

## Indian Point 3

# 4Q/2012 Plant Inspection Findings

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## Initiating Events

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## Mitigating Systems

**Significance:** G Nov 09, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Turbine Building HELB Evaluation for Effect on Safety Related Equipment**

The team identified a finding of very low safety significance (Green) involving a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, Design Control, because Entergy had not verified the adequacy of their design with respect to the potential impact on safety-related electrical equipment in response to postulated turbine building high energy line breaks (HELBs). Specifically, the potential impact on safety-related equipment contained in the adjacent control building cable spreading room and 480V switchgear room had not been adequately evaluated. Entergy entered the issue into their corrective action program to perform an operability evaluation and correct the design deficiency and to determine the need for additional analyses or plant changes to address the HELB issue and conformance with equipment qualification design considerations.

The performance deficiency was determined to be more than minor because it was associated with the design control attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The team evaluated the finding in accordance with IMC 0609, Appendix A, The Significance Determination Process (SDP) for Findings at Power, Exhibit 2 - Mitigating Systems Screening Questions. The finding was determined to be of very low safety significance because it was a design deficiency confirmed not to result in a loss of operability. This finding was not assigned a cross-cutting aspect because it was a historical design issue not indicative of current performance. Specifically, the deficiency was associated with an analysis performed in 1973 and was not identified in a subsequent review of operating experience performed in 2000.

Inspection Report# : [2012007](#) (*pdf*)

**Significance:** G Nov 09, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Verification of Design Analyses for Recirculation Pump NPSH**

The team identified a finding of very low safety significance (Green) involving a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, Design Control, because Entergy had not verified the adequacy of the existing design analyses for internal recirculation pump net-positive-suction-head (NPSH) margin and vapor containment strainer allowable head loss determinations. Specifically, the recirculation pump flow system hydraulic modeling assumption relative to zero leakage through an idle recirculation pump check valve was not verified or consistent with the existing test

method which could allow significant backflow with the established pump and check valve test acceptance criteria. Entergy entered the issue into their corrective action program to evaluate and resolve the design deficiency, and performed an operability evaluation to ensure there was adequate NPSH margin.

The performance deficiency was determined to be more than minor because it was associated with the design control attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The team evaluated the finding in accordance with IMC 0609, Appendix A, The Significance Determination Process (SDP) for Findings at Power, Exhibit 2 - Mitigating Systems Screening Questions. The finding was determined to be of very low safety significance because it was a design deficiency confirmed not to result in a loss of operability. This finding was not assigned a cross-cutting aspect because it was a historical design issue not indicative of current performance.

Inspection Report# : [2012007](#) (*pdf*)

**Significance:**  Jul 20, 2012

Identified By: NRC

Item Type: VIO Violation

**Failure to Protect Safe Shutdown Equipment from the Effects of Fire**

The inspectors identified a finding of very low safety significance (Green), involving a cited violation of Indian Point Unit 3 Operating License Condition 2.H to implement and maintain all aspects of the approved fire protection program. Specifically, ENO failed to protect required post-fire safe shutdown components and cabling to ensure one of the redundant trains of equipment remained free from fire damage as required by 10 CFR Part 50, Appendix R, Section III.G.2. In lieu of protecting a redundant safe shutdown train, ENO utilized unapproved operator manual actions to mitigate component malfunctions or spurious operations caused by postulated single fire-induced circuit faults. ENO submitted an exemption request (M1090760993) on March 6, 2009, in which it sought exemption from requirements of Paragraph III.G.2, to permit the use of OMAs upon which it had been relying for safe-shutdown in a number of fire areas. However, several OMAs within the exemption request were denied because ENO failed to demonstrate that the OMAs were feasible and reliable, or to appropriately evaluate fire protection defense-in-depth. ENO's performance deficiency delayed achieving full compliance with fire protection regulations and adversely affected post-fire safe shutdown. ENO has entered this issue into the corrective program for resolution. The inspectors found the manual actions in addition to roving fire watches in all affected areas to be reasonable interim compensatory measures pending final resolution by ENO.

ENO's failure to protect components credited for post-fire safe shutdown from fire damage caused by single spurious actuation is considered a performance deficiency. The performance deficiency was more than minor because it affected the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to an external event to prevent undesirable consequences in the event of a fire. Specifically, the use of operator manual actions during postfire safe shutdown is not as reliable as normal systems operation which could be utilized had the requirements of 10 CFR 50, Appendix R, Section III.G.2 been met and, therefore, prevented fire damage to credited components and/or cables. The inspectors used IMC 0609, Appendix F, Fire Protection Significance Determination Process, Phase 1 and a Senior Reactor Analyst conducted a Phase 3 evaluation, to determine that this finding was of very low safety significance (Green). This finding does not have a cross cutting aspect because the performance deficiency occurred greater than three years ago when the exemption request was submitted to the NRC on March 6, 2009, and is not indicative of current licensee performance.

Inspection Report# : [2012008](#) (*pdf*)

**Significance:**  Jun 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Procedures for Testing 33 Station Battery (Section 1R15.1)**

The inspectors identified a finding of very low safety significance (Green) involving a non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion XI, "Test Control," because Entergy personnel did not properly document and evaluate test results to ensure that the test requirements were satisfied. Specifically, Entergy personnel did not ensure that the 33 battery modified performance test procedure prescribed the correct vendor discharge rate and that the 33 battery load profile service test and the 33 battery modified performance test prescribed the correct design peak (one minute) load profile amperage. Entergy personnel entered this issue into the corrective action program to evaluate and correct the deficiencies in the battery testing program, perform an extent of condition review, and evaluate the risk associated with delaying testing of the 33 battery until the next refueling outage.

The finding was more than minor because it was similar to NRC IMC 0612, Appendix E, "Examples of Minor Issues," Example 2.c, in that the test control issue was repetitive through multiple performances of the surveillance test over a course of six years. Additionally, the finding was more than minor because it was associated with the procedure quality attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the reliability and capability of systems that respond to initiating events to prevent undesirable consequences. The finding was of very low safety significance (Green) because it was not a design or qualification deficiency, did not represent a loss of system safety function, and did not screen as potentially risk significant due to external events. There was not a cross-cutting aspect associated with this finding because the performance deficiency is not reflective of current performance. Specifically, the inspectors determined that Entergy personnel did not adequately implement their modification process when they did not update their test procedures in 2005, following the modification to the 33 station battery.

Inspection Report# : [2012003](#) (pdf)

**Significance:** G Jun 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Battery Voltage Drop Calculation**

The inspectors identified a finding of very low safety significance (Green) involving an NCV of 10 CFR 50, Appendix B, Criterion III, "Design Control," because Entergy staff did not ensure or verify the adequacy of design with respect to the 33 battery sizing calculation. Specifically, Entergy staff used an incorrect methodology for the safety-related 33 battery voltage drop calculation which provided reasonable doubt about the ability of the battery to operate safety-related breakers. Entergy staff entered this issue into the corrective action program and performed an operability evaluation, which concluded that the battery was operable, based on breaker testing and input from the breaker vendor. The inspectors independently reviewed Entergy staff's basis for operability and similarly concluded that the failure to account for control power wiring did not render the 33 battery inoperable.

The performance deficiency was determined to be more than minor because it was similar to example 3.j of NRC IMC 0612, Appendix E, "Examples of Minor Issues," in that, based on the minimum voltage available to the 31 auxiliary feedwater (AFW) pump breaker being below the manufacturer's rating there was reasonable doubt that the 33 battery would have adequate capacity under all design conditions. In addition, the performance deficiency was associated with the design control attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences. The finding was of very low safety significance (Green) because it was not a design or qualification deficiency, did not represent a loss of system safety function, and did not screen as potentially risk significant due external events. The finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program Component, because Entergy staff did not thoroughly evaluate the problem such that the resolution addressed causes and extent of conditions, as necessary. Specifically, Entergy staff did not accurately evaluate the inadequate voltage drop calculation for the 33 battery and the extent of condition for the affected components.

Inspection Report# : [2012003](#) (pdf)

**Significance:** N/A Mar 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failed to Submit an LER for a Single Cause of Two Auxiliary Boiler Feedwater Trains Inoperable**

The inspectors identified a Severity Level IV, NCV of 10 CFR 50.73(a)(2)(vii), because Entergy personnel did not provide a written Licensee Event Report (LER) to the NRC within 60 days of identifying a single condition which

caused two trains of auxiliary feedwater (AFW) to become inoperable.

The safety-grade nitrogen backup to instrument air in the auxiliary boiler feed pump (ABFP) room is designed to provide 30 minutes of motive force to air operated AFW valves in the event that non-safety-related instrument air is lost. The discharge flow control valves (FCVs) for the ABFPs are designed to fail full open on a loss of all air pressure in order to ensure AFW is provided to the steam generators for decay heat removal. However, with the FCVs full open, the motors for 31 and 33 motor-driven ABFPs could reach an overcurrent condition, which, if coincident with degraded bus voltage, could cause the motor circuit breakers to trip open approximately 400 seconds from breaker amptector actuation. To protect the pump motor circuit breakers from possible trip while the nitrogen system is not available, and ensure AFW operability, a dedicated operator is required to be stationed locally to provide manual control of the FCVs if instrument air is lost. However, on October 11, 2011, Entergy personnel caused two trains of AFW to become inoperable for 45 minutes when they isolated the nitrogen backup system to instrument air during maintenance and did not station a dedicated operator as a compensatory measure. This issue was entered into Entergy's CAP as CR-IP3-2012-00394.

This violation involved not making a required report to the NRC and is considered to impact the regulatory process. Such violations are dispositioned using the traditional enforcement process instead of the Significance Determination Process. Using the Enforcement Policy Section 6.9, "Inaccurate and Incomplete Information or Failure to Make a Required Report," example (d)(9), which states "A licensee fails to make a report required by 10 CFR 50.72 or 10 CFR 50.73," the NRC determined this violation is more than minor and is categorized as a Severity Level IV violation.

Because this violation involves the traditional enforcement process with no underlying technical violation that would be considered more than minor in accordance with IMC 0612, a cross-cutting aspect is not assigned to this violation. Inspection Report# : [2012002](#) (*pdf*)

**Significance:**  Mar 31, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Inadequate Procedure and Instructions for Placing Pressure Regulator in Service**

A self-revealing NCV of very low safety significance (Green) of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified, because Entergy personnel did not ensure written maintenance instructions and an operating procedure were adequate, which resulted in damage to a safety-related relief valve in the nitrogen backup system to instrument air in the ABFP room and unavailability of the system while the valve was repaired. This issue was entered into Entergy's CAP as condition reports CR-IP3-2011-04651 and CR-IP3-2012-00819.

The finding is more than minor because it is associated with the Procedure Quality attribute of the Mitigating Systems cornerstone and affected the cornerstone objective to ensure the availability and capability of systems that respond to initiating events to prevent undesirable consequences. Using IMC 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the inspectors determined this finding was of very low safety significance (Green), because the finding was not related to a design or qualification deficiency, did not represent a loss of safety system function and did not screen as potentially risk significant due to external initiating events.

The inspectors determined that the finding had a cross-cutting aspect in the area of Human Performance, because Entergy personnel did not provide complete, accurate and up-to-date procedures and work packages. Specifically, the work instructions for the regulator maintenance and the operating procedure used to place the regulator back in service did not direct Entergy personnel to reduce the regulator setpoint prior to placing it in service.

Inspection Report# : [2012002](#) (*pdf*)

**Significance:**  Mar 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

**Failed to Update Operating Procedures and Licensing Basis Documents with Nitrogen Backup System Design**

**and Support Function for AFW System Operability**

The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion III, "Design Control," because Entergy personnel did not ensure that the design basis for the nitrogen backup system to instrument air was correctly translated into specifications, drawings, procedures, and instructions. Specifically, Entergy personnel did not ensure that information regarding the safety function of the nitrogen backup system to instrument air in the ABFP room and its relation to the operability of the AFW system was translated into operating procedures and licensing basis documents, which directly contributed to inadequate compensatory measures during corrective maintenance and resulted in two inoperable trains of AFW. This issue was entered into Entergy's CAP as condition reports CR-IP3-2011-4651 and CR-IP3-2012-00393.

The finding is more than minor because it is associated with the design control attribute of the Mitigating Systems cornerstone and adversely affects the objective to ensure the capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Using IMC 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the inspectors determined this finding was of very low safety significance (Green), because the finding was related to a design or qualification deficiency confirmed to result in a loss of operability of two trains of AFW; however, the finding did not represent a loss of safety system function because the turbine-driven ABFP was available and operable, and the motor-driven pumps remained functional, because off-site voltage was not degraded and the Instrument Air System was still available during the short duration of AFW system inoperability. The finding also did not screen as potentially risk significant due to external initiating events. The finding does not have a cross-cutting aspect because the performance deficiency is not reflective of current performance.

Inspection Report# : [2012002](#) (pdf)

**Significance:** G Mar 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Corrective Actions Associated with Degraded Motor Cutoff Switches on 480 Volt Breakers**

The inspectors identified an NCV of very low safety significance, of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions," because Entergy personnel did not promptly identify and correct, a condition adverse to quality associated with degraded motor cutoff (MCO) switches utilized on Westinghouse DS-style 480 Volt breakers. In particular, the MCO switches were related to breakers that did not operate on February 18, 2004, for a breaker that was intended for use for MCC-36D and on November 11, 2010, for the 32 containment spray (CS) pump. The inspectors determined that Entergy did not identify, correct, and replace in a timely manner, degraded, original-style, Westinghouse MCO switches that exist in DS-style 480V breakers at Unit 3. These switches exhibited contact degradation and other internal failure mechanisms that resulted in intermittent operation, and caused safety-related breaker malfunctions. This inadequate evaluation of MCO switch failures and development of appropriate corrective actions resulted in the subsequent failure on August 19, 2011, of the 32 component cooling water (CCW) pump circuit breaker.

Also, Technical Specification (TS) 3.6.6.A, requires that with one CS train inoperable, the train must be restored to operable with 72 hours, or if the required action and associated completion time are not met, be in Mode 3 within 6 hours and Mode 5 within 84 hours. Contrary to the above, between August 18, 2010 and November 12, 2010, the 32 CS pump was inoperable for approximately 86 days without the pump being returned to operable status, or the start of a reactor shutdown. Additionally, during this same period of inoperability, the redundant 31 CS pump was inoperable on October 17th and 25th, which is considered a TS-prohibited condition because TS 3.6.6.F, required immediate entry into TS 3.0.3 and subsequent shutdown to Mode 3 within 7 hours with two CS trains inoperable. Also, because during the same period of inoperability for the 32 CS pump in 2010, the 33 emergency diesel generator (EDG) was inoperable on September 14-15th, October 5-6th, and November 4th, actions to meet TS 3.8.1.b were not met, due to the inoperability of redundant components supported by the EDG, and therefore is also considered a TS-prohibited condition. Corrective actions included the LER submittal, performance of a higher-tier apparent cause evaluation to determine the cause of the breaker failures, revisions to applicable preventive maintenance procedures to ensure future breaker maintenance activities include (1) criteria for installation of new, enhanced motor cutoff switches, where applicable, and (2) expanded resistance checks are performed to verify switch reliability and satisfactory operation.

The inspectors determined that not identifying and correcting a condition adverse to quality associated with the 32 CCW breaker failure to close on demand, in August 2011 was a performance deficiency. The inspectors concluded the

problem was within Entergy's ability to foresee and correct. Specifically, available information from previous internal failures, external industry failures, and vendor information, should have been utilized to identify the deficient internal contacts of the "old-style" MCO switches and inform the identification and implementation of appropriate corrective actions following the 32 CS pump circuit breaker MCO switch malfunction in November 2010. The inspectors determined that if appropriate corrective actions had been identified and implemented, they could have prevented the subsequent failure of the 480V breaker during the August 2011, Loss of 138kV off-site power event associated with the 32 CCW pump because of its MCO switch malfunction. This performance deficiency was more than minor in accordance with IMC-0612, because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected its objective of ensuring the availability, reliability, and operability of systems that respond to initiating events to prevent undesirable consequences. The intermittent failures of the MCO switches prevented successful breaker operation that impacted associated safety-related components utilized to mitigate design basis events. The finding was determined to be of very low safety significance (Green), following IMC-0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations," and the resultant conclusion by the Region I Senior Reactor Analyst following performance of the Significance Determination Process (SDP) Phases 1, 2 and 3.

This finding has a cross-cutting aspect in the area of Problem Identification and Resolution associated with the attribute of Operating Experience, because Entergy personnel did not utilize available vendor, external and internal operating experience information to support plant safety, in that they did not identify and prioritize replacement of degraded MCO switches with the improved/enhanced switches that have been available since 2003.

Inspection Report# : [2012002](#) (*pdf*)

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## **Barrier Integrity**

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## **Emergency Preparedness**

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## **Occupational Radiation Safety**

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## **Public Radiation Safety**

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## **Security**

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

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## **Miscellaneous**

