



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION I
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May 10, 2017

Mr. Anthony Vitale
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**SUBJECT: INDIAN POINT NUCLEAR GENERATING – INTEGRATED INSPECTION
REPORT 05000247/2017001 AND 05000286/2017001, AND INDEPENDENT
SPENT FUEL STORAGE INSTALLATION INSPECTION REPORT
07200051/2017001**

Dear Mr. Vitale:

On March 31, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Indian Point Nuclear Generating (Indian Point), Units 2 and 3. On April 19, 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 two findings of very low safety significance (Green) in this report. These findings involved violations of NRC requirements. Additionally, the inspectors documented a licensee-identified violation which was determined to be a Severity Level IV non-cited violation (NCV) in this report. The NRC is treating these violations as 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 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.

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Sincerely,

/RA/

Thomas C. Setzer, 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 05000247/2017001,
05000286/2017001 and 07200051/2017001
w/Attachment:
Supplementary Information

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SUBJECT: INDIAN POINT NUCLEAR GENERATING – INTEGRATED INSPECTION REPORT 05000247/2017001 AND 05000286/2017001, AND INDEPENDENT SPENT FUEL STORAGE INSTALLATION INSPECTION REPORT 07200051/2017001 DATED MAY 10, 2017

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U.S. NUCLEAR REGULATORY COMMISSION**REGION I**

Docket Nos. 50-247 and 50-286

License Nos. DPR-26 and DPR-64

Report Nos. 05000247/2017001, 05000286/2017001 and 07200051/2017001

Licensee: Entergy Nuclear Northeast (Entergy)

Facility: Indian Point Nuclear Generating, Units 2 and 3

Location: 450 Broadway, General Services Building
Buchanan, NY 10511-0249

Dates: January 1, 2017, through March 31, 2017

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SUMMARY

Inspection Report 05000247/2017001, 05000286/2017001 and 07200051/2017001; 01/01/2017 – 03/31/2017; Indian Point Energy Center (IPEC), Units 2 and 3; Equipment Alignment and Follow-Up of Events and Notices of Enforcement Discretion.

This report covered a three-month period of inspection by resident inspectors and announced inspections performed by regional inspectors. The inspectors identified two findings of very low safety significance (Green), which were non-cited violations (NCVs). The significance of most findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," dated October 28, 2016. 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: Mitigating Systems

- Green. The inspectors identified an NCV of very low safety significance of Technical Specification (TS) 3.4.10, "Pressurizer Safety Valves," when two of three pressurizer code safety valves, RC-PCV-464 and RC-PCV-468, were reported to have failed surveillance test 3.4.10.1 on July 1, 2015, at Wylie Laboratory. Entergy reported these failures under Unit 3 licensee event reports (LERs) 2015-006-00 and 2015-006-01, and concluded that Unit 3 had violated TS 3.4.10, Condition B. Entergy had failed to evaluate three prior test failures from RC-PCV-468 and recognized that RC-PCV-468 had degraded reliability. As a result, Entergy elected not to reinstall RC-PCV-468 at the end of the current outage (condition report (CR)-IP3-2017-0913).

The inspectors determined that failing to correlate the symptoms and identify the cause for the repeated failure history of valve RC-PCV-468 over the last ten years resulted in a reported violation of TS 3.4.10 as reported in LERs 2015-006-00 and 2015-006-01. RC-PCV-468 was reinstalled in the system in 2012 and subsequently failed its lift setpoint test in 2015. The performance deficiency was determined to be more than minor because it is associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely impacts the objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The finding was determined to be of very low safety significance (Green) because the small increase (5 percent) in the lift setpoint of the safety valves would not have prevented the valve from failing to relieve and, therefore, the failed surveillance test did not represent a loss of safety function. The inspectors concluded this finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Evaluation, because Entergy did not thoroughly evaluate the failure history to address causes and extent of conditions commensurate with their safety significance. [P.2] (Section 4OA3)

Cornerstone: Barrier Integrity

- Green. The inspectors identified an NCV of very low safety significance of TS 5.4, "Procedures," because Entergy did not adequately establish and maintain procedure 3-SOP-SFP-003, "Operation of the Backup Spent Fuel Pool Cooling (BSFPC) System." The

updated final safety analysis report (UFSAR) for Unit 3 included several administrative controls for the use of the BSFPC system as the sole source of cooling to the fuel pool; and some of these controls were not captured in 3-SOP-SFP-003 and, therefore, were not implemented. Entergy wrote CR-IP3-2017-00510 to enter this concern into their corrective action program (CAP).

The inspectors determined that failing to include all of the administrative controls in procedure 3-SOP-SFP-003 was a performance deficiency. This performance deficiency was more than minor because it is associated with the Procedure Quality attribute of the Barrier Integrity cornerstone; and if the condition was left uncorrected, the latent equipment issues in the system could have resulted in an undetected or uncorrectable loss of spent fuel pool (SFP) cooling. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 3 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, the inspectors determined that the finding was of very low safety significance (Green) because it did not cause the SFP temperature to exceed the maximum analyzed temperature limit specified in the licensing basis. This finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Evaluation, because when Entergy improved 3-SOP-SFP-003 in response to other identified procedural deficiencies, they did not capture the missing administrative controls in their extent of condition. [P.2] (Section 1R04)

Other Findings

A Severity Level IV NCV 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

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

Unit 3 began the inspection period at 100 percent power. On March 9, 2017, Unit 3 reduced power to 97 percent for equipment testing. On March 12, 2017, operators commenced a shutdown for a planned refueling and maintenance outage (3R19). The station reached mode 5 (cold shutdown) on March 13, 2017. Unit 3 remained in the refueling outage at the end of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01 – 1 sample)

Readiness for Impending Adverse Weather Conditions

a. Inspection Scope

The inspectors performed a review of Entergy's readiness for impending adverse weather in anticipation of a snowstorm (Blizzard "Stella") on March 14, 2017. The inspectors reviewed procedure OAP-048, "Seasonal Weather Preparation (Units 2 and 3)," and verified actions specified in the preparations were completed. The inspectors reviewed the UFSAR, TSs, control room logs, and the CAP to determine the impact of impending adverse weather conditions on plant systems and to ensure Entergy had adequately prepared for these challenges. The inspectors performed walkdowns of the station preparations and readiness for the storm and reviewed plant modification and outage maintenance schedules to verify that Entergy had adequately assessed conditions and implemented appropriate actions. After the storm, the inspectors also verified that snow had been cleared from station structures, systems, and components (SSCs) that could affect security, fire response, and accident mitigation efforts. The inspectors also walked down the independent spent fuel storage installation (ISFSI) storage pad to ensure the dry casks were adequately protected and snow had been removed from necessary areas to maintain cooling capability. Documents reviewed for each section of this inspection are listed in the Attachment.

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

- 22 charging pump following pump trip on low oil pressure on February 15, 2017

Unit 3

- Safety injection system following maintenance on the 33 safety injection pump on February 1, 2017
- 32 emergency diesel generator (EDG) following installation of a temporary modification on March 8, 2017
- Residual heat removal system while in use for shutdown cooling on March 15, 2017

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 (WOs), and CRs 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 March 21 and 30, 2017, the inspectors performed a complete system walkdown of accessible portions of the Unit 3 BSFPC system while it was in service to verify the existing equipment lineup was correct. The inspectors reviewed operating procedures, 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 functional. 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 WOs to ensure Entergy appropriately evaluated and resolved any deficiencies. This sample was part of an in-depth review of the BSFPC system.

b. Findings

Introduction. The inspectors identified an NCV of very low safety significance (Green) of TS 5.4, "Procedures," because Entergy did not adequately establish and maintain procedure 3-SOP-SFP-003, "Operation of the BSFPC System." The UFSAR for Unit 3 included several administrative controls for the use of the BSFPC system as the sole source of cooling to the fuel pool; and some of these controls were not captured in 3-SOP-SFP-003 and therefore, were not implemented.

Description. The normal spent fuel pit cooling system at Unit 3 consists of two pumps and one heat exchanger cooled by the component cooling water system. With only one heat exchanger, the entire system must be taken out of service to allow maintenance on that heat exchanger. Entergy has an installed BSFPC system that can provide some cooling to the fuel pool. It consists of a primary loop that is entirely housed in the fuel storage building and a secondary loop that runs outside and removes heat via a cooling tower in the yard. The use of a cooling tower means the heat removal capability of the system varies with the outdoor wet bulb temperature. It also means the secondary loop requires a constant source of water to make up for the water that evaporates during the cooling process. This water is normally provided by the contractor water skid, with the fire water system serving as a backup source. The entire BSFPC system is powered from a non-safety power source, but it does have a connection point to tie in a temporary diesel generator.

The inspectors identified that the standard operating procedure for the BSFPC system, 3-SOP-SFP-003, "Operation of the BSFPC System," did not contain instructions for implementing some of the administrative controls for the BSFPC system described in the UFSAR. These controls included:

- Testing and making available a temporary diesel generator to power the BSFPC system when the system is expected to be the sole source of cooling for longer than the SFP time to boil;
- Confirming wet bulb temperature at noon the day before using the BSFPC system as the sole source of cooling;
- Taking readings on the system at a frequency consistent with the time for the SFP temperature to rise by 5 degrees Fahrenheit if cooling was lost; and
- Protecting the normal and backup water supply to the secondary loop and the sources of SFP makeup.

These controls were intended to address system vulnerabilities identified during a special inspection in 2001 following an unexpected loss of the BSFPC system while it was being used as the sole source of cooling during a full core offload. The controls were added to the UFSAR in 2012 as part of a license amendment, yet procedure

3-SOP-SFP-003 was not revised at that time. Since 2012, the procedure has been revised and improved several times as corrective actions for other issues, but the administrative controls were not added. The inspectors confirmed that these controls had not been implemented the last time the BSFPC system was used as the sole source of cooling in 2015. Entergy wrote CR-IP3-2017-00510 to enter this concern into their CAP.

Analysis. The inspectors determined that not including all of the administrative controls in procedure 3-SOP-SFP-003, "Operation of the BSFPC System," was a performance deficiency that could have been foreseen and prevented. This performance deficiency was more than minor because it was associated with the Procedure Quality attribute of the Barrier Integrity cornerstone; and if the condition was left uncorrected, the latent equipment issues in the system could have resulted in an undetected or uncorrectable loss of SFP cooling. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 3 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, the inspectors determined that the finding was of very low safety significance (Green) because it did not cause the SFP temperature to exceed the maximum analyzed temperature limit specified in the licensing basis.

This finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Evaluation, because when Entergy improved 3-SOP-SFP-003 in response to other identified procedural deficiencies, they did not capture the missing administrative controls in their extent of condition. [P.2]

Enforcement. TS 5.4, "Procedures," requires, in part, that written procedures be established and maintained covering activities in Regulatory Guide 1.33, Revision 2, Appendix A. Section 3.H of Regulatory Guide 1.33, Appendix A, includes procedures covering startup, operation, and shutdown of fuel storage pool cooling systems. Procedure 3-SOP-SFP-003, "Operation of the BSFPC System," falls within Regulatory Guide 1.33, Appendix A, Section 3.H, and from 2012 to the present it was not adequately maintained to include administrative controls specified in the UFSAR, contrary to TS 5.4. Because the violation was of very low safety significance (Green) and it was entered into Entergy's CAP as CR-IP3-2017-00510, this violation is being treated as an NCV, consistent with Section 2.3.2.a of the NRC Enforcement Policy. **(NCV 05000286/2017001-01, Inadequate Standard Operating Procedure for the Backup Spent Fuel Pool Cooling System)**

1R05 Fire Protection

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 February 3, 2017
- Primary auxiliary building, level 98 foot (PFP-212 was reviewed), on March 28, 2017

Unit 3

- Fuel storage building (PFP-315 and PFP-316 were reviewed) on February 3, 2017 (this sample was part of an in-depth review of the BSFPC system)
- Charging pump rooms (PFP-307B was reviewed) on February 24, 2017
- Primary auxiliary building, level 73 foot (PFP-308 was reviewed), on February 27, 2017
- Appendix R diesel generator yard area (PFP-388 was reviewed) on February 28, 2017

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06 – 1 sample)

Internal Flooding Review

a. Inspection Scope

The inspectors focused on the Unit 3 intake structure Zurn pit to verify the adequacy of common drain lines and sumps, sump pumps, and temporary flood barriers. 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.

b. Findings

No findings were identified.

1R08 Inservice Inspection Activities (71111.08P – 1 sample)

a. Inspection Scope

From March 20 to March 31, 2017, the inspectors conducted an inspection and review of inservice inspection activities in order to assess the effectiveness of Entergy's program for monitoring degradation of the reactor coolant system (RCS) boundary, risk-significant piping boundaries, and the containment system boundaries during the Unit 3 refueling outage (3R19).

Non-Destructive Examination and Welding Activities (IP Section 02.01)

The inspectors observed a sample of in-process non-destructive examinations (NDEs), reviewed completed documentation, and interviewed Entergy personnel to verify that the NDE activities performed as part of the fourth interval, third period, of the Unit 3 inservice inspection program were conducted in accordance with the requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, 2001 Edition with 2002 and 2003 Addenda. For augmented examinations, the inspectors verified that activities were performed in accordance with Entergy's augmented inspection program and procedures and with any applicable industry guidance documents. The inspectors verified that indications and defects, if present, were dispositioned in accordance with the ASME code or an NRC approved alternative and verified that relevant indications were compared to previous examinations to determine if any changes had occurred.

Activities included a review of ultrasonic testing (UT) and visual testing (VT). The inspectors reviewed certifications of the NDE technicians performing the examinations and verified that the inspections were performed in accordance with qualified NDE procedures and industry guidance. For UT activities, the inspectors also verified the calibration of equipment used to perform the examinations. The inspectors verified that the test results were reviewed and evaluated by certified Level III NDE personnel and that the parameters used in the test were in accordance with the limitations, precautions, and prerequisites specified in the test procedure.

ASME Code Required Examinations

- Direct observation of the automated UT of the reactor vessel loop 1 hot leg nozzle to safe-end dissimilar metal weld.
- Direct observation of the automated UT of the reactor vessel upper head penetration J-groove welds.
- Direct observation of the bare metal VT of the reactor vessel upper and bottom head surfaces/penetrations.

Other Augmented, License Renewal or Industry Initiative Examinations

- Direct observation of the manual UT of the alternative charging injection line into the RCS (piping and welds downstream of Weld 7 on Line 80) as part of the augmented program MRP-146, "Materials Reliability Program: Management of Thermal Fatigue in Normally Stagnant Non-Isolable Reactor Coolant System Branch Lines."
- Direct observation of the remote UT of the baffle-former bolts and VT of the baffle-former assembly, including baffle-edge bolts, inside the reactor vessel as part of the aging management program MRP-227-A, "Materials Reliability Program: Pressurized Water Reactor Internals Inspection and Evaluation Guidelines." The inspectors verified that UT results were dispositioned in accordance with Entergy's procedure and corrective actions were in accordance with NRC requirements. The inspectors verified that Entergy's actions were in-progress to replace all of the potentially degraded baffle-former bolts prior to restart, which included 256 bolts with

UT indications and 3 bolts not testable, out of a total of 832. The inspectors did not identify any deviations from MRP-227-A and noted that Entergy's planned re-examination of original baffle-former bolts the next refueling outage was in advance of the program required frequency.

Examination of Previous Indications

The inspectors did not review any previous indications because there were no relevant indications from the previous refueling outage that required re-examination or evaluation for continued service at this time.

Welding on Pressure Boundary Systems

The inspectors reviewed the pressure boundary risk-significant welding activity, including the associated NDE, of one pipe-to-pipe weld (W-1 in 3-SWN-LINE-1081) as part of a repair/replacement activity in the service water system. Specifically, the scope of the activity was to cut out and replace a section of degraded piping with a spool of new pipe. The inspectors performed a documentation review of the welding activities to verify that the welding, NDE, and final acceptance were performed in accordance with the ASME code requirements. The inspectors reviewed the weld procedure specification to ensure it contained the required essential and supplemental essential weld variables and that those variables were within the ranges demonstrated by the supporting qualification record. The inspectors also reviewed the weld records to determine if they were performed with the base and weld filler materials listed in the welding specification. The repair was performed under WO 00444674.

PWR Vessel Upper Head Penetration Inspection Activities (IP Section 02.02)

The inspectors reviewed the reactor pressure vessel upper head penetration nozzles and head area examinations, procedures, and records to verify that they were performed in accordance with requirements of 10 CFR 50.55a and ASME Code Case N-729-1, "Alternative Examination Requirements for PWR Reactor Vessel Upper Heads," to ensure the structural integrity of the reactor vessel head pressure boundary.

The inspectors observed portions of the remote bare metal VT of the exterior surface of the reactor vessel upper head to verify that no boric acid leakage had been observed. The inspectors also observed a sample of UT results for multiple penetration nozzles (i.e., the J-groove welds) to confirm that the examination met Code Case N-729-1 and that a leakage path assessment was completed. For both the visual and ultrasonic examinations, the inspectors verified that the required coverage for examination volumes and surfaces had been achieved.

Boric Acid Corrosion Control Inspection Activities (IP Section 02.03)

The inspectors reviewed Indian Point's boric acid corrosion control program as described in Entergy procedures and discussed the program requirements with the boric acid program owner. The inspectors performed independent walkdowns of various plant areas inside the containment building and reviewed photographic records of several identified boric acid leakage locations. The inspectors reviewed a sample of CRs to verify that degraded or non-conforming conditions were identified properly within the CAP.

The inspectors reviewed three engineering evaluations performed for boric acid found on piping and components to determine whether Entergy properly applied applicable corrosion rates to the affected components and properly assessed the effects of corrosion induced wastage on structural or pressure boundary integrity. The inspectors also reviewed the corrective actions planned and/or performed for those areas identified with evidence of boric acid leaks. Samples were selected based on actions for repair, component function, significance of leakage, and location where direct leakage or impingement on adjacent locations could cause degradation of safety system components.

Steam Generator Tube Inspection Activities (IP Section 02.04)

The inspectors directly observed a sample of the steam generator (SG) eddy current tube examinations, which consisted of full length bobbin inspection of 50 percent of all active tubes in each of the four SGs; +Point probe inspection of 50 percent of row 1 and 2 U-bends; +Point probe inspection of the top-of-tubesheet peripheral tubes; and +Point probe inspection of any special interest tubes. The inspectors reviewed the results of the examinations to determine Entergy's capability to assess future tube performance, and therefore plan for appropriate examinations, by comparing the examination results this refueling outage with the values predicted in the previous outage operational assessment. The inspectors then evaluated the scope of eddy current testing to determine if areas of potential degradation were inspected, noting if areas known to represent eddy current challenges were included. The inspectors also compared the SG tube eddy current examination scope and expansion criteria with TS requirements to determine whether Entergy was in compliance with these requirements. The inspectors noted that there were no active degradation mechanisms currently present in any of the Unit 3 SGs.

The inspectors verified that no in-situ pressure testing was required and no primary-to-secondary leakage occurred over the operating cycle. The inspectors verified that the SG tube examination screening criteria was in accordance with the Electric Power Research Institute Steam Generator Guidelines and that the examination technique specification sheets used for the exams was appropriate for the expected types of tube degradation. The inspectors directly observed a qualified data analyst's review of five SG tubes to determine that proper eddy current analysis techniques were applied.

Identification and Resolution of Problems (IP Section 02.05)

The inspectors reviewed a sample of Unit 3 corrective action reports which identified NDE indications, deficiencies, and other non-conforming conditions since the previous refueling outage and during the current outage. The inspectors verified that non-conforming conditions were properly identified, characterized, evaluated, and that corrective actions were identified and entered into the CAP for resolution.

b. Findings

No findings were identified.

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

The inspectors observed licensed operator regualification training in the Unit 2 simulator on February 8, 2017. The scenario consisted of various simulated RCS leaks into the chemical and volume control system, various leaks into and out of the component cooling water system (inside and outside of containment), and a loss of the 13.8 kV system auxiliary transformer that caused a momentary loss of power to the safety buses. The inspectors evaluated operator performance during the simulated event and verified completion of risk significant operator actions, including the use of abnormal 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 of the emergency classification and TS action statements made by the shift manager. 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 Rooma. Inspection Scope

The inspectors observed and reviewed a control rod exercise conducted on January 31, 2017. The inspectors interviewed the senior reactor operators, control room supervisor, and shift manager 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 Regualification Testing and Traininga. Inspection Scope

The inspectors observed licensed operator simulator training on January 25, 2017, which included an earthquake causing a large break loss of coolant accident coincident with a loss of containment. 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 and TS action statements made by the shift manager. Additionally, the inspectors assessed the ability of the crew and training staff to identify and document crew performance problems.

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors observed and reviewed the planned shutdown and reactor trip to start refueling outage (3R19) conducted on March 12, 2017. The inspectors observed the infrequently performed test or evolution briefing and pre-shift briefing to verify that the briefings met the criteria specified in Entergy's administrative procedure EN-OP-115, "Conduct of Operations." Additionally, the inspectors observed the shutdown 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 – 3 samples)

Routine Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed the samples listed below to assess the effectiveness of maintenance activities on SSC performance and reliability. The inspectors reviewed CAP documents, maintenance WOs, 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 Title 10 of the *Code of Federal Regulations* (10 CFR) 50.65 and verified that the (a)(2) performance criteria established by Entergy was reasonable. As applicable, for SSCs classified as (a)(1), the inspectors assessed the adequacy of goals and corrective actions to return these SSCs to (a)(2). Additionally, the inspectors ensured that Entergy was identifying and addressing common cause failures that occurred within and across maintenance rule system boundaries.

Unit 2

- Weld channel and penetration pressurization system

Unit 3

- EDG heating, ventilation, and air conditioning system
- SFP cooling (this sample was part of an in-depth review of the BSFPC system)

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 10 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. 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

- Work week 1706, yellow risk for nuclear instrumentation over-temperature and over-power delta-temperature channel I, II, III, and IV calibration on February 7, 2017
- Planned surveillance on the Unit 2 Appendix R diesel generator on February 16, 2017

Unit 3

- Work week 1703, yellow risk for undervoltage testing with the Unit 2 Appendix R diesel generator out of service on January 19, 2017
- Work week 1705, planned maintenance on the Unit 3 Appendix R diesel generator, 31 fan cooler unit, 33 safety injection pump, and 36 service water pump on February 2, 2017
- Work week 1708, planned surveillance on 32 auxiliary boiler feedwater pump (ABFP) with line 96951 out of service on February 23, 2017
- Work week 1710, planned maintenance on the 32 EDG, followed by planned surveillances on the motor-driven ABFPs on March 10, 2017
- Shutdown risk with the RCS intact on March 13, 2017
- Shutdown risk with reactor water level at reduced inventory on March 16, 2017
- Shutdown risk during the reactor vessel head lift on March 18, 2017
- Shutdown risk with a full core offload from March 22 to March 24, 2017

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 9 samples)

a. Inspection Scope

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

Unit 2

- Appendix R diesel generator trip on start-up (CR-IP2-2017-00277)
- 22 direct current battery charger positive and negative ground (CR-IP2-2017-00790)
- Pressurizer level indicator LI-461 left out of calibration (CR-IP2-2017-0481)

Unit 3

- 31 service water pump discharge line leak (CR-IP3-2016-1113)
- Appendix R diesel generator fuel rack found sticking on two cylinders (CR-IP3-2017-0663)
- Lubricating oil leak on the 31 EDG (CR-IP3-2017-0712)
- Flaw found on 34 fan cooler unit service water piping (CR-IP3-2017-0856)
- 32 ABFP surveillance test failure (CR-IP3-2017-00930)
- Containment spray header boric acid obstruction (CR-IP3-2017-01256)

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, the inspectors determined whether the measures in place would function as intended and were properly controlled by Entergy. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations.

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors reviewed the post-maintenance tests for the maintenance activities listed below to verify that procedures and test activities ensured system operability and

functional capability. The inspectors reviewed the test procedure to verify that the procedure adequately tested the safety functions that may have been affected by the maintenance activity, that the acceptance criteria in the procedure was consistent with the information in the applicable licensing basis and/or design basis documents, and that the 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 points were performed and checked, and that results adequately demonstrated restoration of the affected safety functions.

Unit 2

- Pressurizer level indicator LI-461 troubleshooting and replacement on February 3, 2017
- 21 charging pump replacement of fluid cylinder valves on February 14, 2017

Unit 3

- Station auxiliary transformer tap changer relay replacement on January 26, 2017
- 32 EDG pre-lube pump replacement and lube oil leak repair on January 31, 2017
- BSFPC differential pressure indication switch DPIS-4469 replacement on March 2, 2017 (this sample was part of an in-depth review of the BSFPC system)
- 32 BSFPC pump motor replacement on March 13, 2017 (this sample was part of an in-depth review of the BSFPC system)

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities (71111.20 – 1 sample)

a. Inspection Scope

The inspectors reviewed the station's work schedule and outage risk plan for the Unit 3 maintenance and refueling outage (3R19) which began on March 13, 2017. The inspectors reviewed Entergy's development and implementation of outage plans and schedules to verify that risk, industry experience, previous site-specific problems, and defense-in-depth were considered. During the outage, the inspectors observed portions of the shutdown and cooldown processes and monitored controls associated with the following outage activities:

- Configuration management, including maintenance of defense-in-depth, commensurate with the outage plan for the key safety functions and compliance with the applicable TSs when taking equipment out of service
- Implementation of clearance activities and confirmation that tags were properly hung and that equipment was appropriately configured to safely support the associated work or testing
- Installation and configuration of reactor coolant pressure, level, and temperature instruments to provide accurate indication and instrument error accounting

- Switchyard activities and other activities affecting the status and configuration of electrical systems to ensure that TSs were met
- Decay heat removal operations
- SFP cooling system operations
- Reactor water inventory controls, including flow paths, configurations, alternative means for inventory additions, and controls to prevent inventory loss
- Activities that could affect reactivity
- Full core offload activities, including fuel handling
- Fatigue management
- Identification and resolution of problems related to refueling outage activities

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – 9 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-M021A, EDG 21 Load Test, Revision 32, on January 11, 2017
- 2-PT-2Y045A, 21 Service Water Pump Full Flow Test, and 2-PT-Q026A, 21 Service Water Pump, on January 30, 2017 (inservice test)
- 2-PT-Q034B, PCV-1310A, and PCV-1310B, Nitrogen Supply, Revision 8, on February 24, 2017
- 2-CY-2380, Primary Sampling System, Revision 7, on March 8, 2017
- RCS Leakrate Performance Indicator (PI) Validation Sample BI02 on March 15, 2017

Unit 3

- 3-PT-R007A, 31 and 33 ABFPs Full Flow Test, on March 9, 2017
- PT-R007B, 32 ABFP Full Flow Testing, on March 11, 2017 (inservice test)
- Ten-Year As-Found Direct Force Test on AC-MOV-769 on March 17, 2017
- MRP-227A, Baffle Bolt Inspections, on March 30, 2017

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06 – 1 sample)

Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of a routine Entergy emergency drill on January 25, 2017, to identify any weaknesses and deficiencies in the classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the simulator and emergency operations facility to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the station drill critique to compare inspector observations with those identified by Entergy in order to evaluate Entergy's critique and to verify whether Entergy was properly identifying weaknesses and entering them into the CAP.

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstone: Public Radiation Safety and Occupational Radiation Safety

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01 – 2 samples)

a. Inspection Scope

The inspectors reviewed Entergy's performance in assessing and controlling radiological hazards in the workplace. The inspectors used the requirements contained in 10 CFR Part 20, TSs, Regulatory Guide 8.38, and the procedures required by TSs as criteria for determining compliance.

Inspection Planning

The inspectors reviewed the PIs for the Occupational Exposure cornerstone, radiation protection program audits, and reports of operational occurrences in occupational radiation safety since the last inspection.

Radiological Hazards Control and Work Coverage (1 sample)

The inspectors evaluated in-plant radiological conditions and performed independent radiation measurements during facility walkdowns and observation of radiological work activities. The inspectors assessed whether posted surveys; radiation work permits; worker radiological briefings and radiation protection job coverage; the use of continuous air monitoring, air sampling, and engineering controls; and dosimetry monitoring were consistent with the present conditions. The inspectors examined the control of highly activated or contaminated materials stored within the SFPs and the posting and physical

controls for selected high radiation areas, locked high radiation areas, and very high radiation areas to verify conformance with the occupational PI.

Radiation Worker Performance and Radiation Protection Technician Proficiency
(1 sample)

The inspectors evaluated radiation worker performance with respect to radiation protection work requirements. The inspectors evaluated radiation protection technicians in performance of radiation surveys and in providing radiological job coverage.

b. Findings

No findings were identified.

2RS2 Occupational ALARA Planning and Controls (71124.02 – 2 samples)

a. Inspection Scope

The inspectors assessed Entergy's performance with respect to maintaining occupational individual and collective radiation exposures as low as is reasonably achievable (ALARA). The inspectors used the requirements contained in 10 CFR Part 20, Regulatory Guides 8.8 and 8.10, TSs, and procedures required by TSs as criteria for determining compliance.

Inspection Planning

The inspectors conducted a review of Indian Point's collective dose history and trends, ongoing and planned radiological work activities, previous post-outage ALARA reviews, radiological source term history and trends, and ALARA dose estimating and tracking procedures.

Verification of Dose Estimates and Exposure Tracking Systems (1 sample)

The inspectors reviewed the current annual collective dose estimate, basis methodology, and measures to track, trend, and reduce occupational doses for ongoing work activities. The inspectors evaluated the adjustment of exposure estimates or re-planning of work. The inspectors reviewed post-job ALARA evaluations of excessive exposure.

Radiation Worker Performance (1 sample)

The inspectors observed radiation worker and radiation protection technician performance during radiological work to evaluate worker ALARA performance according to specified work controls and procedures. Workers were interviewed to assess their knowledge and awareness of planned and/or implemented radiological and ALARA work controls.

b. Findings

No findings were identified.

2RS6 Radioactive Gaseous and Liquid Effluent Treatment (71124.06 – 6 samples)

a. Inspection Scope

The inspectors reviewed the treatment, monitoring, and control of radioactive gaseous and liquid effluents. The inspectors used the requirements in 10 CFR Part 20; 10 CFR Part 50, Appendix I; TSs; offsite dose calculation manual (ODCM); applicable industry standards; and procedures required by TSs as criteria for determining compliance.

Inspection Planning

The inspectors conducted in-office reviews of the Indian Point 2014 and 2015 annual radioactive effluent and environmental reports, radioactive effluent program documents, UFSAR, ODCM, and applicable event reports.

Walkdowns and Observations (1 sample)

The inspectors walked down the gaseous and liquid radioactive effluent monitoring and filtered ventilation systems to assess the material condition and verify proper alignment according to plant design. The inspectors also observed potential unmonitored release points and reviewed radiation monitoring system surveillance records and the routine processing and discharge of gaseous and liquid radioactive wastes.

Calibration and Testing Program (1 sample)

The inspectors reviewed gaseous and liquid effluent monitor instrument calibration, functional test results, and alarm set-points based on National Institute of Standards and Technology calibration traceability and ODCM specifications.

Sampling and Analyses (1 sample)

The inspectors reviewed radioactive effluent sampling activities, representative sampling requirements, compensatory measures taken during effluent discharges with inoperable effluent radiation monitoring instrumentation, the use of compensatory radioactive effluent sampling, and the results of the inter-laboratory and intra-laboratory comparison program including scaling of hard-to-detect isotopes.

Instrumentation and Equipment (1 sample)

The inspectors reviewed the methodology used to determine the radioactive effluent stack and vent flow rates to verify that the flow rates were consistent with TS/ODCM and UFSAR values. The inspectors reviewed radioactive effluent discharge system surveillance test results based on TS acceptance criteria. The inspectors verified that high-range effluent monitors used in emergency operating procedures are calibrated and operable and have post-accident effluent sampling capability.

Dose Calculations (1 sample)

The inspectors reviewed changes in reported dose values from the previous annual radioactive effluent release reports, several liquid and gaseous radioactive waste discharge permits, the scaling method for hard-to-detect radionuclides, ODCM changes,

land use census changes, public dose calculations (monthly, quarterly, and annual), and records of abnormal gaseous or liquid radioactive releases.

Problem Identification and Resolution (1 sample)

The inspectors evaluated whether problems associated with the radioactive effluent monitoring and control program were identified at an appropriate threshold and properly addressed in Entergy's CAP.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

40A1 Performance Indicator Verification (71151 – 4 samples)

RCS Specific Activity (BI01) and RCS Leak Rate (BI02)

a. Inspection Scope

The inspectors reviewed Entergy's submittal for the RCS specific activity and RCS leak rate PIs for both Units 2 and 3 for the period January 1 to December 31, 2016. To determine the accuracy of the PI data reported during those periods, the inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment PI Guideline," Revision 7. The inspectors also reviewed RCS sample analysis and control room logs of daily measurements of RCS leakage, and compared that information to the data reported by the PI. Additionally, the inspectors observed surveillance activities that determined the RCS identified leakage rate, and chemistry personnel taking and analyzing an RCS sample.

Unit 2

- RCS Dose Equivalent Iodine BI01 for the period January 1 to December 31, 2016
- RCS Identified Leak Rate BI02 for the period January 1 to December 31, 2016

Unit 3

- RCS Dose Equivalent Iodine BI01 for the period January 1 to December 31, 2016
- RCS Identified Leak Rate BI02 for the period January 1 to December 31, 2016

b. Findings

No findings were identified.

40A2 Problem Identification and Resolution (71152)Routine Review of Problem Identification and Resolution Activitiesa. 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.

40A3 Follow Up of Events and Notices of Enforcement Discretion (71153 – 1 sample)

(Closed) LERs 05000286/2015-006-00 and 05000286/2015-006-01: TS Prohibited Condition Due to Two Pressurizer Code Safety Valves Discovered Outside Their As-Found Lift Setpoint Test Acceptance Criteria

a. Inspection Scope

The inspectors reviewed LERs 05000286/2015-006-00 and 05000286/2015-006-01 and determined that Entergy violated TS 3.4.10, "Pressurizer Safety Valves," by not adequately evaluating the cause of the repeated failure of pressurizer code safety valve RC-PCV-468 over a ten-year period and consequently installing a safety valve into the RCS that was unreliable. The inspectors identified one new issue during the review of the LER which is documented in the following finding. This LER is closed with the following finding.

b. Findings and Observations

Introduction. The inspectors identified an NCV of very low safety significance (Green) of TS 3.4.10, "Pressurizer Safety Valves," when valves RC-PCV-464 and RC-PCV-468 were reported to have failed surveillance requirement 3.4.10.1 on July 1, 2015, at Wylie Laboratory. Entergy reported these failures under Unit 3 LERs 2015-006-00 and 2015-006-01 and concluded that Unit 3 had violated TS 3.4.10, Condition B. These valves were not in service at the time of the test because they had been removed during the last refueling outage in March 2015.

Description. On July 1, 2015, IPEC Engineering was notified by Wyle Laboratories that two of three pressurizer code safety valves (RC-PCV-464 and RC-PCV-468) had exceeded their as-found lift setpoint test acceptance criteria (2411-2559 psig). Contrary to this requirement, RC-PCV-464 as-found lift pressure was high at 2573 psig and RC-PCV-468 as-found lift pressure was low at 2379 psig. The valves had previously been removed from service in March 2015 and sent to Wyle Laboratories for

bench testing. Entergy reported that the most probable cause of the failures was setpoint drift and because there was no definitive evidence of internal damage that could have caused the failure.

Upon further review, the inspectors determined that RC-PCV-468 (SHOP #51688-7) had failed every lift setpoint surveillance test over a ten-year period of analysis (three of three test failures). In 2007, RC-PCV-468 (SHOP #51688-7) (which was installed during cycle 14 in the RC-PCV-464 location) failed the lift setpoint test (CR-IP3-2008-00768) at 2402 psig (-3.3 percent low), which was attributed to "setpoint drift." There was no visible damage to the valve upon inspection. During this cycle, RC-PCV-468 (SHOP #51688-7) had been installed in the RC-PCV-464 code safety location, and this test failure had not been correlated with the subsequent test failures on the same valve. The inspectors identified this correlation, after the fact, based on a review of the laboratory test reports. In 2011, RC-PCV-468 (installed during cycle 16) failed (CR-IP3-2012-01403) high at 2617 psig (+5.3 percent high) which was attributed to inadequate actuating spring stiffness. However, there was no visible internal damage or other evidence that could clearly explain the setpoint test failure. In 2015, RC-PCV-468 (SHOP #51688-7) (installed during cycle 18) failed again at 2379 psig (-4.3 percent low) (LER 05000286/2015-006 and CR-IP3-2015-03708) which was attributed to a relaxation of tension of the new spring caused by heat soak while in service. In each case, the cause of the setpoint test failure was not based on clear evidence of internal damage, valve misalignment, or any other specified condition. In each case above, the valve failed the initial as-found lift setpoint test but passed the subsequent two tests. The vendor lab report in 2015 indicated that "setpoint drift" was generally not considered a potential cause if the valve failed the first test but subsequently passed the remaining two tests because "setpoint drift" was generally considered to be repeatable.

Furthermore, none of the other code safety valves that were installed in both units over a ten-year period experienced any repeated failures. The overall ten-year failure rate for the Unit 2 pressurizer code safety valves was only 7 percent (1 of 15) and the overall failure rate for Unit 3 was only 16 percent (2 of 12) with Unit 3 RC-PCV-468 failures removed from the failure analysis. That compares to a 100 percent (three of three) ten-year failure rate for RC-PCV-468 which supported a conclusion that the reliability of this valve was substantially degraded. The other code safety valves all experienced similar inservice usage, similar external forces during shipments, and recently had their old actuating springs replaced. These factors, which were attributed by Entergy to be possible failure mechanisms, only appeared to affect RC-PCV-468. These failure rates call into question whether the direct causes of the failures for RC-PCV-468 have been fully identified and corrected.

Entergy had planned to reinstall RC-PCV-468 (SHOP #51688-7) during the current refueling outage (3R19). Entergy had not identified that this valve had repeatedly failed its surveillance tests and the cause of the failures had not been identified in the vendor test reports. Entergy had not fully evaluated the degraded reliability of this valve in light of the fact that successive setpoint test failures over a ten-year period had not been definitively diagnosed. As a direct result of these concerns (as documented in CR-IP3-2017-0913), Entergy elected not to return this valve to service.

Analysis. Entergy's failure to correlate the symptoms and identify the direct cause for the repeated failure history of valve RC-PCV-468 over the last ten years resulting in a reported violation of TS 3.4.10 (LERs 05000286/2015-006-00 and 05000286/2015-006-

01) when the valve that had been reinstalled in the system failed its lift setpoint test, 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 it is associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely impacts the objective to ensure that the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the failure of a pressurizer code safety valve to lift within its allowable setpoint criteria during an anticipated transient without scram (ATWS) event could result in a reduction of the emergency core cooling system flow through the core at a critical time because of high RCS pressure, resulting in a failure to adequately cool the fuel. The final safety analysis report accident analysis credits all (three of three) pressurizer code safety valves to lift at 2485±3 percent and the safety valves are not subject to the single active failure criteria (which would postulate the failure of one valve). The simplified plant analysis risk model also credits all three pressurizer code safety valves and both pressurizer power operated relief valves to fully open in order to maintain RCS pressure below the safety limits and allow sufficient forced cooling flow through the core while the reactor remains at power to prevent fuel damage.

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 was determined to be of very low safety significance (Green) because the small increase in the lift setpoint of the safety valves did not prevent the valve from lifting and therefore, the failed surveillance test did not represent a loss of safety function. A small reduction in the lift setpoint would not significantly impact the functionality of the safety valves to mitigate an ATWS.

The inspectors concluded this finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Evaluation, because Entergy did not thoroughly evaluate the failure history to address causes and extent of conditions commensurate with their safety significance. Specifically, Entergy did not recognize that RC-PCV-468 (SHOP #51688-7) had repeatedly failed the as-found lift test over a ten-year period and did not fully evaluate the impact of the degraded reliability. [P.2]

Enforcement. TS 3.4.10 requires all three pressurizer code safety valves to be operable in Modes 1, 2, and 3 or be restored to an operable status within 15 minutes. Contrary to this requirement, Entergy operated in Mode 1 with one or more code safety valves in an inoperable condition for a period of time longer than allowable by TSs. Entergy determined that valve RC-PCV-468 (SHOP #51688-7) would not be placed in service at the end of the current refueling outage (3R19). Because this violation was of very low safety significance (Green) and was entered into Entergy's CAP as CR-IP3-2017-0913, this violation is being treated as an NCV, consistent with Section 2.3.2.a of the NRC Enforcement Policy. **(NCV 05000286/2017001-02, Operation in Mode 1 with Pressurizer Code Safety Valves in an Inoperable Condition)**

4OA5 Other Activities

.1 Temporary Instruction 05000247 and 05000286/2515/192: Inspection of Entergy's Interim Compensatory Measures Associated with the Open Phase Condition Design Vulnerabilities in Electric Power Systems

a. Inspection Scope

The objective of this performance based temporary instruction is to verify implementation of interim compensatory measures associated with an open phase condition (OPC) design vulnerability in electric power system for operating reactors. The inspectors conducted an inspection to determine if Entergy had implemented the following interim compensatory measures. These compensatory measures are to remain in place until permanent automatic detection and protection schemes are installed and declared operable for OPC design vulnerability. The inspectors conducted interviews, simulator observations, and document reviews to verify the following (as of March 31, 2017):

- Entergy had committed to identify and discuss with plant staff the lessons-learned from the OPC events at the U.S. operating plants including the Byron station OPC event and its consequences. This commitment included conducting operator training for promptly diagnosing and responding to an OPC event.
- Entergy had committed to updating any plant operating procedures to help operators promptly diagnose and respond to OPC events on off-site power sources credited for safe shutdown of the plant.
- Entergy had established and continued to implement periodic walkdown activities to inspect switchyard equipment such as insulators, disconnect switches, and transmission line and transformer connections associated with the offsite power circuits to detect a visible OPC.
- Entergy had ensured that routine maintenance and testing activities on switchyard components have been implemented and maintained. As part of the maintenance and testing activities, Entergy assessed and managed plant risk in accordance with 10 CFR 50.65(a)(4) requirements.

b. Findings and Observations

No findings were identified.

The inspectors identified that Entergy had listed the following interim compensatory measures in Entergy Letter NL-14-015, Subject: Response to Request for Additional Information Regarding Response to Bulletin 2012-01, "Design Vulnerability in Electric Power System," Indian Point Units 2 and 3, Docket Nos. 50-247 and 50-286, License Nos. DPR-26 and DPR-64, dated February 3, 2014:

- Operating instructions and training curriculum were reviewed to ensure operators can diagnose and respond to an OPC.
- Bus transfer procedures were verified to ensure phase voltages are checked prior to bus transfers and after transfers are complete.
- Operations procedures were reviewed to ensure recognition of equipment problems caused by OPC.

The inspectors determined that while Entergy had reviewed operating instructions and training curriculum, they did not ensure that operators could diagnose and respond to an OPC. Bus transfer and operations procedures had been reviewed but had not been changed to verify phase voltages prior to transfer and after completion and operations procedures did not provide criteria for recognizing equipment problems caused by an OPC. These observations were documented in CR-IP3-2017-01256.

Entergy subsequently installed the OPC detector in Unit 3 during the current refueling outage (3R19) and is in the process of revising the appropriate alarm response procedure, 3-ARP-011, "Panel, SHF- Electrical to Provide Direction for Operator Response to an OPC Condition." When enabled at the end of the outage, the OPC detector would cause an annunciator to alarm in the control room. The OPC detector auto-trip capability was not enabled during the detector installation. Entergy will continue to rely on manual operator action to diagnose and respond to the OPC annunciator, "Station Aux XFMR Alarm," while continuing to evaluate the reliability and performance of the OPC detector modification.

Entergy is presently pursuing a waiver from the NRC for the installation of the OPC in Unit 2 because of the pending plant closure in 2020. If approved, Entergy will rely on interim compensatory measures to diagnose and respond to an OPC. Presently, Entergy has not yet provided any approved procedural direction or training to operators regarding how to diagnose an OPC or how to respond to an OPC.

.2 Operation of an ISFSI at Operating Plants (60855 and 60855.1)

a. Inspection Scope

On January 23 to February 4, 2017, the inspectors observed and evaluated Entergy's loading of multi-purpose canister (MPC) 374, the first of two canisters scheduled to be loaded during Entergy's ISFSI dry cask campaign. The inspectors also reviewed Entergy's activities related to long-term operation and monitoring of their ISFSI. The inspectors verified compliance with the Certificate of Compliance (CoC), TSs, regulations, and Entergy procedures.

The inspectors observed the movement of the MPC and Holtec International Transfer Cask (HI-TRAC) into the SFP, loading of spent fuel assemblies into the MPC, and the movement of the MPC/HI-TRAC from the SFP to the cask handling area. The inspectors also observed other cask processing operations including welding of the lid to the MPC and of the port covers, NDE of welds, hydrostatic testing, forced helium dehydration of the MPC, and stack up. During performance of these activities, the inspectors evaluated whether procedure use, communication, and coordination of ISFSI activities met established standards and requirements. The inspectors attended Entergy briefings to assess their ability to identify critical steps of the evolution, potential failure scenarios, and human performance tools to prevent errors. The inspectors reviewed loading and monitoring procedures and evaluated Entergy's adherence to these procedures. The inspectors also reviewed the training of personnel assigned to ISFSI activities.

The inspectors reviewed Entergy's program associated with fuel characterization and selection for storage. The inspectors reviewed cask fuel selection packages to determine whether Entergy was loading fuel in accordance with the CoC and TS. The inspectors confirmed that Entergy did not plan to load any damaged fuel assemblies

during this campaign. The inspectors reviewed recordings made of the fuel assemblies loaded into MPC-374 to ensure the loading was in accordance with Indian Point's loading plan.

The inspectors reviewed radiation protection procedures and radiation work permits associated with the ISFSI loading campaign. The inspectors observed radiation protection technicians as they provided job coverage for the cask loading workers. The inspectors also reviewed the ALARA goal for the cask loading to determine the adequacy of Entergy's radiological controls, to ensure that radiation worker doses were ALARA, and that project dose goals could be achieved. The inspectors reviewed survey data maps and radiological records from the dry cask storage (DCS) loading to confirm that radiation survey levels measured were within limits specified by the TS and consistent with values specified in the final safety analysis report.

The inspectors performed tours of the heavy haul path and ISFSI pad to assess the material condition of the path, pad, and the loaded Holtec International Storage and Transfer Operation Reinforced Modules (HI-STORMs). The inspectors also verified that transient combustibles were not being stored on the haul path, ISFSI pad, or in the vicinity of the HI-STORMs. The inspectors checked the operations rover patrol daily logs and verified Entergy was appropriately performing daily HI-STORM vent surveillances in accordance with TS requirements. The annual environmental reports were reviewed to verify that areas around the ISFSI site boundary were within limits specified in 10 CFR Part 20 and 10 CFR 72.104. The inspectors reviewed Entergy's 10 CFR 72.48 screenings to verify that Entergy had appropriately considered the conditions under which they may make changes without prior NRC approval. The inspectors also reviewed CAPs, CRs, audit reports, and self-assessments that were generated since Entergy's last loading campaign to ensure that issues were being properly identified, prioritized, and evaluated commensurate with their safety significance.

b. Findings

A licensee-identified violation is listed in section 4OA7.

4OA6 Meetings, Including Exit

On April 19, 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 violation of very low safety significance (Green) was identified by Entergy and is a violation of NRC requirements which meets the criteria of the NRC Enforcement Policy for being dispositioned as an NCV.

- 10 CFR 72.150 states, in part, that the licensee, applicant for a license, certificate holder, and applicant for a CoC shall prescribe activities affecting quality by documented instructions, procedures, or drawings of a type appropriate to the circumstance and shall require that these instructions, procedures, and drawings be followed. Entergy established requirements in 2-DCS-008-GEN, "Unit 2 MPC

Loading and Sealing Operations,” to load pre-selected fuel assemblies per the approved loading pattern using 2-SOP-17.12, “Spent Fuel Handling Machine and Spent Fuel Pit Operations,” and Attachment 14, “Fuel Movement Requirements.”

Attachments 4 (“MPC Cross Section”) and Attachment 12 (“MPC Bridge/Trolley Coordinate”) were provided in the procedure as references to orient the DCS crew as to the specific cell within the MPC where spent fuel bundles are to be placed.

Contrary to the above, on January 24, 2017, IPEC DCS crew failed to follow 2-DCS-008-GEN. Specifically, instead of using the approved Attachment 4 from 2-DCS-008-GEN, the DCS crew used an MPC diagram provided by email from reactor engineering causing the initial bundle to be placed in cell F-5 rather than cell A-2. Traditional enforcement violations are not assessed for cross-cutting aspects

Because the issue involved ISFSI operations, consistent with the guidance in Section 2.2 of the NRC Enforcement Policy, the inspectors evaluated this performance deficiency in accordance with the traditional enforcement process. Informed by the significance determination process, IMC 0609, Appendix A, Exhibit 3, “Barrier Integrity Screening Questions,” this violation was determined to be Severity Level IV. Because this violation was of very low safety significance and was entered into Entergy’s CAP as CR-IP2-2017-00356, this violation is being treated as an NCV, consistent with Section 2.3.2.a of the NRC Enforcement Policy.

ATTACHMENT: SUPPLEMENTARY INFORMATION

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Entergy Personnel

A. Vitale, Site Vice President
J. Kirkpatrick, General Manager, Plant Operations
B. Allen, Site NDE Level III
N. Azevedo, Engineering Supervisor
J. Baker, Unit 2 Shift Manager
K. Baumbach, Chemistry Supervisor
S. Bianco, Operations Fire Marshal
F. Blois, Senior Engineer Electrical
C. Bohren, Unit 2 Shift Manager
G. Bouderau, Projects Manager
J. Box, PCI Supervisor
M. Briley, Entergy NDE Level III
R. Burroni, Director, Special Projects
T. Chan, Engineering Supervisor
L. Cossio-Gonzalez, ISI Program Owner
T. Cramer, Unit 3 Shift Manager
M. Crosskey, Welding Program Owner
G. Dahl, Licensing Engineer
D. Dewey, Production Manager
R. Dolansky, Inservice Inspection Program Manager
R. Drake, Civil Design Engineering Supervisor
J. Ferrick, Director, Engineering
L. Frink, ALARA Supervisor
D. Gagnon, Security Manager
L. Glander, Emergency Preparedness Manager
E. Goetchius, Senior Operations Instructor
T. Higgins, Chemistry Manager
M. Kempski, Maintenance Senior Manager
F. Kich, Performance Improvement and Safety Manager
M. Lewis, Operations Senior Manager
N. Lizzo, Training Manager
D. Martin, Unit 2 Control Room Supervisor
B. McCarthy, Director, Regulatory Assurance and Performance Improvement
K. McKenna, Assistant Operations Manager, Unit 2
N. Milazzo, Boric Acid Program Owner
T. Pasko, Supervisor, Dry Fuel Storage
S. Radomski, Unit 2 FSS
B. Rokes, Licensing Specialist IV
M. Rose, Entergy NDE Level III
C. Scott, Engineering Supervisor
S. Stevens, Radiation Protection Manager
B. Sullivan, Superintendent of Training, Nuclear Operations
M. Tesoriero, System Engineering Manager
M. Troy, Nuclear Oversight Manager
B. Vangor, Dry Cask Supervisor

R. Walpole, Regulatory Assurance Manager
 A. Zastrow, Unit 3 Shift Manager

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED

Opened/Closed

05000286/2017001-01	NCV	Inadequate Standard Operation Procedure for the Backup Spent Fuel Pool Cooling System (Section 1R04)
05000286/2017001-02	NCV	Operation in Mode 1 with Pressurizer Code Safety Valves in an Inoperable Condition (Section 4OA3)

Closed

05000247/2515/192 and 05000286/2515/192	TI	Inspection of Entergy’s Interim Compensatory Measures Associated with the Open Phase Condition Design Vulnerabilities in Electric Power Systems (Section 4OA5)
05000286/2015-006-00 and 05000286/2015-006-01	LER	TS Prohibited Condition Due to Two Pressurizer Code Safety Valves Discovered Outside Their As-Found Lift Setpoint Test Acceptance Criteria (Section 4OA3)

LIST OF DOCUMENTS REVIEWED

Common Documents Used

- Indian Point Unit 2, UFSAR
- Indian Point Unit 2, Individual Plant Examination
- Indian Point Unit 2, Individual Plant Examination of External Events
- Indian Point Unit 2, TSs 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

OAP-008, Severe Weather Preparations, Revision 24

Condition Reports (CR-IP2-)

2017-00987 2017-00995 2017-00996 2017-00999 2017-01016

Condition Reports (CR-IP3-)

2017-01012 2017-01023 2017-01047 2017-01055 2017-01082 2017-01108

Section 1R04: Equipment AlignmentProcedures

2-AOP-480V-1, Loss of Normal Power to Any 480V Bus, Revision 8
 2-AOP-CVCS-1, Chemical and Volume Control System Malfunctions, Revision 10
 2-E-1, Loss of Reactor or Secondary Coolant, Revision 4
 2-SOP-3.1, Charging, Seal Water, and Letdown Control, Revision 73
 3-COL-SFP-2, BSFPC System, Revision 3
 3-COL-SI-001, Safety Injection System, Revision 44
 3-SOP-RHR-001, Residual Heat Removal System, Revision 47
 3-SOP-SFP-003, Operation of the BSFPC System, Revision 15
 3-SOP-SFP-003, Operation of the BSFPC System, Revision 18
 IP-SMM-AD-102, IPEC Implementing Procedure Preparation, Review, and Approval,
 Revision 13

Condition Reports (CR-IP2-)

2003-07467 2016-06795 2016-06801 2017-00650

Condition Reports (CR-IP3-)

2003-02602 2015-05708 2016-01138 2016-01139 2017-00392 2017-00485
 2017-00510 2017-00847 2017-00920 2017-01196

Maintenance Orders/Work Orders

WO 00451309 WO 00467847

Drawings

9321-F-27223, Flow Diagram Service Water System Nuclear Steam Supply Plant, Revision 51
 9321-F-27503, Flow Diagram Safety Injection System, Sheet No. 2, Revision 57
 9321-H-30610, BSFPC Secondary Pumps Nos. 31 and 32 Wiring Diagram, Revision 2

Miscellaneous

IP3-DBD-308, Design Basis Document for the Component Cooling Water System, Spent Fuel
 Pit Cooling System, and BSFPC System, Revision 4
 IP-CALC-10-00121, BSFPC System Heat Removal Capability, Revision 0
 PTO 3C19: EDG-1032 – EDG Mechanical
 PTO 3C19: EDG-12 – SWN 8-2

Section 1R05: Fire ProtectionProcedures

EN-DC-127, Control of Hot Work and Ignition Sources, Revision 16
 EN-DC-161, Control of Combustibles, Revision 15
 EN-DC-161, Control of Combustibles, Revision 16
 EN-DC-330, Fire Protection Program, Revision 4

Condition Reports (CR-IP2-)

2016-03591

Condition Reports (CR-IP3-)

2010-03041 2010-03042 2017-00722

Maintenance Orders/Work Orders

WO 00416401 WO 52342748

Miscellaneous

Indian Point Unit 3 Fire Hazards Analysis, Revision 5

IP2-RPT-03-00015, Indian Point Unit 2 Fire Hazards Analysis, Revision 7

IP3-ANAL-FP-01047, Fire Barrier Analysis Primary Auxiliary Building to Radioactive Machine Shop, Revision 1

IP-CALC-11-00006

IPEC PFP 212

IPEC PFP 258

IPEC PFP 307B

IPEC PFP 308

IPEC PFP 315

IPEC PFP 316

IPEC PFP 388

TCE 17-015, Revision 2

Section 1R06: Flood Protection Measures

Procedures

EN-OP-111, Operational Decision-Making Issue Process, Revision 13

Condition Reports (CR-IP3-)

2016-01113

Maintenance Orders/Work Orders

WO 00445393

Miscellaneous

IP3-UT-17-002, 14" Line 1081

Engineering Change (EC) 69066

Section 1R08: Inservice Inspection Activities

Procedures

3-PT-R114, RCS Boric Acid Leakage and Corrosion Inspection, Revision 12

3-PT-R203, Visual Examination of Reactor Vessel Head Penetrations and Head Surface for Leakage, Revision 4

3-PT-R204, Visual Examination of Reactor Vessel Bottom Mounted Instrumentation Penetrations for Leakage, Revision 2

CEP-NDE-0504, Ultrasonic Examination of Small Bore Diameter Piping for Thermal Fatigue Damage, Revision 4

EN-DC-319, Boric Acid Corrosion Control Program, Revision 11

PDI-ISI-254-SE-NB, Remote In-Service Examination of Reactor Vessel Nozzle to Safe End, Nozzle to Pipe, Safe End to Pipe Welds Using the Nozzle Scanner, Revision 3

SEP-A600-IPEC-001, IPEC Alloy 600 Program Plan, Revision 0

SEP-BAC-IPC-001, Boric Acid Corrosion Control Program, Revision 2

SEP-ISI-IP3-001, IP3 Fourth Ten-Year Interval Inservice Inspection/CII Program Plan, Revision 4

SEP-SG-IP3-001, IP3 Steam Generator Program, Revision 2

WDI-STD-1040, Procedure for Ultrasonic Examination of Reactor Vessel Head Penetrations, Revision 14

WDI-STD-1041, Reactor Vessel Head Penetration Ultrasonic Examination Analysis, Revision 12

WDI-STD-1073, Ultrasonic Test Procedure for the Inspection of Internal Hex Head

Baffle-Former Bolts with Welded Lock Bars, Revision 5

WPS-CS-1/1-C-4, Welding Procedure Specification for Shielded Metal Arc Welding of P-No. 1 Carbon Steels, Revision 0

Condition Reports (CR-IP3-)

2014-02642 2015-03763 2016-01113 2017-00996 2017-01194 2017-01195
2017-01239 2017-01577

Drawings

9321-F-51673, Containment Building Restraint and Support Design Line 80, Revision 7

INT-1-4601, Loop 32 3 Inch Line 80 Charging Isometric, Revision 5

Maintenance Orders/Work Orders

WO 00423371 WO 00444674

Miscellaneous

51-9198796-000, Indian Point 3 R17 Steam Generator Condition Monitoring and Final Operational Assessment, Revision 0

Boric Acid Evaluation 15-IP3-0058, Component ID CH-126, dated May 14, 2015

Boric Acid Evaluation 17-IP3-0003, Component ID SI-1837, dated March 18, 2017

Boric Acid Evaluation 17-IP3-0004, Component ID SI-837P, dated March 18, 2017

EC 68188, IP3 Reactor Vessel Equivalent Replacement Baffle-To-Former Bolt, Revision 0

Inservice Inspection Program Health Report for Q2-2016, April 1 to June 30, 2016

INT-15-14, Evaluation of Wear on Inside Surface of CRDM Head Adapters, dated March 16, 2015

INT-A-17, Analysis Technique Specification Sheet: All Bobbin Coil Probes, Revision 0

INT-B-17, Analysis Technique Specification Sheet: 3-Coil RPC Standard and Mag Biased (+PT/115/S080), Revision 0

INT-C-17, Analysis Technique Specification Sheet: Single Coil +PT U-bend RPC, Revision 0

IP3-MT-17-012, Magnetic Particle Data Sheet for Weld W1 on SW Line 1081, dated April 3, 2017

IP-RPT-16-00083, Indian Point Unit 3 Replacement Baffle Bolt Qualification Summary Letter, dated December 19, 2016

List of Site Approved Eddy Current Inspection Techniques, dated March 27, 2017

NL-09-163, Relief Request IP3-ISI-RR-04 for Fourth Ten-Year Inservice Inspection Interval Indian Point Unit 3, dated December 23, 2009

NL-15-072, 2015 Form OAR-1 Owner's Activity Report for Inservice Inspection and R/R, dated June 18, 2015

Pre-NRC Inspection Self-Assessment of IP3 Inservice Inspection Activities, dated January 5, 2017

Remote VT-3 Record Sheet of Baffle Plates, Baffle Edge Bolts, and High Fluence Seams, dated March 28, 2017

SG-SGMP-17-2, Indian Point Unit 3 3R19 (March 2017) Steam Generator Degradation Assessment, dated March 19, 2017

UT-15-009, UT Data Sheet for Piping Upstream of Weld 7 on Line 80, dated March 16, 2015

UT-17-010, UT Data Sheet for Piping Upstream of Weld 7 on Line 80, dated March 28, 2017

Visual Record Sheet for Leakage of BMI Penetrations, dated March 19, 2017

Visual Record Sheet for Leakage of Reactor Vessel Head Penetrations, dated March 29, 2017
 WDI-PJF-1316983-FSR-001, Indian Point Unit 3 3R19 Reactor Vessel Head Inspection Final Exam Report, Revision 0
 WDI-PJF-1316986-FSR-001, Indian Point Unit 3 3R19 Reactor Vessel Outlet Nozzle Dissimilar Metal Weld Inspection, Revision 0
 WDI-PJF-1317263-EPP-001, Indian Point Nuclear Power Plant MRP-227A Reactor Vessel Internals Examination Program Plan, Revision 1
 WDI-TJ-1100, Technical Justification for the Ultrasonic Testing of Baffle-Former Bolts for Indian Point Units 2 and 3, Revision 2
 Weld Data Sheet for Weld W1 on SW Line 1081, dated April 3, 2017
 Weld Map 00444674-04-01 for SW Line 1081 Pipe Replacement, Revision 0
 Welding Program Health Report for Q4-2016, October 1 to December 31, 2016
 Welding Program Snapshot Assessment, dated October 24, 2017

Section 1R11: Licensed Operator Requalification Program

Procedures

0-AOP-SEISMIC-1, Seismic Event, Revision 7
 2-AOP-13.8kV-1, Loss of Power to Any 13.8kV Bus, Revision 042-PT-Q089, Control Rod Exercise, Revision 9
 2-AOP-CCW-1, Loss of Component Cooling Water, Revision 4
 2-AOP-CVCS-1, Chemical and Volume Control System Malfunctions, Revision 10
 2-AOP-LICCW-1, Leakage into the CCW System, Revision 5
 2-AOP-ROD-1, Rod Control and Indication Systems Malfunctions, Revision 6
 3-POP-2.1, Operation at Greater Than 45 Percent Power, Revision 62
 3-POP-3.1, Plant Shutdown from 45 Percent Power, Revision 49
 3-POP-3.2, Plant Recovery from Trip, Hot Standby, Revision 3
 3-SOP-AFW-001, Auxiliary Feedwater System Operation, Revision 9
 EN-EP-308, Emergency Planning Critiques, Revision 4
 EN-OP-115, Conduct of Operations, Revision 18
 2-PT-Q089, Control Rod Testing, Revision 3

Condition Reports (CR-IP2-)

2014-06378 2016-06171

Condition Reports (CR-IP3-)

2017-00272 2017-00275 2017-00276 2017-00277 2017-00280 2017-00281
 2017-00282 2017-00296 2017-00951 2017-1329

Miscellaneous

12SG-LOR-AOP012, AOP-LICCW-1, and AOP-CCW-1, Revision 6

Section 1R12: Maintenance Effectiveness

Procedures

2-SOP-10.5.1, Weld Channel and Containment Penetration Pressurization System Operation, Revision 19
 EN-DC-206

Condition Reports (CR-IP2-)

2015-00016	2015-01396	2015-02549	2015-02822	2015-04461	2015-04802
2016-00024	2016-02432	2016-03759	2016-04297	2016-05980	2016-06218
2016-06550	2017-00018	2017-00212			

Condition Reports (CR-IP3-)

2013-00476	2014-02917	2015-00139	2015-00681	2016-01610	2016-02135
2016-02179	2016-02289	2016-02339	2016-02417	2017-00368	2017-00369
2017-00508	2017-00691				

Maintenance Orders/Work Orders

WO 00214999	WO 00254891	WO 00382022	WO 00398797
WO 00398798	WO 00414116	WO 00447975	WO 52584458

Miscellaneous

AR 230016

Maintenance Rule Basis Document – SFP Cooling, Revision 0

Maintenance Rule Expert Panel Meeting Minutes, dated October 26, 2016

Maintenance Rule Basis Document – IPEC, Units 2 and 3, Weld Channel and Penetration Pressurization System, Revision 0

Maintenance Rule Expert Panel, dated February 17, 2017

PMRQ 50070444

Section 1R13: Maintenance Risk Assessments and Emergent Work ControlProcedures

2-AOI-27.1.9.2, Providing Appendix R Power from Unit 3, Revision 2

2-PC-Q109, Recalibration of NIS and OT/OP ΔT Parameters, Revision 54

2-PT-2Y043, Appendix R Diesel Generator Rated Load Test, Revision 0

2-PT-M110, Appendix R Diesel Generator Functional Test, Revision 8

2-SOP-27.6, Unit 2 Appendix R Diesel Generator Operation, Revision 15

3-PT-Q120B, 32 ABFP (Turbine Driven) Surveillance and IST, Revision 26

EN-IS-124, Job Safety hazards Analysis, Revision 4

EN-OU-108, Shutdown Safety Management Program, Revision 8

EN-OP-119, Protected Equipment Postings, Revision 8

EN-MA-119, Material Handling Program, Revision 28

EN-WM-104, On Line Risk Assessment, Revision 15

IP-SMM-WM-101, Fire Protection and Maintenance Rule (a)(4) Risk Assessment, Revision 5

IP-SMM-OU-104, Shutdown Risk Assessment, Revision 15

OAP-008, Severe Weather Preparations, Revision 24

Condition Reports (CR-IP2-)

2016-07288	2017-00244	2017-00245	2017-00247	2017-00248	2017-00250
2017-00253	2017-00263	2017-00277	2017-00498	2017-00651	

Condition Reports (CR-IP3-)

2017-00173	2017-00399	2017-00631	2017-00975	2017-01086
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Maintenance Orders/Work Orders

WO 52408720

Drawings

9321-F-20193, Flow Diagram Boiler Feedwater, Revision 63
 9321-F-20173, Flow Diagram Main Steam, Revision 72
 9321-F-27223, Flow Diagram Service Water System Nuclear Steam Supply Plant, Revision 51

Miscellaneous

3R19 Risk Briefing Notes
 Equipment Out of Service Risk Management Program
 PTO 3R19: SW-005
 PTO 3R19: SW-006

Section 1R15: Operability Determinations and Functionality Assessments

Procedures

2-PT-2Y043, Appendix R Diesel Generator Rated Load Test, Revision 0
 2-PT-M110, Appendix R Diesel Generator Functional Test, Revision 8
 2-SOP-27.6, Unit 2 Appendix R Diesel Generator Operation, Revision 15
 3-SOP-EL-001, Diesel Generator Operation, Revision 50
 Operability Determination, Revision 2, dated October 2016

Condition Reports (CR-IP2-)

2015-01523	2016-06861	2016-00639	2017-00651	2017-00250	2017-00248
2017-00253	2017-00277	2016-07334	2017-00105	2016-07288	2016-07356
2017-00636	2017-00637	2017-00790	2016-03806	2016-03784	2017-00477
2017-00481	2017-00866				

Condition Reports (CR-IP3-)

0217-01256	2010-03042	2015-02474	2017-00663	2017-00712	2017-00724
2017-00856	2017-00868	2017-01652			

Maintenance Orders/Work Orders

WO 00390198	WO 00444674	WO 00448743	WO 00461521
WO 00463363	WO 52733931	WO 52738819	

Drawings

260431-04
 9321-F-3008-92

Miscellaneous

EC-69066, Engineering Change Reply, dated January 16, 2017
 Engineering Change 65236
 IP-CALC-11-00006, EDG Lube Oil Consumption, Revision 0
 IP-CALC-17-00009, Code Case N-513 Evaluation for Weld B1155 on 34 Fan Cooler Unit, Revision 0
 Engineering White Paper – Containment Spray Nozzles

Section 1R19: Post-Maintenance Testing

Procedures

0-PMP-409-CVCS, Replacement of Fluid Cylinder Valves – Union QX-300 Charging Pump, Revision 3

2-PT-Q033A, 21 Charging Pump, Revision 19
 2-SOP-3.1, Charging, Seal Water, and Letdown Control, Revision 73
 3-PT-M079B, 32 EDG Functional Test, Revision 55
 3-SOP-SFP-003, Operation of the BSFPC System, Revision 18

Condition Reports (CR-IP3-)

2017-00351 2017-00403 2017-00437 2017-00776 2017-00540 2017-00590
 2017-00688 2017-00728 2017-00854 2017-00872

Maintenance Orders/Work Orders

WO 00451309 WO 00464691-02 WO 00466982 WO 00467820
 WO 52679264 WO 52728452

Miscellaneous

Engineering Change 69877

Section 1R20: Refueling and Other Outage Activities

Procedures

3-POP-4.2, Operation below 20 Percent PRZR Level with Fuel in the Reactor/Refueling,
 Revision 40

Condition Reports (CR-IP2-)

2017-00992

Condition Reports (CR-IP3-)

2017-01202

Miscellaneous

3R19 Outage Risk Assessment Team Report, Revision 0
 EN-OM-123, Attachment 9.7, Waiver Basis and Approval, completed March 15, 2017

Section 1R22: Surveillance Testing

Procedures

0-CY-2765, Coolant Activity Limits – Dose Equivalent Iodine/Xenon, Revision 5
 0-SOP-LEAKRATE-001, Revision 6
 2-CY-2320, Reactor Coolant Gas Sampling, Revision 10
 2-CY-2380, Primary Sampling System, Revision 7
 2-PT-2Y045A, 21 Service Water Pump Full Flow Test, Revision 5
 2-PT-M021A, EDG 21 Load Test, Revision 32
 2-PT-Q026A, 21 Service Water Pump, Revision 21
 2-PT-Q034B, PCV-1310A and PCV-1310B Nitrogen Supply, Revision 8
 2-SOP-27.3.1.1, 21 EDG Manual Operation, Revision 23
 3-PT-R007A, 31 and 33 ABFPs Full Flow Test, Revision 21
 3-PT-R007B, 32 ABFP Full Flow Test, Revision 18
 3-PT-V032I, Inservice Pressure Test of Aux Feedwater System, Revision 1
 EN-LI-114, Regulatory PI Process, Revision 7

Condition Reports (CR-IP2-)

2016-03591 2016-06651 2017-00592 2017-00911

Condition Reports (CR-IP3-)

2010-03041 2010-03042 2011-01243 2017-00893 2017-00894 2017-00915
2017-00930

Maintenance Orders/Work Orders

WO 00363647 WO 52355241 WO 52699865 WO 52716384
WO 52726648 WO 52733005 WO 52733008

Miscellaneous

IP-CALC-11-00006, EDG Lube Oil Consumption, Revision 0
NEI 99-02, Regulatory Assessment PI Guideline, Revision 7
NRC PI Technique/Data Sheet, (EN-LI-114 Attachment 9.2), January 1 to December 31, 2016
Nuclear eSoms Log Entries Report, January 1 to December 31, 2016
Unit 2 RCS Routine Activity: IPEC Chemistry Gamma Spectroscopy Report dated March 8,
2017

Section 1EP6: Drill Evaluation

Procedures

IP-EP-310, Dose Assessment, Revision 14
IP-EP-410, Protective Action Recommendations, Revision 12

Condition Reports (CR-IP2-)

2017-00392

Condition Reports (CR-IP3-)

2017-00280 2017-00281 2017-00282 2017-00296

Miscellaneous

EPlan Drill Scenario, dated January 25, 2017
NEI 99-02, Regulatory Assessment PI Guideline, Revision 7

Section 2RS6: Radioactive Gaseous and Liquid Effluent Treatment

Miscellaneous

2014 Annual Radioactive Effluent Release Report, Indian Point Nuclear Generating Unit
Nos. 1, 2, and 3
2015 Annual Radioactive Effluent Release Report, Indian Point Nuclear Generating Unit
Nos. 1, 2, and 3

Most recent calibration results for:

Flow Meters/Level Instruments

Condensate Polisher Effluent Flow
CVCS Effluent Flow
CVCS Monitoring Tanks Level
Functional RWST Level
Functional RWST Level Loop
Functional SGBD Flow Indicators
Functional WDT Level, Liquid Radwaste Effluent Flow
NCD Flow Totalizer versus Ultrasonic Test Flow

Plant Vent Flow Meter
Primary Water Storage Tank Level
PWST Level
SGBD Flow Transmitter
Steam Generator Blowdown Flow
Ultrasonic Test Flow Meter
Units 1 and 2 Plant Vent Monitor Flow

Radiation Monitors

R11/12, R15, R16A, R18, R19, R20, R23, R27, R39, R40, R41/42, R44, R45, R46, R49, R50, R51, R52, R53, R54, R59, R60, R61, R62

Section 40A1: Performance Indicator Verification

Procedures

0-CY-2765, Coolant Activity Limits – Dose Equivalent Iodine/Xenon, Revision 5
EPA Federal Guidance Report No. 11, Table III.1
EN-LI-114, Regulatory PI Process, Revision 7

Miscellaneous

Nuclear Electronic Shift Operations Management System Chemistry Log Entries Report, for the period January 1 to December 31, 2016
NRC PI Technique/Data Sheets (EN-LI-114 Attachment 9.2) for the period January 1 to December 31, 2016

Section 40A3: Follow Up of Events and Notices of Enforcement Discretion

Procedures

3-PT-R005A, Pressurizer Safety Valves Set Pressure and Seat Leakage Test (utilizing an outside facility), Revision 9

Condition Reports (CR-IP3-)

2007-00679 2008-00768 2012-01403 2017-00913

Work Orders

WO 52309208-04 WO 52498123-04

Miscellaneous

Unit 3 LER 2015-006
Wylie Laboratory Test Report RG 5-8-12
Wylie Laboratory Test Report T59062-1 (RG 5-10-12), dated January 11, 2012
Wylie Laboratory Test Report T59062-2 (RG 5-10-12), dated January 11, 2012
Wylie Laboratory Test Report T59062-3 (RG 5-10-12), dated January 11, 2012

Section 40A5: Other Activities

Procedures

0-FTR-401-GEN, Special Lifting Devices Inspection, Revision 4
0-NF-203, Internal Transfer of Fuel Assemblies and Inserts, Revision 19
0-RP-RWP-420, Radiological Controls for Dry Cask Storage, Revision 4
2-AOP-13.8kV, Loss of Power to any 13.8kV Bus, Revision 4

2-AOP-138kV, Loss of Power to 6.9kV Bus 5 and/or 6, Revision 10
 2-AOP-480V, Loss of Normal Power to any 480V Bus, Revision 8
 2-DCS-001-GEN, MPC Inspection, Handling and Fit-Up, Revision 11
 2-DCS-003-GEN, HI-STORM Inspection, Handling and Fit-Up, Revision 7
 2-DCS-006-GEN, Vertical Cask Transporter Operation, Revision 13
 2-DCS-007-GEN, ISFSI Storm Water Pollution Prevention Inspection and Maintenance,
 Revision 4
 2-DCS-008-GEN, Unit 2 MPC Loading and Sealing Operations, Revision 20
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 2-SOP-27.1.3, Operation of the 13.8kV System, Revision 42
 2-SOP-27.1.4, Operation of the 6900V System, Revision 49
 2-SOP-27.1.5, Operation of the 480V System, Revision 53
 3-AOP-13.8kV, Loss of 13.8kV Power, Revision 3
 3-AOP-138kV, Loss of Power to 6.9kV Bus 5 and/or 6, Revision 8
 3-AOP-480V, Loss of Normal Power to any 480V Bus, Revision 8
 3-FTR-001-GEN, Shielded Transfer Canister Inspection, Handling and Storage, Revision 2
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LIST OF ACRONYMS

10 CFR	Title 10 of the <i>Code of Federal Regulations</i>
ABFP	auxiliary boiler feedwater pump
ALARA	as low as is reasonably achievable
ASME	American Society of Mechanical Engineers
ATWS	anticipated transient without scram
BSFPC	backup spent fuel pool cooling
CAP	corrective action program
CoC	Certificate of Compliance
CR	condition report
DCS	dry cask storage
EDG	emergency diesel generator
HI-STORM	Holtec International Storage and Transfer Operation Reinforced Module
HI-TRAC	Holtec International Transfer Cask
ISFSI	independent spent fuel storage installation
IMC	Inspection Manual Chapter
IPEC	Indian Point Energy Center
LER	licensee event report
MPC	multi-purpose canister
NCV	non-cited violation
NDE	non-destructive examination
NRC	Nuclear Regulatory Commission, U.S.
ODCM	offsite dose calculation manual
OPC	open phase condition
PFP	pre-fire plan
PI	performance indicator
RCS	reactor coolant system
SFP	spent fuel pool
SG	steam generator
SSC	structure, system, and component
TS	technical specification
UFSAR	updated final safety evaluation report
UT	ultrasonic test(ing)
VT	visual test(ing)
WO	work order