



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION I  
475 ALLENDALE ROAD  
KING OF PRUSSIA, PA 19406-1415

June 18, 2010

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

SUBJECT: INDIAN POINT NUCLEAR GENERATING UNIT 3 – SUPPLEMENTAL  
INSPECTION REPORT 05000286/2010007

Dear Mr. Pollock:

On April 23, 2010, the U.S. Nuclear Regulatory Commission (NRC) staff completed a supplemental inspection pursuant to Inspection Procedure 95001, "Inspection for One or Two White Inputs in a Strategic Performance Area" at Indian Point Nuclear Generating Unit 3. The enclosed inspection report documents the inspection results, which were discussed on May 6, 2010, with you and other members of your staff.

As required by the NRC Reactor Oversight Process Action Matrix, this supplemental inspection was performed because the Unplanned Scram Performance Indicator value crossed a threshold from Green to White in the 3<sup>rd</sup> quarter of 2009 as a result of four reactor trips. The White Performance Indicator placed Indian Point Unit 3 in the Regulatory Response column of the NRC Reactor Oversight Process Action Matrix.

The objectives of this supplemental inspection were to provide assurance that: (1) the root and contributing causes for the risk-significant issues were understood; (2) the extent of condition and extent of cause of the issues were identified; and (3) corrective actions were or will be sufficient to address and preclude repetition of the root and contributing causes. The inspection consisted of an examination of activities conducted under your license as they related to safety, compliance with the Commission's rules and regulations, and the conditions of your operating license.

Notwithstanding one finding described in this report, the inspectors concluded that Entergy's overall performance was acceptable in determining the root and contributing causes of the performance deficiencies that led to the White performance indicator. Entergy staff's evaluations addressed the extent of the issues and identified primary root causes associated with procedure adherence, procedure quality and insufficient oversight by Entergy of supplemental or vendor personnel performance. Entergy had planned or completed corrective actions for these performance deficiencies. As a result, consistent with Inspection Manual Chapter 0305, "Operating Reactor Assessment Program," a parallel White inspection finding will not be opened for this performance indicator that had previously exceeded the Green/White threshold and further agency follow-up beyond the baseline inspection program is not warranted.

Based on the results of this inspection, the NRC identified one finding of very low safety significance (Green). This finding was determined to not be a violation of NRC requirements, and is described in the subject inspection report. If you disagree with the characterization of the findings 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 3. The information you provide will be considered in accordance with Inspection Manual Chapter 0305.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosures, and your response, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction.

Sincerely,

  
Mel Gray, Chief  
Projects Branch 2  
Division of Reactor Projects

Docket No. 50-286  
License No. DPR-64

Enclosures: Inspection Report No. 05000286/2010007  
w/Attachment: Supplemental Information

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Based on the results of this inspection, the NRC has also identified one finding of very low safety significance (Green). This finding was determined to not be a violation of NRC requirements, and is described in the subject inspection report. If you disagree with the characterization of the findings 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 3. The information you provide will be considered in accordance with Inspection Manual Chapter 0305.

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Sincerely,  
/RA/  
Mel Gray, Chief  
Projects Branch 2  
Division of Reactor Projects

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w/Attachment: Supplemental Information

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## U.S. NUCLEAR REGULATORY COMMISSION

## REGION I

Docket No.: 50-286

License No.: DPR-64

Report No.: 05000286/2010007

Licensee: Entergy Nuclear Northeast (Entergy)

Facility: Indian Point Nuclear Generating Unit 3

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

Dates: April 19 through April 23, 2010

Inspectors: G. Hunegs, Senior Resident Inspector - FitzPatrick  
M. Halter, Resident Inspector - Indian Point 3

Approved By: Mel Gray, Chief  
Projects Branch 2  
Division of Reactor Projects

Enclosure

## SUMMARY OF FINDINGS

Inspection Report (IR) 05000286/2010007; 04/19/2010 – 04/23/2010; Indian Point Nuclear Generating (Indian Point) Unit 3; Supplemental Inspection - (Inspection Procedure 95001) for a White Performance Indicator in the Initiating Events cornerstone.

A senior resident inspector and a resident inspector performed this inspection. One finding of very low safety significance was identified. This finding was not a violation of regulatory requirements. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process." Findings for which the significance determination process (SDP) does not apply may be Green, or be assigned a severity level after NRC management review. The NRC's program for overseeing safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

### Cornerstone: Initiating Events

The NRC performed this supplemental inspection to assess Entergy's evaluation associated with the Unit 3 Initiating Events cornerstone performance indicator (PI) for Unplanned Scrams per 7000 Critical Hours. This PI crossed the Green/White threshold (value > 3.0) in the third quarter of 2009 when Indian Point Unit 3 experienced its fourth reactor trip. At the time of this inspection, the PI for Unplanned Scrams per 7000 Critical Hours remained White.

The inspectors determined that Entergy generally identified the performance issues that led to the White PI, identified root and contributing causes of the issues, and had taken or planned actions to address the identified causes and prevent recurrence of the issues. The Entergy staff's evaluations identified several primary root causes of the issues associated with procedure adherence, procedure quality, and insufficient oversight by Entergy of supplemental or vendor personnel performance. The inspectors identified one finding and several observations associated with weaknesses in the timeliness and completion of Entergy's corrective actions.

Notwithstanding the one finding described in this report, the inspectors concluded that Entergy's overall performance was acceptable in determining the root and contributing causes of the performance deficiencies that led to the White performance indicator. Entergy staff's evaluations addressed the extent of the issues and identified primary root causes associated with procedure adherence, procedure quality and insufficient oversight by Entergy of supplemental or vendor personnel performance. Entergy had planned or completed corrective actions for these performance deficiencies. As a result, consistent with Inspection Manual Chapter 0305, "Operating Reactor Assessment Program," a parallel White inspection finding will not be opened for this performance indicator that had previously exceeded the Green/White threshold and further agency follow-up beyond the baseline inspection program is not warranted.

### Findings

- **Green.** The inspectors identified a finding of very low safety significance (Green) related to the untimely completion of corrective actions that were associated with the August 10, 2009, Unit 3 automatic reactor trip due to the generator primary lockout relay trip and the May 15, 2009, Unit 3 manual trip initiated in response to an uncontrollable rise in steam generator water level that was caused when a main feedwater regulating valve did not

properly control level. Specifically, Entergy personnel did not ensure that some corrective actions to inspect non-safety related components that could contribute to similar initiating conditions were scheduled and completed in a timely manner commensurate with their safety significance. The problem was entered into Entergy's corrective program as CR-IP2-2010-3299. Corrective actions included developing schedules to complete the corrective actions.

The inspectors determined that this finding was more than minor because it was associated with the protection against external factors attribute (grid stability) and equipment performance attribute (reliability) of the Initiating Events cornerstone and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. Specifically, there is a potential for an increased probability of a reactor trip because corrective actions that were developed were not completed in a timely manner. The inspectors determined that this finding increased the likelihood of a reactor trip and was reasonably within Entergy's ability to foresee and prevent because corrective action program records were available which documented the plant equipment and program status and condition. The inspectors evaluated the significance of this finding using IMC 0609.04, "Phase I – Initial Screening and Characterization of Findings." The finding was determined to be of very low safety significance (Green) because the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available.

The inspectors determined that this finding had a cross-cutting aspect in the area of problem identification and resolution within the corrective action program component because Entergy personnel did not take appropriate corrective actions to address safety issues and adverse trends in a timely manner, commensurate with their safety significance and complexity. Specifically, corrective actions to validate and correct the possible causes of the reactor trips were not scheduled and completed in a timely manner. (P.1(d) per IMC 0310).

**REPORT DETAILS**

## 4. OTHER ACTIVITIES

4OA4 Supplemental Inspection (95001).01 Inspection Scope

The NRC conducted this supplemental inspection in accordance with Inspection Procedure (IP) 95001, "Inspection for One or Two White Inputs into a Strategic Performance Area," to assess Entergy's evaluations associated with a White Initiating Events cornerstone performance indicator (PI) reported in the third quarter of 2009. The Unplanned Scrams per 7000 Critical Hours PI is based on the number of unplanned scrams (reactor trips) that are experienced by a unit within the previous 7000 critical hours of reactor operations as measured on a 12-month periodicity. During a time-frame spanning approximately three months beginning in May 2009, Indian Point Unit 3 experienced four reactor trips that resulted in Unit 3 exceeding the Green/White PI threshold (value of > 3.0) for Unplanned Scrams per 7000 Critical Hours. Entergy reported the third quarter 2009 PI data to the NRC in October 2009.

The following reactor trips contributed to the White PI:

- May 15, 2009, Unit 3 manual reactor trip due to high steam generator water level caused by a failed main feedwater regulating valve;
- May 28, 2009, Unit 3 automatic reactor trip due to high steam generator water level caused by an inadequate main feedwater pump governor valve setting and steam generator level controller set-up;
- August 10, 2009, Unit 3 automatic reactor trip due to a turbine-generator trip caused by actuation of the generator protection system lockout relay during a severe thunderstorm with heavy lightning; and
- August 27, 2009, Unit 3 automatic reactor trip due to a turbine trip as a result of turbine autostop oil actuation caused by a failed autostop oil pipe fitting.

The inspection objectives were as follows:

- Provide assurance that Entergy understood the root and contributing causes of the four reactor trips and White performance indicator for the risk significant performance issues;
- Provide assurance that Entergy identified the extent of condition and extent of cause of the performance issues; and
- Provide assurance that Entergy has taken or planned corrective actions that are sufficient to address the root causes and contributing causes and to preclude recurrence.

Enclosure

Entergy staff informed the NRC on January 28, 2010, of their readiness for the supplemental inspection. In preparation for the inspection, Entergy personnel performed a root cause analysis for each of the four reactor trips and a common cause analysis of the issues to identify weaknesses that resulted in the PI for Unplanned Scrams per 7000 critical Hours to exceed the Green/White threshold. Entergy personnel also performed an assessment and an independent review by a member of the Entergy safety review committee to evaluate the overall readiness for the NRC supplemental inspection.

The inspectors reviewed Entergy's root and common cause evaluations associated with the issues. Station personnel were interviewed to determine their understanding of the related issues. The inspectors also determined whether Entergy personnel utilized appropriate methodologies to identify causes of the reactor trips, considered the issues in appropriate scope and detail to identify the extent of the causes, extent of the conditions, and the safety culture components that may have contributed to the reactor trips. Finally, the inspectors determined whether corrective actions were appropriately identified, prioritized, and scheduled to address each root or contributing cause identified in the evaluations. The documents reviewed are listed in Attachment 1.

## .02 Evaluation of the Inspection Requirements

### 02.01 Problem Identification

- a. IP 95001 requires that the inspection staff determine that the licensee's evaluation of the issue documents who identified the issue and the conditions under which the issue was identified.

During the time-frame spanning approximately four months beginning in May, 2009, the Indian Point Unit 3 reactor tripped four times. This resulted in Indian Point Unit 3 exceeding the Green/White PI threshold (value of > 3.0) for Unplanned Scrams per 7000 Critical Hours during the third quarter of 2009. The four reactor trips involved self-revealing event initiators that resulted in both automatic and operator-initiated manual reactor trips.

The inspectors determined that Entergy's evaluations appropriately assessed the circumstances surrounding identification of the issues. For each reactor trip, Entergy staff identified the equipment and plant conditions under which the automatic or manual reactor trips occurred. However, the inspectors noted that NRC engagement, as documented in inspection report 05000286/2009005, was needed prior to Entergy fully identifying all performance issues associated with the May 28, 2009, reactor trip related to the high steam generator 32 water level caused by inadequate 31 main feedwater pump governor valve setting and 32 steam generator level controller set-up. These performance issues included control of work activities associated with the main boiler feedwater pump governor valve and the timeline of activities. Entergy staff subsequently revised the root cause evaluation and associated corrective actions prior to this supplemental NRC inspection.

- b. IP 95001 requires that the inspection staff determine that the licensee's evaluation of the issues documents how long the issues existed and prior opportunities for identification.

The Indian Point Unit 3 PI for Unplanned Scrams per 7000 Critical Hours exceeded the Green/White threshold (value of > 3.0) on August 27, 2009 (third quarter of 2009).

The inspectors determined that Entergy's evaluations appropriately identified prior missed opportunities to address the causes of issues that contributed to each of the reactor trips and resulted in the White performance indicator.

- c. IP 95001 requires that the inspection staff determine that the licensee's evaluation documents the plant specific risk consequences, as applicable, and compliance concerns associated with the issues

For each reactor trip that contributed to the White PI, Entergy staff performed evaluations of the causes of each trip, how long the condition existed, and corrective actions to address the conditions. Entergy's evaluations were described in licensee event reports (LER) submitted to the NRC. The inspectors determined, based upon a review of the LER submitted by Entergy for each reactor trip, that the plant specific risk consequences for each reactor trip were appropriately addressed by Entergy personnel.

In response to each of the four reactor trips in 2009, the resident inspector staff evaluated plant parameters, operator actions, and overall plant status including the availability of mitigating systems. The resident inspectors documented these reviews and associated compliance concerns in NRC inspection reports 05000286/2009003 and 05000286/2009004.

The inspectors further determined that Entergy's root cause evaluations and licensee event reports appropriately assessed compliance concerns, site specific risk, and personnel and equipment hazards.

- d. Findings

No findings of significance were identified.

#### 02.02 Root Cause, Extent of Condition, and Extent of Cause Evaluation

- a. IP 95001 requires that the inspection staff determine that the licensee evaluated the issues using a systematic methodology to identify the root and contributing causes.

Entergy personnel completed a root cause evaluation for each individual reactor trip and a common cause evaluation to identify causal factors associated with the White PI and its individual reactor trip inputs. Several different root cause methodologies were used by Entergy staff to evaluate root and contributing causes related to the individual reactor trips events and the White PI. Entergy personnel used a combination of evaluation methodologies that included Kepner-Tregoe Analysis, Why Staircase methodology, Barrier Analysis, Binning Analysis, and Event and Causal charts to identify the underlying causal factors.

The inspectors determined the evaluation methods used by Entergy personnel were appropriate. The evaluation methodologies are described in Entergy corrective action documents as appropriate to instances of plant equipment failures such as occurred in the four reactor trips. Entergy staff systematically applied the various methodologies to identify the causal factors with the individual reactor trips and White PI.

- b. IP 95001 requires that the inspection staff determine that the licensee's root cause evaluation was conducted to a level of detail commensurate with the significance of the issues.

Entergy personnel completed individual root cause evaluations for each of the four reactor trips. Additionally, Entergy staff performed a common cause analysis that considered the four Unit 3 reactor trips in 2009, and also completed a more extensive common cause analysis that considered reactor trips on both units during the 2002 to August 2009 timeframe. This review was intended to help validate the extent of the causes and the extent of condition.

Entergy staff determined that the common causes involved instances of inadequate procedures and adherence, inadequate supplemental personnel performance and Entergy oversight, and inappropriate recognition of the impact of critical components.

The inspectors concluded that Entergy personnel conducted an adequate evaluation of the White PI and the associated individual reactor trips that contributed to the White PI. Entergy's evaluations considered the causes of reactor trips at both Unit 2 and Unit 3 for an extended period to help validate their conclusions regarding the causes and extent of the conditions related to the four reactor trips that contributed to the White PI. Additionally, Entergy utilized methodologies to develop the level of detail appropriate to the issues. Furthermore, the inspectors concluded that Entergy staff conducted an adequate expanded common cause analysis which included reactor trips on both Units during the 2002 to August 2009 timeframe. The inspectors noted that Unit 2 tripped on November 2, 2009 and again January 11, 2010 and that these trips were not included in the Entergy evaluations. Entergy personnel developed a corrective action to consider the causes of the recent Unit 2 trips in the common cause evaluation process and to determine if there was any impact on the overall conclusions of the common cause analysis. Entergy staff determined that the causes associated with the recent Unit 2 trips did not materially impact their common causes and corrective actions. The inspectors determined that the evaluations were conducted to a level of detail commensurate with the significance of the problems.

- c. IP 95001 requires that the inspection staff determine that the licensee's root cause evaluation included a consideration of prior occurrences of the issue and knowledge of operating experience.

Entergy personnel completed reviews in the respective individual trip root cause evaluations that considered prior occurrences of the problem and knowledge of prior operating experience. Entergy staff reviewed issues from the previous supplemental inspection report 05000286/2008009 to review the effectiveness of associated corrective actions.

The inspectors concluded that Entergy's causal evaluations properly considered and documented prior occurrences of events, including prior operating experience, which had applicable causal relations for the 2009 reactor trips that resulted in the White PI.

- d. IP 95001 requires that the inspection staff determine that the licensee's root cause evaluation addresses the extent of condition and extent of cause of the issues.

Entergy personnel completed individual extent of condition and cause reviews for each of the four reactor trips. Additionally, Entergy staff performed a common cause evaluation that considered the four reactor trips that occurred during 2009. Entergy personnel also performed a more extensive common cause analysis that considered reactor trips on both Unit 2 and Unit 3 during the 2002 to August 2009 timeframe.

The inspectors determined Entergy's evaluations of extent of condition and extent of cause appropriately assessed extent of equipment and performance issues applicable to the individual and collective performance issues. Entergy staff appropriately considered the extent of the issues for each reactor trip and conducted a broad common cause review that considered extent of condition and cause incorporating both Unit 2 and Unit 3 insights.

- e. IP 95001 requires that the inspection staff determine that the licensee's root cause, extent of condition, and extent of cause evaluations appropriately considered the safety culture components as described in Inspectin Manual Chapter 0310.

The inspectors determined that Entergy staff appropriately considered whether weaknesses in safety culture components were root or contributing causes for the performance issues. The identified common causal factors were broad and encompassed the applicable safety culture attributes associated with human performance, aspects of procedural inadequacy and adherence, and decision making. The inspectors did not identify any safety culture component that could reasonably have been a root cause or significant contributing cause that had not been addressed in Entergy's causal evaluations or self-assessments.

- f. Findings

No findings of significance were identified.

#### 02.03 Corrective Actions

- a. IP 95001 requires that the inspection staff determine that (1) the licensee specified appropriate corrective actions for each root and/or contributing cause, or (2) an evaluation that states no actions are necessary is adequate.

The final root cause and common cause reports generally identified corrective actions to address the root, contributing, and common causes for the individual reactor trips and collective performance issues. The inspectors determined that most corrective actions for the reactor trips and common cause evaluation were reasonable, with specific actions to address the personnel, procedural, and equipment issues associated with the White performance indicator and its associated individual reactor trip inputs.

Entergy has developed an initiative to provide additional actions to improve oversight of vendors and contractors, and this initiative was implemented prior to the Indian Point 2 Spring 2010 refueling outage.

- b. IP 95001 requires that the inspection staff determine that the licensee prioritized corrective actions with consideration of risk significance and regulatory compliance.

Overall, based on Entergy's causal evaluation corrective actions and self-assessment corrective actions, the inspectors determined that the corrective actions were prioritized commensurate with their safety significance.

The inspectors observed that a trip reduction committee was initiated in November 2009 to develop a plan for additional oversight of critical work activities associated with feedwater, main turbine generator and switchyard work. The focus was on single point vulnerability and high critical components whose failure could result in a unit trip or significant operating transient. Work packages for such components were highlighted and a critical task observation program was implemented for the Unit 2 Spring 2010 refueling outage. The inspectors concluded the actions in this regard were appropriately prioritized to ensure that corrective actions related to Entergy oversight of supplemental staff performance were implemented in the most recent Indian Point 2 refueling outage.

- c. IP 95001 requires that the inspection staff determine that the licensee established a schedule for implementing and completing the corrective actions.

At the time of the supplemental inspection, a significant portion of Entergy's corrective actions had been implemented with the remainder scheduled in the corrective action program. Corrective actions to prevent recurrence, as well as a significant number of lower-tier corrective and preventive actions, identified in the root cause reports, had been completed or were in-progress by the time of this inspection. However, the inspectors identified a performance deficiency in that some corrective actions for the May 15 and August 10, 2009 trips were not completed in a timely manner commensurate with the significance of the issues. This performance deficiency is discussed in more detail in section 02.03(e) of this report.

- d. IP 95001 requires that the inspection staff determine that the licensee developed quantitative and/or qualitative measures of success for determining the effectiveness of the corrective actions to preclude repetition.

Entergy has planned effectiveness reviews for the 2009 reactor trips and the common cause evaluation. The inspectors determined that Entergy's planned effectiveness reviews and review criteria contained sufficient methods for determining the effectiveness of the corrective actions associated with the individual reactor trips and collective review of the White performance indicator. Additionally, focused self assessments and quality assurance audits have been conducted.

- e. IP 95001 requires that the inspection staff determine that the licensee's planned or taken corrective actions adequately address a Notice of Violation (NOV) that was the basis for the supplemental inspection, if applicable.

The NRC staff did not issue an NOV to the licensee; therefore, this inspection requirement was not applicable.

f. FindingsCorrective Actions Not Implemented In a Timely Manner Commensurate with the Safety Significance of the Issues

Introduction: The inspectors identified a finding of very low safety significance (Green) related to the identification and completion of corrective actions that were associated with the August 10, 2009, Unit 3 automatic trip due to the generator primary lockout relay trip and the May 15, 2009, Unit 3 manual trip initiated in response to an uncontrollable rise in steam generator water level. Specifically, Entergy personnel did not ensure that some corrective actions to address issues potentially impacting nuclear safety regarding these two events were scheduled and completed in a timely manner commensurate with their safety significance.

Description: On August 10, 2009, Unit 3 automatically tripped during a thunder storm. The trip was initiated by the generator primary lockout relay. Entergy staff initiated CR-IP3-2009-03375 and performed a root cause analysis which developed several corrective actions to address the immediate issues associated with the transient and to minimize the potential for lightning induced transients in the future. The inspectors considered the immediate corrective actions to be reasonable, including the conduct of a post-trip walkdown of the 345kv feeder from the disconnect switch at Buchanan to the main transformer, during which no visible damage was noted. Additionally, the initial insulation resistance, continuity and capacitance checks of the primary and backup pilot wires did not reveal any issues. The pilot wire protection scheme is utilized to isolate the overhead 345kv feeder between Indian Point and Buchanan to protect against electrical faults.

Although the root cause analysis report noted that the causes were indeterminate, a possible root cause associated with the station ground mat was developed. The inspectors determined that corrective actions associated with validating this possible root cause was not effectively prioritized and completed in a timely fashion considering the importance of mitigating the potential effects of thunderstorms that could result in initiating events:

Entergy staff concluded that a deteriorated ground mat could limit a grounding wire's capability to mitigate a fault to ground, as inadequate grounding could have caused inadvertent relay operation. Entergy personnel developed corrective action (CA) number 26 to evaluate the IPEC ground mat condition and initiate necessary action to ensure the ground grid is properly maintained. The root cause analysis also noted that it is "imperative" to conduct the ground grid test. CA number 26 was closed to CA number 38, which was developed to track completion of a ground mat test procedure, assure that the test is scheduled for the next Unit 3 outage and to ensure that Unit 2 was also addressed. Through interviews, the inspectors determined that, at the time of the inspection, development of the ground mat test procedure had not been initiated. Also, there is a separate ground mat for each unit and the opportunity to check the Unit 2 ground mat was missed during the recent 2010 spring refueling outage.

Entergy staff also identified that one of five relays providing input signals to the generator lockout (86P) relay may have actuated, and determined this to be an additional possible cause of the trip. CA numbers 15, 16, 17, and 18 were developed to calibrate and test the 86P input relays in order to ensure the relays properly function

Enclosure

during future operation. In order to determine whether one of the relays had caused the trip, CA numbers 40 and 41 were later developed to record the as-found condition of the relays prior to calibration. At the time of the inspection, two of the relays had already been calibrated, yet the as-found condition was not recorded, and thus Entergy will not be able to validate whether either of these two relays caused the trip. This issue was identified by Entergy personnel prior to the inspection and was entered into the corrective action program as CR-IP3-2010-00269. Corrective action was taken to revise the work orders generated for the remaining three relays, which are scheduled to be calibrated during the next unit shutdown, to ensure the as-found condition of the relays is recorded at the time of calibration.

From attachments to the root cause analysis, the inspectors also noted that an external expert notified Entergy that, in order to avoid lightning transients in the future, "at least insure proper and uniform grounding including chassis grounds of protective relay panel installations in the substation." The inspectors also noted that sub-response to CA number 25 observed that electromechanical relays of the type at IPEC are not susceptible to lightning induced faults but that improper grounding could cause undesirable operation for relay systems. In response to inspector questions regarding this recommendation, Entergy subsequently documented CA number 43 associated with CR-IP3-2009-03375 to complete this activity.

On May 15, 2009, a manual reactor trip on Unit 3 was initiated due to an uncontrollable rise in the 33 steam generator water level caused by a feedwater regulating valve not properly controlling level. The cause was determined to be that the valve positioner linkage was disconnected due to loose jam nuts.

The extent of condition performed by Entergy staff determined that 86 valves on Unit 2 and Unit 3 are high critical control valves with similar or the same feedback linkage to that of 33 steam generator feedwater regulating valve. CA number 23 was issued to generate work orders for preventive maintenance tasks to prevent a reoccurring linkage disconnection event. CA 34 was generated to track the work orders to completion. The inspectors determined that the feedback linkage checks for 19 of the 86 high critical control valves were not properly scheduled and therefore not performed. Additionally, the inspectors noted that there were subsequent unit shutdowns which would have presented an opportunity to perform the feedback linkage checks had the checks been properly scheduled.

Analysis: An NRC-identified performance deficiency was identified because Entergy did not implement corrective actions for significant conditions adverse to quality in a timely manner, as prescribed by Entergy procedure EN-LI-118, "Root Cause Analysis Process."

This finding is more than minor because it is associated with the protection against external factors attribute (grid stability) and equipment performance attribute (reliability) of the Initiating Events cornerstone and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. Specifically, there is a potential for an increased probability of a reactor trip because corrective actions associated with these non-safety related components that were developed were not completed. The inspectors determined that this finding increased the likelihood of a reactor trip and was reasonably within Entergy's ability to foresee and prevent because corrective action program records were available

which documented the plant equipment and program status and condition. The inspectors evaluated the significance of this finding using IMC 0609.04, "Phase I – Initial Screening and Characterization of Findings." The finding was determined to be of very low safety significance (Green) because the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available.

The inspectors determined that this finding had a cross-cutting aspect in the area of problem identification and resolution within the corrective action program component because Entergy personnel did not take appropriate corrective actions to address safety issues and adverse trends in a timely manner, commensurate with their safety significance and complexity. Specifically, corrective actions to validate and correct the possible causes of the reactor trips were not scheduled and completed in a timely manner. (P.1(d)).

Enforcement: Enforcement action does not apply because the structures, systems and components that were involved are non-safety related and the performance deficiency did not involve a violation of regulatory requirements. The problem was entered into Entergy's corrective program as CR-IP2-2010-3299. Corrective actions included developing schedules to complete the corrective actions. **(Finding (FIN) 05000286/2010007-01, Corrective Actions Not Implemented In a Timely Manner Commensurate with the Safety Significance of the Issues.)**

#### 4OA6 Exit Meeting

On May 6, 2010, the inspectors presented the integrated inspection results to Mr. Joseph Pollock, and other Entergy managers and staff, who acknowledged the inspection results. Entergy staff did not identify documents which were to be considered proprietary. Additionally, on May 27, 2010, the NRC branch chief responsible for the inspection conducted a regulatory performance meeting on site in accordance with NRC Inspection Manual Chapter 0305 to ensure a shared understanding of the inspection results and Entergy's corrective actions.

**SUPPLEMENTAL INFORMATION****KEY POINTS OF CONTACT****Licensee Personnel**

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 C. Bristol, Maintenance Supervisor  
 P. Conroy, Director, Nuclear Safety Assurance  
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 T. Orlando, Director, Engineering  
 J. Pollock, Site Vice President  
 M. Tesoriero, Programs and Components Engineering Supervisor  
 M. Troy, Programs and Components Engineer  
 M. Vasely, Systems Engineering Supervisor  
 A. Vitale, General Manager of Plant Operations  
 R. Walpole, Licensing Manager  
 M. Zeoli, Outage Manager

**LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED****Opened and Closed**

05000286/2010007-01	FIN	Corrective Actions Not Implemented In a Timely Manner Commensurate with the Safety Significance of the Issues.
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**LIST OF DOCUMENTS REVIEWED****Condition Reports**

IP2-2010-03299	IP2-2006-06670	IP3-2009-02509
IP2-2010-03037	IP2-2008-01056	IP3-2009-02511
IP2-2010-03012	IP2-2008-02650	IP3-2009-02710
IP2-2010-02928	IP2-2008-05623	IP3-2009-03155
IP3-2010-01012	IP2-2009-02629	IP3-2009-03176
IP3-2010-01014	IP3-2006-03422	IP3-2009-03261
IP3-2010-01016	IP3-2007-01849	IP3-2009-03375
IP2-2010-02953	IP3-2009-00730	IP3-2009-03592
IP2-2006-06114	IP3-2009-02368	IP3-2009-03626

Procedures

EN-LI-118-06, Common Cause Analysis, Rev. 0  
EN-LI-118, Root Cause Analysis Process, Rev. 12  
EN-LI-102, Corrective Action Process, Rev. 14  
0-VLV-404-AOV, Use of Air Operated Valve Diagnostics, Rev. 2  
0-VLV-404-AOV, Use of Air Operated Valve Diagnostics, Rev. 3  
EN-WM-102, Work Implementation and Closeout, Rev. 2  
EN-WM-105, Planning, Rev. 5

Work Orders

51484856  
00207805  
00207802  
00207807

Miscellaneous

LO-IP3LO-2009-00052  
LO-IP3LO-2009-00054  
LO-IP3LO-2009-00055  
LO-WTIPC-2009-00057  
LO-WTIPC-2009-00109  
IPEC Oversight Report, 2<sup>nd</sup> Quarter 2009  
IPEC Quarterly Trend Report, 2<sup>nd</sup> Quarter 2009  
NRC Inspection 95001 Readiness Assessment, dated 1/26/10  
IPEC Main Feedwater Pumps and Turbines Top Ten Equipment Reliability Action Plan, dated  
2/19/10  
2009-2010 Maintenance Department Business Plan  
2009-2010 Maintenance Department Performance Improvement Plan  
Mechanical/Electrical Open DRN Status Tracking Data, March 2010  
Mechanical/Electrical Procedure Feedback Status Tracking Data, March 2010  
Maintenance Mechanical/Electrical PRA Procedure Workoff Curve, April 2010  
Indian Point Unit 2 and 3 PI Summary, Unplanned Scrams per 7000 Critical Hours  
Work Instructions for Verifying Linkages Are Tight  
IPEC 2009 Equipment Reliability Analysis  
2R19, Critical Task Observations  
2R19 Critical Task Observation Program Overview

**LIST OF ACRONYMS**

ADAMS	Agency Wide Document Management System
CA	Corrective Action
CR	Condition Report
DRA	Deputy Regional Administrator
DRP	Division of Reactor Projects
DRS	Division of Reactor Safety
ENTERGY	Entergy Nuclear Northeast
FIN	Finding
IMC	Inspection Manual Chapter
IP2	Indian Point 2
IP3	Indian Point 3
IP	Inspection Procedure
IPEC	Indian Point Energy Center
IR	Inspection Report
NRC	Nuclear Regulatory Commission
OEDO	Office of the Executive Director of Operations
PI	Performance Indicator
R1	Region 1
RA	Regional Administrator
ROP	Reactor Oversight Process
RI	Resident Inspector
SDP	Significance Determination Process
SRI	Senior Resident Inspector