UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
2100 RENAISSANCE BLVD., SUITE 100
KING OF PRUSSIA, PA 19406-2713

February 3, 2017

EA-16-240

Mr. Anthony J. Vitale
Site Vice President
Entergy Nuclear Operations, Inc.
Indian Point Energy Center
450 Broadway, GSB
P.O. Box 249
Buchanan, NY 10511-0249

SUBJECT: INDIAN POINT NUCLEAR GENERATING – INTEGRATED INSPECTION REPORT 05000247/2016004 AND 05000286/2016004

Dear Mr. Vitale:

On December 31, 2016, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Indian Point Nuclear Generating (Indian Point), Units 2 and 3. On January 31, 2017, the NRC inspectors discussed the results of this inspection with you and other members of your staff. The results of this inspection are documented in the enclosed report.

The NRC inspectors documented four findings of very low safety significance (Green) in this report. Two of these findings involved violations of NRC requirements. Additionally, inspectors documented a licensee-identified violation which was determined to be a Severity Level IV in this report. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest the violations or significance of these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement; and the NRC Resident Inspector at Indian Point. In addition, if you disagree with a cross-cutting aspect assignment or a finding not associated with a regulatory requirement 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 U. S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC, 20555-0001; with copies to the Regional Administrator, Region I, and the NRC Resident Inspector at Indian Point.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at http://www.nrc.gov/reading-rm/adams.html and the NRC Public Document Room in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Eugene M. DiPaolo, 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 05000247/2016004
and 05000286/2016004 w/Attachment:
Supplementary Information

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REGION I

Docket Nos.	50-247 and 50-286
License Nos.	DPR-26 and DPR-64
Report Nos.	05000247/2016004 and 05000286/2016004
Licensee:	Entergy Nuclear Northeast (Entergy)
Facility:	Indian Point Nuclear Generating, Units 2 and 3
Location:	450 Broadway, GSB Buchanan, NY 10511-0249
Dates:	October 1, 2016, through December 31, 2016
Inspectors:	B. Haagensen, Senior Resident Inspector G. Newman, Resident Inspector S. Rich, Resident Inspector C. Safouri, Acting Resident Inspector J. D'Antonio, Senior Operations Engineer J. DeBoer, Emergency Preparedness Inspector N. Embert, Project Engineer J. Furia, Senior Health Physicist H. Gray, Senior Reactor Inspector M. Henrion, Project Engineer P. Kaufman, Senior Reactor Inspector L. McKown, Millstone Resident Inspector
Approved By:	Eugene M. DiPaolo, Acting Chief Reactor Projects Branch 2 Division of Reactor Projects

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SUMMARY

Inspection Report 05000247/2016004 and 05000286/2016004; 10/01/2016 – 12/31/2016; Indian Point Nuclear Generating (Indian Point), Units 2 and 3; Maintenance Effectiveness, Operability Determinations and Functionality Assessments, Plant Modifications, and Follow Up of Events.

This report covered a three-month period of inspection by resident inspectors and announced inspections performed by regional inspectors. The inspectors identified four findings of very low safety significance (Green), including two 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 April 29, 2015. Cross-cutting aspects are determined using IMC 0310, "Aspects within the Cross-Cutting Areas," dated December 4, 2014. All violations of U.S. Nuclear Regulatory Commission (NRC) requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated November 1, 2016. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6.

Cornerstone: Initiating Events

- Green. A self-revealing NCV of Technical Specification (TS) 5.4.1(a), "Procedures," was identified because Entergy did not follow procedure 2-PT-2M3A, "Reactor Protection System Logic Train B Actuation Logic Test and Tadot," required by NRC Regulatory Guide 1.33, Appendix A, during planned testing on July 6, 2016, resulting in a Unit 2 reactor trip. Specifically, Entergy positioned key #183 in the channel B reactor logic key lock switch to the defeat position without procedural guidance and prior to commencing 2-PT-2M3A. 2-PT-2M3A requires that the reactor trip bypass breaker B be racked in when the channel B reactor protection logic key lock switch is taken to defeat to prevent a reactor trip. Entergy entered this issue into the corrective action program (CAP) as CR-IP2-2016-04320. The corrective actions include procedure enhancements, operations work challenges, and a site all hands meeting.

  This finding was determined to be more than minor because it is associated with the human performance attribute of the Initiating Events cornerstone and affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, Entergy operated plant equipment without direction from procedural guidance which resulted in an unplanned reactor trip. This finding was determined to be of very low safety significance (Green) because it did not cause the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition, high energy line-breaks, internal flooding, or fire. This finding had a cross-cutting aspect in the area of Human Performance, Field Presence, because Entergy leaders did not reinforce standards and expectations with regard to procedure use and adherence. Specifically, Entergy did not have sufficient urgency for changing worker behaviors through the work observation program. [H.2 – Field Presence] (Section 4OA3)

Cornerstone: Mitigating Systems

- Green. The inspectors identified a finding of very low safety significance because Entergy did not correctly classify relief valve DA-5-2 as a high critical component. DA-5-2 is a relief valve in the emergency diesel generator (EDG) air start system; and when it failed in service

due to an inadequate preventive maintenance frequency, it caused a loss of air that depressurized the air start system, rendering it inoperable. Entergy took corrective action to replace the failed relief valve and wrote CR-IP3-2016-03851 to review the classification of DA-5-2.

This performance deficiency was more than minor because it was associated with the Mitigating Systems cornerstone and affected the equipment performance attribute. Specifically, the failure of the relief valve reduced the air available for starting the 32 EDG and reduced its reliability. The inspectors performed a risk screening in accordance with IMC 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions." The finding was of very low safety significance (Green) because it did not represent an actual loss of function of a single train for greater than its TS allowed outage time. Specifically, the air pressure in the starting air tank was below the TS limit for less than an hour, and the allowed outage time for the starting air tank is 48 hours. The inspectors determined that there was no cross-cutting aspect associated with this finding because it is not associated with current performance. Specifically, the decision to extend the preventive maintenance frequency was made in 2010, and there had been no other failures of similar components since then that would have prompted Entergy to review the basis for that decision. (Section 1R12)

- Green. The inspectors identified an NCV of very low safety significance of Title 10 of the *Code of Federal Regulations* (10 CFR) 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," because Entergy staff did not perform an adequate operability review under EN-OP-104, "Operability," for a service water (SW) piping leak described in CR-IP3-2016-1113. Entergy based the flooding portion of the operability review on the assumption that a non-safety-related sump pump would function to prevent flooding of the room, although under accident conditions it would not have electrical power. Entergy implemented corrective actions to revise their operability evaluation and also installed a housekeeping patch that greatly reduced the leak rate.

  The performance deficiency was determined to be more than minor because the finding was similar to Example 3j of NRC IMC 0612, Appendix E, "Examples of Minor Issues," in that incorrect assumptions of the ability of the Zurn pit sump pump to remove the water resulted in reasonable doubt regarding operability and warranted additional evaluation. This issue impacts the protection against the external factors attribute of the Mitigating Systems cornerstone and impacts its objective to ensure the availability of systems that respond to initiating events to prevent undesirable consequences. Specifically, Entergy did not properly evaluate the operability impacts of an increase in the leak rate from a preexisting SW leak in the Zurn strainer pit and, therefore, did not implement compensatory measures to prevent internal flooding in the event the installed, non-safety-related sump pump failed. The inspectors determined the finding could be evaluated using the Significance Determination Process, Attachment 0609.04, "Initial Characterization of Findings." Because the finding impacted the Mitigating Systems cornerstone, the inspectors screened the finding through IMC 0609 Appendix A, "The Significance Determination Process for Findings At-Power," using Exhibit 2, "Mitigating Systems Screening Questions." The finding required a detailed risk evaluation because it represented the potential loss of the entire SW system. A detailed risk assessment was conducted assuming that a loss of offsite power (LOOP) could challenge the functionality of the SW system due to flooding impacts on the system strainers. The resulting change in core damage frequency was estimated to be in the mid E-6 range, Green. The inspectors concluded this finding had a cross-cutting aspect in the area of Human Performance, Avoid Complacency, because Entergy did not recognize and

plan for the possibility of latent issues and inherent risk. Entergy had experienced numerous SW system leaks that remained small and did not plan for the possibility that this one would increase. Once the leak had increased significantly, Entergy did not appropriately revise the operability determination to reflect the changed circumstances and take appropriate compensatory measures to promptly restore operability. [H.12 – Avoid Complacency] (Section 1R15)

- Green. The inspectors identified a finding of very low safety significance when Entergy conducted testing on the Unit 3 reactor protection system (RPS) that was contrary to the guidance in IEEE standard 279-1968, a standard to which Indian Point Unit 3 was committed. Specifically, Entergy made temporary changes to their Unit 3 reactor coolant temperature channel functional test procedures, pressurizer pressure loop functional test procedures, and nuclear power range channel axial offset calibration procedures to use jumpers to bypass RPS trip functions, without meeting the requirement to have continuous indication in the control room when a part of RPS is bypassed for any purpose. Entergy closed the temporary modification and returned to testing without using jumpers to bypass the tested channel.

  The inspectors determined the finding was more than minor because this finding was associated with the procedure quality attribute of the Mitigating Systems cornerstone and affected its objective to ensure the reliability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the new test method reduced the reliability of the RPS tripping the unit under conditions requiring an overtemperature delta temperature (OTDT) trip. The inspectors evaluated this finding using IMC 0609, Attachment 4, "Initial Characterization of Findings." The inspectors determined that the finding affected the Mitigating Systems cornerstone and evaluated the finding using Appendix A, Exhibit 2, "Mitigating Systems Screening Questions." The finding is of very low safety significance (Green) because it did not affect both the RPS trip signal to initiate a reactor scram and the function of other redundant trips or diverse methods of reactor shutdown. The inspectors identified a cross-cutting aspect in the area of Human Performance, Conservative Bias, because Entergy did not determine the test method was safe in order to proceed. Specifically, Entergy staff rationalized that the use of jumpers was allowable because they were focused on completing the required surveillance testing. [H.14 – Conservative Bias] (Section 1R18)

Other Findings

A Severity Level IV violation that was identified by Entergy was reviewed by the inspectors. Corrective actions taken or planned by Entergy have been entered into Entergy's CAP. This violation and corrective action tracking number are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Units 2 and 3 operated at or near 100 percent power during 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 low temperatures. The inspectors reviewed procedure OAP-048, "Seasonal Weather Preparation (Units 2 and 3)." The focused areas were SW pump areas, EDG rooms, and the refueling water storage tanks. The inspectors reviewed the updated final safety analysis report (UFSAR), TSs, control room logs, the list of active temporary modifications, and the CAP to determine what temperatures or other seasonal weather could challenge these systems and to ensure Entergy had adequately prepared for these challenges. The inspectors reviewed station procedures, including Entergy's seasonal weather preparation procedure 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 cold weather conditions. Documents reviewed for each section of this report are listed in the Attachment.

b. Findings

No findings were identified.

.2 External Flooding

a. Inspection Scope

During the week of December 26, 2016, the inspectors performed an inspection of the external flood protection measures for Units 2 and 3. The inspectors reviewed TSs, procedures, design documents, and UFSAR, Chapter 2.4.2.4, which depicted the design flood levels and protection areas containing safety-related equipment, to identify areas that may be affected by internal flooding. The inspectors conducted a general site walkdown of all external areas of the plant, including the turbine building, auxiliary building, and berm, to ensure that Entergy erected flood protection measures in accordance with design specifications. The inspectors also reviewed operating procedures for mitigating external flooding during severe weather to confirm that, overall, Entergy had established adequate measures to protect against external flooding events and, more specifically, that credited operator actions were adequate.

b. Findings

No findings were identified.

1R04 Equipment Alignment

.1 Partial System Walkdowns (71111.04Q – 4 samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

Unit 2

- Containment spray system while 21 fan cooler unit (FCU) was out of service for maintenance on November 9, 2016

Unit 3

- 32 component cooling water train following maintenance on October 20, 2016
- Hydrogen supply line to the primary auxiliary building during wet fuel transfer activities on November 9, 2016
- 33 EDG jacket water and SW subsystems following maintenance on November 30, 2016

The inspectors selected these systems based on their risk-significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors reviewed applicable operating procedures, system diagrams, the UFSAR, TSs, work orders, condition reports (CRs), 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 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 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 December 21, 2016, the inspectors performed a complete system walkdown of accessible portions of the Unit 2 safety injection 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, component lubrication and equipment cooling, hanger and support functionality, and operability of support systems. The inspectors performed field walkdowns of accessible portions of the systems to verify as-built system configuration matched plant documentation and that system components and support equipment remained operable. The inspectors confirmed that systems and components were aligned correctly, free from interference from temporary services or isolation boundaries, environmentally qualified, and protected from external threats. The inspectors also examined the material condition of the components for degradation and observed operating parameters of equipment to verify that there were no deficiencies. Additionally, the inspectors reviewed a sample of related CRs and completed work to ensure Entergy appropriately evaluated and resolved any deficiencies.

b. Findings

No findings were identified.

1R05 Fire Protection

.1 Resident Inspector Quarterly Walkdowns (71111.05Q – 6 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 controlled combustible materials and ignition sources in accordance with administrative procedures. The inspectors verified that fire protection and suppression equipment were available for use as specified in the area pre-fire plan (PFP), 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

- EDG building (PFP-258 was reviewed) on November 16, 2016
- Fan house (PFP-216 was reviewed) on December 14, 2016
- Component cooling water room (PFP-209 was reviewed) on December 15, 2016
- Safety injection pump room (PFP-207 was reviewed) on December 21, 2016

Unit 3

- Intake structure (PFP-385 was reviewed) on December 16, 2016
- Main transformer yard (PFP-380 was reviewed) on December 23, 2016

b. Findings

No findings were identified.

.2 Fire Protection – Drill Observation (71111.05A – 1 sample)

a. Inspection Scope

The inspectors observed a fire brigade drill scenario conducted on October 31, 2016, that involved a fire in the Unit 3 water factory. The inspectors evaluated the readiness of the plant fire brigade to fight fires. The inspectors verified that Entergy identified deficiencies, openly discussed them in a self-critical manner at the debrief, and took appropriate corrective actions as required. The inspectors evaluated specific attributes as follows:

- Proper wearing of turnout gear and self-contained breathing apparatus
- Proper use and layout of fire hoses
- Employment of appropriate fire-fighting techniques
- Sufficient fire-fighting equipment brought to the scene
- Effectiveness of command and control
- Propagation of the fire into other plant areas
- Smoke removal operations
- Utilization of pre-planned strategies
- Adherence to the pre-planned drill scenario
- Drill objectives met

The inspectors also evaluated the fire brigade's actions to determine whether these actions were in accordance with Entergy's fire-fighting strategies. Entergy document EN-TQ-125, "Fire Brigade Drills," Attachment Drill Report, was reviewed by the inspectors.

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06 – 1 sample)

Internal Flooding Review

a. Inspection Scope

The inspectors reviewed the UFSAR, the site flooding analysis, and plant procedures to assess susceptibilities involving internal flooding. The inspectors also reviewed the CAP to determine if Entergy identified and corrected flooding problems and whether operator actions for coping with flooding were adequate. In particular, the inspectors focused on the Unit 3 Zurn strainer pit to verify the adequacy of equipment seals located below the flood line, common drain lines and sumps, sump pumps, and temporary or removable flood barriers.

b. Findings

A finding is documented under Section 1R15 that was identified during this inspection.

1R07 Heat Sink Performance (71111.07A – 1 sample)

a. Inspection Scope

The inspectors reviewed the 31 component cooling water heat exchanger to determine its readiness and availability to perform its safety functions. The inspectors reviewed the design basis for the component and verified Entergy's commitments to NRC Generic Letter 89-13, "Service Water System Requirements Affecting Safety-Related Equipment." The inspectors observed an actual inspection of the 31 component cooling water heat exchanger. 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 verified that the number of tubes plugged within the heat exchanger did not exceed the maximum amount allowed.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program

Licensed Operator Requalification (71111.11A – 1 sample for Unit 3; 71111.11B – 1 sample for Unit 2)

a. Inspection Scope

The following inspection activities were performed using NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 10, Supplement 1, and Inspection Procedure Attachment 71111.11, "Licensed Operator Requalification Program."

Examination Results

The operating tests for the weeks of September 19 and September 26, 2016, were reviewed for quality and performance.

On October 31, 2016, the results of the annual operating tests for Units 2 and 3 were reviewed to determine if pass/fail rates were consistent with the guidance of NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 10, Supplement 1, and IMC 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process." The review verified that the pass rate (individual or crew) did not exceed 20 percent.

Unit 2

- Zero out of forty-six operators failed at least one section of the annual exam. The overall individual failure rate was zero percent. One operator was on medical leave and had not taken an exam when results were reported.
- Zero out of six crews failed the simulator test. The crew failure rate was zero percent.

Unit 3

- Zero out of fifty operators failed at least one section of the annual exam. The overall individual failure rate was zero percent.
- Zero out of six crews failed the simulator test. The crew failure rate was zero percent.

Written Examination Quality

The inspectors reviewed two written examinations administered during the 2015 examination cycle for qualitative and quantitative attributes as specified in Appendix B of Attachment 71111.11, "Licensed Operator Requalification."

Operating Test Quality

Ten job performance measures (JPMs) and five scenarios were reviewed for qualitative and quantitative attributes as specified in Appendix C of 71111.11, "Licensed Operator Requalification Program."

Licensee Administration of Operating Tests

Observations were made of the dynamic simulator exams and JPMs administered during the week of September 19, 2016. These observations included facility evaluations of crew and individual performance during the dynamic simulator exams and individual performance of five JPMs.

Examination Security

The inspectors assessed whether facility staff properly safeguarded exam material. Scenarios, JPMs, and written examinations were checked for excessive overlap of test items.

Remedial Training and Re-Examinations

The remediation plans for one licensed operator written failure were reviewed to assess the effectiveness of the remedial training. Remediation for the individual was processed in accordance with site procedures.

Conformance with Operator License Conditions

Medical records for ten licenses were reviewed to assess conformance with license conditions. One issue was identified which required a waiver; a waiver request was submitted by the facility and granted by the NRC.

Proficiency watch standing records were reviewed for 2015 and the first two quarters of 2016. One licensee-identified violation of proficiency requirements was evaluated as discussed in Section 4OA7 of this report. All other active licensed operators met the watch standing requirements to maintain an active license.

The reactivation plan for 12 senior reactor operator (SRO) licensed operators was reviewed to assess the effectiveness of the reactivation process. The reactivation was successfully processed in accordance with site procedures.

Records for the participation of licensed operators in the requalification program for two years were reviewed. Records for the performance of licensed operators on annual requalification operating test and biennial requalification written exams were reviewed.

Simulator Performance

Simulator performance and fidelity was reviewed for conformance to the reference plant control room. A sample of simulator deficiency reports was also reviewed to ensure facility staff addressed identified modeling problems. Simulator test documentation was also reviewed.

Problem Identification and Resolution

A review was conducted of recent operating history documentation found in inspection reports, Entergy's CAP, and the most recent NRC plant issues matrix. The inspectors also reviewed specific events from Entergy's CAP which indicated possible training deficiencies to verify that they had been appropriately addressed. The senior resident inspector was also consulted for insights regarding licensed operators' performance. These reviews did not detect any operational events that were indicative of possible training deficiencies.

b. Findings

No findings were identified.

Licensed Operator Quarterly Requalification (71111.11Q – 3 samples)

Unit 2

.1 Quarterly Review of Licensed Operator Requalification Testing and Training

a. Inspection Scope

The inspectors observed licensed operator simulator training on November 30, 2016, which included the failure of the 23 steam generator feed regulating valve, loss of condenser backpressure, loss of the 21 EDG and vital safety bus 5A, tube leak in the 23 steam generator, rapid plant shutdown, failure of PT-404 steam pressure controller, unidentified package located within the protected area, an injured person, rod control urgent failure, tube rupture on the 23 steam generator, failure of power operated relief valve block valve to operate, and loss of the capability to depressurize the reactor coolant system. 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. 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 supervisor. The inspectors verified the accuracy and timeliness of the emergency classification made by the shift manager and the TS action statements. 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 operator response to a rod control malfunction due to control rod G03 ratcheting into the core approximately 12 steps on October 13, 2016. The inspectors observed implementation of 2-AOP-ROD-1, Control Rod and Indication Systems Malfunction, and crew briefings to verify that the briefings met the criteria specified in Entergy's administrative procedure EN-OP-115 "Conduct of Operations." Additionally, the inspectors observed test performance 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 Performance in the Main Control Room

a. Inspection Scope

The inspectors observed and reviewed operator performance during turbine control valve testing on December 13, 2016. The inspectors observed implementation of 3-PT-SA045, Main Turbine Stop and Control Valves Exercise Test, and crew briefings to verify that the briefings met the criteria specified in Entergy's administrative procedure EN-OP-115 "Conduct of Operations." Since this test was designated as an infrequently performed test, the inspectors also verified the initial briefing met the criteria specified in EN-OP-116, "Infrequently Performed Tests or Evolutions." Additionally, the inspectors observed test performance 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.

1R12 Maintenance Effectiveness (71111.12Q – 2 samples)

Routine Maintenance Effectiveness

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 SSC 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 was reasonable. Additionally, the inspectors ensured that Entergy was identifying and addressing common cause failures that occurred within and across maintenance rule system boundaries.

Unit 2

- SW and containment challenges on December 2, 2016

Unit 3

- EDG starting air systems on September 22, 2016

b. Findings

Introduction. The inspectors identified a finding of very low safety significance (Green) because Entergy did not correctly classify relief valve DA-5-2 as a high critical component. DA-5-2 is a relief valve in the EDG air start system; and when it failed in service due to an inadequate preventive maintenance frequency, it caused a loss of air that depressurized the air start system, rendering it inoperable.

Description. The Unit 3 EDGs require high pressure air to start. Each EDG has an associated safety-related starting air tank and a non-safety-related starting air compressor that can pressurize the tank. The tank itself has a pressure relief valve, as does the piping from the air compressor to the tank. If either valve lifts below its setpoint, the pressure in the starting air tank will decrease; and the non-safety-related starting air compressor will not be able to provide enough air to make up what is lost. The starting air tank is required by the design basis and the TSs to have enough air to start the diesel engine four times.

The EDGs are scoped into the maintenance rule program as risk significant equipment. Failures are tracked by train, and one train includes the diesel generator itself as well as the support systems. The function of the EDG in the maintenance rule basis document is to provide a reliable source of back up emergency power to the 480 volts alternating current safeguard busses. With a lifting relief valve, the affected train does not have enough air to attempt starting the engine the required four times; and, therefore, the train has failed its maintenance rule function.

EN-DC-153, Attachment 9.3, “Component Classification Questionnaire,” states that if a component’s functional failure results in a loss of a maintenance rule high risk significant function, the component is classified as “high critical” for the purposes of planning preventive maintenance. In the case of the diesel starting air system relief valves, if they fail and lift at too low of a pressure, it is a loss of a high risk significant function for the train, as described in the previous paragraph.

DA-5-2, and other relief valves in the EDG starting air system, were incorrectly classified as low critical. In 2010, an action request was submitted to change the frequency of preventive maintenance on the relief valves from every six years to every ten years. Part of the justification was that the relief valves were low critical components. Entergy made the change and extended the time between relief valve replacements.

On September 22, 2016, an operator discovered DA-5-2 lifted with the starting air compressor running. The air pressure in the 32 EDG starting air tank was dropping and fell below the TS limit of 260 psi, at which time the operator was able to close a valve to stop the air from leaking out through the relief valve. The air pressure was restored above the TS limit within an hour. The affected relief valve, DA-5-2, had last been replaced on December 19, 2007, just under nine years prior to its failure. Entergy wrote CR-IP3-2016-2987 and replaced DA-5-2 the following day.

Analysis. The inspectors determined that Entergy’s failure to adequately classify the EDG starting air system relief valves was a performance deficiency. Specifically, Entergy did not classify the relief valves as high critical components, even though their failure would affect the maintenance rule high risk significant function to provide reliable back up emergency power. As a result, the preventive maintenance frequency for DA-5-2 was extended from six to ten years and the valve failed in service after nine years. This performance deficiency was more than minor because it was associated with the Mitigating Systems cornerstone and affected the equipment performance attribute. Specifically, the failure of the relief valve reduced the air available for starting the 32 EDG and reduced its reliability. The inspectors performed a risk screening in accordance with IMC 0609, Appendix A, Exhibit 2, “Mitigating Systems Screening Questions.” The finding was of very low safety significance (Green) because it did not represent an actual loss of function of a single train for greater than its TS allowed outage time. Specifically, the air pressure in the starting air tank was below the TS limit for less than an hour, and the allowed outage time for the starting air tank is 48 hours.

The inspectors determined that there was no cross-cutting aspect associated with this finding because it is not associated with current performance. Specifically, the decision to extend the preventive maintenance frequency was made in 2010, and there had been no other failures of similar components since then that would have prompted Entergy to review the basis for that decision.

Enforcement. This finding does not involve enforcement action because no violation of a regulatory requirement was identified. Entergy took corrective action to replace the failed relief valve and wrote CR-IP3-2016-03851 to review the classification of DA-5-2. **(FIN 05000286/2016004-01, Inadequate Preventive Maintenance Classification of Starting Air Relief Valve Led to Failure)**

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 7 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 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 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 TS requirements and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

Unit 2

- Elevated risk due to adjustment of the 21 main boiler feedwater pump high pressure governor linkage on November 7, 2016
- Elevated risk due to planned maintenance on 21 auxiliary boiler feedwater pump on November 19, 2016

Unit 3

- Planned yellow risk for shutdown margin monitor surveillance and component cooling water system maintenance on October 20, 2016
- Planned yellow risk for planned test on the chemical volume control system header check valves MOV-205/226 and 227 on October 24, 2016
- Planned yellow risk for 3-PT-M079A, "31 EDG Functional Test," while the 33332 tie line is out of service, on November 10, 2016
- Planned yellow risk for 3-PT-M62B, UV device testing while the 3332 tie line is out of service, on November 17, 2016
- Planned yellow risk for 3-PT-M14A, "Safety Injection Logic Testing," on November 28, 2016

b. Findings

No findings were identified.

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

- Operator workarounds (OWAs) on November 15, 2016
- 24 FCU SW through-wall leak CR-IP2-2016-07384 on December 20, 2016

Unit 3

- Increased leak size on 31 SW strainer discharge line, original operability determination in CR-IP3-2016-01113, on October 17, 2016
- OWAs on November 17, 2016
- Revision 2 to 31 SW strainer discharge line operability determination in CR-IP3-2016-01113 on November 22, 2016
- 32 EDG crankcase pressure low during surveillance run in CR-IP3-2016-3894 on November 29, 2016
- Temporary modification on 33 EDG seismic qualification in CR-IP3-2016-3946 on November 30, 2016
- Appendix R/Station blackout diesel generator repetitively tripped during functional test on December 14, 2016

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 TS 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 TSs and UFSAR to Entergy's evaluations to determine whether the components or systems were operable.

The inspectors confirmed, where appropriate, compliance with bounding limitations associated with the evaluations. Where compensatory measures were required to maintain operability, such as in the case of OWAs, 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. The inspectors verified that Entergy identified OWAs at an appropriate threshold and addressed them in a manner that effectively managed OWA-related adverse effects on operators and SSCs.

b. Findings

Introduction. The inspectors identified an NCV of very low safety significance (Green) of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," because Entergy staff did not perform an adequate operability review under EN-OP-104, "Operability," for a SW piping leak described in CR-IP3-2016-1113. Entergy based the flooding portion of the operability review on the assumption that a non-safety-related

sump pump would function to prevent flooding of the room, although under accident conditions it would not have electrical power.

Description. On April 27, 2016, Entergy identified a leak on the 31 SW discharge line downstream of the check valve in the Zurn strainer pit. At the time, the leak was small, less than one-eighth of a gallon per minute, and posed no immediate challenge to the internal flooding of the Zurn pit room. It was similar to other small pinhole leaks that have occurred on the concrete-lined carbon steel pipe in the SW system. Entergy began once per day visual checks of the leakage and wrote an operability evaluation. Under the flooding section, Entergy stated that there was no flooding concern because the leak was small and within the capacity of the installed Zurn pit sump pump. That pump can be powered from an EDG, but the associated motor control center would have to be manually added and the pump restarted on a LOOP or a safety injection actuation signal. The Zurn pit sump pump was not designed as a safety-related pump because all piping in the Zurn pit is American Society of Mechanical Engineers (ASME) Class III and Seismic Class I piping; therefore, they do not have to postulate a flood caused by a pipe break. Additionally, all penetrations below the design basis external flood height are sealed, so no floodwater removal is required for external flood considerations.

Each day, Entergy operators visually inspected and logged that there was no significant increase in leakage. This action was required by ASME Section XI Code Case N513-3 and was intended to verify that the leak rate had not substantially changed from the original leak rate to ensure that the flaw in the pipe had not grown in size where it might then compromise the structural integrity of the SW line. On September 18, 2016, Entergy recorded that the leak rate was roughly 8 gallons per minute, substantially larger than the original leak rate, but incorrectly documented that there was no significant increase in leak rate. Operators had been comparing the daily leak rate to the previous day's leak rate in concluding that the leak rate had not significantly increased rather than comparing it to the original leak rate (one-eighth of a gallon per minute), which was contrary to the intent of code case N513-3. On September 19, Entergy wrote CR-IP3-2016-2940 documenting that the leak had slowly increased to approximately 5 gpm but did not properly analyze or disposition the meaning of this substantial increase. In the operability section for this new condition report, Entergy concluded that the Zurn pit sump pump was capable of handling the leak rate so flooding was not a concern. At this time, the leak rate was low enough that it did not challenge the specified safety function of the SW system.

On October 15, 2016, Entergy observed that the floor drain in the Zurn pit had become blocked and that the water level rose to several inches in some areas of the room. At this time, they staged temporary sump pumps to support the dewatering of the room should it become necessary. They then measured the leak rate and recorded it at approximately 20 gpm. On October 17, 2016, they reinstalled a housekeeping patch using a seismic support clamp and that reduced the leakage to less than 1 gpm. The housekeeping patch was not analyzed or credited as a compensatory measure.

In response to questions by the inspectors, Entergy revised their operability evaluation, but Revision 2 still did not completely address the concerns. Entergy continued to credit non-safety SSCs (housekeeping patch, Zurn pit sump pump and temporary submersible pumps) and operator manual actions to restore operability to support safety-related functions without completing a required evaluation under 50.59 or proceduralizing these actions. Basing the operability evaluation on the use of non-safety-related pumps and

uncredited operator manual actions was contrary to EN-OP-104, “Operability Determination Process.” Step 5.6.4 states, “If the Operability is based on the use or availability of other equipment, it must be verified that the equipment is capable of performing the function utilized in the evaluation.” They explicitly specified that there were no compensatory measures for operator manual actions in the operability determination. They credited operator manual actions that were not planned, trained, proceduralized, and assessed under 10 CFR 50.59 or credited as operator work arounds.

Additionally, the operability evaluation did not discuss the impact of a flood on equipment in the room. For example, it did not evaluate the ability of the SW strainers to operate without rotation and back wash for extended periods of time before plugging up and restricting flow, nor did it evaluate the performance of the SW pump vacuum breakers when submerged and if there would be an impact on SW system operability during a SW pump sequencer restart following a loss of power. Entergy credited operator manual actions to backwash the Zurn strainers in the event that they received an alarm indicating strainer clogging, but this would require entry into a space that was already flooded or operation of electrical equipment that was submerged.

Furthermore, the operability evaluation also did not consider the mission time for the SW system, as required by EN-OP-104, “Operability Determination Process.” The operability evaluation did not include a calculation of the time to flood the Zurn pit, as there was no flooding alarm or other warning in the control room. The Zurn pit room has a 12 cubic foot sump, and the area of the floor is 518 square feet. The ends of the SW vacuum breaker discharge pipes are located about one foot off the floor. Electrical components associated with the Zurn strainers are not watertight and are located about three feet off the floor. Assuming a 20 gallon per minute leak rate and a loss of power to the sump pump, the water level would rise to cover the vacuum breakers in three hours and the water level would rise to flood the electrical control cabinets to the Zurn strainers in ten hours. After 29 hours, the room would be completely filled with water.

There were no remote alarms in the control room that would indicate that the water level in the Zurn pit room was rising or that the sump pump had lost power. Operators had been tasked to verify that the leak rate had not changed once per day. Therefore, it is possible that the water level could have been rising for almost 36 hours without an operator detecting and alerting the control room to the problem depending on when during the shift the assigned operator made his/her rounds to the Zurn pit room. If the room was substantially flooded, the Zurn strainers would stop rotating and could plug up with debris and sediment. Manually backwashing the Zurn strainers could only be accomplished by entering the room to operate manual valves which would not be safe if the room was flooded. The installed sump pump would not be operable when submerged so the operators would be limited to the capacity of the portable submersible pumps (after installation) to dewater the room. Entergy did not analyze whether there would be sufficient time for operators to restore the Zurn strainers to functionality or manually backwash the strainers prior to a significant reduction or loss of all flow to all six SW pumps due to fouling of the Zurn SW discharge line strainers.

Analysis. Entergy did not perform an adequate operability review for a SW piping leak described in CR-IP3-2016-1113 because Entergy based the flooding portion of the review on the assumption that the non-safety-related Zurn pit sump pump would function to remove the leaking water from the room under all conditions. This was a performance

deficiency that was within Entergy's ability to foresee and prevent. The performance deficiency was determined to be more than minor because the finding was similar to Example 3j of NRC IMC 0612, Appendix E, "Examples of Minor Issues," in that incorrect assumptions of the ability of the Zurn pit sump pump to remove the water resulted in reasonable doubt regarding operability and warranted additional evaluation. This issue impacts the protection against external factors attribute of the Mitigating Systems cornerstone and impacts its objective to ensure the availability of systems that respond to initiating events to prevent undesirable consequences. Specifically, Entergy did not properly evaluate the operability impacts of a SW leak in the Zurn strainer pit and, therefore, did not implement compensatory measures to prevent internal flooding in the event the installed, non-safety-related sump pump failed.

The inspectors determined the finding could be evaluated using the Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings." Because the finding impacted the Mitigating Systems cornerstone, the inspectors screened the finding through IMC 0609 Appendix A, "The Significance Determination Process for Findings At-Power," using Exhibit 2, "Mitigating Systems Screening Questions." The finding required a detailed risk evaluation because it represented a loss of the entire SW system.

A detailed risk assessment was conducted assuming that a LOOP could challenge the functionality of the SW system due to flooding impacts on the system strainers. Since the exact time of the degraded condition could not be determined, the exposure time was estimated to be one half the time from the last known acceptable condition until the leakage exceeded allowable rates. This was estimated to be 13 days. It was assumed that given the leak rate of 20 gpm and assumed loading on the strainers, the system would function acceptably for approximately 12 hours from the onset of a LOOP. As a result, the likelihood that the Appendix R diesel generator would be aligned or that offsite power would be recovered were greatly improved. In the cases that power could not be restored, the impact would be the loss of low and high pressure recirculation. No recovery of the SW was assumed. This was determined to be conservative given the amount of time available and the relative simplicity of the recovery actions. The resulting change in core damage frequency was estimated to be in the mid E-6 range, Green. External events were considered but not determined to be a significant contributor given the performance deficiency. Additionally, large early release frequency impacts were evaluated but determined not to be a significant contributor since Unit 3 has a large dry containment.

The inspectors concluded this finding had a cross-cutting aspect in the area of Human Performance, Avoid Complacency, because Entergy did not recognize and plan for the possibility of latent issues and inherent risk. Entergy had experienced numerous SW system leaks that remained small and did not plan for the possibility that this one would increase. Once the leak had increased significantly, Entergy did not appropriately revise the operability determination to reflect the changed circumstances and take appropriate compensatory measures to promptly restore operability. [H.12]

Enforcement. 10 CFR 50, Appendix B proscribes requirements for all activities affecting the safety-related functions of SSCs; these activities include designing, purchasing, fabricating, handling, shipping, storing, cleaning, erecting, installing, inspecting, testing, operating, maintaining, repairing, refueling, and modifying. Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality shall be

prescribed and accomplished by procedures appropriate to the circumstances. EN-OP-104 is a safety-related procedure that is implemented to establish operability. Step 5.6.4 of EN-OP-104 states, "If the Operability is based on the use or availability of other equipment, it must be verified that the equipment is capable of performing the function utilized in the evaluation." Contrary to the above, Entergy incorrectly based their operability evaluation on the Zurn pit sump pump, which was not capable of performing the required functions during accident conditions without additional compensatory measures. Entergy implemented corrective actions to revise their operability evaluation and also installed a housekeeping patch that greatly reduced the leak rate. The leak is scheduled for repair prior to the completion of the Unit 3 refueling outage in 2017. Because this violation was of very low safety significance (Green) and was entered into Entergy's CAP as CR-IP3-2017-0383, this violation is being treated as an NCV, consistent with Section 2.3.2.a of the NRC Enforcement Policy. (**NCV 05000286/2016004-02, Inadequate Operability Evaluation of Leak in Service Water Pump Discharge Pipe**)

1R18 Plant Modifications (71111.18 – 1 sample)

Temporary Modification

a. Inspection Scope

The inspectors reviewed the temporary procedure changes to three sets of Unit 3 RPS surveillance procedures to determine whether the modifications affected the safety functions of systems that are important to safety. These procedures were 3-PT-Q87A, B and C, "Channel Functional Test of Reactor Coolant Temperature Channel 411, 421, and 431"; 3-PT-Q95A, B and C, "Pressurizer Pressure Loop P-455, P-456, and P-457 Functional Test"; and 3-PC-Q109A, B and C, "Nuclear Power Range Channel N-41, N-42, and N-43 Axial Offset Calibrations." The inspectors reviewed 10 CFR 50.59 documentation to verify that the temporary modifications did not degrade the design bases, licensing bases, and performance capability of the affected systems.

b. Findings

An unresolved item was issued in Inspection Report 05000286/2016001 (ML16133A448). This unresolved item (05000286/2016001-03) is closed because it was determined there was a performance deficiency, which is captured in the finding described below.

Introduction. The inspectors identified a finding of very low safety significance (Green) when Entergy conducted testing on the Unit 3 RPS that was contrary to the guidance in IEEE standard 279-1968. Specifically, Entergy made temporary changes to their Unit 3 reactor coolant temperature channel functional test procedures, pressurizer pressure loop functional test procedures, and nuclear power range channel axial offset calibration procedures to use jumpers to bypass RPS trip functions, without meeting the requirement to have continuous indication in the control room when a part of RPS is bypassed for any purpose.

Description. On October 21, 2014, Entergy implemented temporary procedure changes to three sets of RPS surveillance procedures. These procedures were 3-PT-Q87A, B and C, "Channel Functional Test of Reactor Coolant Temperature Channel 411, 421,

and 431"; 3-PT-Q95A, B and C, "Pressurizer Pressure Loop P-455, P-456, and P-457 Functional Test"; and 3-PC-Q109A, B and C, "Nuclear Power Range Channel N-41, N-42, and N-43 Axial Offset Calibrations." In each case, the change was to install a jumper at the beginning of the testing to energize the trip relay for the tested channel of the OTDT trip circuit. Normally, during the course of these tests, the affected channel of the OTDT trip circuit would de-energize. If one of the other three channels de-energized at the same time for any reason, Unit 3 would trip. By putting the jumper in place, the affected channel remained energized under all conditions, including the conditions that would require a plant trip on OTDT. Each quarterly test was performed three or four times over the course of approximately ten months until the temporary procedure changes were removed in August 2015.

Entergy made the temporary procedures changes as an interim corrective action following a trip of Unit 3 on August 13, 2014, during RPS surveillance testing when a spurious actuation signal occurred in the channel that was not being tested. Entergy was initially unable to identify and correct the cause of the spurious OTDT channel trip and, therefore, wanted to perform their TS required surveillances without risking another unit trip should another spurious actuation occur in the degraded channel not under test. At the time, they completed a process applicability determination form and concluded that an evaluation was not required by 10 CFR 50.59. After the inspectors questioned the conclusions in the process applicability determination, Entergy performed a retroactive 50.59 evaluation. That evaluation identified a need to change the UFSAR in order to use jumpers for testing the RPS.

The Unit 3 UFSAR, Chapter 7, states that the RPS is in accordance with IEEE standard 279. The specific standard Unit 3 is committed to its IEEE-279-1968, which has a section discussing indication of bypasses. Section 4.13 states, "if the protective action of some part of the system has been bypassed or deliberately rendered inoperative for any purpose, this fact shall be continuously indicated in the control room." Unit 3 intended to install permanent test equipment that would allow bypassing a channel and would clearly indicate in the control room that a channel was bypassed, but did not complete the modification. UFSAR Section 7.2.2 reflects this and states that testing in bypass mode may only be done for circuits whose hardware does not require the use of lifted leads or jumpers to do so. The risk of inadvertently leaving a jumper in place is greater than the risk of inadvertently leaving a channel bypassed using hardware that brings in an alarm in the control room because the jumper can go unnoticed for a longer period of time since it is not visible. Entergy did not include steps in the procedure revision to manually indicate the bypassed status of the channel, for example, by hanging a placard. Also, Entergy did not apply any additional human performance error reduction tools (such as independent verification of installation and removal) when they used the jumpers.

Analysis. The inspectors determined that the failure to follow IEEE standard 279-1968 was within Entergy's ability to foresee and correct and, therefore, should have been prevented and was a performance deficiency. Specifically, Entergy failed to ensure there was continuous indication in the control room that an RPS channel was bypassed.

The inspectors determined the finding was more than minor because this finding was associated with the procedure quality attribute of the Mitigating Systems cornerstone and affected its objective to ensure the reliability of systems that respond to initiating

events to prevent undesirable consequences. Specifically, the new test method reduced the reliability of the RPS tripping the unit under conditions requiring an OTDT trip.

The inspectors evaluated this finding using IMC 0609, Attachment 4, "Initial Characterization of Findings." The inspectors determined that the finding affected the Mitigating Systems cornerstone and evaluated the finding using Appendix A, Exhibit 2, "Mitigating Systems Screening Questions." The finding is of very low safety significance (Green) because it did not affect both the RPS trip signal to initiate a reactor scram and the function of other redundant trips or diverse methods of reactor shutdown.

The inspectors identified a cross-cutting aspect in the area of Human Performance, Conservative Bias, because Entergy did not determine the test method was safe in order proceed. Specifically, Entergy staff rationalized that the use of jumpers was allowable because they were focused on completing the required surveillance testing. [H.14]

Enforcement. This finding does not involve a violation of regulatory requirements and is of very low safety significance (Green). Entergy closed the temporary modification and returned to testing without using jumpers to bypass the tested channel. (**FIN 05000286/2016004-03, Failure to Provide Indication of a Bypassed RPS Channel During Testing)**

1R19 Post-Maintenance Testing (71111.19 – 10 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 test results were properly reviewed and accepted and problems were appropriately documented. The inspectors also walked down the affected job site, observed the pre-job brief where possible, confirmed work site cleanliness was maintained, and witnessed the test or reviewed test data to verify quality control hold point were performed and checked, and that results adequately demonstrated restoration of the affected safety functions.

Unit 2

- Non-essential SW header after weld repair on 23 SW pump discharge line on October 12, 2016
- 23 EDG after planned maintenance on jacket water and lube oil systems on October 13, 2016
- 21 auxiliary boiler feedwater pump after planned maintenance on October 20, 2016
- Repairs on the flux wire drive motors on December 13, 2016
- 24 FCU weld repairs on December 21, 2016

Unit 3

- 31 boric acid transfer pump replacement on October 14, 2016
- 32 EDG functional test following overhaul on November 1, 2016
- 31 FCU SW leak mitigation clamp installation on November 6, 2016
- 33 EDG functional test following overhaul on November 29, 2016
- 32 SW pump strainer on December 15, 2016

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – 10 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 TSs, the UFSAR, and Entergy's 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

- 2-PT-Q089, Control Rod Exercise, on October 13, 2016
- 0-NF-302I, Power Distribution and Hot Channel Factor Data Collection, on October 22, 2016
- 2-PT-Q034, 22 Auxiliary Feed Pump, on November 3, 2016 (in-service test)
- 2-PT-Q034B, PCV-1310A, and PCV-1310B, Nitrogen Supply, on November 3, 2016
- 0-SOP-Leakrate-001, Reactor Coolant System Leak Rate Surveillance, on November 18, 2016
- 2-PT-Q027B, 23 Auxiliary Feed Pump, on December 9, 2016 (in-service test)
- 2-PT-2Y043, Appendix R Diesel Generator Rated Load Test, and 2-PT-M110, Appendix R Diesel Generator Functional Test, on December 13, 2016

Unit 3

- 3-PT-M62B, Degraded Voltage Relay Testing, on November 17, 2016
- 3-PT-24014, Appendix R Diesel Generator Rated Load and Overspeed Test, on November 22, 2016 (this sample was part of an in-depth review of the Appendix R diesel generator system)
- 3-PT-SA045, Turbine Control Valve Test, on December 14, 2016

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04 – 1 sample)

a. Inspection Scope

Entergy implemented various changes to the Indian Point Emergency Action Levels (EALs), Emergency Plan, and Implementing Procedures. Entergy had determined that, in accordance with 10 CFR 50.54(q)(3), any change made to the EALs, Emergency Plan, and its lower-tier implementing procedures had not resulted in any reduction in effectiveness of the Plan, and that the revised Plan continued to meet the standards in 50.47(b) and the requirements of 10 CFR 50, Appendix E.

The inspectors performed an in-office review of all EAL and Emergency Plan changes submitted by Entergy as required by 10 CFR 50.54(q)(5), including the changes to lower-tier emergency plan implementing procedures, to evaluate for any potential reductions in effectiveness of the Emergency Plan. This review by the inspectors was not documented in an NRC safety evaluation report and does not constitute formal NRC approval of the changes. Therefore, these changes remain subject to future NRC inspection in their entirety. The requirements in 10 CFR 50.54(q) were used as reference criteria.

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstone: Public Radiation Safety and Occupational Radiation Safety

2RS5 Radiation Monitoring Instrumentation (71124.05 – 3 samples)

a. Inspection Scope

The inspectors reviewed performance in assuring the accuracy and operability of radiation monitoring instruments used to protect occupational workers during plant operations and from postulated accidents. The inspectors used the requirements in 10 CFR 20; regulatory guides; ANSI 323A, N323D, N42.14; and procedures required by TSs as criteria for determining compliance.

Inspection Planning

The inspectors reviewed Entergy's UFSAR, radiation protection audits, records of in-service survey instrumentation, and procedures for instrument source checks and calibrations.

Walkdowns and Observations (1 sample)

The inspectors conducted walkdowns of plant area radiation monitors and continuous air monitors. The inspectors assessed material condition of these instruments and that the monitor configurations aligned with the UFSAR. The inspectors checked the calibration

and source check status of various portable radiation survey instruments and contamination detection monitors for personnel and equipment.

Calibration and Testing Program (1 sample)

For the following radiation detection instrumentation, the inspectors reviewed the current detector and electronic channel calibration, functional testing results, alarm setpoints, and the use of scaling factors: laboratory analytical instruments, whole body counter, containment high-range monitors, portal monitors, personnel contamination monitors, small article monitors, portable survey instruments, area radiation monitors, electronic dosimetry, air samplers, and continuous air monitors. The inspectors reviewed the calibration standards used for portable instrument calibrations and response checks to verify that instruments were calibrated by a facility that used National Institute of Science and Technology traceable sources.

Problem Identification and Resolution (1 sample)

The inspectors verified that problems associated with radiation monitoring instrumentation (including failed calibrations) were identified at an appropriate threshold and properly addressed in the CAP.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151 – 6 samples)

.1 Mitigating Systems Performance Index (MSPI) (4 samples)

a. Inspection Scope

The inspectors reviewed Entergy's submittals for the following Mitigating Systems cornerstone performance indicators (PIs):

Unit 2

- MSPI Cooling Water Systems (MS10) from July 1, 2015, to June 30, 2016
- Safety System Functional Failures (MS05) from July 1, 2015, to September 30, 2016

Unit 3

- MSPI Cooling Water Systems (MS10) from July 1, 2015, to June 30, 2016
- Safety System Functional Failures (MS05) from July 1, 2015, to September 30, 2016

To determine the accuracy of the PI 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 7. The inspectors also reviewed Entergy's operator narrative logs, CRs, mitigating systems

performance index derivation reports, event reports, and NRC integrated inspection reports to validate the accuracy of the submittals.

b. Findings

No findings were identified.

.2 Occupational Exposure Control Effectiveness

a. Inspection Scope

The inspectors reviewed Entergy submittals for the occupational radiological occurrences PI for the first quarter 2016 through the third quarter 2016. The inspectors used PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the PI data reported. The inspectors reviewed electronic personal dosimetry accumulated dose alarms, dose reports, and dose assignments for any intakes that occurred during the time period reviewed to determine if there were potentially unrecognized PI occurrences. The inspectors conducted walkdowns of various locked high and very high radiation area entrances to determine the adequacy of the controls in place for these areas.

b. Findings

No findings were identified.

.3 Radiological Effluent TS/Offsite Dose Calculation Manual Radiological Effluent Occurrences

a. Inspection Scope

The inspectors reviewed Entergy submittals for the radiological effluent TS/Offsite Dose Calculation Manual radiological effluent occurrences PI for the first quarter 2016 through the third quarter 2016. The inspectors used PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine if the PI data was reported properly. The inspectors reviewed the public dose assessments for the PI for public radiation safety to determine if related data was accurately calculated and reported.

The inspectors reviewed the CAP database to identify any potential occurrences such as unmonitored, uncontrolled, or improperly calculated effluent releases that may have impacted offsite dose. The inspectors reviewed gaseous and liquid effluent summary data and the results of associated offsite dose calculations to determine if indicator results were accurately reported.

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 CR screening meetings.

b. Findings

No findings were identified.

.2 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a semi-annual review of site issues, as required by Inspection Procedure 71152, "Problem Identification and Resolution," to identify corrective action process trends that might indicate the existence of more significant safety issues for the six month period from July 1 to December 31, 2016. The inspectors had noted during their daily review of CRs that Energy did not consistently incorporate the concept of mission time into operability reviews. As a result of this observation, the inspectors conducted an in-depth review of six months of CRs that included a selection of prompt operability determinations to identify any potential trends associated with this observation.

b. Findings and Observations

No findings were identified.

The inspectors identified recent trends in the documentation of operability determinations. The assessment of the mission time was not always appropriately considered when determining operability for a safety-related structure, system, or component (SR-SSC). Revision 10 to EN-OP-104, "Operability Determinations," was changed in December 2015 to emphasize that mission time should be considered when operability is evaluated. EN-OP-104 defined mission time as "the duration of SSC operation that is credited in the design basis for the SSC to perform its specified safety function." Additionally, section 5.3.2 requires operators to "determine if there is an ongoing degradation mechanism that may impact future operability based on changing conditions, specifically consider the SSCs specified safety function and mission time." Section 5.3.7 requires operators to "describe the degraded or nonconforming condition and its effect on the ability of the SSC to perform its specified function for its required mission time." The premise is that the SR-SSC will be capable of performing its specified safety function for the duration of its mission time without requiring emergency

repairs, operator actions (that are not either proceduralized or credited compensatory actions), or unapproved temporary modifications.

Interviews with plant operators, operations management, and engineers revealed the concept of mission time was often misunderstood. Mission time was rarely referenced (only once in CR-IP3-2016-02340 in a six month period) or considered when completing prompt operability evaluations. Interviews with personnel who prepared prompt operability determinations indicated that a common misconception was that the mission time had to be explicitly specified in the FSAR or other design bases documents in order to be valid and, if not specified, then it could be assumed that either the mission time was 24 hours (as used in the probabilistic risk analysis) or there was no relevant mission time. This misconception may have resulted in mission times not always being properly assessed and considered when evaluating the operability of degraded SR-SSCs. The mission times for many SR-SSCs can be longer than 24 hours because many SR-SSCs are credited to perform their specified safety function for up to 30 days.

Without the proper assessment of mission times for SR-SSCs, the assignment of operator manual actions or compensatory actions was not always in accordance with EN-OP-104, "Operability Determinations." Many existing operability evaluations specified operator manual actions but explicitly stated that they these actions were not considered compensatory measures, but rather were enhancements. In some cases, the operator manual actions were used to restore operability from a degraded condition and met the criteria for compensatory measures as defined in EN-OP-104 and NEI 96-07, "Guidelines for 10 CFR 50.59 Implementation," Revision 1.

In Section 1R15, a Green NCV (NCV 05000286/2016004-02, Inadequate Operability Evaluation of Leak in Service Water Pump Discharge Pipe) was issued for a failure to adequately assess the operability of the 31 SW pump discharge line leak. Initially, Entergy did not recognize that the SW system had a mission time that was greater than 24 hours because SW was credited in the FSAR to mitigate loss of coolant accident events that required containment sump recirculation cooling, which relied on SW as the ultimate heat sink to cool the core. Entergy personnel had not recognized that operator manual actions that had been specified to prevent the submergence of the SW strainer controls due to internal flooding challenges should have been classified as compensatory actions to restore operability as stated in the NCV. They had not recognized this condition because they had not adequately assessed the mission time of the SW system. As a result of these misconceptions, the operability determination process was not consistently followed when Entergy determined that no operator compensatory actions were required in both the original operability evaluation and the subsequent revision to the evaluation. Subsequently, Entergy assessed the mission time of the SW system was one year but still did not specify non-proceduralized operator mitigation actions and temporary modifications as formal compensatory actions to restore operability.

.3 Annual Sample: Spent Fuel Pool Boraflex Degradation

a. Inspection Scope

The inspectors performed an in-depth review of Entergy's evaluations and corrective actions associated with accelerated neutron-absorber (Boraflex) degradation in the Unit 2 spent fuel pool (SFP) documented in CR-IP2-2014-04414. 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, Criterion XVI, "Corrective Action."

b. Findings and Observations

No findings were identified.

The Unit 2 SFP is composed of high-density racks with Boraflex neutron absorber panels between cells. In 2002, Unit 2 TS 3.7.13, "Spent Fuel Pit Storage," was amended to allow for soluble boron credit in the criticality analysis of record (CAOR) due to the degradation of the Boraflex absorbers. This amendment also divided the SFP into regions and placed restrictions on fuel assemblies that could be placed in each region based on cooling time, burnup, initial enrichment, and number of integral fuel burnable absorbers. Entergy continued to perform periodic testing of the Boraflex panels through 2013 to confirm the assumptions in the CAOR. In February 2014, Entergy determined that additional panels in Region 2-2 exceeded the degradation assumptions of the CAOR and, in the future, more panels would exceed the assumptions based on absorbed dose and residency in the SFP. This issue was documented in CR-IP2-2014-04414 (see Section 4OA2 of Inspection Report 05000247/2014003, ML14223A045). Entergy placed compensatory measures into effect adding administrative restrictions on the allowable locations and patterns for spent fuel placement to ensure the k-effective limits of 10 CFR 50.68(b)(4) would still be met until the condition was corrected.

In addition to operational controls over boron concentration and dilution monitoring, Entergy documented SFP loading compensatory measures in procedure 0-NF-203, "Internal Transfer of Fuel Assemblies and Inserts." The procedure allows the following administrative approaches for complying with the limits of the CAOR in Region 2-2:

- Use the TS 3.7.13 loading requirements for Region 2-1 (more restrictive than Region 2-2) on both sides of a degraded Boraflex panel
- Maintain an empty cell on one side of a degraded panel
- Maintain a rod cluster control assembly in a fuel assembly on one side of a degraded panel

After fuel assembly shuffles were completed for the Unit 2 refueling outage, the inspectors reviewed the SFP loading configuration to determine if it met the requirements of 0-NF-203. The inspectors noted that three degraded panels in Region 2-2 (BG-65-N, BH-53-N, and AM-63-E) did not meet any of the three approaches. These three panels are on the interface of adjoining modules within Region 2-2, which have an additional 1.25-inch water gap between cells. Entergy stated that their analysis vendor verbally indicated that placing fuel assemblies in these locations would meet the intent of the CAOR, however, could not provide a calculation to support the basis for that determination. Entergy subsequently wrote CR-IP2-2016-01505 and commenced reanalysis to confirm the configuration is bounded by the CAOR. On March 12, 2016, Entergy determined that the water gap had sufficient neutron hold down characteristics to compensate for the adjacent failed Boraflex panel based on preliminary calculations. On November 16, 2016, Entergy accepted the

vendor's calculation of record that documented that this condition was acceptable and revised the operability evaluation.

On December 14, 2016, Entergy submitted a license amendment request (LR-LAR-2016-00230) that would accelerate the planned transfer of Unit 3 spent fuel to the Unit 2 SFP and subsequently accelerate the transfer of Unit 2 spent fuel into dry cask storage containers. Removal of sufficient spent fuel assemblies from the Unit 2 SFP will restore the SFP to conform to 10 CFR 50.68 limits for k-effective.

.4 Annual Sample: Service Water System Piping Leaks

a. Inspection Scope

The inspectors reviewed events of leaks and wall thinning in the Units 2 and 3 SW systems piping over the past year. The SW systems use the Hudson River as a water source for providing cooling to various safety-related plant components.

The inspectors reviewed a sample of the identified SW system piping leaks from the ASME Class 3 components over the past year, which are documented in CR-IP3-2015-05136, CR-IP2-2015-05755, CR-IP3-2016-01113, CR-IP2-2016-03818, and CR-IP2-2016-05358. The inspectors conducted interviews with Entergy technical engineering staff, reviewed SW system health reports, cause evaluations, operability determinations, corrective actions, work orders, non-destructive examination reports, photographs, SW system piping leak tracking computer access database, and self-assessment report IPEC Ultimate Heat Sink Performance LO-IP3LO-2015-00071, which described current corrective actions and areas for improvement, as well as corrective actions that have been addressed for the SW systems piping leaks.

The inspectors assessed Entergy's problem identification threshold, cause analyses, operability determinations, extent of condition reviews, compensatory actions, and the prioritization and timeliness of corrective actions to determine whether Entergy's staff were appropriately identifying, characterizing, and correcting problems associated with the SW system piping leaks and whether the planned or completed corrective actions were appropriate. The inspectors interviewed Entergy's technical engineering personnel to discuss the results of the cause evaluations and to assess the effectiveness of the implemented corrective actions. The inspectors compared the actions taken to Entergy's CAP, procedure EN-LI-102, and the requirements of 10 CFR 50, Appendix B.

b. Findings and Observations

In review of Entergy's SW system piping leak tracking computerized access database, the inspectors observed the number of through-wall leaks in 2015 was nine and currently in 2016 there were four leaks identified. This showed an increase in SW piping leaks over the past several years. The inspectors noted Entergy staff had identified crevice corrosion to be the primary degradation mechanism leading to several of the through-wall SW pipe leaks. However, three of the leaks in 2015 occurred in stainless steel piping to the Unit 2 radiation monitors due to pitting corrosion. The inspectors determined most of this degraded radiation monitor piping has been replaced with more corrosion resistant stainless alloy piping.

The inspectors reviewed currently ongoing and planned SW system piping projects to determine whether Entergy was identifying corrective actions focused to correct the causes of the leaks and implementing them in a timeframe commensurate with the safety significance of the leaks. The inspectors noted one of Entergy's current longer-range SW leak mitigation plans is to install mechanical seals over the unprotected weld joints on the inside diameter of the cement-lined carbon steel piping on SW header lines on Unit 2 to address the crevice corrosion initiated leaks. The inspectors reviewed Indian Points Generic Letter 89-13 program and the SW pre-outage non-destructive examination inspection database to verify that Entergy was adequately tracking and prioritizing vulnerable SW piping locations and scheduling SW pipe weld locations for inspections. The inspectors noted Entergy typically selected approximately 20 SW piping welds to inspect pre-outage during an operating cycle.

The inspectors verified that leaks were, in general, appropriately identified and dispositioned with an adequate technical basis for assessing SW system structural integrity and the leaks, prior to tagging out the pipe or component for repair, and did not adversely impact the ability of the SW systems or other potentially impacted systems to perform their intended design safety function to provide cooling. The inspectors determined that Entergy used the ASME Code Case N-513-3 to effectively evaluate the structural integrity of SW system piping with leaks, which allows temporary acceptance, monitoring, and operation of the component until replacement at the next refueling outage. Immediate corrective actions included an evaluation of the degraded component for operability and structural integrity, scheduling repair of the leaking component, and routine monitoring for any changes in leakage rate. Notwithstanding this general conclusion, the inspectors identified an instance where Entergy staff did not identify a significant change in the leak rate of a flaw in the 31 SW discharging line in a timely manner and did not perform an adequate prompt operability evaluation. A finding of very low safety significance related to this issue is documented in Section 1R15 of this inspection report.

The inspectors determined that, in general, Entergy's overall response to the SW system piping leaks was commensurate with the safety significance and included appropriate compensatory actions. The inspectors concluded that completed and planned actions were reasonable to correct the SW system piping weld flaw leakage problems.

4OA3 Follow Up of Events and Notices of Enforcement Discretion (71153 – 8 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 2

- Notification of unusual event due to the high energy failure of the 138 kV electrical tie line between Units 2 and 3 on November 8, 2016. The control room classified the event as an explosion inside the protected area because of a report of a loud explosive sound and smoke inside the protected area. This event did not result in the loss of power or affect any plant systems because the tie line (33332L) was not in service at the time of the failure. The notice of unusual event was terminated approximately one hour after classification when the situation had been fully assessed.
- A SW leak on the 24 FCU resulted in a loss of containment boundary for a period of five minutes on November 21, 2016. The FCU was immediately isolated and the containment boundary was immediately restored. The event was reported under 10 CFR 50.72 (b)(3)(v)(C) (PN 52388) as having the potential for an uncontrollable radiological release.

b. Findings

No findings were identified.

.2 (Closed) Licensee Event Report (LER) 05000247/2015-001-00 and 2015-001-01: Technical Specification Prohibited Condition Due to an Inoperable Containment Caused by a Service Water Pipe Leak with a Flaw Size That Results in Exceeding the Allowed Leakage Rate for Containment

The inspectors reviewed Entergy's actions and reportability criteria associated with LER 05000247/2015-001-00, which was submitted to the NRC on October 9, 2015, and LER 05000247/2015-001-01, which was submitted to the NRC on September 15, 2016. On August 11, 2015, during operator investigations inside the reactor containment building, a through wall leak was discovered on the 24 FCU motor cooler SW return line. The leak was located within the ASME Section XI Code ISI Class 3 boundary and estimated to be approximately 2 gpm. Since the pipe flaw was through wall and was located within the ASME Section XI boundary, it exceeded the flaw allowable limits provided per IWC-3000. The leak could have resulted in post-loss of coolant accident air leakage out of containment in excess of that allowed by TS 3.6.1 (containment) which requires leakage rates to comply with 10 CFR 50, Appendix J. The revision to the LER was submitted after changes were made to the apparent cause evaluation and it was determined that actions needed to be taken to categorize this issue as a safety system functional failure. The direct cause was corrosion. The apparent cause was the length of time to implement a modification to replace the FCU motor cooler piping identified in 2009 per the SW mitigation strategy. A violation for this issue is documented in Inspection Report 05000247/2015003 (ML15316A083). The inspectors did not identify any new issues during the review of the LERs. This LER is closed.

.3 (Closed) LER 05000247/2015-002-00: Safety System Functional Failure Due to Fuses for Residual Heat Removal Heat Exchanger Outlet Valves That Would Not Remain Operable Under Degraded Voltage Conditions

The inspectors reviewed Entergy's actions and reportability criteria associated with LER 05000247/2015-002-00, which was submitted to the NRC on October 19, 2015. On August 18, 2015, Entergy determined that the normally closed residual heat removal

(RHR) heat exchanger outlet valves (MOV-746 and MOV-747) would not remain operable during a degraded voltage condition and would, therefore, render both trains of RHR inoperable. The RHR outlet valves are required to open during a design basis accident for the RHR system to perform its safety function. The direct cause was the fact that electrical coordination calculations for MOV-746 and MOV-747 did not support continued operability during a degraded voltage condition. The apparent cause was that industry operating experience was not properly acted upon due to an incorrect assumption in calculations. The fuses were replaced with fuses that would remain operable under degraded voltage conditions and the RHR trains were restored to operable status. A violation for this issue is documented in Inspection Report 05000247/2015007 (ML15278A301). The inspectors did not identify any new issues during the review of the LER. This LER is closed.

.4 (Closed) LER 05000247/2016-007-00: Safety System Functional Failure and Common Cause Inoperability of the Emergency Core Cooling System Due to Violation of Containment Sump Debris Barrier Integrity

The inspectors reviewed Entergy's actions and reportability criteria associated with LER 05000247/2016-007-00, which was submitted to the NRC on August 9, 2016. On June 10, 2016, NRC inspectors notified Entergy that they had identified two open barriers for the emergency core cooling system sump during a containment tour while Unit 2 was in mode 4. Personnel were moving scaffolding through the barrier gates, but having both sump barriers open results in emergency core cooling system being inoperable in modes 1-4. The direct cause was workers leaving both inner door and outer doors open while moving scaffold parts from inside the crane wall to outside the crane wall storage area, during mode 4, in violation of procedure OAP-007, "Containment Entry and Egress." The apparent cause was a latent organizational weakness associated with not sufficiently communicating the use of procedure OAP-007 available information. The scaffold supervisor was not aware of his requirement to serve as containment coordinator and provide the required briefing on gate closure while the radiation protection brief was focused on the locked high radiation requirements, not gate control. A violation associated with this issue is documented in Inspection Report 05000247/2016002 (ML16243A245). The inspectors did not identify any new issues during the review of the LER. This LER is closed.

.5 (Closed) LER 05000247/2016-008-00: Technical Specification Required Shutdown Due to Not Completing Weld Repairs to a Defect in a Service Water Pipe Elbow to Inlet Nozzle of the Component Cooling Water Heat Exchanger Within the TS Allowed Outage Time

The inspectors reviewed LER 05000247/2016-008-00 and determined the following: On March 19, 2016, prior to startup from the 2016 spring refueling outage, Entergy staff completed a weld repair to address a one drop per second leak from the SW inlet line to the 21 component cooling water heat exchanger inlet line #411 at weld F-1924. This weld joins a carbon steel elbow to a 90/10 Cu/Ni heat exchanger pipe nozzle. The weld repair was conducted in accordance with the ASME Code Section IX and ASME Code Case N-513-3 requirements. On June 12, 2016, Entergy staff identified a new leak in the same SW pipe line #411 repair area. The weld repair time was estimated to be 24 hours, within the 72-hour allowed action statement in the applicable TS. This weld repair was also planned per the ASME Code Section IX and ASME Code Case N-513-3

requirements. Initially this weld repair used the original construction 70Cu/30 Ni (ERCuNi) weld material, but this material was not successful to result in an acceptable weld. During the repair process, Entergy staff determined to use a 70Ni/30 Cu (ERNiCu-7) weld material coupled with an insert piece that replaced the affected weld area. The weld repair time exceeded the allowable outage time in the applicable TS action statement; and Entergy staff followed TS requirements, shutdown Unit 2, and submitted an LER.

The inspectors observed the repaired area of weld #411 in the plant and discussed the repair process and controls with the responsible welding engineer and maintenance staff who provided repair oversight. The LER and the apparent cause evaluation entitled "Weld Repairs to Service Water Line #411 Were Not Completed Within the Allowed Outage Time Forcing a Unit Shutdown," dated July 24, 2016, for CR-IP2-2016-04118, were reviewed with attention to the repair details, the need for repair delay, corrective actions, and condition significance. The inspectors noted as discussed in the LER that during the repair planning stage, selection of the final repair details initially may have allowed the repair to be completed within the applicable allowed outage time with some margin. The inspectors did not identify Entergy welding standards or regulatory requirements not met during these repair activities. This LER is closed.

.6 (Closed) LER 05000247/2016-009-00: Automatic Reactor Trip Due to Actuation of the Trip Logic of the Reactor Protection System During Preparation for Testing

The inspectors reviewed LER 05000247/2016-009-00 and determined that on July 6, 2016, Entergy did not follow procedure 2-PT-2M3A, "RPS Logic Train B Actuation Logic Test and Tadot," during planned Unit 2 testing on July 6, 2016. The inspectors did not identify any new issues during the review of the LER. This LER is closed with the following finding.

Failure to Follow RPS Logic Train B Actuation Logic Test

Introduction. A self-revealing NCV of TS 5.4.1(a), "Procedures," was identified because Entergy did not follow procedure 2-PT-2M3A, "RPS Logic Train B Actuation Logic Test and Tadot," required by NRC Regulatory Guide 1.33, Appendix A, during planned Unit 2 testing on July 6, 2016, resulting in a reactor trip. Specifically, Entergy positioned key #183 in the key lock switch for RPS train B bypass and turned it to the defeat position without procedural direction, prior to formally commencing 2-PT-2M3A. The step in 2-PT-2M3A that directs turning the switch requires that the reactor trip bypass breaker B be racked in prior to taking the RPS train B bypass key lock switch to the defeat position to prevent a reactor trip.

Description. On July 6, 2016, Entergy was preparing to perform 2-PT-2M3A, "RPS Logic Train B Actuation Logic Test and Tadot," and could not locate keys #184 or #182 specifically called out in the procedure for testing. However, the procedure allowed for an "equivalent key" to be used. Key #183, which is primarily used for the train A RPS logic, was suggested as an equivalent. RPS is designed to shut the reactor down due to undesirable plant conditions without operator action. The system is required to be tested regularly. To prevent unnecessary plant trips, the RPS logic system has a test bypass system built in to allow for testing. Prior to entering the TS limiting condition for operation for the test performance, it was desired to verify that key #183 would work. Key #183 was placed into the channel B reactor protection logic key lock switch and the

switch was placed to the defeat position without clear procedural direction or an approved work instruction. Because the reactor trip bypass breaker B was in the racked out position, placing the train B key lock switch to the defeat position caused the normal RPS B breaker to trip causing an unplanned RPS actuation and plant trip. 2-PT-2M3A directs placing the train B bypass key lock switch to the defeat position, only after the reactor trip bypass breaker B has been racked in to prevent an RPS actuation and plant trip.

Entergy completed a root cause evaluation under CR-IP2-2016-04320. The root cause evaluation found that the root cause of the event was an inappropriate focus on schedule adherence over procedural compliance. The contributing cause of this event was that maintenance management failed to provide appropriate oversight or instill sufficient urgency for changing worker behaviors and supervisor effectiveness to meet high standards of performance through the work observation program. Entergy reviewed plant response and conducted interviews with all employees involved.

Analysis. The inspectors determined that Entergy's failure to implement procedure 2-PT-2M3A, as written, was a performance deficiency that was within Entergy's ability to foresee and correct and should have been prevented. The performance deficiency was determined to be more than minor because it is associated with the human performance attribute of the Initiating Events cornerstone and affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, Entergy operated plant equipment without having clear procedural direction which resulted in an unplanned reactor trip. Using IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," and IMC 0609, Appendix A, Exhibit 1, "Initiating Events Screening Questions," the inspectors determined that the finding was of very low safety significance (Green) because it did not also cause the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition, high energy line-breaks, internal flooding, or fire.

This finding had a cross-cutting aspect in the area of Human Performance, Field Presence, because Entergy leaders did not reinforce standards and expectations with regard to procedure use and adherence. Specifically, Entergy did not have sufficient urgency for changing worker behaviors through the work observation program. [H.2]

Enforcement. TS 5.4, "Procedures," Section 5.4.1.a, requires, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Appendix A of Regulatory Guide 1.33, Revision 2. Section 8.b(1)(l) of this regulatory guide requires procedures for surveillance tests for the RPS. Entergy established system operating procedure 2-PT-2M3A to meet the Regulatory Guide 1.33 requirement. Step 7.1.2 of procedure 2-PT-2M3A requires that reactor trip bypass breaker be in the racked in position and closed prior to positioning the channel B reactor protection logic key lock switch to the defeat position. Contrary to the above, on July 6, 2016, Entergy positioned the B train RPS bypass key lock switch to the defeat position with the bypass breaker racked out. As a result, the normal B reactor trip break opened causing a reactor trip. Because this violation was of very low safety significance (Green) and was entered into Entergy's CAP as CR-IP2-2016-04320, this violation is being treated as an NCV, consistent with Section 2.3.2.a of the NRC Enforcement Policy. **(NCV 05000247/2016004-04, Failure to Follow RPS Logic Train B Actuation Logic Test)**

.7 (Closed) LER 05000286/2014-004-00 and 05000286/2014-004-01: Automatic Reactor Trip as a Result of Meeting the Trip Logic for Over Temperature Delta Temperature During Reactor Protection System Pressurizer Pressure Testing

The inspectors reviewed Entergy's actions and reportability criteria associated with LER 05000286/2014-004-00, which was submitted to the NRC on October 10, 2014, and LER 05000286/2014-004-01, which was submitted to the NRC on August 1, 2016. On August 13, 2014, while channel 1 RPS bistables were tripped for planned RPS testing, a spurious signal spiked on channel 3, resulting in meeting the trip logic for OTDT and a reactor trip. The revision to the LER was submitted after troubleshooting and component testing determined the OTDT static gain unit operational amplifier had a bad internal connection. That flaw was attributed to random component failure. A second possible cause was a loose wiring connection to the output of the static gain unit. The static gain unit was replaced and the wiring connections were tightened. Additionally, procedure IP-SMM-WM-140, "Surveillance Test Program," was revised to state that breaks during testing should be managed to minimize the time with a channel in a tripped condition. The inspectors did not identify any new issues during the review of the LERs. This LER is closed.

4OA5 Other Activities

.1 Groundwater Contamination

a. Inspection Scope

In February 2016, Entergy notified the NRC of a significant increase in groundwater tritium levels measured at three monitoring wells (MW-30, MW-31, and MW-32) located near the Unit 2 fuel storage building (FSB). In August 2016, Entergy notified the NRC of the detection of Cobalt-58 measured in MW-32 located near the Unit 2 FSB.

b. Findings and Observations

Actions taken by Entergy to mitigate the consequences of the groundwater spills included the completion and operation of recovery well 1 (RW-1) located below the FSB. Testing of RW-1 commenced in September 2016 for 150 hours at a constant flow rate, and the results of the initial test have been documented in an Entergy report, "RW-1 Groundwater Extraction Test," dated November 14, 2016. The second testing began the week of November 14, 2016, and also is scheduled for 150 hours, using a constant head.

.2 Operation of Inter-Unit Fuel Transfer Canister and Cask System (60845)

a. Inspection Scope

From October 27 to November 10, 2016, the inspectors conducted an inspection and review of Entergy's inter-unit fuel transfer of 12 spent fuel assemblies from Unit 3 to Unit 2. The inspectors verified compliance with Entergy's operating license, Safety Evaluation Report, Holtec Licensing Report, TSs, NRC regulations, and Entergy procedures. The inspectors attended pre-job briefs and verified that the briefs emphasized the critical steps and reviewed the conditions in the work areas. The inspectors interviewed personnel and ensured they were trained and knowledgeable

regarding the tasks to be performed. In addition, training records were reviewed to ensure personnel were qualified to perform their assigned tasks. The inspectors also reviewed Entergy's root cause evaluation associated with internally identified wet fuel transfer and dry cask storage training deficiencies.

The inspectors observed leak testing of the steam generator system, heavy load movement of the shielded transfer canister (STC) from the Unit 3 SFP into the HI-TRAC in the Unit 3 FSB truck bay, pressure rise testing of the loaded STC, and video verification of the spent fuel assemblies. The inspectors also observed venting of a hydrogen line along the haul path, movement of the HI-TRAC/STC out of the Unit 3 truck bay, transport of the HI-TRAC/STC to Unit 2 using the vertical cask transporter, and movement of the HI-TRAC/STC into the Unit 2 FSB. During performance of these activities, the inspectors verified that procedure use, communication, and coordination of inter-unit fuel transfer activities met established standards and requirements. Inspectors met with reactor engineering personnel to review the process for selecting spent fuel for transfer and verify the spent fuel met the requirements of the TS.

The inspectors reviewed radiation protection procedures, radiation work permits, and the established radiological controls associated with the inter-unit fuel transfer. The inspectors assessed whether workers were aware of the radiological conditions in their work area and the radiation work permit controls/limits. The inspectors reviewed radiological surveys for the transfer to confirm radiation survey levels measured were within limits established in the TS and consistent with values specified in the Holtec Licensing Report.

The inspectors reviewed corrective action reports and the associated follow-up actions that were generated since the last inter-unit transfer inspection to ensure that issues were entered into the CAP, prioritized, and evaluated commensurate with their safety significance.

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

On January 31, 2017, the inspectors presented the inspection results to Mr. Anthony Vitale, Site Vice President, and other members of Entergy. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

4OA7 Licensee-Identified Violations

The following Severity Level IV violation was identified by Entergy and is a violation of NRC requirements which meets the criteria in the NRC Enforcement Policy for being dispositioned as an NCV.

- 10 CFR 55.53(e) requires, in part, that to maintain active status, a licensee shall actively perform the functions of an operator or senior operator on a minimum of seven 8-hour shifts or five 12-hour shifts per calendar quarter and that if a licensee has not been actively performing the functions of an operator or senior operator, the

licensee may not resume activities authorized by a license issued except as permitted by 10 CFR 55.53(f).

10 CFR 55.53(f) requires, in part, that before resumption of licensed functions, an authorized representative of the facility licensee shall certify that: 1) the licensee's qualification and status of the licensee are current and valid; and 2) that the licensee has completed a minimum of 40 hours of shift functions under the direction of an operator or senior operator as appropriate and in the position to which the individual will be assigned.

Contrary to the above, between July 2, 2016, and July 5, 2016, Entergy did not properly ensure that the qualifications and status of an SRO was current and valid, regarding the SRO meeting the minimum of seven 8-hour or five 12-hour shifts per calendar quarter. Specifically, the SRO stood watch as a control room supervisor in July 2016 while having stood only four of the five required 12-hour proficiency watches in a creditable position in the prior quarter. In the prior quarter, the SRO stood watch as a shift technical advisor and field support supervisor. These watches are not creditable toward the proficiency requirement.

The SRO was removed from shift and was properly reactivated as required by 10 CFR 55.53(f). This issue was entered in Entergy's CAP as CR-IP2-2016-04440. Corrective actions taken included counseling of the SRO and the auditor. To prevent reoccurrence, a software fix was implemented to check the proficiency status of operators when logging into their shift.

This violation was assessed using the traditional enforcement process because it involved an operator license condition that was not met, which impacts the NRC's regulatory process. Although this violation is similar to a Severity Level III example in the NRC Enforcement Policy, based on the circumstances surrounding the issue including a verification that there were no operational errors as a result of the violation, the issue was evaluated as a Severity Level IV.

ATTACHMENT: SUPPLEMENTARY INFORMATION

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Entergy Personnel

A. Vitale, Site Vice President
J. Kirkpatrick, Plant Operations General Manager
R. Alexander, Unit 2 Shift Manager
N. Azevedo, Engineering Supervisor
K. Baumbach, Chemistry Supervisor
J. Baker, Unit 2 Shift Manager
D. Barr, Unit 2 Control Room Supervisor
S. Bianco, Operations Fire Marshal
J. Boccio, Supervisor, Instrument and Control Maintenance
P. Bode, Radiation Protection Supervisor
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L. Glander, Emergency Preparedness Manager
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M. Johnson, Unit 3 Shift Manager
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N. Lizzo, Training Manager
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J. McDonald, Unit 3 CRS
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C. Rokes, Nuclear Safety / Licensing Specialist IV

J. Ryan, Unit 3 Shift Manager
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M. Tesoriero, System Engineering Manager
M. Troy, Nuclear Oversight Manager
B. Ulrich, Unit 2 Control Room Supervisor
R. Walpole, Regulatory Assurance Manager

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED

Opened/Closed

05000286/2016004-01	FIN	Inadequate Preventive Maintenance Classification of Starting Air Relief Valve Led to Failure (Section 1R12)
05000286/2016004-02	NCV	Inadequate Operability Evaluation of Leak in Service Water Pump Discharge Pipe (Section 1R15)
05000286/2016004-03	FIN	Failure to Provide Indication of a Bypassed RPS Channel During Testing (Section 1R18)
05000247/2016004-04	NCV	Failure to Follow RPS Logic Train B Actuation Logic Test (Section 4OA3)

Closed

05000286/2016001-03	URI	Inadequate Screening of Reactor Protection System Test Method Change (Section 1R18)
05000247/2015-001-00 and 05000247/2015-001-01	LER	Technical Specification Prohibited Condition Due to an Inoperable Containment Caused by a Service Water Pipe Leak with a Flaw Size That Results in Exceeding the Allowed Leakage Rate for Containment (Section 4OA3)
05000247/2015-002-00	LER	Safety System Functional Failure Due to Fuses for Residual Heat Removal Heat Exchanger Outlet Valves That Would Not Remain Operable Under Degraded Voltage Conditions (Section 4OA3)
05000247/2016-007-00	LER	Safety System Functional Failure and Common Cause Inoperability of the Emergency Core Cooling System Due to Violation of Containment Sump Debris Barrier Integrity (Section 4OA3)

05000247/2016-008-00	LER	Technical Specification Required Shutdown Due to Not Completing Weld Repairs to a Defect in a Service Water Pipe Elbow to Inlet Nozzle of the Component Cooling Water Heat Exchanger Within the TS Allowed Outage Time (Section 4OA3)
05000247/2016-009-00	LER	Automatic Reactor Trip Due to Actuation of the Trip Logic of the Reactor Protection System During Preparation for Testing (Section 4OA3)
05000286/2014-004-00 and 05000286/2014-004-01	LER	Automatic Reactor Trip as a Result of Meeting the Trip Logic for Over Temperature Delta Temperature During Reactor Protection System Pressurizer Pressure Testing (Section 4OA3)

LIST OF DOCUMENTS REVIEWED

Common Documents Used

Indian Point Unit 2, Updated Final Safety Analysis Report
Indian Point Unit 2, Individual Plant Examination
Indian Point Unit 2, Individual Plant Examination of External Events
Indian Point Unit 2, Technical Specifications and Bases
Indian Point Unit 2, Technical Requirements Manual
Indian Point Unit 2, Control Room Narrative Logs
Indian Point Unit 2, Plan of the Day

Section 1R01: Adverse Weather Protection

Procedures
0-MET-402-GEN, (Sandbagging)
2-AOP-FLOOD-1, Flooding, Revision 10
3-AOP-FLOOD-1, Flooding, Revision 9
OAP-048, Seasonal Weather Preparation, Revision 1
OAP-008, Severe Weather Preparations, Revision 24

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2016-00790	2016-01999	2016-05825	2016-06675	2016-06792	2016-06794
2016-07083	2016-07134	2016-07377	2016-07386		

Condition Reports (CR-IP3-)

2016-02105	2016-02631	2016-02632	2016-02633	2016-02635	2016-03355
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2016-03743	2016-03978	2016-03986	2016-04027	2016-04070	2016-04193
2016-04259					

Section 1R04: Equipment Alignment

Procedures
2-COL-10.1.1, Safety Injection System, Revision 36

2-COL-10.2.1, Containment Spray System, Revision 21
2-PT-V053C, Mode Change Checklist, Mode 5 to Mode 4, Revision 15
3-COL-CC-1, Component Cooling System, Revision 28
3-COL-RW-002, Service Water System, Revision 48
3-OSP-EL-001, Emergency Diesel Generator Operation with Temporary Service Water Return Lines, Revision 4
3-SOP-CC-001B, Component Cooling System Operation, Revision 35
3-TAP-001-EDG, Removal and Installation of Service Water Drain Line on Emergency Diesel Generator Jacket Water Heat Exchangers, Revision 3

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Drawings
9321-F-27223, Flow Diagram Service Water System Nuclear Steam Supply Plant, Revision 49
9321-F-2735-145, Flow Diagram Safety Injection System Sheet No. 1, Revision 145
9321-F-27513, Flow Diagram Auxiliary Coolant System in PAB and FSB Sheet No. 1, Revision 31
9321-F-3006-98, Single Line Diagram 480V MCC 26A and 26B, Revision 98
A235296-72, Flow Diagram Safety Injection System Sheet No. 2, Revision 72

Miscellaneous
Engineering Change (EC) 13475
Instructions for Isolating and Purging H2 Line to PAB H2 Crib
IP3-CALC-SWS-02378, SW Return Reroute to Flood Sump, EDG's Nos. 31, 32, and 33, Revision 1

Section 1R05: Fire Protection

Procedures
EN-DC-161, Control of Combustibles, Revision 15
EN-DC-330, Fire Protection Program, Revision 4
EN-TQ-125, Fire Brigade Drills, Revision 4
IP2-RPT-03-00015, Indian Point 2 Fire Hazards Analysis, Revision 7
PT-SA11, EDG Building Detection System, Revision 5
SEO-FPP-IP-001, IPEC Fire Protection Program, Revision 4
SEP-FPP-002, IPEC Fire Watch Program, Revision 2

Condition Reports (CR-IP2-)
2016-06527

Maintenance Orders/Work Orders
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Miscellaneous
IPEC Pre-Fire Plan 207
IPEC Pre-Fire Plan 209
IPEC Pre-Fire Plan 216

IPEC Pre-Fire Plan 380
IPEC Pre-Fire Plan 385

Section 1R06: Flood Protection Measures

Procedures
3-AOP-FLOOD-1, Flooding, Revision 9
3-AOP-SW-1, Service Water Malfunction, Revision 2

Condition Reports (CR-IP3-)
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Drawings
9321-F-10403, Intake Structure Valve Pit Concrete and Reinforcing Details, Revision 4
9321-F-30043, Single Line Diagram 480V Motor Control Centers, Nos. 31, 33, and 34, Revision 55

Section 1R07: Heat Sink Performance

Procedures
3-HTX-004-CCW, Component Cooling Water Heat Exchanger Maintenance, Revision 6

Condition Reports (CR-IP3-)
2016-03360 2016-03388 2016-03377 2016-03376 2016-03404 2016-03350
2016-03346 2016-03337

Maintenance Orders/Work Orders
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Section 1R11: Licensed Operator Requalification Program

Procedures
0-SOP-LEAKRATE-001, RCS Leakrate Surveillance, Evaluation and Leak Identification, Revision 6
0-TQ-SM-104, Simulator Performance Test Program, Revision 3
12SX-INPO-CPE-04, LORT Scenario
2-AOP-480V-1, Loss of Normal Power to Any 480V Bus, Revision 8
2-AOP-INST-1, Instrument/Controller Failures, Revision 8
2-AOP-ROD-1, Rod Control and Indication Systems Malfunctions, Revision 6
2-AOP-RSD-1, Rapid Shutdown, Revision 05
2-AOP-SG-1, Steam Generator Tube Leak, Revision 17
2-E-0, Reactor Trip or Safety Injection, Revision 7
2-E-3, Steam Generator Tube Rupture, Revision 6
2-ECA-3.3, Steam Generator Tube Rupture without Pressure Control, Revision 4
3-PT-SA045, Main Turbine Stop and Control Valves Exercise Test, Revision 7
EN-OP-116, Infrequently Performed Tests or Evolutions, Revision 12
EN-TQ-110, Conduct of Simulator Training, Revision 9
EN-TQ-114, Licensed Operator Requalification Training Program Description, Revision 10
EN-TQ-217, Examination Security, Revision 5
IP-EP-120, Emergency Classification, Revision 11

IP-EP-210, Central Control Room, Revision 22
OAP-032, Operations Training Program, Revision 25

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Condition Reports (CR-IP3-)
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Miscellaneous
14.3.3.1, Steady State Operability (Three Power Levels), Revision 2
14.3.7.2, Reactor Startup, Revision 1
14.3.7.3, Plant Startup from Zero Power to Full Power, Revision 1
14.3.9.09, Simultaneous Trip of Both Main Feed Pumps, Revision 5
14.3.9.12, Maximum design Load Rejection, Revision 0
14.3.9.13, Loss-of-Coolant Accident with Blackout, Revision 5
14.3.9.23, Manual Reactor Trip, Revision 6
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Section 1R12: Maintenance Effectiveness

Procedures
EN-DC-153, Preventative Maintenance Component Classification, Revision 14
EN-DC-205, Maintenance Rule Monitoring, Revision 5
EN-DC-206, Maintenance Rule (a)(1) Process, Revision 3

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Drawings
9321-H-20293, Flow Diagram Starting Air to Diesel Generators, Revision 34

Miscellaneous
Indian Point Energy Center Maintenance Rule Basis Document, Emergency Diesel Generators (Units 2 and 3), Revision 0
Indian Point Energy Center Maintenance Rule Basis Document for Service Water, Revision 1
System Health Report, Indian Point Unit 2, Service Water System, Third Quarter 2016

Technical Specification 3.8.3, Diesel Fuel Oil and Starting Air, Amendment 238
Updated Final Safety Analysis Report 8.2, Electrical System Design, Revision 2

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures
3-PT-M079A, 31 EDG Functional Test, Revision 51
3-PT-M14A, Safety Injection System Logic Functional Train A, Revision 11
3-PT-M62 A/B/C Undervoltage/Degraded Grid Protection System Bus 5A Functional, Revision 11
EN-OP-119, Protected Equipment, Revision 8
EN-WM-104, On Line Risk Assessment, Revision 14

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Unit 3 Equipment Out of Service Tool

Section 1R15: Operability Determinations and Functionality Assessments

Procedures
2-PT-2Y043, Appendix R DG Rated Load Test, Revision 0
2-PT-M110, Appendix R DG Functional Test, Revision 8
2-SOP-27.6, Unit 2 Appendix R DG Operation, Revision 15
EN-FAP-OP-006, Operator Aggregate Impact Index Performance Indicator, Revision 2
EN-OP-104, Operability Determination Process, Revision 11

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2016-07268	2016-7328	2016-7331	2016-7334	2016-07342	
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Condition Reports (CR-IP3-)

2016-01113	2016-02940	2016-03316	2016-03484	2016-03894	2016-03944

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WO 00454762	WO 00455469	WO 00457882	WO 00458025
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EC 64452 (Housekeeping Patch on 31 SW Pump Discharge Line)
IP3-DBD-324, Emergency Diesel Generator Design Basis Document, Revision 2
IP-CALC-2016-00039 (Processed by EC 66047), Revision 1 (Degradation Rate Evaluation)
NSE-81-03-051 (Evaluation of Effectiveness of Manual Backwash on SW Strainers)
Nuclear Plant Operator Turnover Sheets
Operations Performance Indicators – October 2016

Section 1R18: Plant Modifications

Procedures
3-PT-Q87A, B and C, Channel Functional Test of Reactor Coolant Temperature Channel 411, 421, and 431, Temporary Change
3-PT-Q95A, B and C, Pressurizer Pressure Loop P-455, P-456, and P-457 Functional Test, Temporary Change
3-PC-Q109A, B and C, Nuclear Power Range Channel N-41, N-42, and N-43 Axial Offset Calibrations, Temporary Change

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IEEE Std 279-1968, Proposed IEEE Criteria for Nuclear Power Plant Protection Systems

Section 1R19: Post-Maintenance Testing

Procedures
0-NF-302, Power Distribution and Hot Channel Factor Data Collection, Revision 11
3-PT-M079B, 32 EDG Functional Test, Revision 53
3-PT-M079C, 33 EDG Functional Test, Revision 55
3-PT-Q038B, 32 Boric Acid Transfer Pump Functional Test, Revision 18
EN-FAP-OP-006, Operator Aggregate Impact Index Performance Indicator, Revision 2
EN-OP-104, Operability Determination Process, Revision 11
IC-PC-I-P-32DJW, 32 EDG Jacket Water Pressure, Revision 6
IC-SI-20, Moveable in-Core Mapping System Detector Drive and Associated Equipment Maintenance, Revision 3

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Condition Reports (CR-IP3-)
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Section 1R22: Surveillance Testing

Procedures
0-NF-302, Power Distribution and Hot Channel Factor Data Collection, Revision 11
0-OSP-TG-001, Main Turbine Stop and Control valve Contingency Actions, Revision 1
0-SOP-LEAKRATE-001, RCS Leakrate Surveillance, Evaluation and Leak Identification, Revision 6
2-AOP-LEAK-1, Sudden Increase in Reactor Coolant System Leakage, Revision 10
2-AOP-LICCW-1, Leakage into Component Cooling Water System, Revision 5
2-AOP-SG-1, Steam Generator Tube Leak, Revision 17
2-PT-2Y043, Appendix R DG Rated Load Test, Revision 0
2-PT-M110, Appendix R DG Functional Test, Revision 8
2-PT-Q013, Inservice Valve Tests, Revision 51
2-PT-Q027B, 23 Auxiliary Feed Pump, Revision 19
2-PT-R208, Auxiliary Feedwater Recirculation Check Valves BFD-50, 52, 54, and 68 Inservice Test, Revision 2
2-SOP-27.6, Unit 2 Appendix R Diesel Generator Operation, Revision 15
3-PT-24014, Appendix R Diesel Generator Rated Load and Overspeed Test, Revision 4
3-PT-M62B, 480V Undervoltage/Degraded Grid Protection System Bus 5a Functional, Revision 11
3-PT-SA045, Main Turbine Stop and Control Valves Exercise Test, Revision 7

Condition Reports (CR-IP2-)

2014-04905	2016-04010	2016-06171	2016-06882	2016-07088	2016-07268
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Condition Reports (CR-IP3-)

2016-01791	2016-03883	2016-03886	2016-03972	2016-03980	2016-04108
2016-04110					

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Section 1EP4: Emergency Action Level and Emergency Plan Changes

Procedures
Indian Point Energy Center On-Shift Staffing Analysis and Evaluation, Revision 1
IPEC-EP, Indian Point Energy Center Emergency Plan, Revision 19
IP-EP-120, Emergency Classification, Revision 11
IP-EP-310, Dose Assessment, Revision 14
IP-EP-320, Radiological Field Monitoring, Revision 10
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Miscellaneous
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Characterization of the JL Shepherd 81-12, 142-10, and 149 Sources, dated April 22, 2016
K&S Associates Record of Calibration for Victoreen V-570 Meter

Section 4OA1: Performance Indicator Verification

Procedures
EN-LI-114, NRC Performance Indicator Process, Revision 7
NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Revision 7
NUREG 1022, Event Reporting Guidelines, 10 CFR 50.72 and 10 CFR 50.73, Revision 3, Supplement 1

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EN-LI-114, Attachment 9.2, NRC Performance Indicator Technique Data Sheet for Second, Third, and Fourth Quarter 2015 and First Quarter 2016, Revision 7

Section 4OA2: Problem Identification and Resolution

Procedures
0-NF-203, Fuel Movesheet Development Procedure
CEP-NDE-0255, Radiographic Examination for ASME Welds and Components, ASME Section XI, Revision 8
CEP-NDE-0404, (PDI UT-1) Manual Ultrasonic Testing of Ferritic Piping Welds (ASME XI), Revision 5
EN-LI-102, Corrective Action Program, Revision 27
Welding Procedure Specification,134 F42 MN-GTAW, Manual Gas Tungsten Arc Welding, Revision 0

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Section 4OA3: Follow-up of Events and Notices of Enforcement Discretion

Procedures
EN-LI-118, Causal Evaluation Process, Revision 21

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Condition Reports (CR-IP3)
2014-01903

Miscellaneous
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Section 4OA5: Other Activities

Procedures
0-FTR-403-GEN, Inter-Unit Fuel Transfer Abnormal Event Procedure, Revision 5
0-FTR-702-GEN, STC Movement between Units 2 and 3, Revision 6
3-FTR-001-GEN, Shielded Transfer Canister Inspection, Handling and Storage, Revision 1
3-FTR-006-GEN, Unit 3 STC Loading and Sealing Operations, Revision 15
3-FTR-006-GEN, Unit 3 STC Loading and Sealing Operations, Revision 16
EN-HU-102, Human Performance Traps and Tools, Revision 14
EN-HU-106, Procedure and Work Instruction Use and Adherence, Revision 3

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2014-01696 2016-03466 2016-03472 2016-03547 2016-03547 2016-03554
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3-NF-322, Attachment 8, STC Loading Plan, Expected Loading Date May 1, 2016
Instructions for Isolating and Purging H2 Line to PAB H2 Crib
STC Loading Video

LIST OF ACRONYMS

10 CFR	Title 10 of the *Code of Federal Regulations*
ASME	American Society of Mechanical Engineers
CAOR	criticality analysis of record
CAP	corrective action program
CR	condition report
EAL	emergency action level
EDG	emergency diesel generator
FCU	fan cooler unit
FSB	fuel storage building
IMC	Inspection Manual Chapter
JPM	job performance measure
LER	licensee event report
LOOP	loss of offsite power
MSPI	mitigating systems performance index
NCV	non-cited violation
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission, U.S.
OTDT	over temperature delta temperature
OWA	operator workaround
PFP	pre-fire plan
PI	performance indicator
RHR	residual heat removal
RPS	reactor protection system
SFP	spent fuel pool
SRO	senior reactor operator
SR-SSC	safety-related structure, system, or component
SSC	structure, system, and component
STC	shielded transfer canister
SW	service water
TS	technical specification
UFSAR	updated final safety evaluation report