



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

February 11, 2013

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

**SUBJECT: INDIAN POINT NUCLEAR GENERATING UNIT 2 – NRC INTEGRATED
INSPECTION REPORT 05000247/2012005**

Dear Mr. Ventosa:

On December 31, 2012, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Indian Point Nuclear Generating Unit 2. The enclosed integrated inspection report documents the inspection results, which were discussed on January 16, 2013, with you and other members of your staff.

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

One NRC-identified finding of very low safety significance (Green) was identified during this inspection. The finding was determined to involve violations of NRC requirements. Additionally, a licensee-identified violation which was determined to be of very low safety significance is listed in this report. The NRC is treating the violation as a non-cited violation (NCV), consistent with Section 2.3.2 of the Enforcement Policy. If you contest the violation or significance of the NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Senior Resident Inspector at Indian Point Nuclear Generating Unit 2. If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region I, and the NRC Senior Resident Inspector at Indian Point Nuclear Generating Unit 2.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the

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Sincerely,

/RA/

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

Docket No. 50-247
License No. DPR-26

Enclosure: Inspection Report 05000247/2012005
w/Attachment: Supplementary Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No.: 50-247

License No.: DPR-26

Report No.: 05000247/2012005

Licensee: Entergy Nuclear Northeast (Entergy)

Facility: Indian Point Nuclear Generating Unit 2

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

Dates: October 1, 2012 through December 31, 2012

Inspectors: O. Ayegbusi, Senior Resident Inspector
S. McCarver, Acting Resident Inspector
T. Ziev, Acting Resident Inspector
J. Furia, Senior Health Physicist
P. Presby, Operations Engineer

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

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SUMMARY OF FINDINGS

IR 05000247/2012005; 10/1/12 – 12/31/12; Indian Point Nuclear Generating (Indian Point) Unit 2; Follow-Up of Events and Notices of Enforcement Discretion.

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

Cornerstone: Mitigating Systems

- Green. The inspectors identified a Green, NCV of Title 10 *Code of Federal Regulations* (CFR) Part 50, Criterion XVI, "Corrective Actions," because Entergy personnel did not adequately identify and correct a condition adverse to quality associated with maintenance procedures and activities that adversely impact the steam generator (SG) safety function to remove decay heat. Specifically, Entergy personnel did not implement adequate corrective actions to address existing procedure deficiencies regarding operational controls on the steam generator blowdown (SGBD) valve radiation bypass switch. Entergy's corrective actions included identifying and placing a hold on instructions directing use of the radiation bypass switch; implementing operator training; and identifying previous occurrences of the condition which resulted in the plant being placed in an unanalyzed condition. Entergy personnel entered this issue into the corrective action program (CAP) as CR-IP2-2013-0191.

This finding is more than minor because if left uncorrected, the performance deficiency could lead to a more significant safety concern. Specifically, maintenance procedures inappropriately allowing operation of the SGBD valve radiation bypass switch could adversely impact the SG safety function to remove decay heat. The inspectors determined that this finding is of very low safety significance (Green) because the finding is a deficiency affecting the design of a mitigating system that maintained its functionality. Specifically, failure of the SGBD isolation valves to close would cause loss of SG water level because the remaining motor driven auxiliary boiler feedwater pump would exceed its design flow rate. However, given the time available, existing procedures, and operator training on isolating the SGBD flowpaths, either from the control room or locally, SG decay heat removal functionality was maintained.

This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program because Entergy staff did not thoroughly evaluate this problem such that the resolutions address the causes and extent of condition. Specifically, Entergy staff did not properly evaluate the use and impact of the radiation bypass switch for the SGBD isolation when considering allowable configurations of the auxiliary feedwater system [P.1(c)]. (Section 4OA3).

Other Findings

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

REPORT DETAILS

Summary of Plant Status

Indian Point Unit 2 began the inspection period at 100 percent power. On November 29, 2012, operators reduced power to 95 percent to perform main turbine stop and control valves testing. Operators returned the unit to 100 percent on the same day. The unit remained at or near 100 percent power for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01 – 2 samples)

.1 Impending Adverse Weather

a. Inspection Scope

Because high winds and rain associated with Superstorm Sandy was forecasted in the vicinity of the facility for October 29-30, 2012, the inspectors reviewed Entergy's overall preparations and protection for the expected weather conditions for Units 2 and 3. The inspectors evaluated the plant staff's preparations in accordance with site procedures to determine if actions were adequate. During the inspection, the inspectors focused on plant specific design features and station procedures used to respond to adverse weather conditions. The inspectors also toured the site to identify loose debris that could become projectiles during a tornado. Additionally, the inspectors also reviewed a sample of CAP items to verify that the licensee identified adverse weather impact issues at an appropriate threshold and dispositioned them through the CAP in accordance with station corrective action procedures.

b. Findings

No findings were identified.

.2 External Flooding

a. Inspection Scope

During the week of October 12, 2012, the inspectors performed an inspection of the external flood protection measures at Unit 2. The inspectors conducted a general site walkdown of external areas of the plant with a focus on the turbine building, intake structure, and control building to ensure that Entergy personnel erected flood protection measures in accordance with design specifications. The inspectors also reviewed operating procedures for mitigating external flooding during severe weather to determine if Entergy personnel planned or established adequate measures to protect against external flooding events.

b. Findings

No findings were identified.

1R04 Equipment Alignment

Partial System Walkdowns (71111.04Q – 3 samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

- 22 spent fuel pit pump on October 15, 2012
- 22 emergency diesel generator (EDG) during 21 EDG preventive maintenance (PMs) on November 6, 2012
- 22 auxiliary boiler feed pump (ABFP) following replacement of the pump's discharge flow gauge on December 12, 2012

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 Evaluation Report (UFSAR), technical specifications (TS), work orders (WO), condition reports (CRs), and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have impacted system performance of their intended safety functions. The inspectors also performed field walkdowns of accessible portions of the systems to verify system components and support equipment were aligned correctly and were operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no deficiencies. The inspectors also reviewed whether Entergy 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.

1R05 Fire Protection

Resident Inspector Quarterly Walkdowns (71111.05Q – 4 samples)

a. Inspection Scope

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

- Pre-fire plan (PFP)-217 [fire zone (FZ) 90A and 91A]: General Floor Plan – Fuel Storage Building for TI-188 on October 12, 2012
- PFP-253 (FZ 15, 115, and 150): Control Room – Control Building on November 2, 2012
- PFP-160A (FZ 360): Appendix R/SBO EDG – U1 Turbine Building on November 6, 2012
- PFP-216 (FZ 59A): General Floor Plan – Fan House on November 14, 2012

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program

.1 Licensed Operator Regualification (71111.11B – 1 sample)

a. Inspection Scope

The following inspection activities were performed using NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9, Supplement 1, and Inspection Procedure Attachment 71111.11, "Licensed Operator Regualification Program and Licensed Operator Performance."

Examination Results

On December 17, 2012, the results of the annual operating tests for year 2012 and the written exam for 2011 were reviewed to determine if pass fail rates were consistent with the guidance of NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9, Supplement 1, and NRC IMC 0609, Appendix I, "Operator Regualification Human Performance SDP." The inspectors verified the following:

- Individual pass rate on the dynamic simulator test was greater than 80 percent (Pass rate was 100 percent)
- Individual pass rate on the job performance measures (JPMs) of the operating exam was greater than 80 percent (Pass rate was 100 percent)
- Individual pass rate on the written examination was greater than 80 percent (N/A – a comprehensive written examination was previously administered in 2011)
- More than 80 percent of the individuals passed all portions of the exam (100 percent of the individuals passed all portions of the operating examination)
- Crew pass rate was greater than 80 percent (Pass rate was 100 percent)

Written Examination Quality

The inspectors reviewed one reactor operator and one senior reactor operator biennial written examination administered during the 2011 examination cycle (i.e., since biennial written examinations were not being administered in the 2012 exam cycle) for qualitative and quantitative attributes as specified on Appendix B of Inspection Procedure 71111.11, Licensed Operator Regualification.

Operating Test Quality

JPMs and scenarios for two exam weeks were reviewed for qualitative and quantitative attributes as specified in Appendix C of Inspection procedure 71111.11, Licensed Operator Requalification.

Licensee Administration of Operating Tests

The inspectors observed facility training staff administer dynamic simulator exams and JPMs during the week of September 17, 2012. These observations included facility evaluations of crew and individual operator performance during the simulator exams and individual performance of JPMs.

Exam Security

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

Remedial Training and Re-examinations

Inspectors reviewed two remedial training packages and respective re-examinations.

Conformance with License Conditions

License reactivation records and proficiency watch standing records were reviewed to ensure that 10 CFR 55.53 license conditions and applicable program requirements were met. The inspectors also reviewed a sample of records for requalification training attendance, and a sample of medical examinations for compliance with license conditions and NRC regulations.

Simulator Performance

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

Problem Identification and Resolution

The inspectors reviewed recent operating history documentation found in inspection reports, licensee event reports (LERs), the licensee's CAP, and the most recent NRC plant issues matrix. The inspectors also reviewed specific events from the licensee's CAP which indicated possible training deficiencies, to verify that they had been appropriately addressed. The resident staff was consulted for insights regarding licensed operators' performance.

b. Findings

No findings were identified.

.2 Quarterly Review of Licensed Operator Requalification Testing and Training
(71111.11Q – 1 sample)

a. Inspection Scope

The inspectors observed licensed operator simulator training on November 13, 2012, which included a SG tube leak progressing to a tube rupture concurrent with instrument failures and failures of equipment required to control pressurizer pressure. The inspectors evaluated operator performance during the simulated event and verified completion of risk significant operator actions, including the use of abnormal and emergency operating procedures. The inspectors assessed the clarity and effectiveness of communications, implementation of actions in response to alarms and degrading plant conditions, and the oversight and direction provided by the control room supervisor. The inspectors verified the accuracy and timeliness of the emergency classification made by the shift manager and the technical specification action statements entered by the shift technical advisor. Additionally, the inspectors assessed the ability of the crew and training staff to identify and document crew performance problems.

b. Findings

No findings were identified.

.3 Quarterly Review of Licensed Operator Performance in the Main Control Room
(71111.11Q – 1 sample)

a. Inspection Scope

The inspectors observed operator response to electrical grid disturbances during severe weather (superstorm Sandy) on October 29 and 30, 2012. The inspectors also observed and reviewed a planned reactor downpower to 90% to perform turbine stop and control valve testing on November 29, 2012. The inspectors evaluated operator performance, and verified the use alarm response procedures. The inspectors assessed the clarity and effectiveness of communications, implementation of actions in response to alarms and equipment challenges, and the oversight and direction provided by the control room supervisor. Additionally, the inspectors verified communication and coordination of activities with the electrical grid operator and between work groups met established expectations and standards.

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 was identifying and addressing common cause failures that occurred within and across maintenance rule system boundaries.

- Chemical volume and control system on November 13, 2012
- 118V AC instrument buses on November 19, 2012

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

- Planned maintenance on the 23 atmospheric dump valve (ADV) concurrent with safety injection (SI) logic out testing on October 1, 2012
- Planned maintenance on the 23 ADV concurrent with the 22 EDG out of service for planned maintenance on October 2, 2012
- Planned alternate safe shutdown supply verification with the 21 ABFP out of service and backup 138kV feeder out of service on October 18, 2012
- Increased plant risk during severe weather warning due to potential impacts of superstorm Sandy on October 29, 2012
- Increased plant risk during severe winter weather warning concurrent with reactor protection system instrumentation testing on November 7, 2012

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 4 samples)a. Inspection Scope

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

- 24 DC bus low voltage alarms on October 23, 2012
- 21 EDG agastat relays identified as out of calibration on November 29, 2012
- 21 DC battery bus voltage less than technical specification required voltage on December 5, 2012
- 23 fan cooler unit discharge block valve failure to close on demand during testing on December 13, 2012

The inspectors selected these issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the operability determinations to assess whether technical specification operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TS 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.

1R19 Post-Maintenance Testing (71111.19 – 6 samples)a. Inspection Scope

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

- 22 ABFP after governor oiler replacement on October 3, 2012
- 23 atmospheric steam dump valve (PCV-1136) after pressure controller (PC-439) calibration on October 9, 2012
- Steam jet air ejector blower inboard containment isolation valve (PCV-1229) after limit switch repair on October 23, 2012
- 21 EDG after preventive maintenance on November 7, 2012
- Residual heat removal sample isolation stop valve (MOV-958) after repair on November 14, 2012
- 23 and 24 SG wide range level recorder after replacement on November 29, 2012

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – 5 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 TS, 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:

- 2-PT-Q27A, 21 ABFP on October 18, 2012
- 2-PT-Q013, 21 ABFP flow control valves 1121, 406A, and 406B on October 18, 2012
- 0-SOP-LEAKRATE-001, reactor coolant system (RCS) leak rate calculation on October 29, 2012
- 2-PC-R53, ABFP room environmental qualified temperature switches on November 1, 2012
- 2-PT-SA067, main turbine stop and control valves exercise test on November 29, 2012

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06 – 1 sample)

Training Observations

a. Inspection Scope

The inspectors observed a simulator training evolution for Unit 2 licensed operators on November 13, 2012, 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 – 1 sample)

a. Inspection Scope

During the week of November 5, 2012, the inspectors reviewed and assessed Entergy's performance in assessing the radiological hazards and exposure control in the workplace. The inspectors used the requirements in 10 CFR 20 and guidance in Regulatory Guide 8.38, "Control of Access to High and Very High Radiation Areas for Nuclear Plants," the TS, and Entergy's procedures required by TS as criteria for determining compliance.

The inspectors reviewed Entergy's performance indicators (PIs) for the Occupational Exposure Cornerstone at Indian Point for follow-up. The inspectors reviewed the results of radiation protection program audits. The inspectors reviewed reports of operational occurrences related to occupational radiation safety since the last inspection.

The inspectors selected occurrences where a worker's electronic personal dosimeter noticeably malfunctioned or alarmed. The inspectors verified that workers responded appropriately to the off-normal condition. The inspectors verified that the issue was included in the CAP and dose evaluations were conducted as appropriate.

The inspectors reviewed Entergy's procedures and records to verify that the radiation detection instrumentation was used at its typical sensitivity level based on appropriate counting parameters.

The inspectors selected two to three sealed sources from Entergy's inventory records that present the greatest radiological risk. The inspectors verified that sources are accounted for and had been verified to be intact.

The inspectors reviewed radiological problem reports since the last inspection that found the cause of the event to be human performance errors. The inspectors determined that there was no observable pattern traceable to a similar cause. The inspectors determined that this perspective matched the corrective action approach taken by Entergy to resolve the reported problems.

The inspectors reviewed radiological problem reports since the last inspection that found the cause of the event to be radiation protection technician error. The inspectors determined that there was no observable pattern traceable to a similar cause. The inspectors determined that this perspective matched the corrective action approach taken by Entergy to resolve the reported problems.

The inspectors verified that problems associated with radiation monitoring and exposure control were being identified by Entergy at an appropriate threshold and were properly addressed for resolution in Entergy's CAP. In addition to the above, the inspectors verified the appropriateness of the corrective actions for a selected sample of problems documented by Entergy that involve radiation monitoring and exposure controls. The inspectors determined that Entergy was assessing the applicability of operating experience to their plants.

b. Findings

No findings were identified.

2RS2 Occupational ALARA Planning and Controls (71124.02)

a. Inspection Scope

During the week of November 5, 2012, the inspectors assessed performance with respect to maintaining individual and collective occupational radiation exposures as low as is reasonably achievable (ALARA). The inspectors used the requirements in 10 CFR 20, Regulatory Guides 8.8 and 8.10, TS, and Entergy's procedures as criteria for determining compliance.

The inspectors reviewed pertinent information regarding plant collective exposure history, current exposure trends, and ongoing or planned activities in order to assess current performance and exposure challenges. The inspectors determined the plant's 3-year rolling average collective exposure.

Using Entergy's records, the inspectors determined the historical trends and current status of significant tracked plant source term known to contribute to elevated facility

aggregate exposure. The inspectors determined that Entergy was making allowances or developing contingency plans for expected changes in the source term as the result of changes in plant fuel performance issues or changes in plant primary chemistry.

b. Findings

No findings were identified.

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

a. Inspection Scope

During the week of November 5, 2012, the inspectors verified in-plant airborne concentrations were being controlled as well as the use of respiratory protection devices consistent with ALARA principles. The inspectors used the requirements in 10 CFR 20, regulatory guides 8.15 and 8.25, NUREG-0041, TS, and applicable procedures as criteria for determining compliance.

The inspectors selected installed systems to monitor and warn of changing airborne concentrations in the plant. The inspectors verified that alarms and set-points were sufficient to prompt licensee/worker action to ensure that doses were maintained within the limits of 10 CFR 20 and ALARA. The inspectors verified that Entergy had established threshold criteria for evaluating levels of airborne beta-emitting and alpha-emitting radionuclides.

The inspectors verified that problems associated with the control and mitigation of in-plant airborne radioactivity were being identified by Entergy at an appropriate threshold and were properly addressed for resolution in Entergy's CAP.

The inspectors reviewed records of air testing for supplied-air devices and self-contained breathing air bottles. The inspectors verified that air used in these devices met or exceeded Grade D quality. The inspectors verified that plant breathing air supply systems met the minimum pressure and airflow requirements for the devices in use.

The inspectors selected individuals qualified to use respiratory protection devices, and verified that they had been deemed fit to use the devices by a physician.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151 – 5 samples)

.1 Mitigating Systems Cornerstone (2 samples)

a. Inspection Scope

The inspectors sampled Entergy's submittals for the below listed PI for Unit 2 for the period of October 1, 2011, through September 30, 2012. To determine the accuracy of the PI data reported during those periods, the inspectors used definitions and guidance contained in Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, and NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 10 CFR 50.73." As applicable, the inspectors reviewed Entergy's operator narrative logs, issue reports, event reports, and NRC integrated inspection reports to validate the accuracy of the submittals.

- MSPI - Residual Heat Removal System (MS09)
- MSPI - Cooling Water Systems (MS10)

b. Findings

No findings were identified.

.2 Barrier Integrity Cornerstone (1 sample)

a. Inspection Scope

The inspectors sampled Entergy's submittals for the below listed PIs for Unit 2 for the period of October 1, 2011, through September 30, 2012. To determine the accuracy of the PI data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, and NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 10 CFR 50.73." As applicable, the inspectors reviewed Entergy's operator narrative logs, issue reports, event reports, and NRC integrated inspection reports to validate the accuracy of the submittals.

- Reactor Coolant System Leakage (BI02)

b. Findings

No findings were identified.

.3 Occupational Radiation Safety Cornerstone (1 sample)

a. Inspection Scope

The inspectors reviewed a listing of licensee action reports for issues related to the occupational radiation safety performance indicator, which measures non-conformances with high radiation areas greater than 1 Roentgen/hour (R/hr) and unplanned personnel exposures greater than 100 millirem (mrem) total effective dose equivalent (TEDE),

5 rem skin dose equivalent (SDE), 1.5 rem lens dose equivalent (LDE), or 100 mrem to the unborn child.

The inspectors determined if any of these PI events involved dose rates >25 R/hr at 30 centimeters or >500 R/hr at 1 meter. If so, the inspectors determined what barriers had failed and if there were any barriers left to prevent personnel access. For unintended exposures >100 mrem TEDE (or >5 rem SDE or >1.5 rem LDE), the inspectors determined if there were any overexposures or substantial potential for overexposure. The inspectors determined that no PI events for occupational radiation safety had occurred during the assessment period.

b. Findings

No findings were identified.

.4 Public Radiation Safety Cornerstone (1 sample)

a. Inspection Scope

The inspectors reviewed a listing of licensee action reports for issues related to the public radiation safety performance indicator, which measures radiological effluent release occurrences per site that exceed 1.5 mrem/quarter (qtr) whole body or 5 mrem/qtr organ dose for liquid effluents; or 5 millirads (mrads)/qtr gamma air dose, 10 mrads/qtr beta air dose; or 7.5 mrems/qtr organ doses from Iodine-131 (I-131), I-133, Hydrogen-3 (H-3) and particulates for gaseous effluents. The inspectors determined that no PI events for public radiation safety had occurred during the assessment period.

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 personnel entered issues into the CAP at an appropriate threshold, implemented 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 condition report screening meetings.

b. Findings

No findings were identified.

.2 Semi-Annual Trend Review (1 sample)

a. Inspection Scope

The inspectors performed a semi-annual review of site issues, as required by Inspection Procedure 71152, "Problem Identification and Resolution," to identify trends that might indicate the existence of more significant safety issues. In this review, the inspectors included repetitive or closely-related issues that may have been documented by Entergy outside of the CAP, such as trend reports, PI, major equipment problem lists, system health reports, maintenance rule assessments, and maintenance or CAP backlogs. The inspectors also reviewed Entergy's CAP database for the first and second quarters of 2012 to assess condition reports written in various subject areas (equipment problems, human performance issues, etc.), as well as individual issues identified during the NRCs daily condition report review (Section 4OA2.1). The inspectors reviewed Entergy's quarterly trend report for the third quarter of 2012, conducted under IP3LO-2012-105 to verify that Entergy personnel were appropriately evaluating and trending adverse conditions in accordance with applicable procedures.

b. Findings and Observations

No findings were identified.

The inspectors evaluated a sample of departments that are required to provide input into the quarterly trend reports, which included maintenance and operations departments. This review included a sample of issues and events that occurred over the course of the past two quarters to objectively determine whether issues were appropriately considered or ruled as emerging or adverse trends, and in some cases, verified the appropriate disposition of resolved trends. The inspectors verified that these issues were addressed within the scope of the CAP, or through department review and documentation in the quarterly trend report for overall assessment. For example, the inspectors noted that consistent with the onset of additional static inverter failures that have occurred over the past several months and the ongoing challenges these static inverter failures pose to the operations department, Entergy personnel had appropriately identified "static inverters" as a monitored trend with ongoing corrective actions to address this long-standing issue. In other cases, the inspectors verified for resolved trends, such as vendor oversight, that applicable success criteria identified to ensure successful resolution of adverse trends had been appropriately dispositioned.

.3 Annual Sample: Review of the Operator Workaround Program (1 sample)

a. Inspection Scope

The inspectors reviewed the cumulative effects of the existing operator workarounds, 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 impact on possible initiating events and mitigating systems. The inspectors evaluated whether station personnel had identified, assessed, and reviewed

operator workarounds as specified in Indian Point Unit 2 procedure OAP-045, "Operator Burden Program."

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 staff entered operator workarounds and burdens into the CAP at an appropriate threshold and planned or implemented corrective actions commensurate with their safety significance.

.4 Annual Sample: Review of Static Inverter Failures (1 sample)

a. Inspection Scope

The inspectors performed an in-depth review of Entergy's apparent cause evaluations (ACE) and corrective actions associated with condition reports CR-IP2-2012-2557 and CR-IP2-2012-2661 which were initiated for failures of the 24 static inverter on April 3, 2012, and the 23 static inverter on April 9, 2012, respectively. Specifically, on both occasions, the inverters failed and transferred to their non-safety related alternate power source during operation. The failures prevented Entergy's operations personnel from aligning the inverters back to the safety related power source and resulted in Entergy entering a 24hr required shutdown TS AOT.

The inspectors assessed Entergy's problem identification threshold, cause analyses, extent of condition reviews, compensatory actions, and the prioritization and timeliness of Entergy corrective actions to determine whether Entergy was appropriately identifying, characterizing, and correcting problems associated with these issues and whether the planned or completed corrective actions were appropriate. The inspectors compared the actions taken to the requirements of Entergy's CAP and 10 CFR 50, Appendix B. In addition, the inspectors performed field walkdowns and interviewed engineering personnel to assess the effectiveness of the implemented corrective actions.

b. Findings and Observations

No findings were identified.

CR-IP2-2012-2557

The inspectors noted that Entergy staff performed troubleshooting of the 24 static inverter after it had transferred to its alternate power source three times, with the first two transfers successfully returned to the normal power source. Entergy staff was not able to definitively identify the cause of the transfers during troubleshooting and replaced the static switch control card based on vendor recommendation. During restoration, Entergy staff identified the inverter would not transfer to the normal power source as previously accomplished. Entergy personnel subsequently identified that the frequency meter LED light was out. The failed light emitting diode (LED) actuated an optical relay out of frequency function which subsequently caused the inverter to transfer to the alternate power source. Entergy staff determined the most probable cause was the complete failure of a frequency meter LED on the front of the inverter. Entergy staff also determined that the most probable cause of the first two transfers was an intermittent failure of the frequency meter LED. Entergy initiated corrective actions to jumper out the frequency meter optical relay and repair the meter.

The inspectors determined Entergy's evaluation and corrective actions were reasonable. However, the inspectors identified that Entergy's corrective actions should have included an action to revise the ACE with results from the frequency meter failure analysis consistent with the station's CAP expectations. This performance issue was of minor significance because Entergy had implemented necessary corrective actions to address the degraded condition for the 21-23 static inverters. In accordance with NRC IMC 0612, "Power Reactor Inspection Reports," the above issue constituted a performance issue of minor significance that is not subject to enforcement action in accordance with the Enforcement Policy. Entergy entered the inspector's observations into its CAP as a corrective action to CR-IP2-2012-2557.

CR-IP2-2012-2661

Entergy staff determined the most probable cause of the 23 static inverter transferring to its alternate power source and failure to transfer back to the normal power source was a mis-operation of the static switch control board. Entergy staff also identified additional probable contributing causes related to a large mass of dirt/debris bridging components on the static switch control board and age degradation of components within the static switch control board. The board was 17 years old at the time of failure; however Entergy's visual inspection did not identify any apparent degraded components on the board. Entergy's corrective actions included replacing the board, performing a failures analysis of the removed board, and updating the ACE using the results of the failure analysis.

The inspectors did not conclude that age degradation was the cause of the static switch control board failure. However, the inspectors observed that Entergy staff deferred a 10-year refurbishment PM that would have replaced all capacitors and circuit boards, including the one that failed, during the March 2012 refueling outage (prior to the April 9, 2012 failure). The inspectors determined this was a missed corrective action opportunity. The inspectors noted that the PM program allowed for the PM to be deferred; however, the corrective action from 2007 that created the PM (and its respective PM schedule) did not appear to fully consider the age of the static inverter capacitors and circuit boards. Based, in part, on inspector questions Entergy conducted a common cause analysis of static inverter failures and developed corrective actions to

ensure PMs for site static inverters appropriately considered age. The inspectors did not identify a violation or regulatory standard that was not met.

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

.1 (Closed) Licensee Event Report (LER) 05000247/2012-003-00: Technical Specification (TS) Prohibited Condition Caused by Through Wall Defects in Reactor Coolant Pressure Boundary Branch Lines

On March 12, 2012, during a scheduled refueling outage boric acid program walk down inspection, Entergy personnel identified that two locations on RCS pressure boundary branch piping had boron deposits due to through wall defects. The locations were cleaned and non-destructive surface examinations confirmed a defect on the top of the horizontal leak off pipe near where it connects to the bonnet of spray inlet stop valve 4152 and a defect in a socket weld of tubing fitting downstream of isolation valve 4138. Entergy determined the apparent causes of the defects to be stress corrosion cracking due to surface contamination and a poor quality weld impacted by vibration and thermal cycling over the operational period, respectively. Entergy's corrective action included replacing the bonnet on stop valve 4152 and replacing the socket weld tee downstream of isolation valve 4138 with a swagelok tee. Entergy staff determined the leakage could have existed during plant operation and, therefore, the plant could have been operation contrary to TS 3.4.13, "RCS Operational Leakage," which limits operational boundary leakage to zero. Entergy staff entered this issue into its CAP as CR-IP2-2012-1733. The enforcement aspects of this issue are discussed in Section 4OA7. The inspectors did not identify any new issues during the review of the LER. This LER is closed.

.2 (Closed) LER 05000247/2012-004-00: Unanalyzed Condition and Safety System Functional Failure Due to Use of Radiation Bypass Switch for Steam Generator Blowdown Isolation Valves Which Defeats Their Automatic Isolation for Analyzed Events

On March 27, 2012, Entergy personnel identified that use of the radiation bypass switch for SGBD isolation valves during modes 1-3 would defeat the automatic isolation of the valves for degraded heat sink events, and that SG inventory would not be maintained with only one motor driven ABFP available. Entergy personnel reviewed past operation and identified that during calibration of R-49, from January 19, 2011 - January 27, 2011, the radiation bypass switch position was in use, and on January 20, 2011, the 21 ABFP was removed from service for maintenance. This resulted in an unanalyzed condition and safety system functional failure. Entergy personnel determined that the apparent cause was a 2002 revision to the R-49 calibration procedure that removed a restriction on when the calibration can be performed. Immediate corrective actions included a revision of the R-49 calibration procedure and an update to the UFSAR to include an explicit statement that SGBD isolation is assumed in the degraded heat sink event analyses. Entergy personnel documented this issue in CR-IP2-2012-02408. The inspectors reviewed the LER, CR, and corrective actions to determine whether the station adequately evaluated the condition. The inspectors identified a Green NCV, as described below. This LER is closed.

Introduction: The inspectors identified a Green, NCV of 10 CFR 50, Criterion XVI, "Corrective Actions," because Entergy personnel did not adequately identify and correct a condition adverse to quality associated with maintenance activities that adversely

impact the SG safety function to remove heat. Specifically, Entergy personnel did not implement adequate corrective actions to address existing procedure deficiencies regarding operational controls of the SGBD valve radiation bypass switch.

Description: On March 27, 2012, Entergy personnel initiated CR-IP2-2012-02408 to evaluate using the radiation bypass switch associated with the SGBD isolation valves during maintenance related to the system. The condition report stated that use of the radiation bypass switch would defeat the automatic isolation of the SGBD valves upon an ABFP start signal. It also indicated that the degraded heat sink analysis assumes SGBD isolation; and SG inventory would not be maintained with continuous blowdown assuming a single failure of one motor driven auxiliary boiler feedwater pump.

Entergy staff performed an evaluation and extent of condition review on the past operation of the radiation bypass switch and identified a condition where, on January 20, 2011, the 21 ABFP was removed from service for planned maintenance while the SGBD isolation valves were in radiation bypass due to calibration of the SGBD radiation monitor R-49. Entergy's evaluation determined that this condition was reportable to the NRC and concluded that the event was due to an inappropriate revision to the R-49 calibration procedure in 2002 which removed a prohibition on performing calibration of R-49 in Modes 1 - 4. Entergy's corrective action for the January 2011 event was to modify the R-49 calibration procedure. Additionally, Entergy personnel reviewed other operations and instrument and control procedures to identify procedures using the radiation bypass switch. Entergy personnel did not identify other procedures that needed modification. Entergy also created a corrective action to update the UFSAR to explicitly state that degraded heat sink event analyses assume isolation of SGBD.

On November 26, 2012, an operator identified a tagout instruction for the one-year PM activity on R-49 that would place the SGBD isolation valves in radiation bypass, and questioned the use of the radiation bypass switch. Operations personnel could not identify a procedure describing control of the radiation bypass switch, and as a result revised the tagout and locked the archived tagout to prevent future use (CR-IP2-2012-6920). In response to NRC questioning, Entergy personnel identified additional tagouts that would place the SGBD isolation valves in radiation bypass, and locked those tagouts to prevent future use. The inspectors' extent of review also identified a number of maintenance procedures (e.g. R-49 heat exchanger cleaning) that directed use of the bypass switches. The inspectors reviewed previous uses of the tagout for the R-49 one-year PM, and identified that on May 3, 2011, the 21 ABFP was removed from service for planned maintenance while the SGBD isolation valves were in radiation bypass for R-49 one-year PM. As a result of NRC questioning, Entergy personnel identified four additional previous occurrences of heat sink equipment out of service while the SGBD isolation valves were placed in radiation bypass, and wrote a condition report (CR-IP2-2012-6952) to evaluate those instances for reportability.

The inspectors also noted that Entergy previously determined (CR-IP2-2012-2408) that the event described in LER 2012-005 was due, in part, to operator understanding of the radiation bypass switch. Based on discussions with Entergy personnel, the NRC determined that Entergy staff did not adequately implement operator training regarding operational controls of SGBD isolation valves, specific to understanding the potential for an unanalyzed condition when a motor driven auxiliary feedwater pump is not in service. Entergy personnel initiated CR-IP2-2013-0191 to evaluate the extent of condition review performed in CR-IP2-2012-2408.

Analysis: The performance deficiency associated with this finding was that Entergy personnel did not adequately identify and correct a condition adverse to quality associated with maintenance activities that adversely impact the ability of the SGs to perform their heat sink function. This finding is more than minor because if left uncorrected, the performance deficiency could lead to a more significant safety concern. Specifically, maintenance procedures inappropriately allowing operation of the SGBD valve radiation bypass switch could adversely impact the SG safety function to remove decay heat. Using IMC 0609.04 "Initial Characterization of Findings" and Exhibit 2 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," the inspectors determined that this finding is of very low safety significance (Green) because the finding is a deficiency affecting the design of a mitigating system that maintained its functionality. Specifically, failure of the SGBD isolation valves to close would cause loss of SG water level because the remaining motor driven auxiliary boiler feedwater pump would exceed its design flow rate. However, given the time available, existing procedures, and operator training on isolating the SGBD flowpaths, either from the control room or locally, SG decay heat removal functionality was maintained.

This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, CAP because Entergy did not thoroughly evaluate this problem such that the resolutions address the causes and extent of condition. Specifically, Entergy staff did not properly evaluate the use and impact of the radiation bypass switch for the SGBD isolation when considering allowable configuration of the auxiliary feedwater system [P.1(c)].

Enforcement: 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," states, in part, that measures shall be established to ensure conditions adverse to quality, such as failures, malfunctions, deviations, defective material and equipment, and nonconformance are promptly identified and corrected. Contrary to the above, Entergy did not take adequate corrective actions, subsequent to March 27, 2012, to identify and correct procedures affecting operation of the SGBD valve radiation bypass switch. Entergy's corrective actions included identifying and placing a hold on instructions directing use of the radiation bypass switch; implementing operator training; and identifying previous occurrences of the unanalyzed condition. Because the finding is of very low safety significance and was entered into Entergy's CAP as CR-IP2-2012-6920, CR-IP2-2012-6952, and CR-IP2-2012-7356, CR-IP2-2013-0191 consistent with Section 2.3.2 of the NRC Enforcement Policy, this violation is being treated as an NCV. **NCV 05000247/2012005-01, Inadequate corrective actions regarding operational control of the steam generator blowdown valve radiation bypass switch.**

- .3 (Closed) LER 05000247/2012-005-01: Technical Specification Prohibited Condition Caused by a Main Steam Safety Valve Outside its As-Found Lift Setpoint Test Acceptance Criteria Due to Spring Skew/Spindle Wear

Entergy staff submitted LER 05000247/2012-005-01 to correct an erroneous reference to an Indian Point Unit 3 SG associated with the inoperable main steam safety valve (MSSV); an error concerned with a corrective action statement that the MSSV lift setpoint was adjusted to +/-1% instead of +/- 3%; and provide clarification in the safety significance section of LER 05000247/2012-005-00 to state the MSSVs provide overpressure protection for design basis transients occurring at 102% reactor thermal power. The inspectors reviewed the revised LER, CRs and corrective actions to

determine whether the station adequately evaluated the condition. No findings were identified. This LER is closed. Inspectors documented their review of LER 05000247/2012-005-00 in inspection report 05000247/2012-003.

.4 (Closed) LER 05000247/2012-006-00: Automatic Reactor Trip as a Result of a Turbine-Generator Trip Due to a Loss of Generator Field Excitation Caused by a Failed Exciter Trigger Generation Card

On June 6, 2012, an automatic reactor trip was initiated as a result of turbine-generator trip, caused by a trip of the generator backup lockout relay on loss of main generator excitation field. Entergy personnel determined that the loss of excitation field was caused by failure of the Generrex C-phase trigger generator card. The inspectors evaluated the response of control room personnel and plant equipment following the automatic reactor trip as described in NRC inspection report 05000247/2012003. Entergy personnel determined that the most likely cause of the C-phase trigger generator card failure was premature failure of the U5 op-amp. Immediate corrective actions included replacement of the C-phase trigger generator card and the AC/DC gate card and vendor analysis of the failed C-phase trigger generator card. Entergy personnel documented the root cause evaluation in CR-IP2-2012-03812. The inspectors reviewed the LER, CR, and corrective action to determine whether the station adequately evaluated the condition. No findings were identified. This LER is closed.

4OA5 Other Activities

.1 Institute of Nuclear Power Operations (INPO) Report Review

a. Inspection Scope

The inspectors reviewed the final report for the INPO plant assessment of Indian Point Units 2 and 3 conducted in December 2011. The inspectors evaluated the report to ensure NRC perspectives of Entergy performance were consistent with any issues identified during the assessment. The inspectors also reviewed the report to determine whether INPO identified any significant safety issues that required further NRC follow-up.

b. Findings

No findings were identified.

.2 (Closed) Temporary Instruction (TI) 05000247/2515/187: Inspection of Near-Term Task Force Recommendation 2.3 – Flooding Walkdowns

a. Inspection Scope

The inspectors selected two areas, the 480 volt switchgear room and the service water intake structure, in which to perform walkdowns. During the week of October 8, 2012, the inspectors accompanied Entergy personnel during their walkdowns of the 480 volt switchgear room and verified that Entergy staff confirmed the following flood protection features:

- Site topography does not direct water toward protected features

- Exterior walls and floors do not have signs of leakage on interior surfaces
- Exterior walls and floors have no apparent degradation or cracks greater than 0.04"
- No undocumented holes or openings
- Penetrations seals do not allow a flow path for water and there are no visible signs of water intrusion
- The door from the Control Building to the Transformer Yard closes and latches properly and the weather stripping around the door is intact

During the week of October 22, 2012, the inspectors independently performed a walkdown of the service water intake structure and verified that the following flood protection features were in place:

- Exterior walls and floors do not have signs of leakage on interior surfaces
- Exterior walls and floors have no apparent degradation or cracks greater than 0.04"
- No undocumented holes or openings
- Temporary pumps and associated equipment designated to be installed in accordance with procedure 2-AOP-FLOOD-1, Flooding, Revision 8, to assist the strainer pit sump pump were properly staged on the 33' elevation of the Unit 1 Turbine Building

Additionally, the inspectors verified that Entergy's walkdown packages for the 480 volt switchgear room and the service water intake structure contained the elements specified in NEI 12-07, Guidelines for Performing Verification Walkdowns of Plant Flood Protection Features, Revision A.

The inspectors verified that non-compliances with current licensing requirements, and issues identified in accordance with the 10 CFR 50.54(f) letter, Item 2.g of Enclosure 4, were entered into Entergy's CAP. In addition, issues identified in response to Item 2.g that could challenge risk significant equipment and Entergy's ability to mitigate the consequences will be subject to additional NRC evaluation.

The inspectors also completed and took credit for an external flooding sample from inspection procedure 71111.01, Adverse Weather Protection, during the TI assessment.

b. Findings

No findings were identified.

.3 (Closed) TI 05000247/2515/188: Inspection of Near-Term Task Force Recommendation 2.3 – Seismic Walkdowns

a. Inspection Scope

During the week of October 8, 2012, the inspectors accompanied Entergy personnel on their seismic walkdowns of the EDG Building, Fuel Storage Building and Auxiliary Building and verified that Entergy confirmed that the following seismic features associated with the 22 EDG, 22 spent fuel pit pump, and 22 ABFP steam supply valve (PCV-1139), were free of potential adverse seismic conditions:

- Anchorage was free of bent, broken, missing or loose hardware
- Anchorage was free of corrosion that is more than mild surface oxidation
- Anchorage was free of visible cracks in the concrete near the anchors
- Anchorage configuration was consistent with plant documentation
- SSCs will not be damaged from impact by nearby equipment or structures
- Overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls are secure and not likely to collapse onto the equipment
- Attached lines have adequate flexibility to avoid damage
- The area appears to be free of potentially adverse seismic interactions that could cause flooding or spray in the area
- The area appears to be free of potentially adverse seismic interactions that could cause a fire in the area
- The area appears to be free of potentially adverse seismic interactions associated with housekeeping practices, storage of portable equipment, and temporary installations (e.g., scaffolding, lead shielding)

On December 28, 2012, the inspectors independently performed walkdowns of the 21 SI pump in the Primary Auxiliary Building, 480V Bus 6A in the Control Building and verified that the equipment was free of the potential adverse seismic conditions listed above.

Observations made during the walkdown that could not be determined to be acceptable were entered into Entergy's CAP for evaluation. Additionally, inspectors verified that items that could allow the spent fuel pool to drain down rapidly were added to the seismic walkdown equipment list (SWEL) and these items were walked down by Entergy.

b. Findings

No findings were identified.

4. Groundwater Protection Initiative

The inspectors reviewed the circumstances surrounding elevated concentrations of tritium detected in monitoring well MW-31 at Indian Point during quarterly sampling conducted on May 11, 2012. This well is located near the U-2 maintenance outage building and southeast of the fuel handling building. Results for tritium ranged between 24600 pCi/liter to 173000 pCi/liter. Subsequent measurements of this well taken in July and August 2012 show a decrease in the tritium concentrations to a range of 1860 pCi/liter to 22400 pCi/liter. The cause for this spike in tritium concentration has not been identified, although Entergy currently postulates that it may be related to a spill or leak related to the Spring 2012 U-2 refueling outage. The inspectors will continue to review future groundwater results to confirm that there is no ongoing leak

4OA6 Meetings, Including Exit

On January 16, 2013, the inspectors presented the inspection results to Mr. John Ventosa, Site Vice President, and other members of the Entergy staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

4OA7 Licensee-Identified Violations

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

- Technical specification 3.4.13, "RCS Operational Leakage", in part requires RCS operational leakage shall be limited to no pressure boundary leakage. With pressure boundary leakage as a result of two through wall defects identified on the RCS as reported to the NRC in LER 05000247/2012-003-00, and as described in Section 4OA3, TS 3.4.13 requires the plant be shutdown within 6 hours. Contrary to TS 3.4.13, RCS operational leakage existed between April 2010 and March 2012, but Entergy did not implement actions to place the plant in a shutdown condition. Entergy entered this issue into the CAP as CR-IP2-2012-1733. The inspectors determined that the finding was of very low safety significance (Green) in accordance with NRC IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," Loss of Coolant Accident Initiators, because after reasonable assessment of the degradation, the finding could not exceed the leak rate for a small LOCA; and could not have likely affected other systems used to mitigate a LOCA resulting in a total loss of their function.

ATTACHMENT: SUPPLEMENTARY INFORMATION

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Entergy Personnel

J. Ventosa, Site Vice President
N. Azevedo, Engineering Supervisor
J. Baker, Shift Manager
T. Beasely, Engineering
G. Bouderau, Equipment Reliability Coordinator
M. Burney, Nuclear Safety/License IV Specialist
T. Chan, Engineering Supervisor
P. Cloughessy, Maintenance Rule Coordinator
P. Conroy, Nuclear Safety Assurance Director
L. Coyle, General Manager Plant Operations
G. Dahl, Nuclear Safety/License IV Specialist
R. Daley, System Engineer
M. DeChristopher, System Engineer
J. Dinelli, Operations Manager
R. Drake, Engineering Supervisor
T. Flynn, Maintenance Inspection Coordinator
E. Goethicus, Operations Instructor
R. Geoggia, System Engineer
D. Gagnon, Security Manager
A. Galati, Design Engineer
M. Haggstrom, System Engineer
A. Iavicoli, Radiation Protection Supervisor
C. Ingrassia, System Engineer
J. Kirkpatrick, Assistant General Manager Plant Operations
R. Lee, Buried Pipe and Tank Program Lead Engineer
J. Lijoi, Maintenance Superintendent
K. Lo, Structural Engineer
L. Lubrano, Senior Lead Engineer
R. Machado, System Engineer
R. Mages, Senior HP/Chemical Specialist
S. Manzione, Components Engineering Supervisor
D. Mayer, Unit 1 Director
T. McCaffrey, Design Engineering Manager
B. McCarthy, Assistant Operations Manager
J. Miu, Programs and Components Engineer
D. Pennino, Technical Lead, Program & Components Engineering
S. Prussman, Nuclear Safety/License IV Specialist
R. Robenstein, Simulator Superintendent
C. Rokes, Licensing Engineer
T. Salentino, Dry Fuel Storage Superintendent
S. Sandike, Senior HP/Chemical Specialist
A. Singer, Licensed Operator Requalification Training Superintendent
B. Sullivan, Superintendent Operations Requalification Training
R. Tagliamonte, Radiation Protection Manager
M. Tesoriero, Programs and Components Manager
J. Timone, Components Engineer

J. Thaliath, Nuclear Engineer
M. Troy, Engineering Supervisor
R. Walpole, Licensing Manager
W. Wittich, Design Engineering Supervisor
D. Williams, Maintenance Manager
M. Woodby, Engineering Director

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

05000247/2012005-01	NCV	Inadequate Corrective Actions regarding operational controls of the steam generator blowdown valve radiation bypass switch (Section 4OA3)
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Closed

05000247/2515/187	TI	Inspection of Near-Term Task Force Recommendation 2.3 Flooding Walkdowns (Section 4OA5)
05000247/2515/188	TI	Inspection of Near-Term Task Force Recommendation 2.3 Seismic Walkdowns (Section 4OA5)
05000247/2012-003-00	LER	Technical Specification (TS) Prohibited Condition Caused by Through Wall Defects in Reactor Coolant Pressure Boundary Branch Lines (Section 4OA3)
05000247/2012-004-00	LER	Unanalyzed Condition and Safety System Functional Failure Due to Use of Rad Bypass Switch for Steam Generator Blowdown Isolation Valves Which Defeats Their Automatic Isolation for Analyzed Events (Section 4OA3)
05000247/2012-005-01	LER	Technical Specification Prohibited Condition Caused by a Main Steam Safety Valve Outside Its As-Found Life Setpoint Test Acceptance Criteria Due to Spring Skew/Spindle Wear (Section 4OA3)
05000247/2012-006-00	LER	Automatic Reactor Trip as a Result of a Turbine-Generator Trip Due to a Loss of Generator Field Excitation Caused by a Failed Exciter Trigger Generation Card (Section 4OA3)

LIST OF DOCUMENTS REVIEWED

Common Documents Used

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

Section 1R01: Adverse Weather Protection

Procedures

2-AOP-FLOOD-1, Flooding, Revision 8
 OAP-008, Severe Weather Preparations, Revision 13

Miscellaneous

Indian Point 2 Technical Requirements Manual, Revision 11

Section 1R04: Equipment Alignment

Procedures

2-COL-4.3.1, Spent Fuel Pit Cooling, Revision 9
 2-COL-21.3, Steam Generator Water Level, Revision 31
 2-COL-27.3.1, Diesel Generators, Revision 26
 EN-OP-119, Protected Equipment Postings, Revision 5

Condition Reports (CR-IP2-)

2011-6041 2012-7174

Drawings

9321-F-2019-116 9321-F-2028-37 9321-F-2029-52 9321-F-2030-40

Section 1R05: Fire Protection

Miscellaneous

PFP-253, Control Building – Control Room, Revision 13
 PFP-160, Turbine Building, Revision 12
 PFP-160A, Appendix R/SBO Emergency Diesel Generator, Revision 12
 PFP-216, Fan House, Revision 0
 PFP-217, Fuel Storage Building, Revision 12

Section 1R11: Licensed Operator Requalification Program

Procedures

ACE Report, 22 Static Inverter Transfer Due to Frequency Meter LED, CR-IP2-2012-5584
 ACE Report, 22 Static Inverter Transfer Due to Frequency Meter LED, CR-IP2-2012-5584
 EN-NS-112, Medical Program, Revision 9
 EN-OP-117, Operations Assessments, Revision 4
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 OAP-017, Plant Surveillance and Operator Rounds, Revision 7
 OAP-032, Operations Training Program, Revision 15
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 Transient Performance: Trans Explosion & Rx Trip on 11/7/10, CR-IP3LO-2010-0054 CA7
 2-AOP-ANNUN-1, Failure of Flight or Supervisory Panel Annunciators
 2-PT-SA067, Main Turbine Stop and Control Valves Exercise Test, Revision 5

Condition Reports (CR-IP2-)

2010-5275	2010-5913	2011-0309	2011-0532	2011-4789	2012-5584
2012-6415	2012-6444	2012-6448	2012-6603		

Simulator Deficiency Reports

IP2-2012-0098

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Plant Computer Data

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Radiological Emergency Data Form – Part 1, 11/13/2012 09:03

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Section 1R12: Maintenance Effectiveness

Procedures

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EN-DC-206, Maintenance Rule (A)(1) Process, Revision 2

EN-DC-324, Preventive Maintenance Program, Revision 8

Condition Reports (CR-IP2-)

2009-2376	2010-0448	2010-0864	2010-4625	2010-4728	2010-7146
2011-3281	2012-2706	2012-5238	2012-5457	2012-6733	

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Miscellaneous

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Operator's Risk Report, October 18, 2012

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2-ARK-SKF, Bearing Monitor, Revision 24

EN-LI-108, Event Notification and Reporting, Revision 7

Condition Reports (CR-IP2-)

2005-0348 2010-1657 2010-5795 2012-4386 2012-4432 2012-4794

2012-5089 2012-5406 2012-5465 2012-5089 2012-6150 2012-6364

2012-6352 2012-6357 2012-6453 2012-6585 2012-6587 2012-6851

2012-7259 2012-7293 2012-7279

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 2-PT-M021B, Emergency Diesel Generator 22 Load Test, Revision 20
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Condition Reports (CR-IP2-)

2001-0777	2005-0715	2006-6735	2006-6850	2006-6901	2012-6325
2012-6332	2012-6390	2012-6562	2012-6563	2012-6602	2012-6612
2012-6995					

Maintenance Orders/Work Orders

00209342	00274941	00282544	00330527	52308008	52441031
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LAR-2010-00140
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0-SOP-LEAKRATE-001, RCS Leakrate Surveillance, Evaluation, and Leak Identification, Revision 2
 2-PT-Q013, Inservice Valve Tests, Revision 47
 2-PT-Q017A, Alternate Safe Shutdown Supply Verification to 21 AFP, Revision 11
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2-PC-R53, Auxiliary Feedwater Pump Room Environmental Qualified Temperature Switches, Revision 8, dated November 1, 2012
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Condition Reports (CR-IP2-)

2012-6499	2012-6993
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Maintenance Orders/Work Orders

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Plant Computer Data

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Miscellaneous

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Miscellaneous

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Miscellaneous

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NRC Performance Indicator Technique/Data Sheet, Cooling Water Support 2nd Quarter 2012
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NRC Performance Indicator Technique/Data Sheet, Heat Removal 3rd Quarter 2012
NRC Performance Indicator Technique/Data Sheet, Heat Removal 2nd Quarter 2012
NRC Performance Indicator Technique/Data Sheet, Heat Removal 1st Quarter 2012
NRC Performance Indicator Technique/Data Sheet, Heat Removal 4th Quarter 2011
NRC Performance Indicator Technique/Data Sheet, Residual Heat Removal 3rd Quarter 2012
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Section 4OA2: Problem Identification and Resolution

Procedures

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2-AOP-VAC-1, Loss of Condenser Vacuum, Revision 2
2-ARP-SJF, Cooling Water and Air, Revision 40

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Condition Reports (CR-IP2-)

2007-0341	2007-0405	2007-1046	2008-4149	2010-4415	2010-7332
2011-1862	2011-2344	2011-4930	2012-1953	2012-2557	2012-2586
2012-2661	2012-2661	2012-2720	2012-2084	2012-2245	2012-3868
2012-4020	2012-4169	2012-4177	2012-4314	2012-4450	2012-4802
2012-4816	2012-4885	2012-5037	2012-5137	2012-5311	2012-5590
2012-5637	2012-6634	2012-7226			

Maintenance Orders/Work Orders

00118558	00164064	00174247	00180361	00256131	00258566
00269696	00277299	00282137	00283378	00288797	00293015
00293223	00309895	00310918	00311658	00311794	00311959
00312480	00313589	00314873	00317166	00317636	00318538
00319576	00322616	00323322	00316537	52248704	

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Procedures

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 EN-LI-102, "Corrective Action Process," Revision 20

Condition Reports (CR-IP2-)

2012-1311	2012-4551	2012-2408	2012-3812	2012-6428	2012-6430
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 LER 2012-003-00
 LER 2012-004-00
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Procedures

EN-DC-168, Fukushima Near Term Task Force Recommendation 2.3 Seismic Walkdown Procedure, Revision 0
EN-DC-170, Fukushima Near Term Task Force Recommendation 2.3 Flooding Walkdown Procedure, Revision 0
2-AOP-138KV-1, Loss of Power to 6.9kV Bus 5 and/or 6, Revision 9
2-AOP-FLOOD-1, Flooding, Revision 8

Condition Reports (CR-IP2-)

2012-6146 2012-6160

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A206646-20, Indian Point No. 2 Conduit Layout Control building Elevation 15'0" Plan
A206647-15, Indian Point No. 2 Conduit layout Control Building elevation 15'0" Plan
A206650-02, Indian Point No. 2 conduit Lay out Control Building Elevation 15'0" & 33'0" Sections
A206651-9, Indian Point No. 2 Conduit Layout Control Building Elevation 15'0"
9321-F-2101-17, Control Building Service Water & Cooling Water Piping River Water System Sheet No. 5
9321-F-1381-25, Indian Point No. 2 Control Building General Arrangement
9321-F-1011, Intake Structure
9321-F-2011-9, General Arrangement Intake Structure Plan Unit No. 2
9321-F-2146-12, Intake Structure Floor and Wall Sleeves
9321-F-2106-44, Intake Structure Service Water Piping River Water System – Sheet No. 1
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Flooding Walkdown Record Form IP2-CTL-002
Flooding Walkdown Record Form IP2-CTL-003
Flooding Walkdown Record Form IP2-CTL-004
Flooding Walkdown Record Form IP2-CTL-005
Flooding Walkdown Record Form IP2-CTL-006
Flooding Walkdown Record Form IP2-CTL-007
Flooding Walkdown Record Form IP2-CTL-008
Flooding Walkdown Record Form IP2-CTL-010
Flooding Walkdown Record Form IP2-CTL-011
Flooding Walkdown Record Form IP2-CTL-012
Flooding Walkdown Record Form IP2-INT-001
Flooding Walkdown Record Form IP2-INT-002
Flooding Walkdown Record Form IP2-INT-003
Flooding Walkdown Record Form IP2-INT-004
Flooding Walkdown Record Form IP2-INT-005
Flooding Walkdown Record Form IP2-INT-006
Flooding Walkdown Record Form IP2-INT-007
Flooding Walkdown Record Form IP2-INT-008
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Seismic Walkdown Checklist SWEL-1-020 Safety Injection Pump 21
Seismic Walkdown Checklist SWEL-1-077 Diesel Generator No. 22
Seismic Walkdown Checklist SWEL-1-080 Auxiliary Feedwater Pump Turbine Steam
Suppression Pressure Reducing Valve
Seismic Walkdown Checklist SWEL-2-003 Spent Fuel Pit Pump 22 and Motor

Section 40A7: Licensee-Identified Violations

Condition Reports (CR-IP2-)
2012-1733

Miscellaneous
LER 2012-003

LIST OF ACRONYMS

ABFP	auxiliary boiler feedwater pump
ACE	apparent cause evaluation
ADAMS	Agencywide Document Access and Management System
ADV	atmospheric dump valve
ALARA	as low as is reasonably achievable
CAP	corrective action program
CFR	Code of Federal Regulations
CR	condition report
EDG	emergency diesel generator
Entergy	Entergy Nuclear Northeast
FZ	fire zone
IMC	Inspection Manual Chapter
INPO	Institute of Nuclear Power Operations
IPEC	Indian Point Energy Center
JPM	job performance measure
LDE	lens dose equivalent
LER	Licensee Event Report
mrads	millirads
mrem	millirem
MSIV	main steam isolation valve
MSSV	main steam safety valve
NCV	non-cited violation
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
PFP	pre-fire plan
PI	performance indicator
PM	preventative maintenance
qtr	quarter
RA	Regional Administrator
RCS	reactor coolant system
R/hr	roentgen/hour
RI	Resident Inspector
SDE	skin dose equivalent
SDP	significance determination process
SG	steam generator
SGBD	steam generator blowdown
SRI	Senior Resident Inspector
SSC	structure, system, and component
SWEL	seismic walkdown equipment list
TEDE	total effective dose equivalent
TI	temporary instruction
TS	Technical Specification
UFSAR	Updated Final Safety Evaluation Report
WO	work orders