B atmospheric power-operated relief valve, as described in CAR 200303427. The inspectors verified the licensee's risk mitigation and compensatory measures from the control room on May 2, 2003.

- Surveillance S705148 and Operations Surveillance Procedure OSP-EJ-V001B. The inspectors reviewed the licensee's risk mitigation and compensatory measures from the control room on May 13, 2003.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed four operability evaluations to verify that the licensee properly justified that components and systems remained available. The inspectors compared the technical adequacy of the determinations to the Technical Specifications, the FSAR, and associated design-basis documents.

- CAR 200302445, operability determination, foreign material in the essential service water system. The inspectors completed an in-office review and walkdown of AFW and component cooling water systems on April 3, 2003.

- CAR 200302806, operability determination, containment particulate radiation monitor detection of reactor coolant leakage. The inspectors completed an in-office review on April 8, 2003.

- CAR 200302575, operability determination, temporary spent fuel cooling pump motor unqualified. The inspectors completed an in-office review on April 15, 2003.

- CAR 200303221, operability determination, condensate monitoring system not collecting a fraction of the total containment cooler condensate. The inspectors completed an in-office review on May 21, 2003.

b. Findings

No findings of significance were identified.

1R16 Operator Workarounds (71111.16)

a. Inspection Scope

The inspectors reviewed the April 2003 operator workaround list and the effect on the plant emergency operating procedures. The inspectors completed the review to verify that the cumulative effect of workarounds did not challenge operators' response to plant transients and events. The inspectors also attended the operator workaround review meeting conducted on April 9, 2003.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications Annual Review (71111.17A)

a. Inspection Scope

The inspectors reviewed Calculation GT-13, “GTRE31/32 Gaseous Channel Response to a Low Activity Primary Coolant Leak,” Revision 0, and Calculation GT-12, GT31/32 "Particulate Channel Response to a Low Activity Primary Coolant Leak," Revisions 0 and 1. The licensee performed the calculations to establish appropriate radiation monitor setpoints to meet reactor coolant system (RCS) Technical Specification leak detection requirements. Technical Specification 3.4.15, “RCS Leakage Detection Instrumentation,” required both the gaseous and particulate channels to detect a one gallon per minute RCS leak within one hour in accordance with Regulatory Guide 1.45, “Reactor Coolant Pressure Boundary Leakage Detection Systems.” The inspectors reviewed the calculations to verify that components met functional requirements under accident conditions and that detector response times were consistent with the design.

b. Findings

Calculation GT-13, “GTRE31/32 Gaseous Channel Response to a Low Activity Primary Coolant Leak,” modeled radionuclide transport from an RCS leak to the containment radiation monitor. The calculation demonstrated detector alarm response resulting from a one gallon per minute RCS leak. Technical Specification 3.4.15, “RCS Leakage Detection Instrumentation,” stated that the monitor was required to detect a one gallon per minute RCS leak within one hour in accordance with Regulatory Guide 1.45. Also, NUREG 0830, “Safety Evaluation Report Related to the Operation of Callaway Plant, Unit 1,” stated that the basis of NRC acceptance was that the design met the requirements of Regulatory Guide 1.45. Regulatory Guide 1.45 stated that "a realistic primary coolant radioactivity concentration assumption should be used" to demonstrate that the monitor can detect "leakage increase in one hour or less."

The licensee assumed that a primary coolant radioactivity concentration equivalent to 0.1 percent failed fuel in Calculation GT-13. Technical Specification 3.4.16, “RCS Specific Activity,” restricted reactor operation to primary coolant radioactivity concentration of dose equivalent iodine to less than 1.0 mirocurie per gram. The licensee also imposed additional dose equivalent iodine administrative limits of 0.3 mirocuries per gram as compensatory action following identification of discrepancies in the SGTR accident analysis. FSAR Table 11.1-1, “Reactor Coolant and Secondary Coolant Specific Activities 0.12 percent Fuel Defects,” predicts the dose equivalent iodine at about 1.0 mirocuries per gram with 0.12 percent fuel failure. Historically, the plant has operated at less than 0.003 mirocuries per gram dose equivalent iodine. The licensee has consistently operated the plant with less than 0.1 percent failed fuel. The licensee’s use of an assumed source term equivalent to 0.1 percent failed fuel was inconsistent with the Regulatory Guide 1.45 requirement to use a realistic primary coolant radioactivity concentration. As a result, Calculation GT-13 did not demonstrate

that the containment radiation monitor met Technical Specification operability requirements. This issue will be unresolved pending additional review by the NRC (URI 50-483/03-04-01).

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed eight postmaintenance tests that could potentially affect risk significant systems or components. The inspectors completed an in-office review to verify that each test adequately demonstrated system operability and capability. The inspectors used Technical Specifications, the FSAR, and ASME Section XI to determine system and component requirements. The inspectors' review included the following postmaintenance tests:

- Retests R220212A, R69743A, and R222384A, component cooling water pump and motor repair, on February 3, 2003
- Retest R673592A, emergency diesel Generator B voltage waveform measurement, on May 30, 2003
- Retest R227700A, main feedwater regulating Valve B, Operational Test OTS-AE-T1000, Revision 0, performed on April 15, 2003
- Retest R226653A, seal table leak inspection, observed on April 2, 2003
- Retest R22524A, repair of AFW level control Valve ALHV-0006, performed on April 15, 2003
- Retest R229222A, repair of steam generator blowdown sample isolation Valves BMHV0020, -36, and -66
- Retests R705959 and R224560, repair of component cooling water outboard containment isolation Valve EGHV0061 operability determination
- Retest R563170A, operability verification following maintenance on circuit breaker supplying power to Valve EFHV0025, performed on June 17, 2003

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities (71111.20)

a. Inspection Scope

The inspectors evaluated and observed selected activities during a scheduled outage to verify that the licensee considered plant risk in developing outage schedules and adhered to operating license and Technical Specification requirements. The outage was to correct problems identified with a leaking Train B pressurizer safety valve. The inspectors observed portions of the reactor cooldown, from the control room, on March 22, 2003, to verify that Technical Specification limits were not exceeded. The inspectors compared the plant cooldown conditions they observed against Procedure OSP-BB-0007, "Reactor Coolant System Heatup and Cooldown Limitations," Revision 6. The inspectors attended daily outage meetings and observed the control of outage activities to verify that the licensee maintained defense-in-depth commensurate with the outage risk control plan. The inspectors compared the licensee's evaluation of emergent work risk with Procedure EDP-ZZ-1129, "Callaway Plant Risk Assessment," Revision 0 and NUMARC 91-06, "Guidelines for Industry Actions to Assess Shutdown Management." The inspectors observed reactor heatup and restart from the control room on April 1 and 2, 2003. The inspectors reviewed operations to verify that Technical Specifications, license conditions, and other requirements, commitments, and administrative procedure prerequisites for mode changes were met.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors observed or reviewed the following three surveillance tests to verify that the systems tested were capable of performing their safety function and to assess their operational readiness. Specifically, the inspectors verified that the following surveillance tests met Technical Specifications, ASME Section XI test requirements, the FSAR, and licensee procedural requirements:

- Surveillance P706331, monthly containment inspection, observed by the inspectors on April 10, 2003

- Surveillance S706705, Instrument Surveillance Procedure ISF-NF-00002, NF039B Relay Driver Test, Revision 1, completed on April 16, 2003

- Surveillance S706951, standby diesel Generator B start and one-hour load test, observed by the inspectors on April 23, 2003

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

The inspectors completed a review of Temporary Modification TM-03-0003, the temporary spent fuel pool cooling motor, and the supporting safety evaluation. The inspectors compared the temporary modification package against the requirements established in Administrative Procedure APA-ZZ-00605, "Temporary System Modifications," Revision 14, and system requirements contained in FSAR Section 9.1.3. The inspectors completed an in-office review and a fuel building walkdown verification of system restoration on April 14, 2003.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP1 Exercise Evaluation (71114.01)

a. Inspection Scope

The inspectors reviewed the objectives and scenario for the 2003 biennial emergency plan exercise to determine if the exercise would acceptably test major elements of the emergency plan. The scenario simulated a loss of control room annunciators, failures of plant cooling water pumps, a large reactor coolant system leak, subsequent loss of containment integrity, and a release of radioactive materials to the environment.

The inspectors evaluated exercise performance by focusing on the risk-significant activities of classification, notification, protective action recommendations, and offsite dose consequences in the simulator control room and in the following dedicated emergency response facilities:

- Technical Support Center
- Operations Support Center
- Emergency Operations Facility

The inspectors also assessed personnel recognition of abnormal plant conditions, the transfer of emergency responsibilities between facilities, communications, protection of emergency workers, emergency repair capabilities, and the overall implementation of the emergency plan.

The inspectors attended the April 15, 2003, postexercise critiques in each of the above facilities to evaluate the initial licensee self-assessment of exercise performance. The inspectors also attended the April 17, 2003, preliminary presentation of the exercise evaluation results to plant management.

b. Findings

No findings of significance were identified.

3. SAFEGUARDS
Cornerstones: Physical Protection

3PP4 Security Plan Changes

a. Inspection Scope

The inspectors conducted an in-office review of Physical Security Plan, Revision 35, dated February 21, 2003, to determine if the change decreased the effectiveness of the Physical Security Plan and to determine if requirements of 10 CFR 50.54(p) were met. This change implemented military work experience background checks.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

a. Inspection Scope

The inspectors sampled licensee submittals for the performance indicators (PIs) listed below for the period from October 2002 through March 2003. To verify the accuracy of the PI data reported during that period, PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Indicator Guideline," Revision 2, were used to verify the basis in reporting for each data element.

Reactor Safety Cornerstone

- High pressure injection safety system unavailability
- Safety system functional failures
- Drill and exercise performance
- Emergency response organization participation
- Alert and notification system unavailability

The inspectors reviewed a selection of licensee event reports (LERs), portions of operator log entries, daily morning reports, the monthly operating reports, and PI data sheets to determine whether the licensee adequately identified the number of safety system functional failures and the number of unavailable hours for the high pressure injection system that occurred in the previous two quarters. This number was compared to the number reported for the PI during the current quarter. In addition, the inspectors also interviewed licensee personnel associated with PI data collection, evaluation, and distribution.

4OA2 Identification and Resolution of Problems (71152)

.1 Containment Spray Pump Air Voiding

a. Inspection Scope

The inspectors reviewed the licensee's response to unusual indications observed during a routine quarterly surveillance test of the Train B containment spray pump on May 22, 2003.

b. Findings

Introduction. The inspectors concluded that voiding of the containment spray suction header occurred on two occasions during the inspection period. The voiding occurred because the licensee failed to properly fill and vent the suction piping following maintenance. This deficiency also had the potential to cause gas voiding of the common suction header which supplies all of the emergency core cooling system (ECCS) pumps. The inspectors concluded that this condition was a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, and was a finding of very low safety significance.

Description. An NRC identified finding occurred on May 22, 2003, when the licensee performed a routine surveillance test of containment spray Pump B. While performing the test, unusual indications were observed for 5 minutes. These indications included low motor current, no discharge pressure, and very little flow noise through the piping. These symptoms were indicative of a pump that was "air bound." Five minutes after the initial start of the pump, all indications returned to normal. Operations reperformed the surveillance procedure, which then met all of the surveillance test requirements. The licensee initially believed the problem to have been caused by a plugged sensing line and declared the pump operable.

The inspectors inquired as to why this containment spray pump was operable, given that operations did not understand the cause of the problem or the extent of the condition (i.e., whether the opposite train equipment was affected by the condition). The inspectors also questioned whether other equipment was inoperable since a postulated air void in the pipe could have migrated to other equipment by rising upwards to the

ECCS common suction header. The licensee subsequently declared the train inoperable and commenced an investigation into the cause.

Based on a review of previous condition reports and test data, the licensee determined the containment spray system had been air voided on the following dates:

- April 29, 2003, for approximately 2 minutes. No adverse condition report had been written on this event.

- November 19, 1996, for approximately 2 minutes as described in CAR 199601814. The cause of this event was determined to be inadequate filling and venting following maintenance.

- October 19, 1995, for an unknown period of time as described in CAR 199501996. The cause was concluded to be a pressure indication problem (e.g., air bound sensing lines).

- July 5, 1995, for an unknown period of time as described in CAR 199501549. The cause of the discharge line movement and "banging" noise was attributed to normal operation of the system.

The licensee determined that these events had occurred due to inadequate filling and venting of the containment spray pump suction headers. The licensee determined that the gas binding event did not constitute a loss of safety function for the containment spray system. The licensee also concluded that there would be no effective change on the loading of the spray header due to the voiding during a postulated event. Operations and engineering personnel verified that damage to the containment spray pumps had not occurred and that the ECCS suction piping was properly filled.

Analysis. The inspectors concluded that the licensee's failure to properly fill and vent the containment spray pump suction headers was a performance deficiency. This finding was greater than minor because it was similar to Example 2C of Appendix E to Inspection Manual Chapter 0612 (i.e., a repetitive issue involving degradation of a safety-related pump). Because this finding involved the degradation of a mitigating system, the finding was evaluated using the significance determination process for at-power situations. The inspectors concluded the finding was only of very low safety significance because:

- it was not a design or qualification deficiency

- it did not represent the actual loss of a safety function of a system

- it did not represent the actual loss of a safety function of a single train for greater than its Technical Specification allowed outage time

- it did not represent the loss of a non-Technical Specification related train (designated as risk significant per 10 CFR 50.65 a(4)) for greater than 24 hours

- it did not screen as potentially risk significant due to a seismic, fire, flooding or severe weather initiating event

Enforcement. Title 10 of the Code of Federal Regulations, Part 50, Appendix B, Criterion XVI, "Corrective Action," required that "Measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies . . . are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition." Contrary to the above, the licensee failed to identify, correct, or preclude recurrence of the voiding of the containment spray suction piping. Because of the very low safety significance and the licensee's action to place the issue in their corrective action program (CAR 200303918), this violation is being treated as a noncited violation in accordance with Section VI.A.1 of the Enforcement Policy (50-483/0304-02).

.2 Heat Exchanger Inspection Identification and Resolution of Problems

a. Inspection Scope

The inspectors reviewed corrective action documents to assure that the licensee had entered significant heat exchanger/heat sink performance problems into the corrective action program.

b. Findings

No findings of significance were identified.

4OA3 Event Followup (71153)

1. Excessive Leakage of Train B Pressurizer Safety Valve

a. Inspection Scope

The inspectors observed control room personnel respond to unexpected high seat leakage from an RCS pressurizer safety valve. The leakage started immediately following startup after the Fall 2002 refueling outage and continued to gradually increase over 4 months. The inspectors monitored the plant response and operator actions to the leaking safety valve, including upstream and downstream piping temperatures, pressurizer level indication, and pressurizer relief tank temperatures.

b. Findings

Introduction. The inspectors concluded that the pressurizer safety valve seat leakage, and subsequent plant shutdown, was the result of incorrect valve reassembly during the previous refueling outage. The inspectors concluded this condition was a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, and a finding of very low safety significance.

Description. A self-revealing finding was identified when pressurizer safety Valve BB8010B unexpectedly commenced leaking past the valve seat immediately following Refueling Outage 12. The initial leakage rate was 0.03 gpm and steadily increased to 0.40 gpm over the 4 months following the outage. The licensee shut down the plant to repair the valve on March 21, 2003. The inspectors determined that the leak had challenged the operation of the plant. The valve leakage resulted in a constant increase of pressure relief tank temperatures and pressures, requiring frequent venting and cooling of the tank, the RCS and pressurizer boron concentration mismatch, and distraction to control room staff.

The licensee's investigation determined the cause of the failure to be an incorrectly installed inlet gasket on Valve BB8010B. Work Instruction P675814 replaced the valve with a pretested spare during Refueling Outage 12. The work instruction did not specify how to reinstall the valve to ensure the inlet gasket was not misaligned. The misalignment of the gasket caused additional stresses on the valve internals leading to the seat leakage.

Analysis. The inspectors concluded that the licensee's failure to properly install the pressurizer safety valve was a performance deficiency. This finding was greater than minor because it was associated with the mitigating system equipment performance cornerstone attributes and it affected the availability/reliability cornerstone objective. Because this finding involved the degradation of a mitigating system, the finding was evaluated using the significance determination process for at-power situations. The inspectors concluded that the finding was only of very low safety significance because:

- it was not a design or qualification deficiency
- it did not represent the actual loss of a safety function of a system
- it did not represent the actual loss of a safety function of a single train for greater than its Technical Specification allowed outage time
- it did not represent the loss of a non-Technical Specification related train (designated as risk significant per 10 CFR 50.65 a(4)) for greater than 24 hours
- it did not screen as potentially risk significant due to a seismic, fire, flooding, or severe weather initiating event

Enforcement. Title 10 of the Code of Federal Regulations, Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," required that "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances . . . instructions, procedure or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities that have been satisfactorily accomplished." Contrary to the above, the licensee's work instructions and procedures were inadequate to correctly install pressurizer safety Valve B. Because of the very low safety significance and the licensee's action to place the issue in their corrective action program (CAR 200301460), this violation is being treated as a noncited violation in accordance with Section VI.A.1 of the Enforcement Policy (50-3/0304-03).

2. (Closed) LER 50-483/03-002-00: Valve EGHV0061 inoperable for a time period greater than allowed by Technical Specifications.

On March 5, 2003, the licensee identified that containment isolation Valve EGHV0061 failed to stroke full-closed during surveillance testing. The licensee determined that the valve failed due to a hydraulic lock between the two valve discs. The valve was inoperable for a total of 109 days. The inoperable duration was a violation of Technical Specifications because the permitted out of service time were exceeded. The finding was minor because the valve would have performed the required safety function. The licensee corrected the problem by modifying the valve disc to relieve any pressure built up to prevent recurrence of the hydraulic lock. No additional findings were identified in the inspector's review. This finding constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the NRC's Enforcement Policy. The licensee documented the problem in CAR 200301950. This LER is closed.

3. (Closed) LER 50-483/02-008-00: Nonconservative Technical Specification Allowable Value for Main Steam Line Pressure Negative Rate.

On April 18, 2002, the licensee identified that the allowable value for the steam line pressure negative rate-high was less restrictive than the safety analyses limit credited in the main steam line break analysis. The licensee determined that the selection of the incorrect Technical Specification value was due to the use of generic evaluations conducted by Westinghouse, rather than calculations specific to Callaway. Additional corrective actions, completed or planned, included revising the main steam line break analysis to credit a high negative pressure rate safety analysis limit greater than or equal to the correct value. No new findings were identified in the inspector's review. This finding constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the NRC's Enforcement Policy. The licensee documented the problem in CAR 200202548. This LER is closed.

4. (Closed) LER 50-483/02-010-00: Potential for Fire Induced Common Cause Failure

On June 25, 2002, during testing of the Train A ultimate heat sink sump heaters, the licensee identified that the motor control center (MCC) feeder breaker had tripped. The licensee determined that the sump heater was improperly grounded and the feeder breaker was not properly coordinated with the MCC feeder breaker. MCCs NG01A and NG02A could experience a fire-induced ground fault condition that could result in the loss of both MCCs. The licensee determined that the cause was the failure to properly document the MCC overcurrent design. Corrective actions included revising design guidance for low and medium voltage equipment, modifying calculations to include ground fault protection criteria and design, and training for engineering personnel. This finding is more than minor because it had a credible impact on safety in that a single condition could result in the loss of specific equipment from two trains of safety-related equipment. The finding affects the Mitigating System Cornerstone and was considered to have very low safety significance (Green) using Appendix A of the significance determination process because of the low likelihood of a fire that would affect both trains and the low probability of actual damage to the cables. This licensee-identified finding involved a violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control." The enforcement aspects of the violation are discussed in Section 4OA7. This LER is closed.

5. (Closed) LER 50-483/03-003-00: Incorrect SGTR Overfill Accident Analysis Contained in the FSAR

The licensee identified that assumed operator action times supporting mitigation of the SGTR accident were exceeded. The NRC approved the licensee's SGTR analysis (Safety Evaluation Report for the Callaway Plant SGRT Analysis, August 6, 1990) based on a 26 rem, 2-hour exclusion area thyroid dose. The NRC concluded that the 26 rem was acceptable because it was below the 30 rem acceptance criteria specified in the Standard Review Plan. The dose projections were based on the assumption that the operator would equalize the pressure between the RCS and faulted steam generator within 63 minutes. The licensee made subsequent changes to Emergency Operating Instruction E-3, "Steam Generator Tube Rupture," which increased the expected equalization time to 77 minutes. The increased operator response time increased the predicted thyroid dose 72 rem.

As interim compensatory action, the licensee administratively reduced the operating dose equivalent iodine limit from the Technical Specification value of 1.0 microcurie per gram to 0.3 microcuries per gram. The new thyroid dose projection was reduced to 26 rem based on a 0.3 microcuries per gram new dose equivalent iodine limit and using the 77-minute operator response time. The failure to properly control the operator response time in Procedure E-3 was a violation 10 CFR Part 50, Appendix B, Criterion III, Design Control. The inspectors reviewed RCS dose equivalent iodine concentrations for the past 5 years. Actual RCS dose equivalent iodine valves were much less than 0.3 microcuries per gram. The violation was of very low safety significance because the actual off-site dose would have been much less than the

26 rem approved value if a SGTR had occurred. The violation occurred because the licensee failed to include the limiting analysis assumptions in the FSAR update. The licensee identified the violation during a systematic evaluation of current licensing bases during a modification review. The licensee documented the problem in CAR 200301136. The enforcement aspects of the violation are discussed in Section 4OA7. This LER is closed.

4OA6 Management Meetings

Exit Meeting Summary

On April 3, 2003, the Physical Security inspector presented the inspection results to Mr. M. Dunbar, Superintendent Protective Services, via telephone. He acknowledged the information presented.

On April 17, 2003, the Emergency Preparedness inspectors presented the inspection results to Mr. R. Affolter, Vice President, Nuclear, and other members of his staff who acknowledged the findings.

On June 20, 2003, the Engineering inspector presented her inspection results to Mr. M. Evans, Manager, Nuclear Engineering, and other members of his staff who acknowledged the findings.

On June 20, 2003, the resident inspectors presented their inspection results to Mr. M. Evans, Manager, Nuclear Engineering, and other members of his staff who acknowledged the findings. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

4OA7 Licensee Identified Violations

The following findings of very low safety significance (Green) were identified by the licensee and are violations of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as NCVs.

- Title 10 of the Code of Federal Regulations, Part 50, Appendix B, Criterion III, required the licensee to establish measures “to assure that applicable regulatory requirements and the design basis . . . for those structures, systems, and components to which this appendix applies are correctly translated into specifications, drawings, procedures and instructions.” During initial construction of the plant, the licensee failed to properly establish a practice to formally document the MCC overcurrent design, as determined in the root cause analysis. This deficiency caused improper coordination of the ground fault overcurrent protection of the MCC feeder breakers with downstream overcurrent protection. This event was described in the licensee’s corrective action program as CAR 200304064.

- Title 10 of the Code of Federal Regulations, Part 50, Appendix B, Criterion III, required the licensee to assure that applicable regulatory requirements and the design basis were correctly translated into specifications, procedures, and instructions. On March 13, 2003, the licensee identified that operator response times needed for performance of key steps in Emergency Operating Instruction E-3, "Steam Generator Tube Rupture," Revision 1B3, exceeded those assumed in the limiting safety analysis. Under design basis assumptions, predicted off doses would have exceeded those approved by the NRC for the SGTR event. Analysis of the limiting operator response times concluded that, under actual plant conditions, approved NRC does limits would not have been exceeded. This finding is only of very low safety significance because it affects only the mitigating systems cornerstone and did not involve an actual loss of safety function. This event is documented in the licensee's corrective action program as CAR 200301136.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

R. Affolter, Vice President, Nuclear
W. Bevard, Emergency Response Coordinator
S. Bond, Supervisor System Engineering
S. Crawford, Emergency Response Coordinator
M. Evans, Manager Nuclear Engineering
L. Graessle, Superintendent, Protective Services
G. Pendergraff, Evaluator, Protective Services
M. Reidmeyer, Supervisor, Regional Regulatory Affairs
W. Witt, Plant Manager

LIST OF ITEMS OPENED AND CLOSED

Opened

50-483/03-04-01	URI	Failure of containment radiation monitors to meet Technical Specification operability requirements (Section 1R17)
50-483/03-04-02	NCV	Failure to identify, correct, or preclude recurrence of the voiding of the containment spray suction piping (Section 4OA2)
50-483/03-04-03	NCV	Failure to correctly install an inlet gasket on a pressurizer safety relief valve due to inadequate work instructions (Section 4OA3)

Closed

50-483/03-04-02	NCV	Failure to identify, correct, or preclude recurrence of the voiding of the containment spray suction piping (Section 4OA2)
50-483/03-04-03	NCV	Failure to correctly install an inlet gasket on a pressurizer safety relief valve due to inadequate work instructions (Section 4OA3)
50-483/03-002-00	LER	Valve EGHV0061 inoperable for a time period greater than allowed by Technical Specifications (Section 4OA3)
50-483/02-008-00	LER	Nonconservative Technical Specification allowable value for main steam line pressure negative rate (Section 4OA3)
50-483/02-010-00	LER	Potential for fire induced common cause failure (Section 4OA3)
50-483/03-003-00	LER	Incorrect SGTR overfill accident analysis contained in FSAR (Section 4OA3)

LIST OF DOCUMENTS REVIEWED

Procedures

APA-ZZ-00303, Classification of Systems, Revision 6

APA-ZZ-00605, Temporary System Modification, Revision 14

Combustible/Electrical Fire Hazards Analysis Program Procedure for Fire Areas A-19 and A-20

CDP-ZZ-00940, “Auxiliary Water Systems Chemistry Optimization Plan,” Revision 1

CDP-ZZ-00950, “Raw water Systems Control Program,” Revision 1

EDP-ZZ-01112, “Heat Exchanger Predictive Performance Manual,” Revision 8

EDP-ZZ-01121, "Raw Water Systems Predictive Performance Manual," Revision 7

EDP-ZZ-01128, Maintenance Rule and EPIX Programs, Revision 4

EDP-ZZ-04107, Heating Ventilation Air Conditioning Pressure Boundary & Watertight Door Control, Revision 12

EIP-ZZ-00226, Fire Response Procedure for Callaway Plant, Revision 7

EIP-ZZ-00101, Classification of Emergencies, Revision 30

EIP-ZZ-00010, Emergency Operations Facility, Revision 28

EIP-ZZ-00102, Emergency Implementation Actions, Revision 30

EIP-ZZ-00200, Augmentation of the Emergency Organization, Revision 10

EIP-ZZ-00201, Notifications, Revision 37

EIP-ZZ-00212, Protective Action Recommendations, Revision 20

EIP-ZZ-00220, Emergency Team Formation, Revision 16

EIP-ZZ-00240, Technical Support Center Operations, Revision 31

Emergency Operating Procedure E-3, Steam Generator Tube Rupture, Revision 1B4

ETP-GL-00001, “Area Room Cooler Test,” Revision 4

ETP-EF-002B, “Essential Service Water Train B Flow Verification,” Revision 9

ETP-EF-002A, “Essential Service Water Train A Flow Verification,” Revision 8

ETP-EG–00001, “Component Cooling Water Heat Exchanger Test,” Revision 5

FPP-ZZ-00001, Fire Preplan Manual, Revision 13 for fire areas A-21, A-22, A-27, C-21 and C-22

ITM-ZZ-VT001, Diagnostic Calibration and Testing of Rising Stem, Modulating Air Operated Valves, Revision 1

KDP-ZZ-02000, Performance Indicator Data Collection, Revision 0

KDP-ZZ-02001, Drill and Exercise Program, Revision 0

KSP-ZZ-00001, Alert and Notification System Availability, Revision 3

KSP-ZZ-00003, Augmentation, Revision 3

MPM-ZZ-QQ001, “Room Cooler Inspection,” Revision 10

OSP-AL-V001C, Turbine Driven Auxiliary Feedwater Valve Operability, Revision 26

OSP-EG-V002A, CCW Train A Containment Isolation Valve Inservice Test, Revision 5

OTA-RL-RK094, Annunciator Response Procedure for Windows 94A through 94F, Revision 2

OTN-NK-0001, Class 1E 125 VDC Electrical System, Revision 9

OTO-SG-00001, Seismic Event Response, Revision 9

OTS-AE-T100, Main Feedwater Regulating Valve B Operational Test, Revision 0

RRA-ZZ-00001, NRC Performance Indicator Program, Revision 0

Drawings

M-22AB02, Piping and Instrumentation Diagram, Main Steam System

M-22AL01, Piping and Instrumentation Diagram, Auxiliary Feedwater System

M-22BG01-05, Piping and Instrumentation Diagram, Chemical and Volume Control System

M-25BN02, Hanger Location Drawing, Borated Refueling Water Storage System

M-22EM01, 02 & 03, Piping and Instrumentation Diagram, High Pressure Coolant Injection System

M-22EN01, Piping and Instrumentation Diagram, Containment Spray System

M-25EN01, Hanger Location Drawing, Containment Spray System

M-25EN02, Hanger Location Drawing, Containment Spray System

M-22FC02, Piping and Instrumentation Diagram, Auxiliary Pump Turbine

M-22KJ03 (Q), Piping and Instrumentation Diagram Standby Diesel Generator 'A' Lube Oil System

M-22KJ01 (Q), Piping and Instrumentation Diagram Standby Diesel Generator 'A' Cooling Water System

M-22KJ02 (Q), Piping and Instrumentation Diagram Standby Diesel Generator 'A' Intake Exhaust Fuel Oil and Starting Air System, Revision 17

E-21NK01 and E-21NK02, Class IE 125 V DC System

Callaway Action Request

199300046	200208065	200302452	200304463
200002462	200208352	200302509	200304465
200102209	200300164	200302933	200304466
200107673	200300381	200303072	200304486
200200839	200301010	200303918	200304595
200202808	200301450	200304160	200308110
200207750	200301460	200304425	
200207521	200302328	200304456	

Requests for Resolution

16196	17332	18529	20522	7809E
16409	17924	19203	21788	

Calculations

EF-45, "Four Containment Coolers with New Coils," Revision 5

EG-20, “Max CCW Temperature During Post - LOCA,” Revision 0

EJ-022, “Calculate Heat Transfer from RHR Pump Casing with Insulation Removed,” Revision 0

EJ-022, “Calculate Heat Transfer from RHR Pump Casing and Suction Pipe with Insulation Removed,” Revision 01

GL-390, “Auxiliary Building HVAC,” Revision 0 and Addenda 2 through 5

GN-03, “Determine the Minimum ESW Flow Rate to GN Coolers with New Coils,” Revision 5

M-EF-52, “Heat Exchanger Performance Based on Reduced ESW Temperature and Flow,” Revision 1

XX-49, Flooding in the Auxiliary Building/Control Building, Revision O

Maintenance Orders

P618058	P649209	P618126	S707661	W219938
P676141	P649206	P592312	S706206	
P676150	P645732	P683703	S706921	

Miscellaneous

Containment spray pump discharge pressure vs. time plots for May 22 and April 29,2003

Daily logs for Reactor Operator and Shift Supervisor for May 22, 2003

Self-Assessment Report SEL-03-007, heat exchanger program

NRC Performance Indicator Transmittal Reports for Mitigating Systems from October 2002 to March 2003

Root Cause Evaluation for CAR 200301460, Pressurizer B Safety Valve Leakage

Radiological Emergency Response Plan, Revision 25

Workman’s Protection Assurance System tagout control sheets WPAs 46194 and 46195

Drill schedules for Calendar Years 2002 and 2003

Drill and exercise scenarios, evaluator and participant logs, and offsite notification forms for a 100 percent sample of drills conducted during the third and fourth quarters of Calendar Year 2002 and the first quarter of Calendar Year 2003

Drill evaluation worksheets

Performance indicator reports

List of key emergency response organization positions

Drill participation date summaries for key emergency responders for the third and fourth quarters of Calendar Year 2002 and the first quarter of Calendar Year 2003

Emergency response organization rosters for the third and fourth quarters of Calendar Year 2002, and the first quarter of Calendar Year 2003

Drill participation records for a sample of eight emergency responders

100 percent sample of siren testing records for the third and fourth quarters of Calendar Year 2002 and the first quarter of Calendar Year 2003

FSAR Section 9.1.3

Design Input Form TM 03-003

LIST OF ACRONYMS

AFW	auxiliary feedwater
CAR	Callaway action request
CFR	*Code of Federal Regulations*
ECCS	emergency core cooling system
FSAR	Final Safety Analysis Report
LER	licensee event report
MCC	motor control center
NCV	noncited violation
NRC	U.S. Nuclear Regulatory Commission
PI	performance indicator
RCS	reactor coolant system
SGTR	steam generator tube rupture
URI	unresolved item