



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION I  
475 ALLENDALE ROAD  
KING OF PRUSSIA, PA 19406-1415

November 8, 2010

Mr. Joseph E. Pollock  
Site Vice President  
Entergy Nuclear Operations, Inc.  
Indian Point Energy Center  
450 Broadway, GSB  
Buchanan, NY 10511-0249

SUBJECT: INDIAN POINT NUCLEAR GENERATING UNIT 3 – NRC INTEGRATED  
INSPECTION REPORT 05000286/2010004

Dear Mr. Pollock:

On September 30, 2010, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Indian Point Nuclear Generating Unit 3. The enclosed integrated inspection report documents the inspection results, which were discussed on October 28, 2010 with you and other members of your staff.

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

This report documents one self-revealing finding of very low safety significance (Green). This finding was determined to involve a violation of NRC requirements. However, because of the very low safety significance and because it is entered into your corrective action program (CAP), the NRC is treating it as a non-cited violation (NCV) consistent with Section 2.3.2 of the NRC Enforcement Policy. If you contest this NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region 1; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Indian Point Nuclear Generating Unit 3. In addition, if you disagree with the cross-cutting aspect assigned to the finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region 1, and the NRC Resident Inspector at Indian Point Nuclear Generating Unit 3.

In accordance with Title 10 of the Code of Federal Regulations Part 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room of from the Publicly Available Records component of the NRC's document system (ADAMS).

J. Pollock

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Sincerely,

A handwritten signature in black ink, appearing to read "Mel Gray", with a long, sweeping flourish extending to the right.

Mel Gray, Chief  
Projects Branch 2  
Division of Reactor Projects

Docket No. 50-286  
License No. DPR-26

Enclosure: Inspection Report No. 05000286/2010004  
w/ Attachment: Supplemental Information

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J. Pollock

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ADAMS is accessible from the NRC Web Site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Mel Gray, Chief  
Projects Branch 2  
Division of Reactor Projects

Docket No. 50-286  
License No. DPR-26

Enclosure: Inspection Report No. 05000286/2010004  
w/ Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No.: 50-286

License No.: DPR-26

Report No.: 05000286/2010004

Licensee: Entergy Nuclear Northeast (Entergy)

Facility: Indian Point Nuclear Generating Unit 3

Location: 450 Broadway, GSB  
Buchanan, NY 10511-0249

Dates: July 1, 2010 through September 30, 2010

Inspectors: P. Cataldo, Senior Resident Inspector – Indian Point 3  
M. Halter, Resident Inspector – Indian Point 3  
J. Kulp, Senior Resident Inspector – Oyster Creek  
H. Gray, Senior Reactor Inspector – Region 1  
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Approved By: Mel Gray, Chief  
Projects Branch 2  
Division of Reactor Projects

Enclosure

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## SUMMARY OF FINDINGS

IR 05000286/2010004; 7/1/10 – 9/30/10; Indian Point Nuclear Generating (Indian Point) Unit 3; Maintenance Effectiveness.

This report covered a three-month period of inspection by resident and region based inspectors. One finding of very low significance (Green) was identified. This finding was also determined to be a non-cited violation (NCV) of NRC requirements. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process." The cross-cutting aspect for the finding was determined using IMC 0310, "Components within the Cross-Cutting Areas." Findings for which the significance determination process (SDP) does not apply may be Green, or be assigned a severity level after NRC management review. The NRC's program for overseeing safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

**Cornerstone: Mitigating Systems**

Green: A self-revealing, non-cited violation (NCV) of very low safety significance (Green) of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions," was identified because Entergy personnel did not adequately identify and correct a condition adverse to quality to ensure the continued availability of the safety related 31 static inverter. Specifically, Entergy personnel did not complete previously-identified corrective actions to ensure capacitors in critical components of the inverter were identified and replaced in a timely manner prior to the occurrence of age-related failures. Entergy personnel determined that degraded commutation capacitors were the cause of a fuse failure on September 14, 2010, and were identified to be 13 years old and installed significantly longer than the nine years recommended by the vendor. Entergy personnel entered the issue into the corrective action program and replaced the capacitor.

The finding was more than minor because the finding was associated with the Mitigating Systems cornerstone attribute of equipment performance and affected the cornerstone objective of ensuring the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the 31 static inverter incurred unnecessary unavailability hours and was inoperable and unavailable for approximately five days following the fuse failure on September 14, 2010. The inspectors determined the finding was of very low safety significance (Green) because the finding was not a design or qualification deficiency, did not represent a loss of system safety function, and was not risk significant with respect to external events.

The inspectors determined that this finding had a cross-cutting aspect in the area of Problem Identification and Resolution because Entergy personnel did not complete adequate and timely corrective actions to implement a capacitor program and identify critical capacitors for replacement prior to a failure that resulted in the unavailability of a safety related inverter. [P.1(d) per IMC 0310] (Section 1R12)

## REPORT DETAILS

### Summary of Plant Status

Indian Point Unit 3 began the inspection period operating at full reactor power (100%). On September 9, 2010, operators manually tripped the reactor after a service water leak was observed inside the main generator exciter cabinet. Repairs were performed and the operators returned Unit 3 to full power on September 17, 2010. Unit 3 remained at or near full power during the remainder of the inspection period.

### 1. REACTOR SAFETY

#### **Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity**

#### 1R01 Adverse Weather Protection (71111.01 – 1 sample)

##### Severe Thunderstorm Warning Preparedness

##### a. Inspection Scope

Using procedure OAP-008, "Severe Weather Preparations," the inspectors reviewed Entergy's preparations for impending thunderstorms on July 19, 2010, which coincided with the notification of a National Weather Service severe thunderstorm warning. The inspectors also reviewed 3-SOP-EL-005, "Operation of On-Site Power Sources," to evaluate any additional actions, including plant risk assessments, as a result of the occurrence of a 345kV grid disturbance that occurred soon after their entry into OAP-008. This inspection represented one inspection sample.

##### b. Findings

No findings were identified.

#### 1R04 Equipment Alignment (71111.04Q – 4 samples)

##### Partial System Walkdowns

##### a. Inspection Scope

The inspectors performed partial system walkdowns to verify the operability of redundant or diverse trains and components during periods of system train unavailability, and where applicable, following return to service after maintenance. The inspectors reviewed system procedures, the Updated Final Safety Analysis Report (UFSAR), and system drawings to verify that the alignment of the applicable system or component supported its required safety functions. The inspectors also reviewed applicable condition reports or work orders to ensure that Entergy personnel had identified and properly addressed equipment deficiencies that could potentially impair the capability of the available train. The documents reviewed during this inspection are listed in the Attachment.

The inspectors performed a partial walkdown on the following systems, which represented four inspection samples:

- 32 containment spray (CS) pump during 31 CS pump test on June 27, 2010;
- 31 and 33 auxiliary boiler feed pumps (ABFP) during 32 ABFP maintenance on August 2, 2010;
- 32 and 33 emergency diesel generators (EDGs) during 31 EDG maintenance on August 10 – 12, 2010; and
- 31 component cooling water (CCW) train during planned work on 33 CCW pump breaker on August 25, 2010.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05Q – 6 samples)

Resident Inspector Quarterly Walkdowns

a. Inspection Scope

The inspectors conducted tours of selected Unit 3 fire areas to assess the material condition and operational status of applicable fire protection features. The inspectors reviewed, consistent with the applicable administrative procedures, whether: combustible material and ignition sources were adequately controlled; passive fire barriers, manual fire-fighting equipment, and suppression and detection equipment were appropriately maintained; and compensatory measures for out-of-service, degraded, or inoperable fire protection equipment were implemented in accordance with Entergy's fire protection program. The inspectors also evaluated the fire protection program for conformance with the requirements of License Condition 2.K. The documents reviewed during this inspection are listed in the Attachment.

- PFP (Pre-Fire Plan) 351A;
- PFP 355;
- PFP 356;
- PFP 383;
- PFP 384; and
- Radiological and Environmental Services room battery failure on September 14, 2010.

b. Findings

No findings were identified.

1R07 Heat Sink Performance (71111.07 – 1 sample)a. Inspection Scope

The inspectors evaluated maintenance activities and reviewed inspection data associated with the 31 EDG jacket water and lube oil heat exchangers on August 10, 2010. The inspectors reviewed applicable design basis information and commitments associated with Entergy's Generic Letter 89-13 program to validate that maintenance activities were adequate to ensure the system could perform its required safety function. The inspectors reviewed radiographic results for selected piping segments to ensure pipe corrosion and conditions adverse to quality were being identified and corrected. This inspection represented one sample for heat sink performance.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11Q – 1 sample)Quarterly Reviewa. Inspection Scope

On August 10, 2010, the inspectors observed a licensed operator requalification training evaluation conducted in the plant-reference simulator, to verify appropriate operator performance, and that evaluators identified and documented crew performance problems, as applicable. The inspectors evaluated the performance of risk significant operator actions, including the use of emergency operation procedures. The inspectors assessed the clarity and the effectiveness of communications, the implementation of appropriate actions in response to alarms, the performance of timely control board operations, and the oversight and direction provided by the control room supervisor.

The inspectors reviewed simulator fidelity to verify correlation with the actual plant control room, and to verify that differences in fidelity that could potentially impact training effectiveness were either identified or appropriately dispositioned. Licensed operator training was evaluated for conformance with the requirements of 10 CFR 55, "Operator Licenses." This observation of licensed-operator evaluations represented one inspection sample.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12Q – 2 samples)a. Inspection Scope

The inspectors reviewed performance-based problems that involved selected structures, systems, and components (SSCs) to assess the effectiveness of maintenance activities

and to verify activities were conducted in accordance with site procedures and 10 CFR 50.65 (The Maintenance Rule). The reviews focused on:

- Evaluation of Maintenance Rule scoping and performance criteria;
- Verification that reliability issues were appropriately characterized;
- Verification of proper system and/or component unavailability;
- Verification that Maintenance Rule (a)(1) and (a)(2) classifications were appropriate;
- Verification that system performance parameters were appropriately trended;
- For SSCs classified as Maintenance Rule (a)(1), that goals and associated corrective actions were adequate and appropriate for the circumstances; and
- Identification of common cause failures.

The inspectors also reviewed system health reports, maintenance backlogs, and Maintenance Rule basis documents. The documents reviewed during this inspection are listed in the Attachment. The following systems and/or components were reviewed and represented two inspection samples:

- 138 KV system and breaker BT 5-6 failure on June 18, 2010; and
- 31 static inverter unavailability on August 24, 2010.

b. Findings

Introduction: A self-revealing, non-cited violation (NCV) of very low safety significance (Green) of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions," was identified because Entergy personnel did not adequately identify and correct a condition adverse to quality to ensure the continued availability of the safety-related 31 static inverter. Specifically, Entergy personnel did not implement previously-identified corrective actions to ensure capacitors in critical components of the inverter were identified and replaced in a timely manner prior to the occurrence of age-related failures.

Description: On September 14, 2010, the safety-related 31 static inverter performed an automatic swap-over from its safety-related power source to its non-safety related power source due to a fuse failure. This occurrence required Entergy operators to enter a seven-day shutdown limiting condition for operation in accordance with technical specifications. Entergy personnel began troubleshooting actions, which included contracted technical consultation, to determine the cause of the fuse failure in the A4 commutation section of the inverter.

Entergy personnel's troubleshooting actions included, for example, visual inspections of solder joints, circuit card connection checks, circuit card operation and revision history (age/history), diode checks and voltage profiles, and commutation circuit operational checks. Based on review of troubleshooting test data, commutation capacitors C1 and C2, located in the A4 section, were determined by Entergy personnel to be the cause of the fuse failure. Entergy staff determined these capacitors had been in service for 13 years which is significantly longer than the nine years recommended by the vendor. These capacitors were replaced and the static inverter was successfully load tested and placed back into normal operation on September 19, 2010.

The inspectors reviewed the corrective action database, which included a similar fuse failure in August 2010 (CR-IP3-2010-02530), and other failures that dated back to 2001. During this review, the inspectors noted that a capacitor improvement program had been previously identified by Entergy staff as a program that was needed due to failures that included age-related causes. For example, Entergy's root cause evaluation (RCE) regarding a 2007 power supply failure associated with a Unit 2 main boiler feedwater pump (CR-IP2-2007-01046) documented the following information:

- A December 2001 kickoff meeting was held to develop a capacitor program;
- A 2002 corrective action (CA) to address capacitor aging/replacement was cancelled;
- Entergy's RCE team noted that from May 2003 to March 2007 there were no further actions taken to address age degradation of electrolytic capacitors and that the 2007 event's cause was an organizational weakness in not implementing the Capacitor Program;
- Corrective action to prevent recurrence was established to develop a capacitor program;
- Specified corrective actions for the development of the capacitor program were transferred to other CAs (create a list of effected components), which were subsequently transferred to additional CAs (review the list for inclusion into the capacitor program), and delayed on several occasions; and
- Long-term CA approval incorrectly assumed the issue requiring evaluation was limited to power supplies in critical systems or considered an enhancement.

The inspectors noted that in 2007, a 6-year PM was performed but did not involve the replacement of capacitors, and in January 2009, just prior to an outage period, a unit-specific procedure was created that detailed the requirement to replace the critical commutation capacitors in the inverter. The inspectors determined these activities from 2007 to 2010 represented reasonable opportunities for Entergy staff to (1) identify appropriate maintenance was not being performed on the static inverters, i.e., replacement of the commutation capacitors, C1 and C2, and (2) utilize the vendor manual as a source of information in preparation of maintenance (and troubleshooting) and identify these commutation capacitors in the A4 section of the inverter have a vendor recommended replacement every nine years.

Analysis: The inspectors determined that Entergy personnel did not adequately identify and correct in a timely manner a condition adverse to quality to ensure continued availability and reliability of the 31 static inverter. Specifically, the static inverter incurred unnecessary unavailability hours and was inoperable for approximately five days following the fuse failure on September 14, 2010. Moreover, the static inverter's reliability was impacted during continued operations with capacitors that were beyond the vendor-recommended useful life of 9 years, and it was reasonable for Entergy staff to foresee this condition because the replacement requirement was contained in the vendor manual. The finding was more than minor because the finding was associated with the Mitigating Systems cornerstone attribute of equipment performance and affected the cornerstone objective of ensuring the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. The inspectors evaluated the finding using IMC 0609, Attachment 4, "Initial Screening and Characterization of Findings." The inspectors determined the finding was of very low

safety significance because the finding was not a design or qualification deficiency, did not represent a loss of safety function, and was not risk significant with respect to external events.

The inspectors determined that this finding had a cross-cutting aspect in the area of Problem Identification and Resolution because Entergy personnel did not implement adequate and timely corrective actions to implement a capacitor program and identify critical capacitors for replacement prior to failure that resulted in the unavailability of a safety-related inverter for approximately five days. [P.1(d) per IMC 0310]

**Enforcement:** 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions," requires, in part, that the conditions adverse to quality, such as deficiencies and defective material and equipment are promptly identified and corrected. Contrary to the above, Entergy personnel did not correct a condition adverse to quality after identified in 2007 and ensure that commutation capacitors were identified and replaced in a timely manner prior to the occurrence of age-related failures and subsequent unavailability of the 31 static inverter on September 14, 2010. Because this violation is of very low safety significance and has been entered into the Entergy's corrective action program, CR-IP3-2010-02731, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy (**NCV 05000286/2010004-01, Untimely Corrective Actions for Degraded Capacitors for the 31 Static Inverter**)

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 4 samples)

a. Inspection Scope

The inspectors reviewed maintenance activities to verify that the appropriate on-line risk assessments were performed prior to removing equipment for work as required by 10 CFR 50.65(a)(4). When planned work scope or schedules were altered to address emergent or unplanned conditions, the inspectors verified that the plant risk was promptly reassessed and managed by station personnel. The documents reviewed during this inspection are listed in the Attachment. The following activities represented four inspection samples:

- Elevated risk due to Category I thunderstorm and A1 reactor protection system (RPS) testing on July 19, 2010;
- Elevated risk for emergent work on 138KV feeder 96952 on July 22, 2010;
- Elevated risk for troubleshooting 6.9KV Bus 2 with 32 EDG out of service (OOS) on September 10, 2010; and
- Elevated risk with 138KV line 33332 OOS on September 15, 2010.

b. Findings

No findings were identified.

1R15 Operability Evaluations (71111.15 – 4 samples)Resident Quarterly Reviewa. Inspection Scope

The inspectors reviewed operability evaluations to assess the acceptability of the evaluations, the use and control of compensatory measures when applicable, and compliance with Technical Specifications. These reviews were conducted to verify that operability determinations were performed in accordance with procedure ENN-OP-104, "Operability Determinations." The inspectors assessed the technical adequacy of the evaluations to ensure consistency with the UFSAR and associated design and licensing basis documents. The documents reviewed are listed in the Attachment. The following operability evaluations were reviewed and represented four inspection samples:

- Radiation monitor R-11 check source failure;
- 480V switchgear during control building high temperature;
- Residual heat removal pump seal cooling; and
- EDG air start system reduced volume.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18 – 1 sample)Temporary Modification: Temporarily Disable the Limit Switch for 31 Emergency Diesel Generator (EDG) Fuel Oil Day Tank Inlet Valve DF-LCV-1207Ba. Inspection Scope

The inspectors reviewed the temporary modification which disabled the limit switch for 31 EDG fuel oil day tank inlet valve DF-LCV-1207B while the hydraulic actuator for DF-LCV-1207B was out of service. Without hydraulic pressure, DF-LCV-1207B fails open in order to ensure fuel oil can always be transferred to any or all of the three fuel oil day tanks. However, with DF-LCV-1207B failed open, the limit switch contact for the valve remains closed, thereby preventing the fuel oil transfer pump from automatically shutting off when the 31 EDG fuel oil day tank has been filled to 90 percent. Entergy's temporary modification disabled the limit switch for DF-LCV-1207B and permitted the automatic shutoff of the 31 EDG fuel oil transfer pump by relying on the limit switch for DF-LCV-1207A, which is connected in parallel with limit switch for DF-LCV-1207B.

The inspectors reviewed the temporary modification and associated engineering change (EC)-23034 to verify that the temporary modification was conducted in accordance with site procedures, as applicable, including EN-DC-136, "Temporary Modifications." The inspectors' review also considered whether the appropriate design interfaces were established during preparation and implementation and were consistent with the design basis information located in the UFSAR. The inspectors also reviewed Entergy's work package that controlled installation of this temporary modification and the associated

post-installation testing, including the resultant ability of the fuel oil transfer pump to start and secure as required, based on the level of the fuel oil day tanks.

b. Findings

No findings were identified.

1R19 Post Maintenance Testing (71111.19 – 5 samples)

a. Inspection Scope

The inspectors reviewed post-maintenance test procedures and associated testing activities for selected risk-significant mitigating systems, and assessed whether the effect of maintenance on plant systems was adequately addressed by control room and engineering personnel. The inspectors verified that: test acceptance criteria were clear and the test demonstrated operational readiness consistent with design basis documentation; test instrumentation had current calibrations with the appropriate range and accuracy for the application; and the tests were performed as written, with applicable prerequisites satisfied. Upon completion of the tests, the inspectors reviewed whether equipment was returned to the proper alignment necessary to perform its safety function. Post-maintenance testing was evaluated for conformance against the requirements of 10 CFR 50, Appendix B, Criterion XI, "Test Control." The documents reviewed are listed in the Attachment. The following post-maintenance activities were reviewed and represented five inspection samples:

- 31 ABFP load sequencer calibration on July 8, 2010;
- 31 EDG maintenance outage on August 10 and 11, 2010;
- 'B' RPS intermediate range trip block relay failure on August 16, 2010;
- MS-PCV-1135 (32 steam generator atmospheric dump valve) maintenance on August 16 – 17, 2010; and
- Feed water low-flow bypass valve (FCV-417L) process signal meter troubleshooting and repair on August 25, 2010.

b. Findings

No findings were identified.

1R20 Refueling and Outage Activities (71111.20)

Forced Outage 3FO10A: Exciter Cooler Leak Repairs and Other Activities

a. Inspection Scope

The inspectors observed and/or evaluated selected activities during the maintenance outage that was initiated following the manual reactor trip on September 9, 2010, due to

service water leakage from main turbine generator exciter coolers. These observations and evaluations included:

- Main unit generator exciter cooler 31 and 32 repairs;
- TS 3.0.3 entry due to two unavailable off-site sources and one EDG inoperable;
- 34 reactor coolant pump seal re-seating activities;
- Carbon dioxide activation due to relief valve lifting on the 31 main boiler feed pump;
- Initial criticality during startup activities on 9/11/2010;
- 32 heater drain (HD) pump trip during power ascension and control room personnel response during implementation of abnormal operating procedure on 9/13/2010; and
- Main turbine overspeed trip and control room personnel response during implementation of abnormal operating procedure on 9/13/2010.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – 4 samples)

a. Inspection Scope

The inspectors observed performance of surveillance tests and/or reviewed test data of selected risk significant structures, systems, and components, to assess whether test results satisfied technical specifications, UFSAR, technical requirements manual and Entergy procedure requirements. The inspectors verified that: test acceptance criteria were sufficiently clear; tests demonstrated operational readiness and were consistent with design basis documentation; test instrumentation had accurate calibrations and appropriate range and accuracy for the application; tests were performed as written; and applicable test prerequisites were satisfied. Following the tests, the inspectors verified whether equipment was capable of performing the required safety functions. The documents reviewed during this inspection are listed in the Attachment. The following surveillance tests were reviewed and represented four inspection samples, which included an in-service testing (IST) surveillance:

- 0-SOP-LEAK-001, Reactor Coolant System (RCS) Leakrate Surveillance, Evaluation, and Leak Identification, on July 19, 2010;
- 3-PC-OL27G, Bus 5A 480V Undervoltage Relays Inspection and Calibration, on July 26, 2010;
- 3-PT-SA045, Main Turbine Stop and Control Valves Test, on July 29, 2010; and
- 3-PT-Q120B, 32 ABFP (Turbine Driven) Surveillance and IST, on August 3, 2010.

b. Findings

No findings were identified.

#### 4. OTHER ACTIVITIES

##### 4OA1 Performance Indicator Verification (71151 – 5 samples)

###### a. Inspection Scope

The inspectors reviewed performance indicator (PI) data listed below to verify the accuracy of the data recorded from July 2009 through June 2010. The inspectors used Nuclear Energy Institute 99-02, "Regulatory Assessment Performance Indicator Guideline," as applicable, and reviewed associated Entergy procedures and data to verify individual PI accuracy and completeness. The documents reviewed during this inspection are listed in the Attachment.

###### Mitigating Systems Cornerstone

- Mitigating Systems Performance Index – Emergency AC Power System;
- Mitigating Systems Performance Index – High Pressure Injection System;
- Mitigating Systems Performance Index – Heat Removal System;
- Mitigating Systems Performance Index – Residual Heat Removal System; and
- Mitigating Systems Performance Index – Cooling Water System.

###### b. Findings

No findings were identified.

##### 4OA2 Identification and Resolution of Problems (71152 – 2 samples)

###### 1 Routine Problem Identification and Resolution Program Review

###### a. Inspection Scope

As required by Inspection Procedure 71152, "Identification and Resolution of Problems," and to identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed a daily screening of all items entered into Entergy's corrective action program. The review was accomplished by accessing Entergy's computerized database for CRs and attending condition report screening meetings.

In accordance with the baseline inspection modules, the inspectors selected corrective action program items across the Initiating Events, Mitigating Systems, and Barrier Integrity cornerstones for further follow-up and review. The inspectors assessed Entergy personnel's threshold for problem identification, the adequacy of the cause analysis, extent of condition reviews, operability determinations, and the timeliness of the associated corrective actions.

###### b. Findings

No findings were identified.

.2 Annual Sample - Buried Pipe Inspection and Monitoring Program

a. Inspection Scope

The inspectors interviewed the Program Owner (Responsible Engineer) for the Indian Point Buried Pipe Inspection and Monitoring Program and reviewed the related applicable procedures for the program. The inspectors used as a reference the Electric Power Research Institute (EPRI) and NEI guidelines for buried pipe systems. Field observations were made of the areas of past and current buried pipe activities. These included the Unit 2 and Unit 3 condensate storage tank (CST) and auxiliary feedwater (AFW) piping, and the piping exiting the Unit 3 reactor water storage tank to under the independent spent fuel storage installation (ISFSI) haul path.

The inspection scope included determining the status and comparison of the site activities and plans to monitor and inspect buried piping and storage tanks. The inspectors ensured these activities met or exceeded the EPRI and NEI guidance and requirements to understand the condition of these components to minimize the occurrence of leakage.

Specific documents reviewed during this inspection are listed in the attachment. These activities constitute completion of one in depth problem identification and resolution sample as defined in Inspection Procedure 71152.

b. Findings and Observations

No findings were identified.

A leak in the Unit 2 AFW system 8-inch diameter return line to the CST was identified by Entergy staff on February 15, 2009 and repaired. In September 2009, guided wave inspection identified Level 2 G-scan indications in both the Unit 2 and Unit 3 AFW CST 12-inch diameter suction lines. Level 2 G-scan indications are areas of moderate interest where follow-up is recommended. Entergy entered this condition for evaluation into the CAP as CR-IP2-2009-00666.

.3 Annual Sample: Review of Corrective Actions for Emergency Core Cooling Systems (ECCS) Gas Accumulation

a. Inspection Scope

This inspection focused on Entergy personnel's identification, evaluation, and resolution of deficiencies associated with the accumulation of gas in the ECCS and potential impacts on ECCS equipment, as documented in condition reports during 2007 to 2010. Specifically, a number of condition reports dated 2007 through 2009 documented the requirement to refill the 34 cold-leg injection accumulator due to nitrogen-entrained water leakage into the ECCS. Additionally, condition reports dated 2007 and through 2009 documented rising level in the pressurizer relief tank due to safety injection (SI) relief valve 855 lifting while using 31 or 32 SI pumps to refill the cold-leg injection accumulators. Specific condition reports reviewed for these two issues are listed in the attachment to this report. Finally, Entergy CR-IP3-2010-01937 documented an

abnormal pressure increase in the boron injection tank (BIT) and Non-BIT headers following the completion of PT-Q134A, 31 RHR Pump Test.

The inspectors reviewed operability evaluations and engineering reviews to determine whether Entergy personnel had properly evaluated and dispositioned the operability of the equipment impacted by the issues reviewed. The inspectors reviewed condition reports and an apparent cause analysis to ensure the resolution of the issues were properly classified and prioritized consistent with the safety significance of the issues. The inspectors reviewed completed work orders and planned corrective actions to ensure that actions identified were appropriately focused to correct the problem, and that actions were planned or completed in a timely manner, consistent with the safety significance of the issues. The inspectors reviewed completed work orders and performed a condition report review to ensure actions taken resulted in the correction of the identified problems. Finally, the inspector interviewed the system engineer and reviewed historical condition reports, surveillance procedures, preventative maintenance schedules, gas void detection testing results, industry operating experience to evaluate Entergy's consideration of extent of condition and cause, generic implications, common causes, and previous occurrences of the issues.

b. Findings and Observations

No findings were identified.

The inspectors determined that Entergy personnel properly implemented their corrective action process regarding the identification, evaluation, and resolution of the reviewed issues. The inspectors determined that Entergy's identification of the cause of SI-855 lifting and subsequent actions during 3R15 to overhaul and repack SI-AOV-890D, 34 cold-leg injection accumulator fill line isolation valve, due to seat leakage was adequate to correct the problem. The inspectors determined that the preventative maintenance schedule for SI-855 was appropriate and that the modification implemented to increase the setpoint of SI-855 did not negatively impact the ability of the relief valve to protect the system from overpressure. The inspectors determined that Entergy's identification of the cause of 34 cold-leg injection accumulator leakage and subsequent actions to replace check valve SI-838D due to seat leakage was adequate to correct the problem. The inspectors determined that while the cause of the abnormal pressure increase in the BIT and Non-BIT headers following the 31 RHR pump test in July 2010 has not been positively identified, Entergy personnel took timely action to assess that the operability of the equipment was not impacted and ruled out certain potential causes.

4OA3 Event Follow-Up (71153 – 2 samples)

.1 (Closed) LER 05000286-2009-004-01, Automatic Reactor Trip During Single Feedwater Pump Operation Due to a High 32 Steam Generator Water Level Caused by Inadequate 31 Main Feedwater Pump Governor Valve Setting

On May 28, 2009, Unit 3 control room operators responded to an automatic reactor trip that was caused by high level in the 32 steam generator. Subsequently, the cause of the SG water level event was determined by Entergy personnel to be inadequate feedwater controller settings and improper feedwater pump governor valve operation

associated with the 31 main boiler feedwater pump. Entergy staff entered the issue in the corrective action program as CR-IP3-2009-02494 and 02710 and conducted a root cause evaluation (RCE). Additionally, Entergy submitted LER 2009-004-00 in July 2009, which was evaluated and dispositioned as a Finding (FIN) of very low safety significance in NRC inspection report 05000247/2009-005.

The inspectors reviewed this supplement LER, which was submitted in April 2010, following revisions to the RCE and associated corrective actions. The inspectors verified the information in the LER was consistent with the updated corrective action program documents. There were no additional findings of significance or violations of NRC requirements identified. This LER is closed.

.2 Manual Reactor Trip on September 9, 2010, due to Exciter Service Water Leak

a. Inspection Scope

The inspectors evaluated the response of control room personnel following the initiation of a manual reactor trip due to service water identified by operators to be leaking into the main unit generator exciter housing. The inspectors reviewed plant computer data, including the sequence of events report, evaluated plant parameter traces, and discussed the event with plant personnel, to verify that plant equipment responded, as expected, and to ensure that operating procedures were appropriately implemented. The inspectors also verified that station personnel took appropriate actions in response to the unexpected trip of the 34 reactor coolant pump, which was preliminarily determined to be caused by anomalies with the closing sequence of the 6.9kV Bus No. 5/Safety Bus No. 2 tie breaker (UT2-ST5) during the fast transfer operation which normally occurs post-trip. The inspectors verified that Entergy's post-trip review group (PTRG) identified the most probable cause of the water that was identified to be leaking into the exciter housing, as well as appropriate recommendations and corrective actions prior to restart. This event and the PTRG report were entered into Entergy's corrective action program as CR IP3-2010-02682.

b. Findings

No findings were identified.

The inspectors determined that the operational response to the reactor trip was appropriate. The inspectors will conduct future reviews of the root cause evaluation (RCE) and associated corrective actions. These reviews will be conducted following Entergy's submittal of a licensee event report (LER) with regard to the event.

40A6 Meetings, Including Exit

Exit Meeting Summary

On October 28, 2010, the inspectors presented the inspection results to Mr. Joseph Pollock and other Entergy managers and staff, who acknowledged the inspection results. Entergy staff identified documents which were to be considered proprietary and handled as such.

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

**SUPPLEMENTAL INFORMATION****KEY POINTS OF CONTACT****Entergy Personnel**

J. Pollock	Site Vice President
H. Anderson	Licensing Specialist
V. Andreozzi	Systems Engineering Supervisor
R. Burroni	Systems Engineering Manager
P. Conroy	Director, Nuclear Safety Assurance
J. Dinelli	Site Operations Manager
J. Lijoi	Instrumentation and Controls Superintendent
L. Lubrano	System Engineer
T. McCaffrey	Design Engineering Manager
D. Morales	System Engineer
T. Orlando	Engineering Director
M. Tesoriero	Manager Programs and Components
A. Vitale	General Manager, Plant Operations
R. Walpole	Licensing Manager

**LIST OF ITEMS OPENED, CLOSED AND DISCUSSED****Opened and Closed**

05000247/2010-004-01	NCV	Inadequate Identification and Correction of a Condition Adverse to Quality to Ensure the Continued Availability of the Safety-Related No. 31 Static Inverter (Section 1R12)
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**Closed**

050000286/2009-004-01	LER	Automatic Reactor Trip During Single Feedwater Pump Operation Due to a High 32 Steam Generator Water Level Caused by Inadequate 31 Main Feedwater Pump Governor Valve Setting (Section 4OA3)
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**LIST OF DOCUMENTS REVIEWED**

**Section 1R04: Equipment Alignment**

Procedures

3-COL-CC-1, Component Cooling System, Rev. 28

**Section 1R05: Fire Protection**

Procedures

3PT-Q130, RES Battery Inspection, Rev. 0

EN-DC-161, Control of Combustibles, Rev. 4

PFP-364, Unit 3 Pre-Fire Plan General Floor Plan – Turbine Building – 53'-0", Rev. 11

PFP-392, Outage Support Building – Second Floor, Rev. 5

Pre-Fire Plans

PFP-351A, A/C Equipment Room – Control Building, Rev. 11

PFP-355, Lower Electrical Tunnel, Rev. 5

PFP-356, Lower Electrical Penetration Area, Rev. 0

PFP-383, Condensate Polisher – Lower Level, Rev. 5

PFP-384, Condensate Polisher – Upper Level, Rev. 0

Miscellaneous

0090-00066-EVAL-003, Report on Expansion and Seismic Gaps for Indian Point 3 Nuclear Power Plant, dated November 7, 1994

IP3-RPT-FP-01163, NFPA Code 13-1983 Conformance Review, Rev. 3

**Section 1R07: Heat Sink Performance**

Procedures

SEP-SW-001, IPEC NRC G.L. 89-13 Service Water Program, Rev. 2

Condition Reports (CR-IP3-)

2010-02384

Work Orders

52243920      52243921

Miscellaneous

31 EDG Jacket Water and Lube Oil Cooler Inspection Report, dated August 11, 2010

**Section 1R11: Licensed Operator Requalification**

Procedures

TQF-210-DD03, LOR Simulator Crew Performance Evaluation Report, Rev.1

**Section 1R12: Maintenance Effectiveness**

Procedures

3-IC-PC-I-E-Static Inverter-31, No. 31 Static Inverter Maintenance Procedure, Rev. 0 and Rev. 1  
3-IC-SI-27, No. 31 Static Inverter Special Maintenance Procedure, Rev. 9  
3-PT-W020, Electrical Verification – Inverters and DC Distribution in Modes 1 to 4, Rev. 12

Condition Reports (CR-)

IP2-2010-04148      IP2-2010-04663      IP3-01674

Calculations

IP3-CALC-EL-00188; Inverter #31 System Component Sizing Analysis, Rev. 0

Work Orders

51438131-02                      250464                      248502

Miscellaneous

Vendor Manual 498-100000689, Instruction Manual Operations – Maintenance Instructions and Parts Catalog for Elgar Inverters Model Inv. 253-1-106

**Section 1R13: Maintenance Risk Assessment and Emergent Work Control**

Procedures

EN-WM-104, On Line Risk Assessment, Rev. 2

Completed Procedures

3-ST-M13A, Reactor Protection Logic Channel Functional Test (Shutdown Train A), dated September 10, 2010

**Section 1R15: Operability Evaluations**

Procedures

3-ARP-013, Panel SKF – Bearing Monitor, Rev. 36  
3-PT-Q75A, Functional Test RM 11/12, Rev. 18  
ONOP-RM-1, Failures of Radiation Monitors, Rev. 14  
EN-OP-104, Operability Determination Process, Rev. 4

Condition Reports (CR-IP3-)

2006-02398    2010-01850    2010-01987    2010-01989    2010-02142

Drawings

9321-F-27203, Flow Diagram – Auxiliary Coolant System Inside Containment, Rev. 29  
9321-F-27513 Sheet 1, Flow Diagram – Auxiliary Coolant System in PAB and FSB, Rev. 31

Work Orders

00241655

Calculations

IP3-CALC-CBHV-00997, CB El. 15'-0" Temperatures at Varying Outdoor Temperatures, Rev. 1

- IP3-CALC-ED-01545, 480V Safety Related Switchgear Accident Operation at Above 40 degrees C Ambient, Rev. 0
- IP3-CALC-ED-00301, Evaluation of Short Time Operation of 480V AC Safety Related Switchgear Bus Above 3200A Rating, Rev. 1
- IP3-CALC-ED-00302, Evaluation of Short Time Operation of 480V AC Safety Related Supply Circuit Breaker for Safety Related Switchgear Above 3200A Rating, Rev. 3
- IP3-CALC-ED-01294, 480V Buses 2A, 3A, 5A, and 6A Load vs. Temperature Tables, Rev. 0

**Section 1R18: Plant Modifications**

Procedures

EN-DC-136, Temporary Plant Modifications, Rev. 5

Drawings

- 9321-F-20303, Flow diagram Fuel Oil to Diesel Generators, Rev. 29
- 9321-LL-31333 Sheet 6, Schematic Diagram Diesel Generator Auxiliaries, Rev. 7
- 9321-LL-31333 Sheet 15, Schematic Diagram Diesel Generator Auxiliaries, Rev. 6
- 9321-F-32173, Wiring Diagram Diesel Generators 31-32-33, Rev. 13

Work Orders

00240786

Miscellaneous

EC-23034, Temporarily Disable the "AO" Limit Switch for DF-LCV-1207B

**Section 1R19: Post-Maintenance Testing**

Completed Procedures

- 0-VLV-404-AOV, Use of Air Operated Valve Diagnostics, Rev. 7
- 3-PT-M13B1, Reactor Protection Logic Channel Functional Test (Reactor Power Greater than 35% - P8), dated August 16, 2010
- 3-PT-M079A, 31 EDG Functional Test, Rev. 39
- 3-PT-OL3B1, Auxiliary Boiler Feedwater Pump #31 Load Sequencer Calibration, dated July 8, 2010
- 3-PT-Q120A, 31 Auxiliary Feedwater Pump, dated July 8, 2010
- 3-SOP-EL-001, Diesel Generator Operation, Rev. 42

Condition Reports (CR-IP3-)

2010-02201

Drawings

- 113E301 Sheet 3, Reactor Protection System Schematic Diagram, Rev. 10
- 113E301 Sheet 4, Reactor Protection System Schematic Diagram, Rev. 10

Work Orders

00143710	00245038	00246268	00246271	51692331	52244274
52257653	52259198	52266847			

**Section 1R20: Refueling and Outage Activities**

Procedures

- 3-AOP-TURB-1, Main Turbine Trip Without a Reactor Trip, Rev. 5
- 3-AOP-FW-1, Loss of Feedwater, Rev. 7
- 3-POP-1.2, Reactor Startup, Rev. 51
- 3-POP-2.1, Operation at Greater Than 45% Power, Rev. 54

**Section 1R22: Surveillance Testing**

Procedures

- 0-OSP-TG-001, Main Turbine Stop and Control Valve Contingency Actions, Rev. 0
- 0-SOP-LEAKRATE-001, RCS Leakrate Surveillance, Evaluation, and Leak Identification, Rev. 1

Completed Procedures

- 0-SOP-LEAKRATE-001, RCS Leakrate Surveillance, Evaluation, and Leak Identification, dated July 9, 2010
- 3-PC-OL27G, Bus 5A 480 Volt Undervoltage Relays Inspection and Calibration, Rev. 1
- 3-PT-Q120B, 32 ABFP (Turbine Driven) Surveillance and IST, Rev. 16
- 3-PT-SA045, Main Turbine Stop and Control Valves Exercise Test, Rev. 4

Condition Reports (CR-IP3-)

- 2010-02037 2010-02055

**Section 40A1: Performance Indicator Verification**

Procedures

- 3-SOP-CC-001B, Component Cooling System Operation, Rev. 33
- 3-ARP-009, Panel SFF - Chemical and Volume Control System, Rev. 38
- EN-LI-114, Performance Indicator Process, Rev. 4

Completed Procedures

- EN-LI-114, Performance Indicator Process – Mitigating Systems Performance Indicator High Pressure Injection, dated October 2, 2009
- EN-LI-114, Performance Indicator Process – Mitigating Systems Performance Indicator High Pressure Injection, dated January 7, 2010
- EN-LI-114, Performance Indicator Process – Mitigating Systems Performance Indicator High Pressure Injection, dated April 3, 2010
- EN-LI-114, Performance Indicator Process – Mitigating Systems Performance Indicator High Pressure Injection, dated July 8, 2010
- EN-LI-114, Performance Indicator Process – Mitigating Systems Performance Indicator Residual Heat Removal, dated October 2, 2009
- EN-LI-114, Performance Indicator Process – Mitigating Systems Performance Indicator Residual Heat Removal, dated January 7, 2010
- EN-LI-114, Performance Indicator Process – Mitigating Systems Performance Indicator Residual Heat Removal, dated April 3, 2010
- EN-LI-114, Performance Indicator Process – Mitigating Systems Performance Indicator Residual Heat Removal, dated July 8, 2010
- EN-LI-114, Performance Indicator Process – Mitigating Systems Performance Indicator Heat Removal, dated October 6, 2009

- EN-LI-114, Performance Indicator Process – Mitigating Systems Performance Indicator Heat Removal, dated January 6, 2010
- EN-LI-114, Performance Indicator Process – Mitigating Systems Performance Indicator Heat Removal, dated April 2, 2010
- EN-LI-114, Performance Indicator Process – Mitigating Systems Performance Indicator Heat Removal, dated July 6, 2010
- EN-LI-114, Performance Indicator Process – Mitigating Systems Performance Indicator Emergency AC Power, dated October 6, 2009
- EN-LI-114, Performance Indicator Process – Mitigating Systems Performance Indicator Emergency AC Power, dated January 7, 2010
- EN-LI-114, Performance Indicator Process – Mitigating Systems Performance Indicator Emergency AC Power, dated April 5, 2010
- EN-LI-114, Performance Indicator Process – Mitigating Systems Performance Indicator Emergency AC Power, dated July 7, 2010
- EN-LI-114, Performance Indicator Process – Mitigating Systems Performance Indicator Cooling Water Support (Component Cooling Water), dated October 5, 2009
- EN-LI-114, Performance Indicator Process – Mitigating Systems Performance Indicator Cooling Water Support (Component Cooling Water), dated January 7, 2010
- EN-LI-114, Performance Indicator Process – Mitigating Systems Performance Indicator Cooling Water Support (Component Cooling Water), dated April 4, 2010
- EN-LI-114, Performance Indicator Process – Mitigating Systems Performance Indicator Cooling Water Support (Component Cooling Water), dated July 6, 2010
- EN-LI-114, Performance Indicator Process – Mitigating Systems Performance Indicator Cooling Water Support (Service Water), dated October 7, 2009
- EN-LI-114, Performance Indicator Process – Mitigating Systems Performance Indicator Cooling Water Support (Service Water), dated January 7, 2010
- EN-LI-114, Performance Indicator Process – Mitigating Systems Performance Indicator Cooling Water Support (Service Water), dated April 4, 2010
- EN-LI-114, Performance Indicator Process – Mitigating Systems Performance Indicator Cooling Water Support (Service Water), dated July 8, 2010

**Section 40A2: Identification and Resolution of Problems**

Procedures

- 3-PT-M108, RHR/SI/CS System Venting, Rev. 11
- CEP-BPT-0100, Buried Piping and Tanks Inspection and Monitoring, Rev. 0
- EN-DC-343, Buried Piping and Tanks Inspection and Monitoring Program, Rev. 2
- EN-DC-167, Classification of Structures, Systems, and Components, Rev. 4
- EN-EP-S-002-MULTI, Buried Piping and Tanks General Visual Inspection, Rev. 0
- EN-IS-112, Trenching, Excavating and Ground Penetrating Activities, Rev. 6
- IPEC U2 and U3 Buried Pipe and Tank Inspections summary for October 12, 2008 to March 31, 2010

Condition Reports (CR-)

IP2-2008-04754	IP2-2009-00666	IP2-2010-01146	
IP3-2007-00019	IP3-2007-00247	IP3-2007-00487	IP3-2007-00489
IP3-2007-00504	IP3-2007-00508	IP3-2007-01162	IP3-2007-01546
IP3-2007-03211	IP3-2007-04168	IP3-2008-00875	IP3-2008-01100
IP3-2008-01656	IP3-2008-02234	IP3-2008-02277	IP3-2009-00061
IP3-2009-01152	IP3-2009-01640	IP3-2010-01937	

Drawings

9321-F-27353, Flow Diagram Safety Injection System Sheet No. 1, Rev. 41  
9321-F-27503, Flow Diagram Safety Injection System Sheet No. 2, Rev. 50

Work Orders

00136869 00169294

Miscellaneous

EPRI Report 1016456, Recommendations for an Effective Program to Control the Degradation of Buried Pipe  
Inspection Report for AFW lines 1505, 1509 and 10" overflow, IPU2, December 4, 2008  
NEI 09-14, Guidance for the Management of Buried Piping Integrity, January 2010  
Report IP-RPT-09-00011, Rev 0, Corrosion /Cathodic Protection Field Survey and Assessment of Underground Structures at IP U2 and U3, Rev. 0, October 2008  
Root Cause Analysis Report for CR-IP2-2009-00666, May 14, 2009  
SIA Report of G-Scan Assessment of various Buried pipe sections at IP U2 and U3, September 23–24, 2009  
NRC Inspection Report 05000286/201011  
IPEC U2 and U3 Safety Related and Rad fluid piping lists  
Entergy Buried Piping/Tanks Action Plan, Rev 3  
IPEC Buried Piping and Tank Program Health Report for July 2009 – September 2009, as updated to July 6, 2010

**LIST OF ACRONYMS**

ADAMS	Agency Wide Document Management System
ABFP	Auxiliary Boiler Feed Pump
AFW	Auxiliary Feedwater System
CA	Corrective Action
BIT	Boron Injection Tank
CAP	Corrective Action Plan
CCW	Component Cooling Water
CFR	Code of Federal Regulations
CR	Condition Report
CS	Containment Spray
CST	Condensate Storage Tank
ECCS	Emergency Core Cooling Systems
EDG	Emergency Diesel Generator
ENTERGY	Entergy Nuclear Northeast
EPRI	Electric Power Research Institute
FIN	Finding
HD	Heater Drain
IMC	Inspection Manual Chapter
IPEC	Indian Point Energy Center
LER	License Event Report
MBFP	Main Boiler Feed Pump
NDE	Non-Destructive Examination
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
NCV	Non-Cited Violation
NUREG	NRC Technical Report Designation
OOS	Out of service
PFP	Pre-Fire Plan
PI	Performance Indicator
PM	Preventive Maintenance
PTRG	Post-Trip Review Group
RCE	Root Cause Evaluation
RCP	Reactor Coolant Pump
RCS	Reactor Coolant System
RES	Radiological and Environmental Services
RHR	Residual Heat Removal
RPS	Reactor Protection System
SI	Safety Injection
SSC	Structures, Systems, and Components
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report