



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION I
2100 RENAISSANCE BLVD., SUITE 100
KING OF PRUSSIA, PA 19406-2713

November 7, 2014

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

**SUBJECT: INDIAN POINT NUCLEAR GENERATING – NRC INTEGRATED INSPECTION
REPORT 05000247/2014004 AND 05000286/2014004**

Dear Mr. Ventosa:

On September 30, 2014, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Indian Point Nuclear Generating, Units 2 and 3 (Indian Point). The enclosed inspection report documents the inspection results, which were discussed on October 24, 2014, with you and other members of your staff.

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

This report documents two findings of very low safety significance (Green). One of these findings was determined to involve a violation of NRC requirements. However, because of the very low safety significance, and because it has been entered into your corrective action program, the NRC is treating this finding as a non-cited violation, consistent with Section 2.3.2.a of the NRC Enforcement Policy. If you contest the non-cited violation in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Senior Resident Inspector at Indian Point. In addition, if you disagree with the cross-cutting aspect assigned to any finding, or a finding not associated with a regulatory requirement, in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region I, and the NRC Senior Resident Inspector at Indian Point.

J. Ventosa

2

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390 of the NRCs "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC's Public Document Room or from the Publicly Available Records component of the NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Arthur L. Burritt, 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 05000247/2014004 and 05000286/2014004
w/Attachment: Supplementary Information

cc w/encl: Distribution via ListServ

J. Ventosa

2

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390 of the NRCs "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC's Public Document Room or from the Publicly Available Records component of the NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Arthur L. Burritt, 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 05000247/2014004 and 05000286/2014004
w/Attachment: Supplementary Information

cc w/encl: Distribution via ListServ

Distribution w/encl: (via E-mail)

D. Lew, Acting RA
V. Ordaz, Acting DRA
H. Nieh, DRP
M. Scott, DRP
R. Lorson, DRS
J. Trapp, DRS
A. Burritt, DRP
T. Setzer, DRP
J. Petch, DRP
S. Stewart, DRP, SRI
Ami Patel, DRP, RI
G. Newman, DRP, RI
D. Hochmuth, DRP, AA
J. Jandovitz, RI OEDO
RidsNrrPMIndianPoint Resource
RidsNrrDorLp11-1 Resource
ROPReports Resources

DOCUMENT NAME: G:\DRP\BRANCH2\A - INDIAN POINT\IP2&3 INSPECTION REPORTS\2014\2014-004\IP2&3 2014.004.FINAL.DOCX
ADAMS ACCESSION NUMBER: **ML14314A052**

<input checked="" type="checkbox"/> SUNSI Review		<input checked="" type="checkbox"/> Non-Sensitive <input type="checkbox"/> Sensitive		<input checked="" type="checkbox"/> Publicly Available <input type="checkbox"/> Non-Publicly Available	
OFFICE	RI/DRP	RI/DRP	RI/DRP		
NAME	SStewart/ALB for	TSetzer/ALB for	ABurritt/ALB		
DATE	11/7/14	11/7/14	11/7/14		

OFFICIAL RECORD COPY

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos. 50-247 and 50-286

License Nos. DPR-26 and DPR-64

Report Nos. 05000247/2014004 and 05000286/2014004

Licensee: Entergy Nuclear Northeast (Entergy)

Facility: Indian Point Nuclear Generating, Units 2 and 3

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

Dates: July 1, 2014, through September 30, 2014

Inspectors: J. Stewart, Senior Resident Inspector
A. Patel, Resident Inspector
G. Newman, Resident Inspector
B. Bollinger, Acting Resident Inspector
J. Brand, Acting Resident Inspector
C. Lally, Acting Resident Inspector
J. Furia, Health Physicist
S. Galbreath, Reactor Inspector
S. Hammann, Senior Health Physicist
S. McCarver, Physical Security Inspector

Approved By: Arthur L. Burritt, Chief
Reactor Projects Branch 2
Division of Reactor Projects

TABLE OF CONTENTS

SUMMARY	3
REPORT DETAILS	5
1. REACTOR SAFETY	5
1R01 Adverse Weather Protection	5
1R04 Equipment Alignment	6
1R05 Fire Protection	7
1R06 Flood Protection Measures	8
1R07 Heat Sink Performance	9
1R11 Licensed Operator Requalification Program	9
1R12 Maintenance Effectiveness	11
1R13 Maintenance Risk Assessments and Emergent Work Control	12
1R15 Operability Determinations and Functionality Assessments	13
1R18 Plant Modifications	14
1R19 Post-Maintenance Testing	17
1R22 Surveillance Testing	18
1EP6 Drill Evaluation	19
2. RADIATION SAFETY	19
2RS1 Radiological Hazard Assessment and Exposure Controls	19
2RS2 Occupational ALARA Planning and Controls	20
2RS5 Radiation Monitoring Instrumentation	22
4. OTHER ACTIVITIES	23
4OA1 Performance Indicator Verification	23
4OA2 Problem Identification and Resolution	24
4OA3 Follow Up of Events and Notices of Enforcement Discretion	29
4OA5 Other Activities	30
4OA6 Meetings, Including Exit	31
ATTACHMENT: SUPPLEMENTARY INFORMATION	31
SUPPLEMENTARY INFORMATION	A-1
KEY POINTS OF CONTACT	A-1
LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED	A-2
LIST OF DOCUMENTS REVIEWED	A-2
LIST OF ACRONYMS	A-10

SUMMARY

IR 05000247/2014004, 05000286/2014004; 07/01/2014 – 09/30/2014; Indian Point Nuclear Generating Units 2 and 3 (Indian Point); Occupational ALARA Planning and Controls and Problem Identification and Resolution.

This report covered a three-month period of inspection by resident inspectors and announced inspections performed by regional inspectors. The inspectors identified one finding and one non-cited violation (NCV), both which were of very low safety significance (Green). 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 (SDP)," dated June 2, 2011. Cross-cutting aspects are determined using IMC 0310, "Aspects Within the Cross-Cutting Areas," dated December 19, 2013. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated July 9, 2013. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5.

Cornerstone: Mitigating Systems

- Green. The inspectors identified a Green NCV of Title 10 of the *Code of Federal Regulations* (10 CFR) 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," because Entergy personnel did not adequately implement procedure EN-OP-104, "Operability Determination Process," Step 5.5, to assess the operability and degraded condition of the 22 station battery capacity. Specifically, Entergy personnel did not identify the degraded/non-conforming condition or evaluate the condition relative to support functions for Technical Specification (TS) Surveillance Requirement (SR) 3.8.6.6.

The finding was more than minor because it is associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, after inspectors questioned the operability determination, the degraded condition was identified and resulted in the 22 station battery being declared OPERABLE but DEGRADED. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 2 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 the finding was not a design or qualification deficiency, did not represent a loss of system safety function, and did not screen as potentially risk significant due to seismic, flooding, or severe weather initiating event. Entergy placed this issue into the corrective action program (CAP) as condition report (CR)-IP2-2014-04825 and performed an immediate operability determination followed by a request for an exigent change in TS requirements. The inspectors assigned a cross-cutting aspect in the area of Problem Identification and Resolution, Evaluation, because Entergy did not thoroughly evaluate the condition of the 22 station battery capacity. Specifically, Entergy did not identify the degraded/non-conforming condition or evaluate the condition relative to support functions for TS SR 3.8.6.6. [P.2]. (Section 40A2)

Cornerstone: Occupational/Public Radiation Safety

- Green. A self-revealing finding (FIN) of very low safety significance (Green) was identified due to Entergy having excessive unintended occupational collective exposure. This resulted from performance deficiencies in planning and work control while performing reactor coolant pump (RCP) work activities during the Unit 2 refueling outage. Inadequate work planning and control resulted in unplanned, unintended collective exposure due to conditions that were reasonably within Entergy's ability to control and prevent. The work activity performance deficiencies resulted in the collective exposure for these activities increasing from the planned dose of 7.269 person-rem to an actual dose of 13.742 person-rem. Entergy entered this issue into their CAP as CR-IP2-2014-02558.

The finding was more than minor because it was associated with the Program and Process attribute of the Occupational Radiation Safety cornerstone and adversely affected the cornerstone objective to ensure the adequate protection of the worker health and safety from exposure to radiation. Additionally, the performance deficiency was more than minor based on a similar example (6.i) in Appendix E of IMC 0612; in that, the actual collective dose exceeded 5 person-rem and exceeded the planned, intended dose by more than 50 percent. Entergy placed this issue into the CAP as CR-IP2-2014-02558 and completed a root cause evaluation. The finding had a cross-cutting aspect in the area of Human Performance, Teamwork, in that the work groups did not coordinate activities, which involved job site activities, that adversely impacted radiological safety. Specifically, higher source term due to not delaying the start of work to reduce reactor coolant system (RCS) activity levels following the crud burst and the inability to properly sequence the installation of shielding packages with the work activities resulted in collective exposures that exceeded estimates by greater than 50 percent. [H.4] (Section 2RS2)

REPORT DETAILS

Summary of Plant Status

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

Unit 3 began the inspection period at 100 percent power. On August 13, 2014, Unit 3 tripped from full power due to a spurious signal during testing of the reactor protection system (RPS). The unit was restarted on August 15 and returned to full power on August 17. Unit 3 remained at full power for the remainder of the 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 reviewed Entergy's preparations for the onset of hot weather on July 30, 2014. The inspectors reviewed the implementation of adverse weather preparation procedures including OAP-48, "Seasonal Weather Preparation (Units 2 and 3)," and 2-SOP-24.1.1, "Service Water Hot Weather Operation (Units 2)," before the onset of and during this adverse weather condition. The inspectors walked down the Unit 2 emergency diesel generator (EDG) building; the Unit 2 480 volt (V) switchgear room; the Unit 3 EDG rooms; and the Unit 3 service water room to ensure system availability and that there were no problems as a result of the severe weather. The inspectors verified that operator actions defined in Entergy's adverse weather procedure maintained the readiness of essential systems. The inspectors discussed readiness and staff availability for adverse weather response with operations. The inspectors discussed hot weather preparedness with operators and maintained an awareness of hot weather issues throughout the hot weather periods. Documents reviewed for each section of this inspection report 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

- 21 and 23 auxiliary boiler feedwater pumps (ABFPs) while 22 ABFP was out of service (OOS) for planned maintenance on August 28, 2014
- 21 and 22 EDGs while 23 EDG was OOS for a two-year mechanical overspeed test on September 12, 2014

Unit 3

- 31 and 33 EDG and 480V switchgear rooms while 32 EDG was OOS for a scheduled two-year preventive maintenance on August 4, 2014
- 31 and 33 ABFPs while 32 ABFP was OOS for planned maintenance on flow control valve (FCV)-405B on September 24 and 25, 2014

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 Updated Final Safety Analysis Report (UFSAR), TSs, work orders (WOs), CRs, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have impacted system performance of their intended safety functions. The inspectors also performed field walkdowns of accessible portions of the systems to verify system components and support equipment were aligned correctly and were operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no deficiencies. The inspectors also reviewed whether Entergy staff had properly identified equipment issues and entered them into the CAP for resolution with the appropriate significance characterization.

b. Findings

No findings were identified.

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

a. Inspection Scope

On August 20, 2014, the inspectors performed a complete system walkdown of accessible portions of the Unit 2 containment spray system to verify the existing equipment lineup was correct. The inspectors reviewed operating procedures, surveillance tests, drawings, equipment line-up check-off lists, support structure isometric drawings, and the UFSAR to verify the system was aligned to perform its required safety functions. The inspectors also reviewed electrical power availability, hanger and support functionality, and operability of support systems. The inspectors

performed field walkdowns of accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no deficiencies. Additionally, the inspectors reviewed a sample of related CRs and WOs to ensure Entergy appropriately evaluated and resolved any deficiencies.

b. Findings

No findings were identified.

1R05 Fire Protection

.1 Resident Inspector Quarterly Walkdowns (71111.05Q – 8 samples)

a. Inspection Scope

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

Unit 2

- 22 residual heat removal pump cell and adjacent pipe and valve room (PFP-204 was reviewed) on July 17, 2014
- Electrical penetration area (PFP-214 was reviewed) on July 31, 2014
- Auxiliary feedwater pump room (PFP-259 was reviewed) on August 1, 2014
- Main control room (PFP-253 was reviewed) on August 22, 2014

Unit 3

- 480V switchgear room (PFP-351 was reviewed) on July 30, 2014
- Diesel generator building, diesel generators 31, 32, and 33, and diesel generator valve room (PFP-354 was reviewed) on July 31, 2014
- Main control room (PFP-353 was reviewed) on August 7, 2014. In addition, the inspectors reviewed existing deficiencies and or impairments associated with the main control room fire alarm panel and fire protection equipment to verify the issues were in Entergy's CAP and that in the aggregate, the overall fire protection system remained functional
- Cable spreading room (PFP-352 was reviewed) on August 13, 2014

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors observed an unannounced Unit 2 fire brigade drill scenario conducted on August 6, 2014, that involved a fire in the fuel storage building alleyway at the 80' elevation. The inspectors evaluated the readiness of the plant fire brigade to fight fires. The inspectors verified that Entergy personnel identified deficiencies, openly discussed them in a self-critical manner at the debrief, and took appropriate corrective actions as required. The inspectors evaluated specific attributes as follows:

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

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

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06 – 2 samples)

.1 Internal Flooding Review

a. Inspection Scope

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

b. Findings

No findings were identified.

.2 Review of Cables Located in Underground Bunkers/Manholes

a. Inspection Scope

The inspectors conducted an inspection of underground bunkers/manholes subject to flooding that contain cables whose failure could disable risk-significant equipment on August 15, 2014. The inspectors performed walkdowns of risk-significant areas, including Unit 3 manhole 33, to verify that the cables were not submerged in water, that cables and/or splices appeared intact, and to observe the condition of cable support structures. The inspectors also ensured that drainage was provided and functioning properly in areas where dewatering devices were not installed. For those cables found submerged in water, the inspectors verified that Entergy had conducted an operability evaluation for the cables and were implementing appropriate corrective actions.

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors reviewed the 21 component cooling water (CCW) heat exchanger (WO 52395395) to determine its readiness and availability to perform its safety functions. The inspectors reviewed the design basis for the component and verified Entergy's commitments to NRC Generic Letter 89-13. The inspectors observed actual performance tests for the heat exchangers and/or reviewed the results of previous inspections of the 21 CCW and similar heat exchangers. The inspectors discussed the results of the most recent inspection with engineering staff and reviewed pictures of the as-found and as-left conditions. The inspectors verified that Entergy initiated appropriate corrective actions for identified deficiencies. The inspectors also verified that the number of tubes plugged within the heat exchanger did not exceed the maximum amount allowed.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11Q – 4 samples)

Unit 2

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

a. Inspection Scope

The inspectors observed and reviewed selected operator activities on July 22 and July 23, 2014, which included rackout of the 6900 kilovolt (kV) off-site power breaker, shift turnover activities, and operator response to erratic rod position indication for control rod N03, as well as other routine operating activities. The inspectors observed pre-evolution briefings and reactivity control briefings to verify that the briefings

met the criteria specified in Entergy's conduct of operations procedure and practices. Additionally, the inspectors observed implementation of an abnormal operating procedure, flux mapping, and maintenance performance associated with the erratic rod position indication 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.

.2 Quarterly Review of Licensed Operator Requalification Testing and Training (Annual Requalification Operating Test)

a. Inspection Scope

The inspectors observed a crew composed of licensed operators in an evaluated simulator session on September 8, 2014. The session was part of the annual operating test required by 10 CFR 55.59. The evaluated scenario (LRQ-SES-21) included a loss of bus 6A leading to a loss of all alternating current (AC) power resulting from flooding due to a ruptured fire header, with a stuck open pressurizer operated relief valve, following a service water pump failure and pressurizer pressure instrument failure. 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 crew communications, implementation of actions in response to alarms and degrading plant conditions, and the oversight and direction provided by the control room supervisors. The inspectors verified the accuracy and timeliness of the emergency classification made by the shift manager and the TS action statements entered by the shift technical adviser. Additionally, the inspectors assessed the ability of the crew and training staff to identify and document crew performance problems. The inspectors verified that Entergy evaluated the performance of the operating crew against pre-established criteria, including completion of critical tasks.

b. Findings

No findings were identified.

Unit 3

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

a. Inspection Scope

The inspectors observed and reviewed portions of the Unit 3 reactor recovery and return to power operations on August 15, 2014. The inspectors specifically observed the activities listed below to verify that procedure use, crew communications, and coordination of activities between work groups met established expectations and standards.

- Return to power operation and power escalation in accordance with Entergy procedures 3-POP-1.2, "Reactor Startup," and 3-POP-1.3, "Plant Startup from Zero to 45 Percent Power"
- Operation of the 345 kV Circuit Breakers 1 and 3
- Operation of the main and bypass feedwater regulating valves

b. Findings

No findings were identified.

.4 Quarterly Review of Licensed Operator Requalification Testing and Training (Annual Requalification Operating Test)

a. Inspection Scope

The inspectors observed a crew composed of licensed operators in an evaluated simulator session on September 8, 2014. The session was part of the annual operating test required by 10 CFR 55.59. The evaluated scenario (I3SX-LOR-SES004) included a loss of a 480V safety bus, failure of a RCP seal, and a steam line break in the turbine building coupled with a loss of the secondary heat sink. The inspectors evaluated operator performance during the simulated event and verified completion of risk significant operator actions, including the use of abnormal and emergency operating procedures, including 3-AOP-480V-1, "Loss of Normal Power to Any Safeguards 480V Bus;" 3-AOP-RCP-1, "Reactor Coolant Pump Malfunction;" 3-E-0, "Reactor Trip or Safety Injection;" and 3-FR-H.1, "Loss of Secondary Heat Sink." The inspectors assessed the clarity and effectiveness of crew communications, implementation of actions in response to alarms and degrading plant conditions, and the oversight and direction provided by the control room supervisors. The inspectors verified the timeliness of the emergency classification made by the shift manager was in accordance with Entergy procedure IP-EP-210, "Central Control Room, Indian Point Energy Center (IPEC) Emergency Plan Implementing Procedure." Additionally, the inspectors assessed the ability of the crew and training staff to identify and document crew performance problems. The inspectors verified that Entergy evaluated the performance of the operating crew against pre-established criteria, including completion of critical tasks. Simulator fidelity was evaluated by comparison with routine control room observations.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12Q – 2 samples)

a. Inspection Scope

The inspectors reviewed the samples listed below to assess the effectiveness of maintenance activities on structure, system, and component (SSC) performance and reliability. The inspectors reviewed system health reports, CAP documents, maintenance 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 sample selected, the inspectors verified that the SSC was

properly scoped into the maintenance rule in accordance with 10 CFR 50.65 and verified that the (a)(2) performance criteria established by Entergy staff was reasonable. As applicable, for SSCs classified as (a)(1), the inspectors assessed the adequacy of goals and corrective actions to return these SSCs to (a)(2). Additionally, the inspectors ensured that Entergy staff were identifying and addressing common cause failures that occurred within and across maintenance rule system boundaries.

Unit 2

- CR-IP2-2012-5690; a(1) action plan for 138kV electrical after exceeding maintenance rule unavailability limits
- CR-IP2-2013-2903; functional failure determination for 21 EDG after issues following the performance of 2-PT-M21A, EDG 21 Load Test

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 5 samples)

a. Inspection Scope

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

Unit 2

- Elevated risk for planned work on 22 auxiliary feedwater pump discharge valve FCV-405B including contingency plans should adverse weather impact the site on July 14, 2014
- Elevated (Yellow) risk for planned maintenance on 23 charging pump when the off-site power breaker was removed from service for planned inspection on July 22, 2014
- Yellow risk for planned maintenance on 22 auxiliary boiler feedwater discharge valves and emergent loss of power to 22 service water pump strainer on August 7, 2014 (CR-IP2-2014-4321)

Unit 3

- Elevated (Yellow) risk for planned maintenance on 32 EDG when ABFP room fan failed and was removed from service (CR-IP3-2014-1754) on August 4, 2014
- Yellow risk for planned maintenance on 31 auxiliary feedwater pump and auxiliary feedwater FCV-406A on August 26, 2014

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 6 samples)a. Inspection Scope

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

Unit 2

- On July 7, 2014, control room operators identified low pressure in the 23 safety injection (SI) accumulator upon receiving the associated annunciator and pressurized the accumulator to normal operating conditions in accordance with the alarm response procedure (CR-IP2-2014-03894). The inspectors determined that the 23 SI accumulator remained operable based upon review of the accumulator pressure data identifying no exceedance of design parameters and no adverse trends
- On August 11, 2014, control room received containment recirculation fan motor bearing vibration alarm on 25 containment recirculation fan (CR-IP2-2014-04267). The inspectors determined that the 25 containment recirculation fan remained operable based upon review of the motor and fan vibration data identifying no exceedance of design parameters
- On August 25, 2014, during the performance of 2-PT-2M2A, RPS Logic Train 'A' Actuation Logic Test, the annunciator for the Pressurizer Low Pressure Channel Trip 1930 psig remained lit even though testing in that section had been completed (CR-IP2-2014-04550). The inspectors determined that the reactor protection function for pressurizer low pressure remained operable due to the reactor trip contacts being unaffected and re-testing performed satisfactorily

Unit 3

- On June 18, 2014, during performance of 3-PT-Q92B, 32 service water pump surveillance testing, operators identified increased motor vibration levels (CRs-IP3-2014-01380, 2014-01661, and 2014-01800). The inspectors determined the 32 service water pump and motor remained operable based upon review of the motor vibration data and Entergy's evaluation and assessment of the condition
- On August 17, 2014, during routine inspection and dewatering of electrical manhole 31, technicians identified sixty inches of water accumulation and abrasions on the 480V electrical power cable AJ7-M65 for the 36 service water pump (CR-IP3-2014-01652). Visual inspections determined the abrasions were limited to

- the outside of the plastic sheath. The inspectors determined that the 36 service water pump remained operable and surveillance testing of the pump was performed satisfactorily
- On August 18, 2014, electrical technicians identified a broken wire associated with the 31 safety injection pump. The wire which is located in the 480V 5A safety-related bus had separated from the ring terminal (CR-IP3-2014-01959). Operators declared the pump inoperable. Engineers determined the affected wire was a control wire associated with the automatic start function of the 31 SI pump. Entergy determined the wire had most likely been damaged during activities associated with the beyond design bases modifications (post Fukushima Flex Mod). The inspectors verified the 31 SI pump was returned to service within TS allowed outage times after completion of the wire repair

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

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18 – 3 samples)

.1 Permanent Modification

a. Inspection Scope

On February 28, 2014, Spectra Energy submitted an application before the Federal Energy Regulatory Commission for a certificate to build a new natural gas pipeline near the IPEC about one-quarter mile from the Unit 2 and Unit 3 reactors. Because the proposed pipeline would intersect with a small portion of the licensee's owner-controlled property, Entergy personnel performed a 10 CFR 50.59 review and, on August 21, 2014, submitted the safety evaluation and supporting analysis to the NRC for information. A 50.59 review is a technical evaluation performed by a licensee to determine if a proposed change to the facility represents a significant modification to the plant design and licensing bases as described in the Final Safety Analysis Report and, hence, requires NRC approval prior to implementation. The Entergy review concluded that the change in the design basis external hazards analysis associated with the installation of the proposed new natural gas pipeline across a portion of the Indian Point site does not require prior NRC review and approval.

Entergy's evaluation analyzed the effects of a pipeline rupture with a subsequent jet flame, cloud fire, detonation of a vapor cloud, and/or missile generation to SSCs important to safety. The licensee's analysis of potentially hazardous events precipitated by a pipeline rupture demonstrates that the threshold for damage to safety-related or important-to-safety SSCs within the Security Owner Controlled Area (SOCA) will not be exceeded because of the distance between the SOCA and the new pipeline. However, a portion of the proposed pipeline would be located near SSCs important-to-safety outside the SOCA. Due to the potential impact to these components they were also evaluated to determine if any further reductions in safety margins would occur should the pipeline rupture. The original proposal was to put the new gas pipeline in the same trench as two existing pipelines. However, the proposal was subsequently revised to place the new pipeline further away from the Unit 2 and 3 reactors, and to retire one of the two existing pipelines in-place. The Entergy analysis concluded that there would be no additional reduction in safety margins from these components and, therefore, the new pipeline poses minimal or no increased risk to the safe operation of Units 2 and 3.

NRC inspectors and staff reviewed the 50.59 safety evaluation and supporting hazard analysis, conducted a walk-down of the proposed pipeline routing, and performed an independent analysis of the potential hazards associated with failure of the proposed pipeline. NRC staff also reviewed the qualifications of Entergy's subject matter expert (SME) who performed the licensee's analysis to ensure that the individual possessed the requisite knowledge, experience, and abilities to conduct the hazards analysis for the new pipeline. Additionally, the NRC staff reviewed the requirements of 10 CFR 50, Appendix B, Criterion I, "Organization," to assess whether the SME's activities were adequately controlled under the licensee's quality assurance program.

b. Findings, Observations, and Independent NRC Analysis

No findings were identified.

Based on the review of Entergy's hazards analysis and the NRC's independent calculation results using conservative assumptions and rationale, the NRC staff concluded that safety-related SSCs inside the SOCA would not be exposed to conditions exceeding the threshold for damage. However, SSCs important-to-safety outside the SOCA would be affected, because the calculated minimum safe distances to the impacts are not satisfied. The staff determined that the impacts to the SSCs important-to-safety outside the SOCA from the proposed new pipeline are bounded by the impacts from low probability events of extreme natural phenomena (including seismic activity, tornado winds, and hurricanes) which have been previously assessed and are addressed in the Indian Point Units 2 and 3 UFSAR. Indian Point Units 2 and 3 would still be able to achieve safe shutdown conditions. Also, because methane is buoyant, the plume rises aloft quickly, and burns rapidly in seconds far above the ground. Therefore, a cloud flash fire may occur without challenging the structures and components; and the existing margin of safety is not expected to be reduced due to a potential rupture of the proposed pipeline near IPEC. In performing the analysis for the new pipeline, the staff also noted that the proposed pipeline is located at greater distances from safety-related SSCs than two currently operating gas pipelines. Finally, the staff determined that Entergy's conclusions involving the potential rupture of the proposed pipeline near IPEC poses no threat to safe operation of the plant or safe shutdown of the plant, are reasonable and acceptable, and are also comparable with the staff's conclusions.

The staff's hazards analysis was performed by a physical scientist in the Office of New Reactors/Division of Site Safety and Environmental Analysis/Radiation Protection and Accident Analysis Branch with more than eight years of experience at the NRC performing power plant siting evaluations, and assessing external man-made hazards from nearby facilities at proposed new nuclear power plant sites. In addition, the physical scientist has 32 years of diversified experience in the areas of environmental assessments, environmental impact statements, and safety analysis reports for the NRC, Department of Energy, and the Environmental Protection Agency. The NRC's physical scientist performed an independent analysis of the hazards associated with the proposed pipeline. The analysis was performed based on the following conditions and hypothetical scenarios: rupture of the proposed pipeline located near IPEC resulting in an unconfined explosion or jet flame at the source; delayed vapor cloud fire or vapor cloud explosion; and accompanying missile generation. For the assessment of an unconfined explosion, Regulatory Guide (RG) 1.91, "Evaluations of Explosions Postulated to Occur at Nearby Facilities and on Transportation Routes Near Nuclear Power Plants," Revision 2, methodology was used to calculate the minimum safe distance. For the jet flame, cloud fire, and vapor cloud explosion, the "Areal Locations of Hazardous Atmospheres" (ALOHA) chemical release modeling computer software was used to determine the hazard impact distances which were compared with the actual distances at IPEC to safety-related SSCs or SSCs important-to-safety. In order to assess the impact potential, ALOHA software was employed using the appropriate source term (amount of methane released) for the scenario considered, using conservative meteorological conditions and open country ground roughness condition modeling assumptions.

In addition, NRC staff reviewed the qualifications and resume of Entergy's SME who performed the licensee's analysis. The NRC staff determined that the individual possessed the requisite knowledge, experience, and abilities to conduct the pipeline hazards analysis and that the analysis had been conducted in accordance with IPEC procedures (EN-DC-149 and EN-LI-101). Specifically, the SME possessed a Ph.D. and Masters of Engineering Degree in Chemical Engineering and was a licensed Professional Engineer. In addition, the SME had performed similar analyses for several industrial applications, including commercial nuclear stations.

Regarding Entergy's oversight of the SME, the NRC staff determined that the licensee's controls were in accordance with the requirements of 10 CFR 50, Appendix, B, Criterion 1, which states, in part, that "licensees may delegate to others, such as contractors or consultants, the work of establishing and executing the Quality Assurance (QA) program, or any part thereof, but shall retain the responsibility for the QA program." Based on a review of the SME's qualifications and Entergy's 10 CFR 50.59 review which accepted the SME's work under the QA program (EN-DC-149; Steps 1.2, 1.6, 5.3.2.a, 5.3.2.c, and Attachment 9.1 dated August 20, 2014), the NRC staff determined that the SME was not required to be listed on the station's qualified vendor list.

As a result of the above inspection activities and independent analysis, the staff determined Entergy had appropriately concluded that the proposed pipeline does not introduce significant additional risk to safety-related SSCs and SSCs important-to-safety at Indian Point Units 2 and 3; and, therefore, the change in the design bases external hazards analysis associated with the proposed pipeline does not require prior NRC review and approval.

.2 Temporary Modifications

a. Inspection Scope

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

Unit 3

- Engineering Change 44764; Prepare a temporary modification to provide an alternate means of monitoring the reactor coolant drain tank level; operational decision making issue action plan for unidentified RCS leakrate (CR-IP3-2014-2479)
- Engineering Change 53116; Installation of blocking device on temperature control valve (TCV)-1104; during testing of containment fan cooler units cooling water discharge valve TCV-1104, the valve did not reopen from the closed position due to separation from the actuator; emergency temporary modification installed to maintain valve in its safety-related open position (CR-IP2-2014-4944)

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 7 samples)

a. Inspection Scope

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

Unit 2

- Functional test appendix R EDG using 2-PT-M110 on July 25, 2014, following 6-year preventive maintenance on the diesel engine and generator during the week of July 21, 2014
- Post-work test of 23 CCW pump using 2-PT-Q030C and 2-PT-Q017C following a 2-year electrical inspection and outboard bearing oil replacement on July 31, 2014
- Post-maintenance test of emergency boration valve using 2-PT-V24-DS070 following electrical preventative maintenance on August 27, 2014

Unit 3

- Functional test of 32 SI pump following planned breaker replacement using 3-PT-Q116B on July 7, 2014
- Functional test of 32 EDG using 3-PT-M079B on August 5, 2014, following a planned two-year preventive maintenance activity
- Functional test of over temperature delta temperature (OTDT) channels using 3PC-OL4A following troubleshooting activities to investigate cause(s) of a reactor trip that occurred on August 13, 2014
- Post-work test of 32 ABFP FCV-405B using 3-PT-Q120B following actuator maintenance and steam isolation valve PCV-1310B using 3-PT-Q101 following corrective maintenance on September 25, 2014

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 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-Q034, 22 Auxiliary Feed Pump Test, on August 8, 2014
- 2-PT-M048, 480V Undervoltage Alarm Test, on August 13, 2014
- 2-PT-2Y022A, 21 Charging Pump Test, on August 18, 2014
- 2-PT-SA067, Main Turbine Stop and Control Valve Test, on September 11, 2014
- 2-PT-2Y008C, 23 EDG Mechanical Overspeed Test, on September 12, 2014
- 2-PT-Q089, Control Rod Exercise, on September 25, 2014

Unit 3

- 3-PT-Q132, Emergency Boration Flow Path Valve CH-MOV-333, on July 21, 2014 (inservice test)
- 3-PT-Q120C, 33 Auxiliary Feedwater Pump Test, on July 31, 2014 (inservice test)
- 3-PT-Q016, EDG and Vapor Containment Temperature Valves SWN-FCV-1176 & 1176A and SWN-TCV-1104 & 1105, Revision 23, on August 14, 2014

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness1EP6 Drill Evaluation (71114.06 – 1 sample)Training Observationsa. Inspection Scope

The inspectors observed a simulator training evolution, LRQ-SES-ECA00A, for Unit 2 licensed operators on July 29, 2014, which required emergency plan implementation by an operations crew. Entergy planned for this evolution to be evaluated and included in performance indicator data regarding drill and exercise performance. The inspectors observed event classification and notification activities performed by the crew. The inspectors also attended the post-evolution critique for the scenario. The focus of the inspectors' activities was to note any weaknesses and deficiencies in the crew's performance and ensure that Entergy evaluators noted the same issues and entered them into the CAP.

b. Findings

No findings were identified.

2. RADIATION SAFETY**Cornerstone: Public Radiation Safety and Occupational Radiation Safety**2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01)a. Inspection Scope

During August 11–15, 2014, the inspectors reviewed and assessed Entergy performance in assessing the radiological hazards and exposure control in the workplace. The inspectors used the requirements in 10 CFR Part 20 and guidance in RG 8.38, "Control of Access to High and Very High Radiation Areas for Nuclear Plants," TSs, and the Entergy procedures required by TSs as criteria for determining compliance.

Radiological Hazard Assessment

The inspectors determined if, since the last inspection, there have been changes to plant operations that may result in a significant new radiological hazard for onsite workers or plant areas. The inspectors conducted walk downs of the facility to evaluate material conditions and potential radiological conditions.

Contamination and Radioactive Material Control

The inspectors observed several locations where Entergy monitors material leaving the radiological control areas, and inspected the methods used for control, survey, and

release from these areas. The inspectors selected sealed sources from Entergy's inventory records and verified that sources are accounted for and periodically tested for contamination leakage. The inspectors verified that any transactions involving nationally tracked sources were reported.

b. Findings

No findings were identified.

2RS2 Occupational ALARA Planning and Controls (71124.02)

a. Inspection Scope

During August 11–15, 2014, the inspectors assessed performance with respect to maintaining occupational individual and collective radiation exposures as low as is reasonably achievable (ALARA). The inspectors used the requirements in 10 CFR Part 20, RG 8.8, RG 8.10, TSs, and Entergy procedures required by TSs as criteria for determining compliance.

Radiological Work Planning

The inspectors obtained a list of work activities ranked by actual or estimated exposure that have been completed during the last outage, and select work activities of the highest exposure significance. The inspectors reviewed the ALARA work activity evaluations, exposure estimates, and exposure mitigation requirements for these work activities. The inspectors verified that Entergy's ALARA assessment had taken into account decreased worker efficiency from use of respiratory protective devices. The inspectors determined that Entergy's work planning considered the use of remote technologies as a means to reduce dose and the use of dose reduction insights from industry operating experience and plant-specific lessons learned. The inspectors verified the integration of ALARA requirements into work procedure and radiation work permit documents. The inspectors compared the results achieved with the intended dose established in Entergy's ALARA planning for these work activities. The inspectors determined that post-job reviews were conducted and that identified problems were entered into Entergy's CAP.

Verification of Dose Estimates and Exposure Tracking Systems

The inspectors reviewed applicable ALARA procedures to determine the methodology for estimating exposures from specific work activities and the intended dose outcome. The inspectors verified that for the selected work activities that Entergy had established measures to track, trend, and reduce occupational doses for ongoing work activities. The inspectors verified that criteria were established to prompt additional reviews and additional ALARA planning and controls. The inspectors evaluated Entergy's method of adjusting exposure estimates, for re-planning work, and when unexpected changes in work scope were encountered.

b. Findings

Introduction: A self-revealing FIN of very low safety significance (Green) was identified due to Entergy having excessive unintended occupational collective exposure. This resulted from performance deficiencies in planning and work control while performing RCP work activities during the Unit 2 refueling outage. Inadequate work planning and control resulted in unplanned, unintended collective exposure due to conditions that were reasonably within Entergy's ability to control and prevent. The work activity performance deficiencies resulted in the collective exposure for these activities increasing from the planned dose of 7.269 person-rem to an actual dose of 13.742 person-rem.

Description: Unintended collective exposure that exceeded the estimated exposure by more than 50 percent for RCP work, was a result of the following: (1) area effective dose rates were 25 percent above expected dose rates due to Entergy actions to not reduce reactor coolant radioactivity levels to planned criteria following a shutdown crud burst; (2) Entergy moved significant portions of the work from the planned location on the 95' elevation of the refueling floor (a lower dose area) to inside the bioshield (a higher dose rate area) resulting in an additional 2.5 person-rem; (3) failure to install planned temporary shielding in the work area prior to the start of work, that resulted in an additional 0.943 person-rem; and (4) 24 RCP coupling rework and realignment, resulting in an additional 0.440 person-rem.

Entergy initiated a planned crud burst on shutdown which resulted in an RCS activity level of 6.76 $\mu\text{Ci/cc}$, approximately four times higher than anticipated. As a result, following the planned RCS clean up regimen timeframe, activity remained higher than the established refueling outage RCS criteria before the start of RCP work. Entergy began the RCP work with high reactor coolant activities, which were not reduced to the established outage criteria until eight days later. Additionally, while significant portions of the RCP motor surveillances were planned to be performed in a low dose area on the refueling floor (containment 95' elevation), Entergy made a work change during the outage and relocated these activities inside the bioshield (a higher dose rate area). These two outage work plan changes resulted in an additional collective exposure of 2.5 person-rem.

Due to work plan coordination deficiencies, specifically not having the temporary shielding for the RCP work sequenced correctly before the RCP work activity began, resulted in significantly higher area dose rates than intended. This resulted in an additional collective exposure of 0.943 person-rem. The initial attempt to align and recouple the 24 RCP was not properly done, causing an additional six hours of rework. This resulted in an additional collective exposure of 0.440 person-rem.

Consequently, the total collective dose for the RCP activities increased from the planned collective dose of 7.269 person-rem to the actual collective dose of 13.742 person-rem. Entergy entered this issue into their CAP as CR IP2-2014-02558, which included a root cause evaluation.

Analysis: The failure to implement the outage work plan for the RCP work was a performance deficiency that was within Entergy's ability to control and prevent. Unintended collective exposure that exceeded the estimated exposure by more than 50 percent for RCP work was a result of the following: (1) area effective dose rates were 25

percent above expected dose rate due to Entergy actions to not reduce reactor coolant radioactivity levels to planned criteria following a shutdown crud burst; (2) Entergy moved significant portions of the work from the planned location on the 95' elevation of the refueling floor (a lower dose area) to inside the bioshield (a higher dose rate area) resulting in an additional 2.5 person-rem; (3) failure to install planned temporary shielding in the work area prior to the start of work, that resulted in an additional 0.943 person-rem; and (4) 24 RCP coupling rework and realignment, resulting in an additional 0.440 person-rem. The performance deficiency was more than minor because it was associated with the Program and Process attribute of the Occupational Radiation Safety cornerstone and adversely affected the cornerstone objective to ensure the adequate protection of the worker health and safety from exposure to radiation. Additionally, the performance deficiency was determined to be more than minor based on a similar example (6.i) in Appendix E of IMC 0612, in that the actual collective dose exceeded 5 person-rem and exceeded the planned, intended dose by more than 50 percent. In accordance with IMC 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," the finding was determined to be of very low safety significance (Green) because Indian Point's current three year rolling average collective dose is less than the criteria of 135 person-rem per pressurized water reactor unit.

The finding had a cross-cutting aspect in the area of Human Performance, Teamwork, in that the work groups did not coordinate activities, which involved job site activities that impacted radiological safety. Specifically, higher source term due to not delaying the start of work to reduce RCS activity levels following the crud burst and the inability to properly sequence the installation of shielding packages with the work activities resulted in collective exposures to exceed their estimates by greater than 50 percent. [H.4]

Enforcement: No violation of regulatory requirements occurred. The ALARA rule (10 CFR Part 20.1101 (b)) "Statements of Consideration," indicate that compliance with the ALARA requirement will be judged on whether the licensee has incorporated measures to track, and if necessary, to reduce exposures, and not whether exposures and doses represent an absolute minimum or whether the licensee has used all possible methods to reduce exposures. The overall exposure performance of a nuclear power plant is used to determine its compliance with the ALARA rule. Since Entergy is below a three year rolling average of 135 person-rem per unit and has an established ALARA program to reduce exposure consistent with 10 CFR Part 20.1101, "Statements of Consideration," no violation of 10 CFR Part 20.1101 (b) occurred. Entergy entered this issue into their CAP as CR IP2-2014-02558. Because this finding does not involve a violation and has very low safety significance, it is identified as FIN. **(FIN 05000247/2014004-01, Failure to Maintain Radiation Exposure ALARA During Refueling Activities)**

2RS5 Radiation Monitoring Instrumentation (71124.05)

a. Inspection Scope

During August 11–15, 2014, the inspectors verified that Entergy is assuring the accuracy and operability of radiation monitoring instruments that are used to protect occupational workers and to protect the public from nuclear power plant operations. The inspectors used the requirements in 10 CFR Part 20, applicable industry standards, and Entergy procedures required by TSs as criteria for determining compliance.

Walkdowns and Observations

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

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151 – 12 samples)

Mitigating Systems Performance Index

a. Inspection Scope

The inspectors reviewed Entergy's submittal of the Mitigating Systems performance indicators for the period July 1, 2013, through June 30, 2014, for the following systems:

Unit 2

- Safety System Functional Failures (MS05)
- Emergency AC Power System (MS06)
- High Pressure Injection System (MS07)
- Heat Removal System (MS08)
- Residual Heat removal System (MS09)
- Cooling Water Systems (MS10)

Unit 3

- Safety System Functional Failures (MS05)
- Emergency AC Power System (MS06)
- High Pressure Injection System (MS07)
- Heat Removal System (MS08)
- Residual Heat removal System (MS09)
- Cooling Water Systems (MS10)

To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7. The inspectors also reviewed Entergy's operator narrative logs, CRs, mitigating systems performance index derivation reports, event reports, and NRC integrated inspection reports to validate the accuracy of the submittals. Periodically, the inspectors observed activities such as surveillance tests that contribute to the performance indicator data.

b. Findings

No findings were identified.

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

.1 Routine Review of Problem Identification and Resolution Activities

a. Inspection Scope

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

b. Findings

No findings were identified.

.2 Annual Sample: Review of the Operator Workaround Program, Unit 2 and Unit 3
(2 samples)

a. Inspection Scope

The inspectors reviewed the cumulative effects of the existing operator burdens, existing operator aids and disabled alarms, and open main control room deficiencies to identify any effect on emergency operating procedure operator actions, and any possible impact on initiating events and mitigating systems. The inspectors evaluated whether station personnel had identified, assessed, and reviewed plant problems as potential operator workarounds. The inspectors reviewed Entergy’s process to identify, prioritize, and resolve main control room distractions to minimize operator burdens. The inspectors reviewed the system used to track these operator workarounds and recent Entergy self-assessments of the program. The inspectors also toured the control room and discussed the current operator workarounds with the operators to ensure the items were being addressed on a schedule consistent with their relative safety significance.

b. Findings and Observations

No findings were identified.

The inspectors determined that the issues reviewed did not adversely affect the capability of the operators to implement abnormal or emergency operating procedures. The inspectors also verified that Entergy entered operator workarounds and burdens into the CAP at an appropriate threshold and planned or implemented corrective actions commensurate with their safety significance. The inspectors conducted reviews of operations tagging and activities to verify the absence of plant deficiencies that could be characterized as operator workarounds.

.3 Annual Sample: Station Battery Testing: Failed Test for 22 Station Battery (1 sample)

a. Inspection Scope

The inspectors performed an in-depth review of Entergy's evaluations and corrective actions associated with CR-IP2-2014-01707 and CR-IP2-2014-01712 for the failure of the 22 station battery capacity test. The 22 station battery calculated battery capacity at 80.4 percent, which was less than the required operability and acceptance criteria of greater than or equal to 85 percent. Entergy performed an operability evaluation and determined that the Institute of Electrical and Electronics Engineers (IEEE) standard battery temperature of 77 degrees was used in the calculations instead of average battery cell temperature of 70.73 degrees that was measured. Specifically, Entergy's technical staff identified that the battery capacity was incorrect due to the temperature factor and when corrected the 22 station battery capacity calculated at 85.2 percent of the manufacturer's rating.

The inspectors assessed Entergy's problem identification threshold, problem analysis, extent of condition reviews, compensatory actions, and the prioritization and timeliness of corrective actions to determine whether Entergy was appropriately identifying, characterizing, and correcting problems associated with this issue and whether the planned or completed corrective actions were appropriate. The inspectors compared the actions taken to the requirements of Entergy's CAP and 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action." In addition, the inspectors reviewed documentation associated with this issue, including the operability evaluation, and interviewed engineering personnel to assess the effectiveness of the implemented corrective actions to complete full resolution of the issue.

b. Findings

Introduction: The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," because Entergy personnel did not adequately implement procedure EN-OP-104, "Operability Determination Process," Step 5.5, to assess the operability and degraded condition of the 22 station battery capacity. Specifically, Entergy personnel did not identify the degraded/non-conforming condition or evaluate the condition relative to support functions for TS SR 3.8.6.6.

Description: On March 11, 2014, Entergy personnel completed an operability evaluation to determine the battery capacity of the 22 station battery to be 85.2 percent of rated manufacturer capacity. Entergy personnel then declared the 22 station battery OPERABLE. The inspectors reviewed the March 2014 operability evaluation, CR-IP2-2014-01707, which showed that Entergy did not identify the degraded/non-conforming condition to support functions for SR 3.8.6.6. Entergy evaluated the calculated battery capacity of 80.4 percent which was less than the required operability and acceptance criteria of greater than or equal to 85 percent. The battery capacity test is performed on each station battery to meet TS SR 3.8.6.6, which requires that Entergy verify battery capacity is greater than or equal to 85 percent of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test. Entergy determined that the IEEE standard battery temperature of 77 degrees was used in the calculations instead of average battery cell temperature of 70.73 degrees that was measured. Specifically, Entergy's technical staff identified that the battery

capacity was incorrect due to the temperature factor and when corrected the 22 station battery capacity calculated at 85.2 percent of the manufacturer's rating.

On September 11, 2014, during the problem identification and resolution sample inspection, the NRC inspectors questioned the current operability of the 22 station battery capacity based on the test results obtained during the 2R21 refueling outage. Specifically, the operability evaluation completed in March 2014 did not have any additional assessment as to why the battery capacity was going to stay greater than or equal to 85 percent until March 2015 when the battery was required to be tested again by TS SR 3.8.6.6. Per IMC 0326, "Operability Determinations & Functionality Assessments for Conditions Adverse to quality for Safety," Section 4.03 states that "An example of when surveillances would not be sufficient to establish operability is the satisfactory completion of TS surveillance but with results that show a degrading trend and indicate that acceptance criteria might not be met before the next surveillance test." In March 2012, the 22 station battery capacity was at 85.9 percent and in March 2014, the capacity measured at 85.2 percent, which shows that the battery capacity is degrading. Entergy did not have a trend to show when the battery capacity would or would no longer meet the required TS SR and also did not declare the battery OPERABLE but DEGRADED.

The inspectors reviewed Entergy's operability evaluation in CR-IP2-2014-01707 and determined that Entergy did not identify the degraded/non-conforming condition or evaluate the condition relative to support functions for SR 3.8.6.6. Entergy entered this issue into the CAP under CR-IP2-2014-04825. As an immediate corrective action, Entergy performed an immediate determination for degraded or non-conforming condition followed by an operability evaluation and provided the basis of operability for the 22 station battery capacity. Entergy determined that the battery is OPERABLE but DEGRADED and based on projection, a capacity rating of 85 percent could be reached on September 25, 2014. An exigent TS change was submitted to the NRC on September 15, 2014, to change the 22 station battery capacity to greater than or equal to 80 percent of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test through March 6, 2015. In a supplemental submittal dated September 18, 2014, Entergy stated that only 62.5 percent of the manufacturer's rated capacity is required to supply the design basis loads for battery 22, indicating that there is adequate margin in the current capacity of battery 22 even when it approaches 80 percent of rated capacity. The TS change was granted on September 24, 2014, by the Office of Nuclear Reactor Regulation.

Analysis: The performance deficiency associated with this finding was that Entergy did not identify the degraded/non-conforming condition or evaluate the condition relative to support functions for SR 3.8.6.6. This finding is more than minor because it is associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, after inspectors questioned the operability determination, the degraded condition was identified and resulted in the 22 station battery being declared OPERABLE but DEGRADED. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 2 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 the finding was not a design or qualification deficiency, did not represent a loss of system

safety function, and did not screen as potentially risk significant due to seismic, flooding, or severe weather initiating event.

This finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Evaluation, because Entergy did not thoroughly evaluate the condition of the 22 station battery capacity. Specifically, Entergy did not identify the degraded/non-conforming condition or evaluate the condition relative to support functions for TS SR 3.8.6.6. [P.2]

Enforcement: 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality shall be prescribed by documented procedures of a type of appropriate to the circumstances and shall be accomplished in accordance with these procedures. Procedure EN-OP-104, "Operability Determination Process," Section 5.5, requires that an operability determination be performed for degraded or non-confirming TS SSCs.

Contrary to the above, on March 11, 2014, Entergy procedure EN-OP-104 was not accomplished to assess the degraded condition of the 22 battery capacity. As a result, when the operability determination was performed on September 12, 2014, Entergy's personnel identified that the 22 station battery capacity was in a degraded condition (OPERABLE but DEGRADED). Because the violation was of very low safety significance (Green) and it was entered into Entergy's CAP as CR-IP2-2014-04825, this violation is being treated as a NCV, consistent with Section 2.3.2.a of the NRC Enforcement Policy. **(NCV 05000247/2014004-02, Failure to Identify and Evaluate Degraded Condition of the 22 Station Battery Capacity)**

.4 Groundwater Contamination

a. Inspection Scope

Entergy's current groundwater investigation is documented in CR-IP2-2014-02564 (initiated on April 9, 2014) and is the subject of this inspection focus area. Since the April 2014 identification of increased tritium concentrations in groundwater monitor wells (MWs) near the Unit 2 spent fuel pool (SFP), onsite specialist inspections have been conducted on April 29–30, June 2–6, and August 11–15, 2014, to review Entergy's investigation activities to identify the cause of the onsite groundwater tritium increase, and assess Entergy actions to repair any associated leaking structure. Bi-weekly in-office teleconference inspections have been held with Entergy since April 2014, which have included NRC health physics inspectors and an expert hydrogeologist from the Office of Research. These teleconference inspections are continuing until the current concern is resolved. During the most recent August 11-15, 2014, onsite inspection, the inspectors walked down the Unit 2 piping penetration room (one of three remaining possible sources) and observed leak testing activities in that room. The inspectors reviewed the Kepner-Tregoe systematic analysis of 21 potential sources and Entergy's process of elimination in determining the cause of the increased groundwater contamination. The NRC hydrogeologist reviewed the groundwater and the site hydrogeological model and conducted inspections with Entergy's hydrogeologist expert.

b. Findings and Observations

No findings were identified.

Since the original increased tritium concentration was identified on April 9, 2014 (687,000 pCi/L), Entergy has collected weekly samples from MW-30, MW-31, and MW-32, together with monthly samples from the nearest downstream wells in the Unit 2 transformer yard. Although the general trend for MW-31 and MW-32 has been downward, periodic increases to approximately 66 percent of the original spike have been observed over the past four months. Based on the unexpected increased groundwater tritium contamination, a multi-discipline investigation team was organized in April to identify the cause. Entergy review of the increased ground water radioactivity radionuclide signature indicated recent reactor coolant water and that the time of the groundwater increase appeared to be associated with Unit 2 refueling outage activities. Entergy is currently working with plant staff and contract hydrogeologists to further characterize the source of the subsurface contamination and conduct systematic reviews of potential refueling outage related work activities and associated reactor coolant flooded components to identify the cause of the ground water contamination.

Entergy performed a Kepner-Tregoe Analysis for the event, and identified 21 potential sources of groundwater contamination. Since that time, Entergy has conducted a variety of tests for these areas, and based upon the results, has narrowed the results down to the pipe penetration room on the 53' elevation, the fuel transfer canal, and the cask loading pit in the SFP. The presence of short-lived isotopes (Cr-51 and Co-58) in some of the groundwater well samples led to the elimination of several of the other 18 identified potential sources, as their presence indicates that the source of the leak to groundwater came from "fresh" reactor coolant water, not water in long-term storage. Other potential sources were eliminated based on leak testing.

Due to the continuing elevated groundwater tritium concentrations several months since the refueling outage, Entergy has initiated an analysis of operational events involving the movement of water within the plant, to see if, in fact, the leak may not be related to the refueling outage, but rather due to operational events. Finally, Entergy recently completed a detailed underwater video of the fuel loading pit in the Unit 2 SFP to identify any leaks which could be the cause.

Currently, Entergy's investigation is focusing on testing the three remaining potential sources. The NRC remains engaged with monitoring of these activities and will continue to review their actions to verify the cause and terminate any identified leaks to groundwater. The levels of increased groundwater tritium concentration are similar to the Unit 2 tritium plume measured in the 2005–2008 timeframe and although the current increased tritium has not yet migrated to the Hudson River, it appears to represent a very small fraction of one millirem to the public dose and be well within the licensed liquid effluent release limit of 3 millirem per year.

4OA3 Follow Up of Events and Notices of Enforcement Discretion (71153 – 3 samples).1 Plant Eventsa. Inspection Scope

For the plant events listed below, the inspectors reviewed and/or observed plant parameters, reviewed personnel performance, and evaluated performance of mitigating systems. The inspectors communicated the plant events to appropriate regional personnel, and compared the event details with criteria contained in IMC 0309, "Reactive Inspection Decision Basis for Reactors," for consideration of potential reactive inspection activities. As applicable, the inspectors verified that Entergy made appropriate emergency classification assessments and properly reported the events in accordance with 10 CFR Parts 50.72 and 50.73. The inspectors reviewed Entergy's follow-up actions related to the events to assure that Entergy implemented appropriate corrective actions commensurate with their safety significance.

Unit 2

- On September 18, 2014, Unit 2 reduced power to 68 percent during the performance of 2-PT-Q89, Control Rod Exercise test; when rod G-3 in Shutdown Bank 'B', and associated individual rod position and plant computer indications both displayed rod movement that was not in conjunction with Shutdown Bank 'B' group movement. Rod movement was stopped and abnormal procedure 2-AOP-ROD-1 was entered. Rod G-3 inserted to 195 steps with Shutdown Bank 'B' demand at 218 steps. TS limiting condition for operation (LCO) 3.1.4, "Rod Group Alignment Limits," was not met for Rod G-3; and LCO 3.1.5, "Shutdown Bank Insertion Limits," was not met for Shutdown Bank 'B'. These LCOs were entered at 10:28 on September 18. Entergy reduced power to 68 percent by 12:28 to meet the required action statement of LCO 3.1.4. At 13:58, Entergy re-aligned Rod G-3 with its bank and restored Shutdown Bank 'B' at 14:24 with all rods withdrawn to 223 steps. All LCO action statements were met at that time. At 13:20, Entergy made a 4-hour notification for initiating a shutdown LCO action. The resident inspectors responded to the control room and observed operator actions in response to the event and confirmed plant conditions were stable. The rod position was restored and the unit returned to full power on September 19.

Unit 3

- On August 13, 2014, the Unit 3 tripped from full power due to OTDT logic during scheduled surveillance testing of a pressurizer input to the RPS. At the time of the trip, pressurizer pressure channel I was in test mode (tripped) for the surveillance test. All control rods fully inserted on the reactor trip and all plant equipment responded normally to the unit trip. The resident inspectors were in the plant when the trip occurred and responded to the control room and observed operator actions. The inspectors confirmed plant conditions were stable and the plant trip was non-complicated, no emergency classification thresholds were met, and there were no indications of a radioactive release. Unit 2 was not affected by this event and remained at 100 percent power. The cause of the trip had not been determined by the conclusion of this inspection period. However, the inspectors verified that Entergy developed and implemented multiple corrective actions to trouble shoot and

assess the condition including: developing a troubleshooting plan; as-found testing of applicable RPS instrumentation; replacement of OTDT bistables; development of an adverse condition monitoring plan; installation of additional monitoring equipment; and sending the replaced bistables for detailed evaluation. The inspectors monitored the unit restart on August 15 and return to power operation.

b. Findings

No findings were identified.

.2 (Closed) Licensee Event Report (LER) 05000286/2014-003-00: Automatic Actuation of the Turbine Driven Auxiliary Feedwater Pump Following Testing of the 31 EDG Due to Non-SI Blackout Logic Defeated Reset

On February 6, 2014, at the end of testing of 31 EDG using Entergy procedure 3-PT-M79A, 31 EDG output breaker was opened. At the same time, 31 EDG non-SI blackout logic defeated, reset without operator action and 32 ABFP started. Entergy determined that the ABFP start was not required, documented the event in the CAP (CR-IP3-2014-00368), and initiated an investigation. Entergy found that the condition was the result of a sticking reset pushbutton in protective logic associated with the diesel breaker and the ABFP. The inspectors reviewed the logic drawings and verified that the failure of this reset circuit does not adversely affect the safety of the plant, the EDGs, or the Engineering Safeguard Features. The inspectors did not identify any new issues during the review of the LER. This LER is closed.

4OA5 Other Activities

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

a. Inspection Scope

From July 21 – July 24, 2014, the inspectors conducted an inspection and review of Entergy's inter-unit fuel transfer of 12 spent fuel assemblies from Unit 3 to Unit 2. The inspectors verified compliance with Entergy's operating license, Safety Evaluation Report, Holtec Licensing Report, TSs, NRC regulations, and Entergy procedures.

The inspectors attended pre-job briefs and verified that the briefs emphasized the critical steps and reviewed the conditions in the work areas. The inspectors interviewed personnel and ensured they were trained and knowledgeable regarding the tasks to be performed. In addition, training records were reviewed to ensure personnel were qualified to perform their assigned tasks.

The inspectors observed the loading of spent fuel assemblies from the Unit 3 SFP into the shielded transfer canister (STC), O ring replacement for the STC lid, leak testing of the steam generator system, heavy load movement of the STC from the Unit 3 SFP into the HI-TRAC in the Unit 3 fuel storage building truck bay, and video verification of the spent fuel assemblies. The inspectors also observed movement of the HI-TRAC/STC out of the Unit 3 truck bay, transport of the HI-TRAC/STC to Unit 2 using the vertical cask transporter, and movement of the HI-TRAC/STC into the Unit 2 fuel storage building. During performance of these activities, the inspectors verified that procedure

use, communication, and coordination of inter-unit fuel transfer activities met established standards and requirements.

Inspectors met with reactor engineering personnel to review the process for selecting spent fuel for transfer and verify the spent fuel met the requirements of the TS. Inspectors also met with contract personnel used to perform helium leak testing of the STC and reviewed the helium leak test procedure.

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

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

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

On October 24, 2014, the inspectors presented the inspection results to Mr. John Ventosa, Site Vice President, and other members of the Entergy staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

ATTACHMENT: SUPPLEMENTARY INFORMATION

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Entergy Personnel

N. Azevedo, Code Programs Supervisor
S. Bianco, Operations Fire Marshall
R. Burroni, Engineering Director
T. Chan, Mechanical Systems Supervisor
J. Dinelli, General Manager Plant Operations
R. Daley, System Engineer Electrical Supervisor
R. Drake, Civil Design Engineering Supervisor
J. Ferrick, Production Manager
L. Glander, Emergency Preparedness Manager
D. Gagnon, Security Manager
F. Inzirillo, Training Manager
F. Kich, Performance Improvement Manager
J. Kirkpatrick, Regulatory and Performance Improvement Director
D. Mayer, Unit 1 Director
B. McCarthy, Operations Manager
F. Mitchell, Radiation Protection Manager
T. Pasko, Dry Cask Storage Supervisor
S. Pressman, Licensing Engineer
J. Raffaele, Electrical Design Supervisor
T. Salentino, Dry Cask Supervisor
J. Skonieczny, Engineer
J. Spagnulo, Maintenance Manager
S. Stevens, Radiation Protection Superintendent
J. Stewart, Radiation Protection Supervisor
R. Tamburi, ALARA Supervisor
M. Tesoriero, System Engineering Manager
M. Troy, Quality Assurance Manager
J. Ventosa, Site Vice President
R. Walpole, Regulatory Assurance Manager

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATEDOpened/Closed

05000247/2014-004-01	FIN	Failure to Maintain Radiation Exposure ALARA During Refueling Activities (Section 2RS2)
05000247/2014-004-02	NCV	Failure to Identify and Evaluate Degraded Condition of the 22 Station Battery Capacity (Section 4OA2)

Closed

05000286/2014-003-00	LER	Automatic Actuation of the Turbine Driven Auxiliary Pump Following Testing of the 31 Emergency Diesel Generator Due to Non-SI Blackout Logic Defeated Reset (Section 4OA3)
----------------------	-----	--

LIST OF DOCUMENTS REVIEWED**Common Documents Used**

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

Section 1R01: Adverse Weather ProtectionProcedures

OAP-48, Seasonal Weather Preps, Revision 12
 2-SOP-24.1.1, Service Water Hot Weather Operations, Revision 12

Section 1R04: Equipment AlignmentProcedures

2-COL-10.2.1, Containment Spray System, Revision 21
 2-COL-21.3, Steam Generator Water Level, Revision 33
 2-COL-27.3.1, Diesel Generators, Revision 26

Condition Reports (CR-IP2-)

2014-3122 2014-4580

Maintenance Orders/Work Orders

383093

Drawings

Dwg. No. 9321-F-2735, Flow Diagram Safety Injection System, Revision 141
Dwg. No. 206694, Inservice Inspection Isometric of Safety Injection Line No. 51, Revision 9
Dwg. No. 206677, Inservice Inspection Isometric of Safety Injection Line No. 15, Revision 9
Dwg. No. 9321-F-2030, Flow Diagram Fuel Oil to Diesel Generators, Revision 30
Dwg. No. A207698, Flow Diagram Lube Oil for Diesel Generators, Revision 26

Section 1R05: Fire Protection

Procedures

EN-TQ-125, Fire Brigade Drills, Revision 2
Pre-fire plan (PFP)-001, Unit 2 Overall Site Plan, Revision 14
PFP-217(fire zones 90A, 91A): General Floor Plan-Fuel Storage Building, Revision 12
PFP-351 (fire zone 14): 480V switchgear Room-Control Building, Revision 5
3-ARP-027, Fire Display Control Panel, Revision 24

Condition Reports (CR-IP2-)

2014—04317

Condition Reports (CR-IP3-)

2014-01839 2014-01839 2014-01833 2-14-00792 2014-00433 2013-02285
2012-03960 2011-03193 2010-01182

Section 1R06: Flood Protection Measures

Condition Reports (CR-IP3-)

2011-01363

Procedures

IP-EP-AD13, IPEC Emergency Action Level Technical Bases, Revision XX
ONOP-RW-3, Plant Flooding, Revision 9
3-AOP-FLOOD-1, Flooding, Revision 5

Maintenance Orders/Work Orders

Drawings

9321-F-31203, Conduit Details Manhole 31A, 31B, and 33, Revision 4

Miscellaneous

Indian Point Unit 3 Individual Plant Evaluation for Internal Events

Section 1R07: Heat Sink Performance

Condition Reports (CR-IP2-)

2014-04952 2014-5002

Section 1R11: Licensed Operator Requalification ProgramProcedures

0-NF-302, Power Distribution and Hot Channel Factor Data Collection, Revision 10
 0-NF-315, Dropped Rod and Misaligned Rod Verification Procedure, Revision 0
 2-AOP-ROD-1, Rod Control and Instrumentation System Malfunctions, Revision 6
 2-PT-Q69, Liquid Radwaste Effluent Line Flow Rate Functional Test, Revision 4
 2-SOP-24.1.1, Service Water Hot Weather Operations, Revision 12
 2-AOP-INST-1, Instrument/Controller Failures, Revision 7
 2-AOP-Flood-1, Flooding, Revision 10
 SAO-703, Fire Protection Impairment Criteria and Surveillance, Revision 34
 2-AOP-480-1, Loss of Normal Power to any 480 V Bus, Revision 8
 E-0, Reactor Trip or Safety Injection, Revision 6

Condition Reports (CR-IP2-)

2014-4097

Section 1R12: Maintenance EffectivenessCondition Reports (CR-IP2-)

2012-4888 2013-2903

Miscellaneous

138 kV System Health Report, dated June 23, 2014
 Functional Failure Determination Form for CR IP2-2013-2903, dated July 16, 2013
 LT-Apparent Cause Evaluation Report for CR IP2-2013-2903, dated July 16, 2013

Section 1R15: Operability Determinations and Functionality AssessmentsProcedures

2ARP-SBF-1, CCR Safeguards, Revision 41
 2-SOP-10.1.1, Safety Injection Accumulators and Refueling Water Storage Tank Operations,
 Revision 56
 EN-OP-104, Operability Determination Process, Revision 7
 SEP-VIB-IP-001, IPEC Vibration Monitoring Program, Revision 0
 3-PT-Q092B, 32 Service Water Pump, Revision 20
 EN-FAP-OM-012, Prompt Investigation Report, Revision 5
 EN-LI-118, Causal Evaluation Process, Revision 20
 2-PT-2M2A, RPS Logic Train "A" Actuation Logic Test and TADOT, Revision 4

Condition Reports (CR-IP2-)

2014-01931 2014-03894 2014-03277 2014-4267 2014-4279 2014-4280
 2014-04366

Condition Reports (CR-IP3-)

2014-01380 2014-01652 2014-01661 2014-01363 2014-01800

Maintenance Orders/Work Orders

387703-01 390543 52575288 52556114

Drawings

Drawing No. 9321-4022, Containment Building Air Recirculation Fan-Cooler-Filter Unit Plan
Drawing No. 110E073, Indian Point Station Unit 2 Reactor Protection System Schematic

Miscellaneous

EC 52599

Section 1R18: Plant Modifications

Procedures

EN-LI-101, 10 CFR 50.59 Evaluations, Revision 12
EN-DC-149, Acceptance of Vendor Documents, Revision 9

Drawings

S7-A-2100, Algonquin Incremental Market Project Stony Point Discharge Proposed 42" M/L,
Revision B
S7-A-2114 through S7-A-2124, Algonquin Incremental Market Project Stony Point Discharge
Proposed 42" M/L, Revision D

Miscellaneous

NL-14-106, 10 C. F. R. 50.59 Safety Evaluation and Supporting Analyses Prepared in
Response to the Algonquin Incremental Market Natural Gas Project Indian Point Nuclear
Generating Units 2 & 3, dated August 21, 2014
Spectra Energy Memorandum: Entergy Pipeline Enhancement Measures dated July 29, 2014
Report 14-126, Puncture Assessment for Algonquin Pipeline, dated August 27, 2014
IP-RPT-14-00010, Report of Liquefaction Potential Assessment
NRC Memorandum, Review of Natural Gas Hazards, Indian Point Nuclear Generating
Unit Nos. 2 and 3, dated April 25, 2003
Regulatory Guide 1.91, Evaluations of Explosions Postulated to Occur on Transportation
Routes Near Nuclear Power Plants, Revision 2
NUREG-0800, Standard Review Plan for the Review of Safety Analysis Reports for Nuclear
Power Plants: LWR Edition
GRI-00/0189, A Model for Sizing High Consequence Areas Associated With Natural Gas
Pipelines, October 2000
OPS TTO13, Potential Impact Radius Formulae for Flammable Gases Other Than Natural Gas,
June 2005
US Nuclear Regulatory Commission, Regulatory Guide 1.91, Evaluations of Explosions
Postulated to Occur at nearby Facilities and on Transportation Routes Near Nuclear
Power Plants, Revision 2, April 2013
US EPA, NOAA, ALOHA User's Manual, February 2007
FEMA, US DOT, US EPA, Handbook of Chemical Hazard Analysis Procedures

Section 1R19: Post-Maintenance Testing

Procedures

2-PT-M110, Appendix R EDG Functional Test, Revision 7 (52555406)
2-PT-2Y043, Appendix R DG Rated Load Test, Revision 0 (52436411)
2-PT-Q030C, 23 Component Cooling Water Pump, Revision 23 (52556776)
2-PT-Q017C, Alternate Safe Shutdown Supply Verification to 23 CCP, Revision 17 (52556777)
0-LUB-401-GEN, Lubrication of Plant Equipment, Revision 12

2-PT-Q017C, Alternate Safe Shutdown Supply Verification to 23 CCP, Revision 17
2-PT-Q030C, 23 Component Cooling Water Pump, Revision 23
3-PT-M079B, 32 EDG Functional Test, Revision 50

Condition Reports (CR-IP2-)

2013-4963

Maintenance Orders/Work Orders

523208320-01, Appendix R EDG 6Y Preventive Maintenance
2-GEN-EDG 6-Year Inspection-ELC, Appendix R EDG 6-Year Inspection
52433856-01, 2-Year External Inspection 23CCW-Motor

Section 1R22: Surveillance Testing

Procedures

3-PT-Q016, EDG and Vapor Containment Temperature Valves SWN-FCV-1176 & 1176A and
SWN-TCV-1104 & 1105, Revision 23
2-PT-SA067, Main Turbine Stop and Control valves Exercise Test, Revision 5
2-PT-M021C, Emergency Diesel Generator 23 Load Test, Revision 21
2-PT-2Y008C, 23 EDG Mechanical Overspeed Trip, Revision 4
IP-SMM-LI-108, Event Notification and Reporting, Revision 17

Condition Reports (CR-IP2-)

2014-4816 2014-4029

Maintenance Orders/Work Orders

52570883 52554238 52570681 52563449 52558502 52413851
52577807

Drawings

A207698, Flow Diagram Lube Oil for Diesel Generators No 21, 22, 23

Miscellaneous

IP2-EDG-DBD, Emergency Diesel Generator System, Revision 2

Section 2RS1: Radiological Hazard Assessment and Exposure Controls

Procedures

O-RP-RWP-420, Radiological Controls for Dry Cask Storage, Revision 2
O-RP-RWP-407, Refueling Support, Revision 4

Section 2RS2: Occupational ALARA Planning and Controls

Miscellaneous

Indian Point Unit 2 2R21 Outage Report
Root Cause Evaluation and Corrective Actions for CR-IP2-20141-02558

Section 2RS5: Raditation Monitoring Instrumentation

Procedures

EN-RP-204, Special Monitoring Requirements, Revision 6
 EN-RP-122, Alpha Monitoring, Revision 7

Condition Reports (CR-IP2-)

2014-00475 2014-00949 2014-01029 2014-01738 2014-01953 2014-01992
 2014-02295 2014-02351 2014-03060 2014-03320 2014-03791 2014-03834
 2014-03893

Condition Reports (CR-IP3-)

2014-00224 2014-00319 2014-00348 2014-00697

Section 4OA2: Problem Identification and Resolution

Procedures

2-PT-R076B, Station Battery 22 Load Test, Revision 15
 2-PT-R076B, Station Battery 22 Load Test, Revision 17

Condition Reports (CR-IP2-)

2012-03773 2014-01712 2014-01707 2014-04825

Maintenance Orders/Work Orders

00318549 52251779

Miscellaneous

EC 49671, Station Battery 22 System Calculation, Revision 1
 ENN-DC-148, Vendor Manual Change Request for 58 GN Battery String with Accessories,
 dated May 14, 2006
 EN-OP-104, Operability Evaluation for No. IP2-2014-04825, Revision 7
 IEEE Std 450-1995, IEEE Recommended Practice for Maintenance, Testing, and Replacement
 of Vented Lead-Acid Batteries for Stationary Applications, dated January 24, 1995
 IEEE Std 485-1997, IEEE Recommended Practice for Sizing Lead-Acid Batteries for Stationary
 Applications, dated March 20, 1997
 Kepner-Tregoe Analysis for Monitoring Well Spiked High, Revision 4
 Safety, Storage, Installation, Operation & Maintenance Manual, Flooded Lead-Acid Batteries
 C,D, E, F and G EnerSys, dated August 2003

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

Procedures

3-E-0, Reactor Trip or Safety Injection, Revision 5 performed August 13, 2014
 3-ES-0.1, Reactor Trip Response, Revision 7
 3-POP-1.2, Reactor Startup, Revision 54
 IP-SMM-OP-105, and Attachment 10.2, Post Transient Evaluation, Revision 7
 2-AOP-ROD-1, Rod Control and Indication Systems Malfunctions, Revision 6

Condition Reports (CR-IP2-)

2014-4905 2014-4911 2014-4912 2014-4913 2014-4914

Condition Reports (CR-IP3-)

2014-01910

Maintenance Orders/Work Orders

00391308-01

Drawings

5651D72, Logic Diagram Primary Coolant System Trip Signals and Reactor Manual Trip,
Revision 7

Miscellaneous

EN-50361, Event Notification OTDT U-3, Reactor Trip on August 13, 2014

Section 40A5: Other Activities

Procedures

0-FTR-402-GEN, STC Movement Between Unit 2 and Unit 3, Revision 5
0-FTR-403-GEN, Inter Unit Fuel Transfer Abnormal Event Procedure, Revision 4
0-FTR-405-GEN, STC Metamic Coupon Analysis Results and Document Control, Revision 0
3-FTR-003-GEN, Air Pad Operation for Unit 3, Revision 2
3-FTR-006-GEN, Unit 3 STC Loading and Sealing Operations, Revision 12
3-NF-322, Fuel Selection for Wet Fuel Transfer in the Shielded Transfer Canister, Revision 1
3-SOP-RP-022, Movement of New and Spent Fuel in the Spent Fuel Pool, Revision 13
EN-TQ-201, Systematic Approach to Training Process, Revision 19
MSLT-STC-PCI, Shielded Transfer Canister Helium Mass Spectrometer Leak Test Procedure,
Revision 4107-01
OAP-008, Severe Weather Preparations, Revision 17

Condition Reports (CR-IP2-)

2012-06642 2012-07423 2013-00183 2014-02920

Condition Reports (CR-IP3-)

2012-03157 2012-03199 2013-00055 2013-01973 2014-01696 2014-01700

Maintenance Orders/Work Orders

325076-11 364548-03

50.59 Screening/Process Applicability Determinations for Procedures

0-FTR-402-GEN, STC Movement Between Unit 2 and Unit 3, Revision 5
0-FTR-403-GEN, Inter Unit Fuel Transfer Abnormal Event Procedure, Revision 4
0-FTR-405-GEN, STC Metamic Coupon Analysis Results and Document Control, Revision 0
Shielded Transfer Canister (STC) Helium Mass Spectrometer Leak Test Procedure, Revision 1

Miscellaneous

0-RP-RWP-430, Rev. 2, Attachment 9.1, 14-3-0242, 14-3-0243

3-NF-322, Attachment 2, Fuel Assembly Qualification for Loading into the STC, for STC 3, 2014

3-NF-322, Attachment 4, Fuel Selection for STC Load Plan Development, for STC 3, 2014

3-NF-322, Attachment 8, STC Loading Plan, for STC 3, 2014

2012-2013 Wet Fuel Transfer Exposure Summary

Dry Cask Continuing Training Plan

EN-RP-110-05, ALARA Planning and Controls, ALARA Plan for Inter Unit Wet Fuel Transfer,
Revision 2

Lesson Plan, Mechanical Maintenance Specialty, Wet Fuel Transfer for Technicians

Survey: IPEC 1407-0263, 7-24-20

LIST OF ACRONYMS

10 CFR	Title 10 of the <i>Code of Federal Regulations</i>
ABFP	auxiliary boiler feedwater pump
AC	alternating current
ALARA	as low as is reasonably achievable
ALOHA	Areal Locations of Hazardous Atmospheres
CAP	corrective action program
CCW	component cooling water
CR	condition report
EDG	emergency diesel generator
Entergy	Entergy Nuclear Northeast
FCV	flow control valve
FIN	finding
IEEE	Institute of Electrical and Electronics Engineers
IMC	Inspection Manual Chapter
IPEC	Indian Point Energy Center
kV	kilovolt
LCO	limiting condition for operation
LER	licensee event report
MW	monitor well
NCV	non-cited violation
NRC	Nuclear Regulatory Commission
OOS	out of service
OTDT	over temperature delta temperature
PFP	pre-fire plan
QA	quality assurance
RCP	reactor coolant pump
RCS	reactor coolant system
RG	regulatory guide
RPS	reactor protection system
SFP	spent fuel pool
SI	safety injection
SME	subject matter expert
SOCA	Security Owner Controlled Area
SR	surveillance requirements
SSC	structure, system, and component
STC	shielded transfer canister
TCV	temperature control valve
TS	technical specification
UFSAR	updated final safety evaluation report
V	volt
WO	work order