



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION I**  
2100 RENAISSANCE BOULEVARD, SUITE 100  
KING OF PRUSSIA, PENNSYLVANIA 19406-2713

July 31, 2013

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

**SUBJECT: INDIAN POINT NUCLEAR GENERATING UNITS 2 AND 3 – NRC  
INTEGRATED INSPECTION REPORT 05000247/2013003 AND  
05000286/2013003**

Dear Mr. Ventosa:

On June 30, 2013, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Indian Point Nuclear Generating Units 2 and 3. The enclosed inspection report documents the inspection results, which were discussed on July 17, 2013, 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 three NRC-identified findings of very low safety significance (Green). These findings were determined to involve violations of NRC requirements. Because of the very low safety significance and because they are entered into your corrective action program, the NRC is treating these findings as non-cited violations (NCVs), consistent with Section 2.3.2 of the NRC Enforcement Policy. If you contest any NCVs in this report, 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 I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Indian Point Energy Center. In addition, if you disagree with a cross-cutting aspect assignment 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 I, and the NRC Resident Inspector at Indian Point Energy Center.

In accordance with 10 CFR 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 or from the Publicly Available Records component of the NRC's

J. Ventosa

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Sincerely,

*/RA/*

Scott P. Rutenkroger, PhD, Acting Chief  
Reactor Projects Branch 2  
Division of Reactor Projects

Docket Nos. 50-247 and 50-286  
License Nos. DPR-26 and DPR-64

Enclosure: Inspection Report 05000247/2013003 and 05000286/2013003  
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**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION I**

Docket Nos: 50-247 and 50-286

License Nos: DPR-26 and DPR-64

Report Nos: 05000247/2013003 and 05000286/2013003

Licensee: Entergy Nuclear Northeast (Entergy)

Facility: Indian Point Nuclear Generating Units 2 and 3

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

Dates: April 1, 2013, through June 30, 2013

Inspectors: J. Stewart, Senior Resident Inspector  
P. Cataldo, Senior Resident Inspector  
K. Dunham, Resident Inspector  
A. Patel, Resident Inspector  
J. Furia, Senior Health Physicist  
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J. Richmond, Senior Reactor Inspector  
S. McCarver, Project Engineer  
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Approved By: Scott P. Rutenkroger, PhD, Acting Chief  
Reactor Projects Branch 2  
Division of Reactor Projects

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## SUMMARY

IR 05000247/2013003, 05000286/2013003; 04/01/13 – 06/30/13; Indian Point Nuclear Generating Units 2 and 3; Maintenance Risk Assessments and Emergent Work Control, Problem Identification and Resolution, and Follow-Up of Events and Notices of Enforcement Discretion.

This report covered a three-month period of inspection by resident inspectors and announced inspections performed by regional inspectors. The inspectors identified three findings of very low safety significance (Green), which were non-cited violations (NCVs). The significance of most findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," dated June 2, 2011. Cross-cutting aspects are determined using IMC 0310, "Components Within Cross-Cutting Areas," dated October 28, 2011. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated January 28, 2013. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4.

### Cornerstone: Mitigating Systems

- Green. The inspectors identified an NCV of Title 10 of the *Code of Federal Regulations* (10 CFR) 50.65(a)(4), requirements for monitoring the effectiveness of maintenance, when Entergy did not assess and manage the risk associated with reactor protection testing with Unit 3 below normal operating pressure. Specifically, on March 27, 2013, with Unit 3 just having entered Mode 3 and while raising reactor coolant system (RCS) temperature, required risk management actions were not taken regarding a reactor protection system test, and due to a problem with the test equipment, a low pressure safety injection (SI) actuated. Entergy operators took action to mitigate the SI, and the event was entered into the corrective action program (CAP) as CR-IP3-2013-2115. A root cause evaluation was initiated to determine the acceptability of conducting this test with the plant at low pressure in Mode 3 and address extent of condition.

The finding was more than minor because it was associated with the configuration control attribute of the Mitigating Systems cornerstone and affected the cornerstone objective of ensuring the availability of systems that respond to initiating events to prevent undesirable consequences. In addition, in accordance with IMC 0612, Appendix E, Example 7.f, had the risk assessment for the testing been done using Entergy's risk procedure, the assessment would have determined the impairment of the low pressure SI interlocks and would have placed the plant in an administrative higher risk condition (Orange). The finding was evaluated using IMC 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," and determined to be of very low safety significance (Green) when the risk assessment was performed correctly with the resulting actual incremental core damage frequency deficit determined to be very small, less than 1E-6. The inspectors determined this finding had a cross-cutting aspect in Human Performance, Work Control, when Entergy personnel did not take risk insights, job site conditions such as the plant pressure, technical specification requirements, and an inaccurate pressurizer level indication into consideration when preparing for testing along with the need for contingencies. [H.3.(a)] (Section 1R13)

- Green. The inspectors identified an NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," when Entergy failed to correct a condition adverse to quality associated with the Unit 3 pressurizer safety valves (PSVs). Specifically, following valve lift setpoint failures in 2005 and 2008, Entergy did not complete a cause determination and establish corrective actions. As a result, a PSV (PCV-468) removed from Unit 3 in 2011, lifted at higher than its setpoint pressure due to spring fatigue. Following the 2011 failure, Entergy performed a cause investigation and initiated a corrective action to include spring rate testing in the inspection of the safety valves.

The finding was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. In accordance with IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," Exhibit 2, the finding screened to be of very low safety significance (Green), when all screening questions were answered "no." The inspectors determined that no cross-cutting aspect was applicable to this performance deficiency because this finding was not indicative of current licensee performance. (Section 4OA2)

- Green. The inspectors identified an NCV of 10 CFR 50, Appendix B, Criterion V, "Procedures," when Entergy did not maintain appropriate written procedures for responding to an inadvertent SI on Unit 3 when below the normal operating RCS temperature. As a result, operators did not comply with procedure requirements when responding to an inadvertent SI event on March 27, 2013. During a review of the event by the inspectors, procedure deficiencies were identified which have the potential to lead to a more significant safety concern. Entergy personnel documented the March 27 event in their CAP as CR-IP3-2013-2115 and initiated a root cause evaluation.

The finding was more than minor because, if left uncorrected, the procedure deficiencies have the potential to lead to a more significant safety concern related to exceeding vessel integrity pressure limitations if a charging pump was started in solid conditions below 380°F. In accordance with IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," Exhibit 2, the finding screened to be of very low safety significance (Green), when all screening questions were answered "no." The finding was assigned a cross-cutting aspect in the area of Human Performance, Resources, because Entergy staff did not ensure that design documentation and procedures were adequate to assure nuclear safety. [H.2(c)] (Section 4OA3)

## REPORT DETAILS

### Summary of Plant Status

Unit 2 operated at or near 100 percent power during the inspection period.

Unit 3 began the inspection period at 35 percent power, following the completion of a planned refueling and maintenance outage. Unit 3 returned to 100 percent power on April 7, 2013, and remained at or near 100 percent power for the remainder of the inspection period.

## 1. REACTOR SAFETY

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

1R01 Adverse Weather Protection (71111.01 – 2 samples)

#### .1 Readiness for Seasonal Extreme Weather Conditions

##### a. Inspection Scope

The inspectors performed a review of Entergy's readiness for the onset of seasonal high temperatures and storm readiness. The review focused on the condition of the 138 kilovolt (kV) and 13.8 kV electrical distribution systems. The inspectors reviewed the Updated Final Safety Analysis Report (UFSAR), technical specifications, control room logs, and the CAP to determine what temperatures or other seasonal weather could challenge these systems, and to ensure Entergy personnel had adequately prepared for these challenges. The inspectors reviewed station procedures, including Entergy's seasonal weather preparation procedure, OAP-008, "Seasonal Weather Preparations," and applicable operating procedures. The inspectors performed walkdowns of the selected systems to ensure station personnel identified issues that could challenge the operability of the systems during hot or severe weather conditions. Documents reviewed for each section of the inspection report are listed in the Attachment.

##### b. Findings

No findings were identified.

#### .2 Summer Readiness of Offsite and Alternate Alternating Current (AC) Power Systems

##### a. Inspection Scope

The inspectors performed a review of plant features and procedures for the operation and continued availability of the offsite and alternate AC power system to evaluate readiness of the systems prior to seasonal high grid loading. The inspectors reviewed Entergy's procedures affecting these areas and the communications protocols between the transmission system operator and Entergy. This review focused on changes to the established program and material condition of the offsite and alternate AC power equipment. The inspectors assessed whether Entergy established and implemented appropriate procedures and protocols to monitor and maintain availability and reliability



of both the offsite AC power system and the onsite alternate AC power system. The inspectors evaluated the material condition of the associated equipment by interviewing the responsible system manager, reviewing condition reports and open work orders, and walking down portions of the offsite and AC power systems including the 345 kV and 138 kV switchyards.

b. Findings

No findings were identified.

1R04 Equipment Alignment

.1 Partial System Walkdowns (71111.04Q – 5 samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

Unit 2

- 21, 22, and 23 emergency diesel generator (EDG) fuel oil system using Entergy procedure 2-COL-27.3.1, "Diesel Generators," following Entergy identification that fuel oil supply valve DF-17-4 had been inadvertently removed from service (CR-IP2-2013-1366) on April 18, 2013
- Appendix R EDG during maintenance window for 22 EDG on June 11, 2013

Unit 3

- 32 and 33 EDGs during a 31 EDG maintenance outage on April 10, 2013
- Instrument air system including supply to the control room ventilation system after a leak was identified on the control room ventilation backup nitrogen system (CR-IP3-2013-2563). The walkdown was done using Entergy procedure 3-COL-IA-1, "Instrument Air System," Revision 28, and Drawing 9321-F-20363, "Flow Diagram Instrument Air," on April 30, 2013
- 31 auxiliary boiler feed pump valve alignment while the Appendix R EDG was out of service for maintenance. The walkdown was done in accordance with Entergy procedure 3-COL-FW-2, "Auxiliary Feedwater System," Revision 31, on May 29, 2013

The inspectors selected these systems based on their risk-significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors routinely reviewed applicable operating procedures, system diagrams, the UFSAR, technical specifications, work orders, condition reports, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have impacted system performance of their intended safety functions. The inspectors also routinely performed field walkdowns of accessible portions of the systems to verify system components and support equipment were aligned correctly and were operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no deficiencies. The inspectors also

reviewed whether Entergy staff had properly identified equipment issues and entered them into the CAP for resolution with the appropriate significance characterization.

b. Findings

No findings were identified.

.2 Full System Walkdown (71111.04S – 1 sample)

a. Inspection Scope

On May 7, 2013, the inspectors performed a complete system walkdown of accessible portions of the Unit 2 480 volt AC distribution system to verify the existing equipment lineup was correct. The inspectors reviewed operating procedures, surveillance tests, drawings, equipment line-up check-off lists, and the UFSAR to verify the system was aligned to perform its required safety functions. The inspectors also reviewed electrical power availability and equipment cooling, hangar and support functionality, and operability of support systems. The inspectors performed field walkdowns of accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no deficiencies. Additionally, the inspectors reviewed a sample of related condition reports and work orders to ensure Entergy appropriately evaluated and resolved any deficiencies. CR-IP3-2013-00731 was reviewed by the inspectors to verify that Entergy was identifying issues at an appropriate threshold and correcting deficiencies.

b. Findings

No findings were identified.

1R05 Fire Protection

Resident Inspector Quarterly Walkdowns (71111.05Q – 8 samples)

a. Inspection Scope

The inspectors conducted tours of the areas listed below to assess the material condition and operational status of fire protection features. The inspectors verified that Entergy staff controlled combustible materials and ignition sources in accordance with administrative procedures. The inspectors verified that fire protection and suppression equipment was available for use as specified in the area pre-fire plan, and passive fire barriers were maintained in good material condition. The inspectors also verified that station personnel implemented compensatory measures for out of service, degraded, or inoperable fire protection equipment, as applicable, in accordance with procedures.

Unit 2

- Fire zones 3A and 4, Primary Auxiliary Building, Elevation 15'-0" (pre-fire plan 204 was reviewed) on April 3, 2013
- Fire zones 9, 12A, 13A, Primary Auxiliary Building, Elevation 59'-0" (pre-fire plan 207 was reviewed) on April 23, 2013
- Fire zone 32A, Electrical Tunnel (pre-fire plan 213 was reviewed) on May 8, 2013
- Fire zone 1, component cooling water room (pre-fire plan 209 was reviewed) on June 21, 2013

Unit 3

- Fire zones 10, 36A, 101A, and 102A, 31 EDG Room – PAB on (pre-fire plan 354 was reviewed) May 6, 2013
- Fire zones 60A and 73A, Upper Electrical Tunnel and Penetration Area – from Cable Spreading Room on 33'-0", Up Stairwell to 43'-0" (pre-fire plans 357 and 358 were reviewed) on May 21, 2013
- Fire zones 1 and 1A, Component Cooling Pumps-PAB 41'-0" on May 23, 2013, after failure of zone 148 smoke detectors (pre-fire plan 306A was reviewed) on May 15, 2013 (CR-IP3-2013-2690, CR-IP3-2013-2749, CR-IP3-2013-2784)
- Appendix R EDG (pre-fire plan 388 was reviewed) on June 5, 2013

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06 – 1 sample)Unit 3 Internal Flooding Reviewa. Inspection Scope

The inspectors reviewed the Unit 3 UFSAR, the site flooding analysis, and plant procedures to assess susceptibilities involving internal flooding. The inspectors also reviewed the CAP to determine if Entergy staff identified and corrected flooding problems and whether operator actions for coping with flooding were adequate. In particular, the inspectors focused on seismically induced break of the fire protection piping and deluge valves for the water spray system for Main, Station, Auxiliary, and Unit Auxiliary transformers located in the 480V switchgear room resulting in potential loss of all four 480V emergency buses. The inspectors verified the adequacy of equipment seals located below the flood line, floor and water penetration seals, watertight door seals, common drain lines and sumps, sump pumps, level alarms, control circuits, operator response, and temporary or removable flood barriers.

b. Findings

No findings were identified.

1R07 Heat Sink Performance (71111.07A – 2 samples)a. Inspection Scope

The inspectors reviewed the 22 emergency diesel jacket water and lube oil heat exchangers for Unit 2 and the 32 emergency diesel jacket water and lube oil heat exchanger for Unit 3 to determine their readiness and availability to perform their safety functions. The inspectors reviewed the design basis for the components and verified Entergy's commitments from NRC Generic Letter 89-13. The inspectors reviewed the results of previous inspections of the 22 and 32 EDG jacket water heat exchangers. The inspectors discussed the results of the most recent inspection with engineering staff and reviewed pictures of the as-found and as-left conditions. The inspectors verified that Entergy initiated appropriate corrective actions for identified deficiencies. The inspectors also compared the number of tubes plugged within the heat exchanger to the maximum allowed.

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program (71111.11Q – 4 samples)Unit 2.1 Quarterly Review of Licensed Operator Regualification Testing and Traininga. Inspection Scope

The inspectors observed a licensed operating crew evaluated simulator session on June 11, 2013. The unannounced scenario (LRQ-SES-57) included a RCS leak, leading to a large break loss of coolant accident. The inspectors evaluated operator performance during the simulated event and verified completion of risk significant operator actions, including the use of abnormal and emergency operating procedures that included 2-AOP-LEAK-1, "Sudden Increase in Reactor Coolant System Leakage;" 2-E-0, "Reactor Trip or Safety Injection;" 2-E-1, "Loss of Primary Coolant;" and 2-ES-1.3, "Transfer to Cold Leg Recirculation." The inspectors assessed the clarity and effectiveness of communications, implementation of actions in response to alarms and degrading plant conditions, and the oversight and direction provided by the control room supervisors. The inspectors verified that the timeliness of the emergency classification made by the shift manager was in accordance with Entergy procedure IP-ED-210, "Central Control Room, Indian Point Energy Center (IPEC) Emergency Plan Implementing Procedure." Additionally, the inspectors assessed the ability of the crew and training staff to identify and document crew performance problems.

b. Findings

No findings were identified.

.2 Quarterly Review of Licensed Operator Performance in the Main Control Room

a. Inspection Scope

The inspectors observed and reviewed control room operations conducted on June 27, 2013. The inspectors observed the morning pre-shift briefing and evolution pre-briefings to verify that the briefings met the criteria specified in Entergy's administrative procedure EN-OP-115, "Conduct of Operations," Revision 14. Additionally, the inspectors observed licensed operator performance of routine operations such as starting and stopping 21 charging pump, operator response to control room annunciators, and the balance of plant rounds to verify that procedure use, crew communications, and coordination of activities between work groups similarly met established expectations and standards.

b. Findings

No findings were identified.

Unit 3

.3 Quarterly Review of Licensed Operator Requalification Testing and Training

a. Inspection Scope

The inspectors observed a licensed operating crew evaluated simulator session on May 7, 2013. The unannounced scenario (IP3-SX-LOR-SES-37) included 33 Steam Generator tube rupture with the two motor driven auxiliary feed water pumps (31 and 33) not available and loss of instrument air requiring a manual reactor trip and initiation of SI. The inspectors evaluated operator performance during the simulated event and verified completion of risk significant operator actions, including the use of abnormal and emergency operating procedures, including 3-AOP-SG-1, "Steam Generator Tube Leak," 3-E-0, "Reactor Trip or Safety Injection;" 3-E-3, "Steam Generator Tube Rupture (SGTR);" and 3-ECA-3.3, "SGTR Without Pressure Control." The inspectors assessed the clarity and effectiveness of communications, implementation of actions in response to alarms and degrading plant conditions, and the oversight and direction provided by the control room supervisors. The inspectors verified that the timeliness of the emergency classification made by the shift manager was in accordance with Entergy procedure IP-ED-210, "Central Control Room, IPEC Emergency Plan Implementing Procedure." Additionally, the inspectors assessed the ability of the crew and training staff to identify and document crew performance problems.

b. Findings

No findings were identified.

.4 Quarterly Review of Licensed Operator Performance in the Main Control Room

a. Inspection Scope

On April 3, 2013, the inspectors observed plant operators shift main feedwater supply from 31 main boiler feedwater pump to 32 main boiler feedwater pump as part of the plant recovery from refueling outage 17. The inspectors observed the pre-evolution briefing and discussion amongst the operators to verify that adequate preparations and precautions were taken to minimize the possibility of an unplanned transient. The evolution was conducted using Entergy procedure 3-SOP-FW-001, "Main Feedwater System Operation," Section 4.16. Additionally, the inspectors conducted routine observations of control room operations to verify that procedure use, crew communications, and coordination of activities between work groups met Entergy's established expectations and standards.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12Q – 4 samples)

a. Inspection Scope

The inspectors reviewed the samples listed below to assess the effectiveness of maintenance activities on structure, system, and component (SSC) performance and reliability. The inspectors reviewed system health reports, CAP documents, maintenance work orders, and maintenance rule basis documents to ensure that Entergy was identifying and properly evaluating performance problems within the scope of the maintenance rule. For each sample selected, the inspectors verified that the SSC was properly scoped into the maintenance rule in accordance with 10 CFR 50.65 and verified that the (a)(2) performance criteria established by Entergy staff was reasonable. As applicable, for SSCs classified as (a)(1), the inspectors assessed the adequacy of goals and corrective actions to return these SSCs to (a)(2). Additionally, the inspectors ensured that Entergy staff was identifying and addressing common cause failures that occurred within and across maintenance rule system boundaries.

Unit 2

- From 2011 to 2012, static inverter frequency meter failures caused multiple unplanned entries into shutdown limiting condition for operations (LCOs). The inspectors verified that Entergy's corrective actions ensured the reliability of the 118V system with a focus on the a(1) action plan on April 30, 2013
- When attempting to power the gas turbine 3 bus from 13W77 on February 7, 2013, the fuses failed and melted (CR-IP2-2013-0615). The inspectors verified that the power supply was outside the scope of the credited portion of the 13.8 kV distribution system and no functional failure was assigned. The first quarter 2013 13.8 kV electrical system health report was reviewed with focus on a(2) monitoring performance. Portions of the 13.8 kV electrical distribution were walked down and discussed with plant personnel

Unit 3

- Failure of multiplier/divider FM-419B identified during plant test 3-PT-Q43B, "Main Steam Flow Wide Range Analog Components Channel II," on June 5, 2013 (CR-IP3-2012-1712)
- Performance evaluation following failure of relay LC-427F-X-A, 32 steam generator level on March 26, 2013, documented in CR-IP3-2013-2357. The a(1) action plan associated with relay problems, documented in CR-IP3-2011-5686, was reviewed in this inspection

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 8 samples)a. Inspection Scope

The inspectors reviewed station evaluation and management of plant risk for the maintenance and emergent work activities listed below to verify that Entergy personnel performed the appropriate risk assessments prior to removing equipment for work. The inspectors selected these activities based on potential risk significance relative to the reactor safety cornerstones. As applicable for each activity, the inspectors verified that Entergy personnel performed risk assessments as required by 10 CFR 50.65(a)(4) and that the assessments were accurate and complete. When Entergy performed emergent work, the inspectors verified that operations personnel promptly assessed and managed plant risk. The inspectors reviewed the scope of maintenance work and discussed the results of the assessment with the station's probabilistic risk analyst to verify plant conditions were consistent with the risk assessment. The inspectors also reviewed the technical specification requirements and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

Unit 2

- Yellow risk during SI logic testing on April 8, 2013
- Green risk during 22 auxiliary feedwater pump testing with manual operator actions on May 8, 2013
- Yellow risk with 21 EDG and feeder 33332 out of service on May 13, 2013
- Green risk during 13.8kV back up feeder 13W93 out of service for maintenance on May 22, 2013

Unit 3

- Green risk during 3-PT-M13B, "Reactor Protection Logic Channel Functional Test (Monthly)," on March 27, 2013
- Yellow risk during 32 EDG planned maintenance on May 7, 2013

- Yellow risk during 31 residual heat removal pump and 31 service water pump testing on May 21, 2013
- Green risk during 13.8kV feeder 13W92 not available for crosstie and primary feeder 13W93 out of service for maintenance on May 22, 2013

b. Findings

Introduction: The inspectors identified a Green NCV of 10 CFR 50.65(a)(4) when Entergy did not assess and manage the risk associated with reactor protection testing with the plant below normal operating pressure. Risk management precautions were not assigned as required by Entergy's on-line risk procedure, and due to a problem with the test equipment, a low pressure SI actuated.

Description: On March 27, 2013, within one hour after entering Mode 3 and during heatup to normal operating pressure and temperature, Entergy initiated plant test 3-PT-M13B, "Reactor Protection Logic Channel Functional Test (Monthly)." The test required the four pressurizer pressure signals to be greater than 1930 psig, but with the plant at a lower pressure, directed the four pressure channels be provided with false signals using test potentiometers. Operators did not recognize that providing false pressure signals to all three engineered safety feature actuation system (ESFAS) pressure instruments made the ESFAS interlocks inoperable and the appropriate technical specification action was not entered. Also, the operators did not recognize that automatic operation of the reactor coolant power operated relief valves (PORVs) was disabled when the pressure channels were defeated. Entergy attempted a risk assessment of the testing in accordance with their procedure EN-WM-104, "On Line Risk Assessment," which was in effect when the unit entered Mode 3, but the test, 3-PT-M13B, was dropped from the risk assessment after discussion with the risk analyst because the resulting higher risk orange condition was intended for at-power situations. The effect of the test on the pressure channels, the ESFAS interlocks, and the PORVs were not reviewed with the risk analyst nor included in the resulting assessment. The risk assessment procedure specified an evaluation of plant integrated risk which would consider technical specification limitations, but this was not done when the outage group did not recognize the risk management procedure as being in effect.

When false signals were inserted into the pressure channels, plant pressure was approximately 1100 psi and being slowly increased. Precise pressurizer level indication was not available because neither the cold calibrated instrument nor the normal at-temperature calibrated instruments were accurate at the intermediate system temperature. When a test device failed following installation on the second pressure channel, the auto initiate low pressure SI logic was made-up and a SI initiated. The injection caused all injection pumps to start, letdown and charging were isolated, and a rapid filling of the pressurizer occurred challenging administrative pressurizer level limits established to assure integrity of the RCS at lower temperatures.

Entergy procedure EN-WM-104, Step 5.2(a), requires that a risk assessment be performed when any safety-related component is taken out of service for planned activities. Further, EN-WM-104, Attachment 9.2, Qualitative Risk Assessment; specifies for conditions that could cause a SI actuation or could result in a technical specification active shutdown LCO; or a loss of redundancy; that integrated risk be declared high. If



the percentage of LCO time to be used is greater than 75 percent, or there was a high probability of a transient initiator, then Orange risk is assigned. Indian Point procedure IP-SMM-WM-101, "On-Line Risk Assessment," Step 4.1.10, required that planned removal of technical specification equipment for more than half of the allowable outage time shall be reviewed by the operations manager prior to execution, and approved by the plant manager. The procedure states that planned removal from service of any components that cause a resulting risk color of Orange are to be reviewed by the operations manager, approved by the plant manager, and shall have a contingency plan. Because the operators did not determine the technical specification requirements affected by the test, the test was excluded from the risk assessment, and the expected Orange risk actions were not taken.

Entergy entered the event into their CAP as CR-IP3-2013-2115. A root cause evaluation was initiated to determine the acceptability of conducting this test with the plant at low pressure in Mode 3 and address extent of condition. The inspectors conducted a review of the event including interviewing involved personnel and checking procedures.

Analysis: The inspectors determined that the failure to accurately assess the risk impact of performing reactor protection logic testing at pressures below normal operating conditions, including not identifying the appropriate technical specification allowed outage times for the engineered safety features actuation interlocks, and evaluating the effects of the testing on PORV operation, was a performance deficiency that was reasonably within Entergy's ability to foresee and correct and should have been prevented. The finding was more than minor because it was associated with the configuration control attribute of the Mitigating Systems cornerstone and affected the cornerstone objective of ensuring the availability of systems that respond to initiating events to prevent undesirable consequences. In addition, in accordance with IMC 0612, Appendix E, Example 7.f, had the risk assessment for the testing been done correctly, the assessment would have determined the impairment of the low pressure ESFAS interlocks and would have placed the plant in an administrative higher risk condition (Orange). In the orange condition, risk management actions such as a critical evolutions meeting and other reviews would have been required. The finding was evaluated using IMC 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," and determined to be of very low safety significance (Green) because the actual incremental core damage frequency deficit was determined to be very small, less than  $1E-6$ . Key risk factors included an exposure time of less than two hours and the continued power operated relief valve manual operation capability. The inspectors determined this finding had a cross-cutting aspect in Human Performance, Work Control, when Entergy personnel did not take risk insights, job site conditions such as the plant pressure, technical specification requirements, and pressurizer level indication into consideration along with the need for contingencies when preparing for testing [H.3(a)].

Enforcement: 10 CFR 50.65(a)(4) requires, in part, that before performing maintenance activities, including surveillance testing, the licensee shall assess and manage the increase in risk that may result from the proposed activities. Entergy implements these requirements using their procedure EN-WM-104, "On-Line Risk Assessment," which requires a critical evolution meeting and other risk management actions when an integrated risk color of Orange or higher results from a risk assessment. Contrary to the

above, on March 27, prior to performing monthly surveillance test, 3-PT-M13B, "Reactor Protection Logic Channel Functional Test," plant personnel ran a computer based risk assessment of the test and determined a risk color Orange, but disputed the result and did not manage the administratively required risk such as by having a critical evolution meeting as specified by their procedure. As a result, when the test was conducted, an inadvertent SI was actuated. Following the SI, operators stabilized the plant, documented the event in their CAP as CR-IP3-2013-2115, and initiated a review of activities including a root cause evaluation. Licensee Event Report (LER) 05000286/2013-005-00 was issued regarding this event. Because this issue is of very low safety significance (Green) and Entergy entered it into their CAP (CR-IP3-2013-2115), this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000286/2013003-01, Failure to Assess and Manage Risk Associated with Reactor Testing Below Normal Operating Conditions)**

1R15 Operability Determinations and Functionality Assessments (71111.15 – 8 samples)

a. Inspection Scope

The inspectors reviewed operability determinations for the following degraded or non-conforming conditions:

Unit 2

- 22 component cooling water pump discharge check valve operability determination dated May 23, 2012; reviewed May 23, 2013
- Control rod B-10 erratic position indication on flight panel on May 24, 2013 (CR-IP2-2013-2041)
- High particulate level in EDG fuel reserves dated June 26, 2012; reviewed June 19, 2013 (CR-IP2-2012-4164)

Unit 3

- Pressurizer heatup and cooldown evaluation and the structural integrity of the pressurizer and the surge line following a SI on March 27, 2013 (CR-IP3-2013-02116). As part of the inspection, WCAP-17162-P, "Evaluation of Pressurizer Insurge/Outsurge Transients for Indian Point Unit 3," Revision 1, was reviewed.
- During RCS heatup after 3R17, Core Exit Thermocouple H-8 was reading approximately 40°F higher than the rest of the thermocouples as identified on March 27, 2013 (CR-IP3-2013-2122).
- During performance of major preventive maintenance on SI-MOV-880D, 32 Fan Cooler Unit Charcoal Filter Dousing Isolation, the main case grease relief valve was identified as not installed on April 12, 2013 (CR-IP3-2013-2443).
- Engine pre-lubrication pump high vibrations and relief valve reported lifting following 31 EDG surveillance test on May 6, 2013 (CR-IP3-2013-2647)
- Water accumulated on the floor of cable spreading room in vicinity of air compressors. The inspectors verified that the floor drains were not clogged and available to remove system leakage on May 31, 2013 (CR-IP3-2013-2854).

The inspectors selected these issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the operability determinations to assess whether technical specification operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the technical specifications and UFSAR to Entergy's evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled by Entergy. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18 – 2 samples)

.1 Temporary Modification

a. Inspection Scope

The inspectors reviewed the temporary modifications listed below to determine whether the modifications affected the safety functions of systems that are important to safety. The inspectors reviewed 10 CFR 50.59 documentation and post-modification testing results and conducted field walkdowns of the modifications to verify that the temporary modifications did not degrade the design bases, licensing bases, and performance capability of the affected systems.

Unit 3

- Defeat of 31 reactor coolant pump high oil level alarm in the control room annunciator panel (this will allow the high oil level switches for the other three reactor coolant pump motors to actuate this alarm in the event of an actual high oil level) on April 17, 2013 (CR-IP3-2013-2394)

b. Findings

No findings were identified.

.2 Permanent Modification

a. Inspection Scope

The inspectors evaluated and verified that the design bases, licensing bases, and performance capability of the affected systems were not degraded by the modification. In addition, the inspectors reviewed modification documents associated with the upgrade and design change.

- Engineering Change 8630, MOV-880 spring pack grease relief valve for Unit 3 in March 2013

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 6 samples)

a. Inspection Scope

The inspectors reviewed the post-maintenance tests for the maintenance activities listed below to verify that procedures and test activities ensured system operability and functional capability. The inspectors reviewed the test procedure to verify that the procedure adequately tested the safety functions that may have been affected by the maintenance activity, that the acceptance criteria in the procedure was consistent with the information in the applicable licensing basis and/or design basis documents, and that the procedure had been properly reviewed and approved. The inspectors also witnessed the test or reviewed test data to verify that the test results adequately demonstrated restoration of the affected safety functions.

Unit 2

- 2-PT-M021C, "EDG 23 Load Test," Revision 19, following two year planned maintenance on April 17, 2013
- Quarterly 22 SI 2-PT-Q029B, "22 SI Pump," Revision 20, after inspection of lube oil heat exchanger and discharge relief valve on June 18, 2013

Unit 3

- Valve stroke test of SI valve SI-MOV-880D following 6 year preventive maintenance done in accordance with work order 52308099-01. The test was conducted using Entergy procedure 3-PT-V057, "Valve Stroke Timing Test," on March 20, 2013
- 3-IC-PM-I-E-34BC, "No. 34 Battery Charger Preventive Maintenance," Revision 3; charger preventive maintenance, repairs, and return-to-service activities using 3-SOP-EL-003, "Battery Charger and 125 Volt DC System Operations," Revision 41, on April 24, 2013
- 3-PT-M079B, "32 EDG Functional Test," Revision 49, on May 8, 2013, following planned varistor replacement under work order 159894-05, on May 7, 2013
- 3-PT-Q134A, "31 Residual Heat Removal Pump Functional Test," Revision 8, on May 21, 2013

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities (71111.20 – 1 sample)Unit 3 Refueling Outage No. 17 (3R17) – Fatigue Rulea. Inspection Scope

The inspectors reviewed the station's work schedule following the Unit 3 maintenance and refueling outage 3R17, which was conducted on March 4 through 31, 2013. Following the outage, the inspectors reviewed the implementation of 10 CFR 26, fatigue rule requirements, to verify that plant operators, including fire brigade members and maintenance personnel, involved in work on safety systems received waivers and fatigue assessments, and that self-declarations were properly managed as specified in NRC Regulatory Guide 5.73. The inspectors reviewed corrective action documents related to fatigue management and interviewed cognizant station personnel regarding fatigue management.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – 8 samples)a. Inspection Scope

The inspectors observed performance of surveillance tests and/or reviewed test data of selected risk-significant SSCs to assess whether test results satisfied technical specifications, the UFSAR, and Entergy procedure requirements. The inspectors verified that test acceptance criteria were clear, tests demonstrated operational readiness and were consistent with design documentation, test instrumentation had current calibrations and the range and accuracy for the application, tests were performed as written, and applicable test prerequisites were satisfied. Upon test completion, the inspectors considered whether the test results supported that equipment was capable of performing the required safety functions. The inspectors reviewed the following surveillance tests:

Unit 2

- RCS leakage on April 22, 2013 (leakage)
- Acoustic emission leak verification in Unit 2 spent fuel pool on May 7, 2013
- 2-PT-Q013, "Inservice Valve Tests," for testing of 22 auxiliary feedwater pump flow control valves FCV-405A/B/C/D on May 9, 2013 (in-service test)
- 2-PT-Q029A, "21 SI Pump Quarterly," on May 21, 2013 (in-service test)

Unit 3

- 3-PT-Q97, "Steam Generator Level Analog Functional," on April 9, 2013
- 3-PT-R156B, "32 Batteries," on April 15, 2013

- 3-PT-Q101, "Main Steam Valves PCV-1310A, PCV-1310B, and PCV-1139 Stroke Test," on April 18, 2013 (in-service test)
- 3-PT-V054, "Control Room HVAC Damper Nitrogen Supply Backup Test," on April 30, 2013

b. Findings

No findings were identified.

**Cornerstone: Emergency Preparedness**

1EP2 Alert and Notification System Evaluation (71114.02 - 1 sample)

a. Inspection Scope

An onsite review was conducted to assess the maintenance and testing of the Alert and Notification System (ANS). During this inspection, the inspectors conducted a review of the ANS testing and maintenance programs. The inspectors reviewed the associated ANS procedures and the Federal Emergency Management Agency approved ANS Design Report to ensure compliance with design report commitments for system maintenance and testing. 10 CFR 50.47(b)(5) and the related requirements of 10 CFR 50, Appendix E, were used as reference criteria.

b. Findings

No findings were identified.

1EP3 Emergency Response Organization (ERO) Staffing and Augmentation System (71114.03 - 1 sample)

a. Inspection Scope

The inspectors conducted a review of the IPEC emergency response organization (ERO) augmentation staffing requirements and the process for notifying and augmenting the ERO. The review was performed to verify the readiness of key Entergy staff to respond to an emergency event and to verify Entergy's ability to activate their emergency response facilities in a timely manner. The inspectors reviewed the IPEC Emergency Plan for emergency response facility activation and ERO staffing requirements, the ERO duty roster, applicable station procedures, augmentation test reports, the most recent drive-in drill report, and corrective action reports related to this inspection area. The inspectors also reviewed a sample of ERO responder training records to verify training and qualifications were up to date. 10 CFR 50.47(b)(2) and related requirements of 10 CFR 50, Appendix E, were used as reference criteria.

b. Findings

No findings were identified.

1EP5 Maintaining Emergency Preparedness (71114.05 - 1 sample)a. Inspection Scope

The inspectors reviewed a number of activities to evaluate the efficacy of Entergy's efforts to maintain the IPEC emergency preparedness program. The inspectors reviewed: Memorandums of Understanding with offsite agencies; 10 CFR 50.54(q), Emergency Plan change process and practice; Entergy maintenance of equipment important to emergency preparedness; records of evacuation time estimate population evaluation; and provisions for, and implementation of, primary, backup, and alternate emergency response facility maintenance. The inspectors also verified Entergy's compliance with new NRC emergency preparedness regulations regarding: emergency action levels for hostile action events; protective actions for on-site personnel during events; emergency declaration timeliness; ERO augmentation and alternate facility capability; evacuation time estimate updates; on-shift ERO staffing analysis; and, ANS back-up means.

The inspectors further evaluated Entergy's ability to maintain their emergency preparedness program through their identification and correction of weaknesses, by reviewing a sample of drill reports, self-assessments, 10 CFR 50.54(t) review reports, and emergency preparedness-related condition reports. The inspectors reviewed a sample of emergency preparedness-related condition reports initiated at IPEC from August 2011 through May 8, 2013. 10 CFR 50.47(b) and the related requirements of 10 CFR 50, Appendix E, were used as reference criteria.

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06 – 1 sample)Training Observationsa. Inspection Scope

The inspectors observed a simulator training evolution for Unit 2 licensed operators on June 25, 2013, which required emergency plan implementation by an operations crew. Entergy planned for this evolution to be evaluated and included in performance indicator data regarding drill and exercise performance. The inspectors observed the operators during IPEC Simulator Evaluated Scenario LRQ-SES-57 which involved a RCS leak leading to a large break loss-of-coolant-accident. The inspectors focused on the crew event classification (alert) and notification activities using New York State Radiological Emergency Data Form – Part 1. The inspectors also attended the evaluator's critique for the scenario. The focus of the inspectors' activities was to note any weaknesses and deficiencies in the crew's performance regarding timely event classification and notification and ensure that Entergy evaluators noted the same issues and entered them into the CAP.

b. Findings

No findings were identified.

**2. RADIATION SAFETY**

**Cornerstone: Public Radiation Safety and Occupational Radiation Safety**

2RS3 In-Plant Airborne Radioactivity Control and Mitigation (71124.03 – 1 sample)

During the week of April 29 – May 3, 2013, the inspectors verified that in-plant airborne concentrations were being controlled to validate plant operations and to verify the practices and use of respiratory protection devices on site. The inspectors used the requirements in 10 CFR 20; the guidance in Regulatory Guide 8.15, “Acceptable Programs for Respiratory Protection;” Regulatory Guide 8.25, “Air Sampling in the Workplace;” NUREG-0041, “Manual of Respiratory Protection Against Airborne Radioactive Material;” technical specifications; and Entergy’s procedures required by technical specifications as criteria for determining compliance.

a. Inspection Scope

The inspectors reviewed the UFSAR to identify areas of the plant designed with ventilation systems and airborne monitoring instrumentation. The inspectors reviewed the UFSAR for an overview of the respiratory protection program and a description of the types of devices used. The inspectors reviewed the UFSAR, technical specifications, and emergency planning documents to identify the location and quantity of respiratory protection devices stored for emergency use. The inspectors reviewed Entergy’s procedures for maintenance, inspection, and use of respiratory protection equipment including self-contained breathing apparatus. Additionally, the inspectors reviewed procedures for air quality maintenance. The inspectors reviewed the reported performance indicators to identify any related to unintended dose resulting from intakes of radioactive materials.

Use of Respiratory Protection Devices

The inspectors verified that Entergy provided respiratory protective devices such that occupational doses are as low as is reasonably achievable (ALARA). As available, the inspectors selected work activities where respiratory protection devices were used to limit the intake of radioactive materials, and verified that Entergy performed an ALARA evaluation. The inspectors verified that Entergy had established means to verify that the level of protection provided by the respiratory protection devices.

The inspectors verified that respiratory protection devices used to limit the intake of radioactive materials are certified by the National Institute for Occupational Safety and Health/Mine Safety and Health Administration (NIOSH/MSHA) or had been approved by the NRC. The inspectors selected work activities where respiratory protection devices were used and verified that the devices were used consistent with their NIOSH/MSHA certification.



The inspectors selected individuals assigned to wear a respiratory protection device and observed them donning, doffing, and functionally checking the device. The inspectors reviewed applicable training curricula for users of the devices.

The inspectors chose respiratory protection devices staged and ready for use in the plant and stocked for issuance for use. The inspectors observed the physical condition of the device components and reviewed records of routine inspection. The inspectors reviewed records of maintenance on the vital components of various respiratory protection devices. The inspectors verified that onsite personnel assigned to repair vital components had received vendor-provided training.

#### Self-Contained Breathing Apparatus (SCBA) for Emergency Use

Based on UFSAR, technical specification, and emergency operating procedure requirements, the inspectors reviewed the status and surveillance records of SCBAs staged in-plant for use during emergencies. The inspectors observed Entergy's capability for refilling and transporting SCBA air bottles to and from the control room and operations support center during emergency conditions.

The inspectors selected individuals on control room shift crews, and other individuals available to perform emergency response duties. The inspectors determined that control room operators and other emergency response personnel were trained and qualified in the use of SCBAs. The inspectors determined that personnel assigned to refill bottles were trained and qualified for that task.

The inspectors verified that appropriate mask sizes and types were available for use. The inspectors selected on-shift operators, and verified that they had no facial hair that would interfere with the sealing of the mask to the face. The inspectors also verified that vision correction did not penetrate the face seal.

The inspectors reviewed the past two years of maintenance records for SCBA units used to support operator activities during accident conditions and designated as "ready for service." The inspectors verified that any maintenance or repairs on an SCBA unit's vital components were performed by individuals certified by the manufacturer of the device to perform the work. The inspectors reviewed the onsite maintenance procedures governing vital component work and identified any inconsistencies with the SCBA manufacturer's recommended practices. For those SCBAs designated as "ready for service," the inspectors ensured that the required periodic air cylinder hydrostatic testing was up to date, and the retest air cylinder markings required by the U.S. Department of Transportation were in place.

#### b. Findings

No findings were identified.

2RS4 Occupational Dose Assessment (71124.04 – 1 sample)

During the week of April 29 – May 3, 2013, the inspectors determined the accuracy and operability of personal monitoring equipment, determined the accuracy and effectiveness of Entergy's methods for determining total effective dose equivalent, and ensured that occupational dose was appropriately monitored. The inspectors used the requirements in 10 CFR 20; the guidance in Regulatory Guide 8.13, "Instructions Concerning Prenatal Radiation Exposures;" Regulatory Guide 8.36, "Radiation Dose to Embryo Fetus;" Regulatory Guide 8.40, "Methods for Measuring Effective Dose Equivalent from External Exposure;" technical specification; and Entergy's procedures as criteria for determining compliance.

a. Inspection Scope

Internal Dosimetry

The inspectors reviewed procedures used to assess dose from internally deposited nuclides using whole body counting equipment. The inspectors verified that the procedures addressed methods for determining if an individual was internally or externally contaminated, the release of contaminated individuals, the determination of entry route, and assignment of dose.

The inspectors verified that the frequency of such measurements was consistent with the biological half-life of the potential nuclides available for intake.

The inspectors evaluated the minimum detectable activity (MDA) of the instrument. The inspectors determined that the MDA was adequate to determine the potential for internally deposited radionuclides.

The inspectors verified that the system used in each bioassay had sufficient detection sensitivity and the analysis program utilized an appropriate nuclide library. The inspectors verified that any anomalous count peaks/nuclides indicated in output spectra received appropriate disposition.

The inspectors reviewed and assessed the adequacy of Entergy's program for in-vitro monitoring of radionuclides, including collection and storage of samples.

The inspectors reviewed the counting laboratory's quality assurance program and Entergy's audits of applicable vendor laboratories. The inspectors verified that the laboratories participated in an analysis cross-check program and that out-of-tolerance results were evaluated and resolved.

The inspectors reviewed the adequacy of Entergy's program for dose assessments based on airborne/derived air concentration (DAC) monitoring. The inspectors verified that flow rates and collection times for air samplers were adequate to ensure that appropriate lower limits of detection were obtained. The inspectors reviewed the adequacy of procedural guidance used to assess dose when Entergy applies protection factors. The inspectors reviewed dose assessments performed using airborne/DAC monitoring. The inspectors verified that Entergy's DAC calculations were

representative of the actual airborne radionuclide mixture, including hard-to-detect nuclides.

The inspectors reviewed the adequacy of Entergy's internal dose assessments for any actual internal exposure greater than 10 millirem committed effective dose equivalent. The inspectors determined that the affected personnel were properly monitored with calibrated equipment and the data was analyzed and internal exposures properly assessed in accordance with Entergy procedures.

#### Problem Identification and Resolution

The inspectors verified that problems associated with occupational dose assessment were being identified by Entergy at an appropriate threshold and were properly addressed for resolution in their CAP. In addition, the inspectors verified the appropriateness of the corrective actions for a selected sample of problems documented by Entergy involving occupational dose assessment.

#### b. Findings

No findings were identified.

#### 2RS5 Radiation Monitoring Instrumentation (71124.05)

During the week of April 29 – May 3, 2013, the inspectors verified that Entergy was ensuring the accuracy and operability of radiation monitoring instruments that were used to (1) monitor areas, materials, and workers to ensure a radiologically safe work environment and (2) detect and quantify radioactive process streams and effluent releases. The instrumentation subject to this review included equipment used to monitor radiological conditions incident to normal plant operations, including anticipated operational occurrences and conditions resulting from postulated accidents. The inspectors used the requirements in applicable industry standards and Entergy's procedures required by technical specifications as criteria for determining compliance.

#### a. Inspection Scope

##### Walkdowns and Observations

The inspectors selected portable survey instruments in use or available for issuance. The inspectors checked calibration and source check stickers for currency and assessed instrument material condition and operability.

The inspectors observed Entergy staff performing source checks for various types of portable survey instruments. The inspectors determined that high-range instruments were source checked on all appropriate scales.

The inspectors walked down area radiation monitors and continuous air monitors and determined that they were appropriately positioned relative to the radiation sources or areas they were intended to monitor.

The inspectors selected personnel contamination monitors and small article monitors and verified that the periodic source checks were performed in accordance with the manufacturer's recommendations and Entergy procedures.

#### Calibration and Testing Program

For portable survey instruments and area radiation monitors, the inspectors reviewed detector measurement geometry and calibration methods and had Entergy staff demonstrate use of instrument calibrators. The inspectors verified that Entergy periodically measured calibrator output over the range of the instruments using a calibrated ion chamber electrometer.

The inspectors verified that the measuring devices had been calibrated by a facility using National Institute of Standards and Technology traceable sources and that correction factors for these measuring devices were properly applied by Entergy in its calibration activities.

The inspectors reviewed Entergy's 10 CFR 61, "Licensing Requirements for Land Disposal of Radioactive Waste," source-term to determine if the calibration sources used were representative of the types and energies of radiation encountered in the plant.

The inspectors reviewed the methods and sources used to perform whole body counter functional checks before daily use of the instrument. The inspectors determined that check sources were appropriate and aligned with the plant's isotopic mix.

The inspectors reviewed whole body counter calibration reports completed since the last inspection to verify that calibration sources were representative of the plant source-term and that appropriate calibration phantoms were used.

#### b. Findings

No findings were identified.

### 4. **OTHER ACTIVITIES**

#### 4OA1 Performance Indicator Verification (71151)

##### .1 RCS Specific Activity (BI01) and RCS Leak Rate (BI02) (4 samples)

#### a. Inspection Scope

The inspectors reviewed Entergy's submittal for the RCS specific activity and RCS leak rate performance indicators for both Unit 2 and Unit 3 for the period of April 1, 2012, through March 31, 2013. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors also reviewed RCS sample analysis and control room logs of daily measurements of RCS leakage, and compared that

information to the data reported by the performance indicator. Additionally, the inspectors observed surveillance activities that determined the RCS identified leakage rate, and chemistry personnel taking and analyzing a Unit 2 RCS sample.

b. Inspection Findings

No findings were identified.

.2 Emergency Preparedness Performance Indicators (3 samples)

a. Inspection Scope

The inspectors reviewed data for the following three emergency preparedness performance indicators: (1) Drill and Exercise Performance, (2) ERO Drill Participation, and (3) ANS Reliability. The last NRC emergency preparedness inspection at IPEC was conducted in the fourth calendar quarter of 2012. Therefore, the inspectors reviewed supporting documentation from emergency preparedness drills and equipment tests from the fourth calendar quarter of 2012 through the first calendar quarter of 2013 to verify the accuracy of the reported performance indicator data. The review of the performance indicators was conducted in accordance with NRC Inspection Procedure 71151. The acceptance criteria documented in NEI 99-02, "Regulatory Assessment Performance Indicator Guidelines," Revision 6, were used as reference criteria.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152 – 3 samples)

.1 Routine Review of Problem Identification and Resolution Activities

a. Inspection Scope

As required by Inspection Procedure 71152, "Problem Identification and Resolution," the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that Entergy entered issues into the CAP at an appropriate threshold, gave adequate attention to timely corrective actions, and identified and addressed adverse trends. In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the CAP and periodically attended management meetings where condition reports were discussed.

b. Findings

No findings were identified.

.2 Annual Sample: Unit 3 Pressurizer Safety Valve, RC-PCV-468, Failed Its Setpoint Test CR-IP3-2012-1403 (1 sample)

a. Inspection Scope

The inspectors performed an in-depth review of Entergy's evaluation and corrective actions associated with the setpoint failure of PSV RC-PCV-468, to determine whether Entergy personnel were appropriately identifying, characterizing, and correcting problems associated with this issue, the inspectors assessed Entergy's problem identification threshold; apparent cause analysis of the event; extent of condition reviews; reportability determination, and the prioritization, timeliness, and adequacy of corrective actions.

The inspectors reviewed Entergy's cause evaluation and associated documentation for the event, interviewed engineering personnel, conducted a review of previous similar events to ensure appropriate characterization, and reviewed Entergy's corrective action process implementation and close out documentation for the issue.

b. Findings

Introduction: The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," when Entergy failed to identify and correct a condition adverse to quality associated with the Unit 3 PSVs. Specifically, in 2005 and in 2008, safety valves were found to have lifted outside of the technical specification acceptance band; however no investigation was done to determine the cause. As a result, in 2011, a PSV (PCV-468) lifted at higher than its setpoint pressure. Entergy initiated a cause determination and determined the problem was due to spring fatigue. A corrective action to include spring rate testing in the scope of the inspection was specified for future outages.

Description: On June 28, 2012, Entergy submitted LER 50-286/2012-003-00, "Technical Specification Prohibited Condition Due to a Pressurizer Safety Valve Discovered Outside Its As-Found Lift Setpoint Test Acceptance Criteria." During Refueling Outage 3R16, the three PSVs were removed from Unit 3 and tested at an offsite facility. On May 1, 2012, the vendor reported that one of the three valves (RC-PCV-468) lifted at 2617 psig, outside of its as-found lift setpoint test acceptance criteria (2485 psig +/-3 percent). Entergy entered this issue in their CAP as CR-IP3-2012-1403 and initiated an apparent cause investigation.

On October 24, 2012, the vendor performed failure analysis of the spring assembly in accordance with the applicable manufacturer's (6x6" Crosby Model: HB-BP-86-E) spring datasheet and determined that the tested K-rate of the spring assembly was below the acceptance range for that particular spring. The vendor concluded that if the K-rate is low, the spring would require additional compression to obtain the desired 2485 psig set pressure. In adding this extra spring compression, it is possible for the spring-rate to become non-linear over time and the initial actuation could be high. Once the spring deflects during the initial lift, the following actuations would be lower, as in the case of PCV-468. Entergy determined that the apparent cause of this failure was lack of a replacement preventive maintenance task for the safety valves.

The inspectors reviewed the history of previous failures and determined that there were five lifts outside of the setpoint tolerance at Indian Point Unit 3 from 2000-2012. In these earlier cases, Entergy did not identify the cause of the failure. In 2000, all three of the PSVs failed the lift setpoint acceptance criteria, and a licensee-identified violation was cited by the NRC. In 2005, PSV-464 was removed during 3R13, and the as-found pressure was (2578) 3.7 percent above the acceptance pressure of 2485 psig +/-3 percent. Even though the PSV was removed in 2005, CR-IP3-2007-00679 was not generated until 2007, prior to installation of the valve during 3R14. The condition report was closed with the explanation that there was no operability concern as the currently installed PSVs were pretested. The condition report did not identify the cause of the failure nor did it specify corrective actions. In 2008, PSV-464 (Tag no RC-PCV-468), removed during 3R14, lifted at 2403 psig (-3.4 percent), below the 2485 psig +/-3 percent acceptance range. CR-IP3-2008-768 was generated to document the condition; however, no further investigation was performed.

The inspectors reviewed the operability determination for the installed safety valves in 2005 and 2008 and determined that Entergy did not account for the potential of the valve setpoint to drift during the operating cycle. NRC Information Notice 2006-24, "Recent Operating Experience Associated with Pressure and Main Steam Safety/Relief Valve Lift Setpoints," states that, "Setpoint drift is the result of many random variables and is usually considered a function of time since calibration and setting." The inspectors concluded that regardless of operating experience and previous failures of Unit 3 PSVs, Entergy did not perform adequate evaluations following problems in 2005 and 2008 to determine the cause of the setpoint drift.

On October 29, 2012, Entergy initiated a corrective action to revise the current and future Indian Point PSVs purchase orders to include spring rate testing in the scope of work.

Analysis: The inspectors determined that the failure to take timely corrective action to correct a condition adverse to quality, regarding setpoint drift for Unit 3 PSVs in 2005 and 2008, was a performance deficiency that was within Entergy's ability to foresee and correct and should have been prevented. Specifically, Entergy failed to resolve a potentially degraded condition associated with the setpoint drift for installed PSVs. The finding was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences when the test failure recurred in 2011. In accordance with IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," Exhibit 2, the finding screened to be of very low safety significance (Green), when all screening questions were answered "no." The inspectors noted that the redundant valves remained capable of maintaining plant pressure below the safety limit of 2735 psi in all cases and there was no actual loss of function. Because Entergy completed lift testing of all safety valves prior to installation in the plant, there was no immediate safety concern. The inspectors determined that no cross cutting aspect was applicable to this performance deficiency because it was not reflective of current licensee performance.

Enforcement: 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances are promptly identified and corrected. Contrary to the above, following safety valve lift setpoint failures in 2005 and 2008, Entergy did not promptly identify and correct a deficiency associated with spring relaxation in Unit 3 PSVs. Specifically, following the 2005 and 2008 setpoint failures for PSVs, up to and including a failure of RC-PCV-468 during testing in 2012, Entergy did not identify and correct the cause of the failures, i.e. spring assembly fatigue. Because this violation is of very low safety significance (Green) and has been entered into Entergy's CAP (CR-IP3-2013-2236), it is being treated as an NCV consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000247 and 286/2013003-02, Failure to Identify and Correct a Condition Adverse to Quality Affecting Pressurizer Safety Valves)**

.3 Annual Sample: Water Intrusion into 480VAC Bus Ducts (1 sample)

a. Inspection Scope

The inspectors performed an in-depth review of Entergy's evaluations and corrective actions associated with condition report CR-IP2-2013-01748, for water intrusion into the EDG 480VAC bus ducts. Specifically, a small roof leak in the underground electrical cable tunnel resulted in water dripping into the 480VAC bus ducts during occasional periods of heavy rain.

The inspectors assessed Entergy's problem identification threshold, problem analysis, extent of condition reviews, compensatory actions, and the prioritization and timeliness of Entergy's corrective actions to determine whether Entergy was appropriately identifying, characterizing, and correcting problems associated with this issue and whether the planned or completed corrective actions were appropriate. The inspectors compared the actions taken to the requirements of Entergy's CAP and 10 CFR 50, Appendix B. The inspectors performed field walkdowns and interviewed engineering personnel to assess the reasonableness of the planned corrective actions and to evaluate the extent of any on-going bus duct degradation problems. The inspectors observed portions of Entergy's visual inspections and reviewed recent insulation and bus bar connection inspection results. In addition, the inspectors reviewed Entergy's bus duct preventive maintenance program, routine bus duct inspection and testing, selected bus duct test results, and bus duct inspection schedules.

b. Findings

No findings were identified.

On May 8, 2013, during a routine walkdown in the electrical cable tunnel, the inspectors identified a roof leak dripping water into an EDG bus duct. The inspectors concluded that Entergy staff were also aware of the leak because plastic sheeting had been recently taped in-place to provide temporary protection to other cables and conduit in the area of the leak. In response to the inspector's observations, Entergy initiated condition report CR-IP2-2013-01748, performed detailed visual inspections and an engineering



assessment to evaluate the impact of the water intrusion, and scheduled repairs to stop the leak.

Entergy's technical review determined that, although the installed bus ducts were rated for indoor conditions, they were suitable for use in either dry or occasionally wet environmental conditions. Entergy's determination was based on a comparison of the design characteristics for indoor and outdoor bus ducts. Both indoor and outdoor ducts were ventilated (e.g., louvered openings top and bottom) and used the same insulated bus bars, insulation, and splice configurations. The primary difference between indoor and outdoor ducts was that for indoor applications, the bus duct housing was bonderized enameled steel, while outdoor applications used galvanized painted steel housing. In addition, Entergy's visual inspections on the interior and exterior of the bus ducts at the wetted locations showed only minor surface corrosion of the bus duct housing, with no pitting or flaking, and no degradation on the bus bar surfaces, insulation, or splice connections. Therefore, Entergy concluded that occasional wetting of the ducts was within the design characteristics of the installed indoor ducts. Although the inspectors noted that the vendor specifications for indoor bus ducts did not specifically discuss environmental conditions, such as occasional wetting, the inspectors concluded that Entergy's assessments were reasonable, based on visual inspections, recent test results, and comparison of design characteristics.

The inspectors identified a weakness in the implementation of Entergy's CAP. Specifically, Entergy personnel were aware of the leak but had not initiated a condition report. In addition, the last two maintenance rule structural monitoring inspections, performed in 2004 and 2008, also identified roof leaks, but condition reports were not initiated. The electrical tunnel was an underground safety-related structure, and the leak was located at a seismic joint approximately 12 feet below grade. Based on interviews with Entergy's staff, the inspectors determined that the tunnel's design drawings and specifications showed the seismic joint to be sealed with an elastomer material, and did not specify any allowable leakage or leakage limits. Therefore, the inspectors concluded that the joint sealant had sufficiently degraded to allow ground water leakage through the tunnel roof, and therefore constituted a non-conforming condition to the tunnel's structural design specifications (e.g., a condition adverse to quality). The inspectors determined that not identifying a condition adverse to quality was a violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action."

The inspectors also identified a weakness in the implementation of Entergy's corrective actions. Specifically, the small roof leak had existed in the electrical tunnel since 1999. During that 14 year period, eight condition reports, five of which were NRC identified, had been initiated and subsequently closed out, but no physical work to repair or mitigate the leak had been planned, scheduled, or performed. The inspectors determined that not correcting a condition adverse to quality during a 14-year period was a violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action."

The inspectors determined that these issues were minor because the actual impact of the water intrusion was determined to not adversely affect the bus ducts' ability to perform its design function. Entergy entered these issues into their CAP as CR-IP2-2013-02913.

.4 Semi-Annual Trend Review (1 sample)

a. Inspection Scope

The inspectors performed a semi-annual review of Indian Point 2 and 3 issues, as required by Inspection Procedure 71152, "Problem Identification and Resolution," to identify trends that might indicate the existence of more significant safety issues. The inspectors considered repetitive or closely-related issues that may have been documented by Entergy outside of the corrective action program, such as in the Entergy First Quarter 2013 Trend Report dated May 13, 2013, the Top Ten Equipment Problems list, system health reports, and maintenance or CAP backlogs. The inspectors reviewed the IPEC Management Review Meeting package dated May 9, 2013, and selected Plant Health Committee meeting packages for trends not identified in the CAP. The inspectors also reviewed Entergy's CAP database for the first and second quarters of 2013 to assess condition reports written in various subject areas (equipment problems, human performance issues, etc.), as well as individual issues identified during the daily condition report review (Section 4OA2.1), to verify that Entergy personnel were appropriately evaluating, trending, and reporting adverse conditions in accordance with applicable procedures.

b. Findings and Observations

No findings were identified.

No trends were identified that indicated a potentially safety significant issue. Entergy actively identified trends and addressed the trends within the CAP. The inspectors evaluated a sampling of problem reports used by Entergy in their first quarter 2013 trend report and screened problem reports from the second quarter to determine whether issues were appropriately considered as emerging or adverse trends. For identified problems, the inspectors verified that the issues were addressed within the CAP at the appropriate significance level. Examples of trends being monitored by Entergy included procedure use and adherence in maintenance, housekeeping, and problems with document control. A monitored trend associated with problems with static inverters was being addressed in the Entergy maintenance rule program. For these licensee-identified trends, the inspectors verified that Entergy had established actions to mitigate the problems and prevent recurrence.

4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153 – 4 samples)

.1 Plant Events

a. Inspection Scope

For the plant events listed below, the inspectors reviewed and/or observed plant parameters, reviewed personnel performance, and evaluated performance of mitigating systems. The inspectors communicated the plant events to appropriate regional personnel, and compared the event details with criteria contained in IMC 0309, "Reactive Inspection Decision Basis for Reactors," for consideration of potential reactive inspection activities. As applicable, the inspectors verified that Entergy made appropriate

emergency classification assessments and properly reported the event in accordance with 10 CFR 50.72 and 50.73. The inspectors reviewed Entergy's follow-up actions related to the events to assure that Entergy implemented appropriate corrective actions commensurate with their safety significance.

### Unit 3

March 27, 2013; automatic actuation of SI and engineered safety features during reactor protection system functional testing

#### b. Findings

Introduction: The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion V, "Procedures," when Entergy did not maintain appropriate written procedures for responding to an inadvertent SI on Unit 3 when below the normal operating conditions RCS temperature.

Description: On March 27, 2013, during performance of a surveillance test, a malfunctioning instrument test signal lead caused an inadvertent SI actuation. The reactor was not operating at the time of the event. A plant heatup was in progress in accordance with Procedure 3-POP-1.1, "Plant Heatup from Cold Shutdown Condition," with reactor coolant temperature at approximately 389°F.

When the SI actuated, operators appropriately entered 3-E-0, "Reactor Trip or Safety Injection," but were immediately challenged by conflicts between guidance in the heatup procedure and guidance in the emergency operating procedure. The heatup procedure, 3-POP-1.1, directed operators in event of a SI, to determine the SI was invalid in the sense that actual initiation conditions were not met; then stop all high head SI pumps and enter emergency operating procedures. Emergency Procedure 3-E-0, contrary to 3-POP-1.1, provided the Westinghouse Owners Group response strategy of: 1) determining all coolant injection functioned as designed, 2) formally evaluating numerous criteria to determine whether an accident (loss of coolant, steam line break, steam generator tube rupture) was in progress and then, 3) with RCS pressure greater than 1700 psi and stable or rising, transition to emergency procedure ES-1.1, "Safety Injection Termination."

Indian Point Unit 3 uses administrative controls to prevent over-pressurization of the RCS when temperature is between 330°F and 380°F. The basis for low temperature over-pressure (LTOP) Technical Specification 3.4.12 states that administrative controls in the Technical Requirements Manual are used to limit the potential for exceeding fracture toughness (10 CFR 50, Appendix G) limits when greater than the LTOP arming temperature (i.e.,  $\geq 330^\circ\text{F}$ ) but below the minimum temperature at which the RCS safety valves can provide overpressure protection. The technical specification basis further states these controls may include operating with a bubble in the pressurizer and/or otherwise limiting activities when reactor coolant temperature is in the specified range (between 330°F and 380°F).

Operators appropriately entered the emergency operating procedures following the SI actuation, rather than first performing the event diagnostic and response actions directed

by the plant operating procedure. However, based on knowledge and training, the operators recognized that the heatup procedure directed specific actions to stop SI pumps on an invalid actuation in the brittle fracture region of plant operation. This operational area, defined at temperatures  $\leq 380^{\circ}\text{F}$ , was administratively controlled by the heatup procedure as  $<400^{\circ}\text{F}$  RCS temperature. Emergency Operating Procedure Users Guide Step 4.4.18 allowed for parallel usage of sub-tier procedures such as plant operating procedures, but only if they did not interfere with the actions called for in the emergency procedures.

Two senior reactor operators conferred with the operations manager and agreed that it was appropriate and necessary to stop high head SI pumps prior to filling the pressurizer to preclude filling the RCS solid and challenging vessel pressure / temperature limits. Six minutes into the event, after confirming the signal was invalid, and immediately prior to Step 11 of 3-E-0 which would start a high pressure charging pump, the crew stopped all high head SI pumps. Then, in Step 18 of 3-E-0, which determined if SI flow should be terminated, the crew took exception to the procedure requirement for RCS pressure greater than 1700 psig and proceeded to 3-ES-1.1, "Safety Injection Termination," even though RCS pressure was being maintained less than 1700 psig. The conflicting procedural guidance contributed to the operators taking action in conflict with the controlling procedure, 3-E-0, to address what they perceived to be a challenge to pressure limits. The operators were not aware that at the existing RCS temperature, which remained above  $380^{\circ}\text{F}$  throughout the event, vessel integrity was not a concern and 3-E-0 could have been implemented as designed without exceeding fracture toughness limits. Entergy personnel documented the March 27 event in the CAP as CR-IP3-2013-2115 and initiated a root cause evaluation. The inspectors interviewed operations personnel involved in the event, engineering personnel knowledgeable in fracture toughness limitations at Indian Point, and operations training personnel.

Operator understanding of, and training on, the Unit 3 Combined Heatup / Overpressure Protection System Curve (3-Graph-RCS-1F) further contributed to the control room operators' sense of urgency for stopping SI. Through interviews, inspectors determined that operators understood the upper pressure / temperature limit on this curve to relate to Appendix G brittle fracture limits. The operators did not appear to understand that the limits above  $380^{\circ}\text{F}$  were based on different considerations than those shown for temperature below  $380^{\circ}\text{F}$ . Reviews of documents after the event revealed problems and inconsistencies with procedural guidance on RCS pressure / temperature limits. Unit 3 Technical Requirements Manual TRO 3.4.A established pressurizer level controls when between  $330^{\circ}\text{F}$  and  $411^{\circ}\text{F}$  for brittle fracture protection, although the upper limit was actually  $380^{\circ}\text{F}$ . The combined pressure temperature graph (3-Graph-RCS-1F) showed a steam generator tube sheet differential pressure limit of 1550 psid, when the supporting analysis shows the limit was 1700 psid.

Analysis: The inspectors determined that the failure to maintain appropriate written procedures for responding to a SI system actuation when in MODE 3 at low RCS temperature was a performance deficiency that was reasonably within Entergy's ability to foresee and correct and should have been prevented. This finding was more than minor because, if left uncorrected, the procedure deficiencies have the potential to lead to a more significant safety concern related to exceeding vessel integrity pressure limitations if a charging pump was started in solid conditions below  $380^{\circ}\text{F}$ . In

accordance with IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," Exhibit 2, the finding screened to be of very low safety significance (Green), when all screening questions were answered "no." The finding was assigned a cross-cutting aspect in the area of Human Performance, Resources, because Entergy staff did not ensure that design documentation and procedures were adequate to assure nuclear safety. [H.2(c)]

**Enforcement:** 10 CFR 50, Appendix B, Criterion V, states, in part, that activities affecting quality shall be prescribed by documented procedures of a type appropriate to the circumstances and shall be accomplished in accordance with these procedures, and the procedures shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished. Entergy accomplishes this requirement using procedures that include emergency procedure 3-E-0, "Reactor Trip or Safety Injection;" operating procedure 3-POP-1.1, "Plant Heatup from Cold Shutdown;" the Unit 3 Technical Requirements Manual; and 3-GRAPH-RCS-1F, "Unit 3 Combined Heatup / Overpressure Protection System Curve." Contrary to the above, as of March 27, Entergy failed to maintain prescribed procedures appropriate to the circumstances for managing overpressure protection at low temperatures in operating Mode 3. Specifically, at temperatures below 380°F, emergency operating procedure 3-E-0 required actions that could challenge overpressure protection when a charging pump was started with all SI pumps running, 3-POP-1.1 directed placing all SI pumps in trip pull out at temperatures higher than required for overpressure protection, and both the Technical Requirements manual and 3-GRAPH-RCS-1F inappropriately limited the operators' use of safety systems at temperatures greater than 380°F in conflict with emergency procedure requirements. Because this violation was of very low safety significance (Green) and has been entered into Entergy's CAP (CR-IP3-2013-2115), this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000247 and 286/2013003-03, Failure to Maintain Appropriate Procedures for Response to Safety Injection Actuation at Low Temperature)**

- .2 (Closed) LER 05000286/2012-003-00 and LER 05000286/2012-003-01: Technical Specification Prohibited Condition Due to a Pressurizer Safety Valve Discovered Outside Its As-Found Lift Setpoint Test Acceptance Criteria

On May 1, 2012, Entergy engineering personnel were notified by Wyle laboratories that one of three PSVs (RC-PCV-468) was outside its as-found lift setpoint acceptance criterion (2411-2559 psig). The as-found set pressure testing acceptance criterion for operability is 2485 psig +/- 3 percent. The safety valve lifted at 2617 psig which is 5.3 percent above the 2485 psig set pressure. Technical Specification 3.4.10 (Pressurizer Safety Valves) requires three PSVs to be operable with lift settings set at greater than 2460 psig and less than 2510 psig, and Technical Specification 3.4.10, condition A (one PSV inoperable), requires in action a.1, to restore an inoperable valve to operable status in 15 minutes. Entergy staff entered this issue into their CAP as CR-IP3-2012-01403. The corrective actions were to disassemble and inspect valve PC-PCV-468 to determine the cause of the failure and to develop an inspection and repair plan.

Subsequently, Entergy evaluated a potential contributing cause associated with the PSV to be spring fatigue and submitted supplemental LER (50-286/2012-003-001) to include

information acquired through their evaluation, and captured in the CAP in CR-IP3-2012-01403. The corrective actions included replacement of the spring for RC-PCV-468 and inspection of the spring rate on the remainder of the two safety valves. Additionally, Entergy will revise the inspection and repair plan to include safety valve disassembly and complete spring assembly inspection that includes spring measurements, inspecting overall spring condition, and performing a spring-rate test every 10 years or when directed by engineering. The inspectors identified one violation during the review of this LER and the supplement which is documented in Section 4OA2 of this report. These LERs are closed.

.3 (Closed) Licensee Event Report (LER) 05000286/2013-005-00: Automatic Actuation of Engineered Safety Features During Reactor Protection System Functional Testing

On March 27, 2013, while in Mode 3 during recovery from the Unit 3 refueling outage, an inadvertent SI occurred during reactor protection logic testing. The actuation was caused when a jumper installed in a pressurizer pressure channel failed due to an internal fault after the low pressure SI block feature had been disabled by the false high pressure signals installed for the test. NRC inspectors responded to the control room during the event and observed the operators' activities. Plant operators responded to the SI using emergency operating procedures and stopped the actuation. A root cause was done following the event and a number of issues were identified. The inspectors reviewed the LER and verified that the defective test lead had been removed from service and that Entergy test procedure 3-PT-M13B, being performed when the actuation occurred, had been revised to prevent a recurrence. The inspectors identified two violations during the review of this LER, which are documented in Sections 1R13 and 4OA3 of this report. The LER is closed.

4OA6 Meetings, Including Exit

On July 17, 2013, the inspectors presented the inspection results to Mr. John Ventosa, Site Vice President, and other members of the Entergy staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

**ATTACHMENT: SUPPLEMENTARY INFORMATION**

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

J. Ventosa, Site Vice President  
 J. Dinelli, General Manager Plant Operations  
 N. Azevedo, Code Programs Supervisor  
 T. Chan, Mechanical Systems Supervisor  
 T. Cole, NUC Project Manager  
 P. Conroy, Nuclear Safety Assurance Director  
 R. Dolanksy, ISI Program Manager  
 D. Gagnon, Security Manager  
 J. Kirkpatrick, Assistant General Manager Plant Operations  
 J. Lijoi, Instrument and Control Maintenance Superintendent  
 L. Lubrano, Electrical Design Engineer  
 S. Manzione, Components Engineering Supervisor  
 D. Mayer, Unit 1 Director  
 T. McCaffrey, Design Engineering Manager  
 B. McCarthy, Operations Manager (Acting)  
 M. Miele, Emergency Preparedness Manager  
 R. Tagliamonte, Radiation Protection Manager  
 M. Tesoriero, Programs and Components Manager  
 M. Troy, Quality Assurance Manager  
 R. Walpole, Licensing Manager  
 M. Woodby, Engineering Director

**LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED**Opened/Closed

|                          |     |   |
|--------------------------|-----|---|
| 05000247, 286/2013003-01 | NCV | Failure to Assess and Manage Risk Associated with Reactor Testing Below Normal Operating Conditions (Section IR13)      |
| 05000247, 286/2013003-02 | NCV | Failure to Identify and Correct a Condition Adverse to Quality Affecting Pressurizer Safety Valves (Section 4OA2)       |
| 05000247, 286/2013003-03 | NCV | Failure to Maintain Appropriate Procedures for Response to Safety Injection Actuation at Low Temperature (Section 4OA3) |

Closed

Unit 3

|                      |     |  |
|----------------------|-----|--|
| 05000286/2012-003-00 | LER | Technical Specification Prohibited Condition Due to a Pressurizer Safety Valve Discovered Outside Its As-Found Lift Setpoint Test Acceptance Criteria (Section 4OA3) |
| 05000286/2012-003-01 | LER | Technical Specification Prohibited Condition Due to a Pressurizer Safety Valve Discovered Outside Its As-Found Lift Setpoint Test Acceptance Criteria (Section 4OA3) |
| 05000286/2013-005-00 | LER | Automatic Actuation of Engineered Safety Features During Reactor Protection System Functional Testing (Section 4OA3)   |

**LIST OF DOCUMENTS REVIEWED**

**Section 1R01: Adverse Weather Protection**

Procedures

IP-SMM-OP-104, Offsite Power Continuous Monitoring and Notification, Revision 13  
IP-SMM-LI-108, Event Notification and Reporting, Revision 14  
OAP-008, Seasonal Weather Preparations, Revision 8

Condition Reports (CR-IP2-)

2011-04206

Condition Reports (CR-IP3-)

2013-02907 2011-05605 2012-02437

Maintenance Orders/Work Orders

310262

Drawings

908, Indian Point and Buchanan System Ties, Revision 39

**Section 1R04: Equipment Alignment**

Procedures

0-XFR-401-ELC, Station Service and Load Center Transformers Outage Inspection, Revision 0  
2-AOP-480V-1, Loss of Normal Power to Any 480V Bus, Revision 8  
2-COL-27.1.5, 480V AC Distribution, Revision 27  
2-COL-27.6, Unit 2 Appendix R Diesel Generator, Revision 2  
2-ELC-016-BUS, Inspection Cleaning and Testing of 480 VAC Buses. Revision 0  
2-SOP-27.1.5, 480 Volt System, Revision 44  
3-COL-EL-005, Diesel Generators, Revision 36



Maintenance Orders/Work Orders

51799856      52293872

Drawings

400881, Station Blackout and Appendix R Diesel Generator Set- Fuel Oil System Mechanical, Revision 0  
400882, Station Blackout and Appendix R Diesel Generator Set- Diesel Cooling Water System Mechanical, Revision 1  
617F644, 480V One Line Diagram, Revision 35  
9321-F-30053, Single Line Diagram 480V Motor Control Centers, Revision 72

Miscellaneous

System Health Report, 480 V, May 1, 2013

**Section 1R05: Fire Protection**

Procedures

EN-DC-161, Control of Combustibles, Revision 7  
IP2-RPT-03-00015, Unit 2 Fire Hazards Analysis Report, Revision 5  
Pre-fire plan (PFP)-204 (fire zones 3A, 4): General Floor Plan – Primary Auxiliary Building, Revision 0  
PFP-207 (fire zones 9, 12A, 13A): General Floor Plan – Primary Auxiliary Building, Revision 0  
PFP-213 (fire zone 32A): Unit 2 Electrical Tunnel, Revision 0

**Section 1R07: Heat Sink Performance**

Procedures

SEP-SW-001, IPEC NRC G.L. 89-13 Service Water Program, Revision 6  
0-HTX-405-EDG, EDG Lube Oil and Jacket Water Heat Exchanger Maintenance, Revision 3

Condition Reports (CR-IP2-)

2012-7192

Condition Reports (CR-IP3-)

2013-2695

Maintenance Orders/Work Orders

52432649      52432650      52445925      52445926

**Section 1R11: Licensed Operator Requalification Program**

Procedures

2-AOP-FW-1, Loss of Feedwater, Revision 13  
2-AOP-RLR-1, Rapid Load Reduction, Revision 3  
2-AOP-SG-1, Steam Generator Tube Leak, Revision 15  
E-0, Reactor Trip or Safety Injection, Revision 47  
ECA-0.0, Loss of all AC Power, Revision 41

Miscellaneous

LRQ-SES-ECA00B, Loss of feedwater resulting in a manual trip with subsequent loss of all AC, following steam generator tube leak, Revision 8  
TQF-210-DD03, LOR Simulator Crew Performance 6/11/2013, Revision 13

**Section 1R12: Maintenance Effectiveness**

Procedures

EN-DC-203, Maintenance Rule Program, Revision 1  
EN-DC-206, Maintenance Rule (a)(1) Process, Revision 2  
EN-DC-324, Preventative Maintenance Program, Revision 8  
EN-LI-119, HT - Apparent Cause Evaluation Report, Revision 14

Condition Reports (CR-IP2-)

2013-00425 2013-00902 2012-02584 2012-02661 2012-02625 2012-06671  
2012-0615

Condition Reports (CR-IP3-)

2012-1712 2012-2357 2011-5686

Maintenance Orders/Work Orders

5226332 52263368

Miscellaneous

IPEC Static Inverter Reliability Action Plan, updated May 8, 2012  
Systems Health Report-118V Instrument Bus  
Solidstate Controls, Inc. Instruction/Technical Manual, 7.5 KVA Inverter

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

Procedures

EN-WM-104, On Line Risk Assessment, Revision 7

Miscellaneous

Daily Plant Information, Work Week 1314  
Daily Plant Information, Work Week 1318  
Daily Plant Information, Work Week 1319  
Equipment Out of Service (EOOS) Risk Profile  
Operator Narrative Logs, April 8, 2013  
Operator Narrative Logs, May 8, 2013  
Operator Narrative Logs, May 13, 2013

**Section 1R15: Operability Determinations and Functionality Assessments**

Procedures

2-PT-Q030A, 21 Component Cooling Water Pump, performed June 20, 2012, July 16, 2012, September 17, 2012, December 26, 2012, and March 26, 2013, Revision 18  
2-PT-Q030B, 22 Component Cooling Water Pump, performed February 23, 2012, May 22, 2012, November 27, 2012, and February 28, 2013, Revision 21

2-PT-Q030C, 23 Component Cooling Water Pump, performed May 5, 2012, July 25, 2012,  
October 23, 2012, and January 30, 2013, Revisions 21 and 22  
2-SOP-27.3.1.1, 21 Emergency Diesel Generator Manual Operation, Revision 21

Condition Reports (CR-IP2-)

2012-03535 2012-05751 2012-04164 2012-04617

Condition Reports (CR-IP3-)

2013-02116 2013-2854 2013-2647 2013-2443 2013-2122

Maintenance Orders/Work Orders

WO 00327450 WO 52267396

Drawings

A227781-82

Miscellaneous

Component Cooling Water System Health Reports for 3Q12, 4Q12, 1Q13, 2Q13  
TRM 3.4.D, Pressurizer Heatup and Cooldown  
WCAP-17162-P, Evaluation of Pressurizer Insurge/Outsurge Transients for Indian Point Unit 3,  
Revision 1

**Section 1R18: Plant Modifications**

Condition Reports (CR-IP3-)

2013-2394

Miscellaneous

Engineering Change 8630, MOV-880 spring pack grease relief valve for Unit 3 in March 2013

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

Procedures

0-MD-402, Attachment 2, Termination Matrix, Revision 3

Condition Reports (CR-IP2-)

2013-01366 2013-02477 2013-02481

Condition Reports (CR-IP3-)

2013-2494

Maintenance Orders/Work Orders

|             |             |             |             |
|-------------|-------------|-------------|-------------|
| WO 00304897 | WO 348862   | WO 52308425 | WO 52309465 |
| WO 52472815 | WO 52479384 | WO52481279  | WO52423421  |

Drawings

9321-F-2030-40  
9321-F-2735

**Section 1R22: Surveillance Testing**

Procedures

0-SOP-Leakrate-001, RCS Leakrate Surveillance, Evaluation and Leak Identification, Revision 3  
0-SOP-IST-001, Leakrate Test Rig Operations, Revision 6  
SEP-IP3-IST-2, Indian Point 3 Fourth Ten Year Interval In-service Testing Program Plan,  
Revision 0

Condition Reports (CR-IP2-)

2013-01974

Maintenance Orders/Work Orders

WO 352212                      WO 52418492                      WO 52472525

Miscellaneous

21 Safety Injection Pump, 2-PT-Q029A, on May 21, 2013  
IP2 RCS Leakrate Calculation, dated April 24 and 25, 2013  
IP2 7-Day Trending Data for Leakage, dated April 26, 2013  
Spent Fuel Pool Report, Entergy Indian Point Energy Center Unit # 2, May 7, 2013

**Section 1EP2: Alert and Notification System Evaluation**

Procedures

Design Report for the Alert and Notification System for the Indian Point Energy Center, dated  
March 2010  
FEMA Final Technical Review of the IPEC ANS Design Report and Associated Documentation,  
dated December 5, 2008  
IP-EP-AD-30, IPEC ATI Siren System Administration, Revision 4  
IP-EP-AD-31, IPEC ATI Siren System Maintenance Administration, Revision 2  
IP-EP-AD-32, IPEC ATI Siren System Routine Polling and Testing, performed February 7, 2013,  
and April 11, 2013  
IP-EP-AD-33, IPEC ATI Siren System Quarterly Preventative Maintenance, performed April 17,  
2013 (Grasslands) and March 12, 2013 (EOF)  
IP-EP-AD-34, IPEC ATI Control Station Semi-Annual Preventative Maintenance, performed  
March 12, 2013 (EOF) and March 4, 2013 (GSB)  
IP-EP-AD-41, IPEC ATI Siren Site Annual Sample Preventative Maintenance, Revision 0  
IPEC ANS First Quarter 2013 Trend Report  
IPEC ANS Fourth Quarter 2012 Trend Report  
Letter from FEMA to New York State Division of Homeland Security and Emergency Services  
Re: Backup Alert and Notification for the IPEC EPZ, dated December 6, 2012

**Section 1EP3: Emergency Response Organization Staffing and Augmentation System**

Procedures

EN-EP-310, Emergency Response Organization Notification System, Revision 1  
EN-EP-801, Emergency Response Organization, Revision 7  
EN-TQ-110, Emergency Response Organization Training, Revision 10  
EN-TQ-110-01, Fleet EP Training Course Summary Plan, Revision 5  
IPEC Emergency Planning May 22, 2012, Call-In/Report-In Drill Report  
IPEC Emergency Response Organization Roster, as of May 1, 2013

IPEC-EP-12-01, Indian Point Energy Center Emergency Plan, Revision 14  
IPEC ERO Off-Hours Notification Test Reports: 1Q12, 3Q12, 4Q12, 1Q13  
IPEC On-Shift Staffing Analysis Final Report, Revision 0  
LO-HQNLO-2011-00190, Focused Self-Assessment on EP Communications – Ever Bridge Implementation, Revision 0

**Section 1EP5: Maintenance of Emergency Preparedness**

Procedures

IPEC Development of Evacuation Time Estimates, Field Report KLD TR-537, Revision 1  
IPEC-EP-12-01, Indian Point Energy Center Emergency Plan, Revision 14  
IP-EP-AD-1, Maintaining Emergency Preparedness, Revision 4  
IP-EP-AD-6, Emergency Facilities and Equipment, Revision 21  
IP-EP-AD-40, Equipment Important to Emergency Response, Revision 7  
EN-EP-202, Equipment Important to Emergency Preparedness, Revision 1  
EN-EP-305, Emergency Planning 10 CFR 50.54(q) Review Program, Revision 3  
January 20, 2013 IPEC Emergency Planning Training Drill Results Report, dated February 26, 2013  
LO-IP3LO-2012-00081, Emergency Preparedness Exercise Readiness, performed April 9-13, 2012  
Quality Assurance Surveillance Report, No. QS-2012-IP-07  
September 12, 2012 IPEC Emergency Planning Training Drill Results Report, dated October 4, 2012  
September 27, 2012 IPEC Emergency Planning Training Drill Results Report, dated October 11, 2012  
Snap Shot Assessment: Emergency Response Facility Equipment Obsolescence, performed July 9–18, 2012  
Snap Shot Assessment: Implementation of the Standard Emergency Response Organization (SERO), performed January 19, 2012

Condition Reports (CR-IP2)

|            |            |            |            |            |            |
|------------|------------|------------|------------|------------|------------|
| 2011-04975 | 2011-05496 | 2011-06109 | 2011-06508 | 2012-00073 | 2012-00361 |
| 2012-00948 | 2012-01925 | 2012-05826 | 2012-06559 | 2012-06603 | 2013-01364 |

Condition Reports (CR-IP3)

2012-01894 2012-02832

**Section 2RS3: In-Plant Airborne Radioactivity Control and Mitigation**

Procedures

EN-RP-502, Inspection and Maintenance of Respiratory Protection Equipment, Revision 8  
EN-RP-504, Breathing Air, Revision 3  
X-zam Laboratories Services Certificate of Breathing Air Quality for AAA Emergency Supply Company, dated April 30, 2013

**Section 2RS4: Occupational Dose Assessment**

Procedures

EN-RP-203, Dose Assessment, Revision 5

EN-RP-208, Whole Body Counting / In-Vitro Bioassay, Revision 5  
GEL Laboratories, LLC Quality Assurance Plan, Revision 26

**Section 2RS5: Radiation Monitoring Instrumentation**

Miscellaneous

Model 81-12 Beam Source Calibration, dated March 22, 2013  
Battelle Report of Calibration for Victoreen Model 570 Condenser R-Meter, dated April 3, 2012

**Section 4OA1: Performance Indicator Verification**

Procedures

0-CY-2765, Coolant Activity Limits – Dose Equivalent Iodine/Xenon, Revision 4  
2-CY-2380, Primary Sampling System, Revision 4  
EN-EP-210, Performance Indicators, Revision 7  
EN-FAP-EP-005, Emergency Preparedness Performance Indicators, Revision 0  
EN-LI-114, Performance Indicator Process, Revision 6

Miscellaneous

Reviewed Performance Indicator Data from Fourth Quarter 2012 to First Quarter 2013

**Section 4OA2: Identification and Resolution of Problems**

Procedures

EN-LI-102, Corrective Action Process, Revision 20  
EN-OP-104, Operability Determination Process, Revision 6

Condition Reports (CR-IP2-)

|            |            |            |            |            |            |
|------------|------------|------------|------------|------------|------------|
| 1997-04886 | 1998-10953 | 1999-06538 | 1999-07698 | 2002-11536 | 2003-01825 |
| 2007-00958 | 2009-03029 | 2010-00470 | 2013-01748 | 2013-01786 | 2013-02913 |

Calculations, Analysis, and Engineering Evaluations

EC-44996, Acceptability of Leaking Rain Water on the Unit 2 EDG Bus Ducts in the Electrical Tunnel, Revision 0

Structural Monitoring Inspections

IP-RPT-05-00428, Maintenance Rule Structural Monitoring Inspection Report for the Unit 2 Electrical Tunnel, performed 5/12/97  
IP-RPT-05-00428, Maintenance Rule Structural Monitoring Inspection Report for the Unit 2 Electrical Tunnel, performed 1/13/04  
IP-RPT-08-00005, Maintenance Rule Structural Monitoring Inspection Report (Third Cycle) for the Unit 2 Electrical Tunnel, performed 1/15/08

Work Orders

|                            |                            |                            |          |          |
|----------------------------|----------------------------|----------------------------|----------|----------|
| IP2-1997-96519<br>00292989 | IP2-2002-65717<br>52294517 | IP2-2007-00073<br>52293872 | 51254067 | 51320388 |
|----------------------------|----------------------------|----------------------------|----------|----------|

Miscellaneous

Westinghouse Application Data Manual 30-562, Low Impedance Bus Duct, 3/65

**Section 40A3: Follow-up of Events and Notices of Enforcement Discretion**

Procedures

2-GRAPH-RCS-16C, PORV Open Setpoint, Revision 6  
2-GRAPH-RCS-16D, Max RCS Press OPS Inop 1 Chg Pp, Revision 6  
2-GRAPH-RCS-16E, Max RCS Press OPS Inop 2 Chg Pp, Revision 6  
2-GRAPH-RCS-16F, Max RCS Press OPS Inop 3 Chg Pp, Revision 2  
3-ARP-002, Panel FDF – Pressurizer Low Press SI Alarm, Revision 16  
3-ARP-003, Panel SAF – Pressurizer Low Press (SI) Channel Trip, Revision 48  
3-E-0, Reactor Trip or Safety Injection, Revision 3  
3-ES-1.1 SI, Termination, Revision 3  
3-GRAPH-RCS-IF Combined Heatup / OPS Curve, Revision 8  
3-POP-1.1, Plant Heatup from Cold Shutdown Condition, Revision 67  
3-PT-M13B, Reactor Protection Logic Chnl Funct Test, Revision 50  
3-PT-V053D, Mode Change Checklist, Mode 4 to 3, Revision 9  
EN-AD-102, Procedure Adherence and Level of Use, Revision 5  
EN-OP-115, Conduct of Operations, Revision 13  
ITS 3.4.3, RCS Pressure and Temperature (P/T) Limits, Amend 235  
ITS 3.4.12, Low Temperature Overpressure Protection, Amend 235  
ITS 3.5.2, ECCS – Operating, Amend 230  
OAP-012, EOP Users Guide, Revision 8  
RCS-3B, Density Compensation for Cold Calibrated LT-462, Revision 2  
TRM 3.4, A Low Temperature Overpressure Protection (RCS 330°F – 411°F), Revision 2

Condition Reports (CR-IP3-)

2013-2115

Miscellaneous

3-E-0, Dev Reactor Trip or Safety Injection Deviation Document, Revision 3  
3-ES-1.1, Dev SI Termination, Revision 3  
WOG E-0, Background – LP, Revision 2  
WOG ES-1.1, Background – LP, Revision 2  
WOG Executive Volume Generic Issues – SI Termination/Reinitiation HP/LP, Revision 2

**LIST OF ACRONYMS**

|         |   |
|---------|---|
| AC      | alternating current                                   |
| ADAMS   | Agencywide Document Access Management System          |
| ALARA   | as low as reasonably achievable                       |
| ANS     | alert and notification system                         |
| CAP     | corrective action program                             |
| CFR     | Code of Federal Regulations                           |
| DAC     | derived airborne concentration                        |
| DRP     | Division of Reactor Projects                          |
| DRS     | Division of Reactor Safety                            |
| EDG     | emergency diesel generator                            |
| Entergy | Entergy Nuclear Northeast                             |
| ERO     | emergency response organization                       |
| ESFAS   | engineered safety feature actuation system            |
| FSAR    | final safety analysis report                          |
| IMC     | Inspection Manual Chapter                             |
| IPEC    | Indian Point Energy Center                            |
| KV      | kilovolt  |
| LCO     | limiting condition for operation                      |
| LER     | Licensee Event Report                                 |
| LTOP    | low temperature over-pressure                         |
| MDA     | minimum detectable activity                           |
| MSHA    | Mine Safety and Health Administration                 |
| NCV     | non-cited violation                                   |
| NEI     | Nuclear Energy Institute                              |
| NIOSH   | National Institute for Occupational Safety and Health |
| NRC     | Nuclear Regulatory Commission                         |
| PORV    | power operated relief valve                           |
| PSV     | pressurizer safety valve                              |
| RCS     | reactor coolant system                                |
| SCBA    | self-contained breathing apparatus                    |
| SI      | safety injection                                      |
| SSC     | structure, system, and component                      |
| UFSAR   | Updated Final Safety Evaluation Report                |