

# Indian Point 3

## 2Q/2007 Plant Inspection Findings

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### Initiating Events

**Significance:**  Jun 29, 2007

Identified By: NRC

Item Type: FIN Finding

#### **FAILURE TO IDENTIFY IN THE CORRECTIVE ACTION PROCESS OR ADEQUATELY EVALUATE A DEGRADED CONDITION ASSOCIATED WITH A HIGH VOLTAGE BUSHING ON A MAIN TRANSFORMER**

The inspectors identified a finding of very low safety significance (Green), in that, Entergy failed to identify in the corrective action program an adverse condition associated with the 'B' phase high voltage bushing on the 31 main transformer (MT) that was discovered during testing. The data from that test indicated potential degradation of the 'B' phase high voltage bushing. As a result, this condition was not adequately evaluated before placing the transformer back in service, and the bushing subsequently failed. The transformer failure was entered into their corrective action program.

Entergy replaced the 31 main transformer and conducted a root cause analysis associated with the failure. The inspectors determined that this finding was more than minor because it is associated with the equipment performance attribute of the Initiating Events cornerstone, and it affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, Entergy did not place this issue in the corrective action process, and as a result, did not conduct an adequate evaluation of a degraded condition associated with the 'B' phase high voltage bushing on 31 MT. Subsequently, the bushing failed during power operation and resulted in a reactor trip, an explosion in the transformer yard, and the declaration of a notification of an unusual event. The inspectors evaluated the significance of this finding using Phase 1 of Inspection Manual Chapter (IMC) 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations." This finding was determined to be of very low safety significance because, while it was a transient initiator that resulted in a reactor trip, it did not contribute to the likelihood that mitigation equipment or functions would not be available.

The inspectors determined that this finding had a cross-cutting aspect in the area of problem identification and resolution, because Entergy failed to promptly identify an adverse condition in the corrective action program in a timely manner commensurate with its safety significance. (Section 4OA3)

Inspection Report# : [2007003](#) (*pdf*)

**Significance:**  Mar 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

#### **FAILURE TO INCLUDE THE INTAKE STRUCTURE TRASH RACKS WITHIN THE SCOPE OF THE MAINTENANCE RULE MONITORING PROGRAM**

The inspectors identified a Green non-cited violation (NCV) of 10 CFR 50.65(b), in that, Entergy did not include the Indian Point Unit 3 trash rack structures within the scope of the maintenance rule monitoring program. Additionally, Entergy did not demonstrate the performance or condition of the trash racks was being effectively controlled through the performance of appropriate preventive maintenance such that the structure remained capable of performing its intended function. Entergy performed a cleaning of the trash racks to immediately address the lowered service water intake bay level, and they timed service water bay level monitoring to coincide with river low tide cycles. Entergy also entered this issue into the corrective action program as CR-IP3-2007-00453, and developed corrective actions to: modify the requirements for inspection and cleaning of trash racks based on component history and condition monitoring; modify guidance for service water bay level monitoring to be more effective; evaluate maintenance rule system scoping; develop procedural guidance for managing low service water bay levels; and implement a method for monitoring debris fouling of the trash racks.

The inspectors determined that this finding affected the Initiating Events cornerstone and was more than minor because it was similar to Example 7.d in Inspection Manual Chapter (IMC) 0612, Appendix E, "Examples of Minor Issues." Specifically, equipment performance problems were such that Entergy was unable to demonstrate effective control of the performance or condition of the trash racks through appropriate preventive maintenance as specified by 10CFR50.65(a)(2). The inspectors evaluated the significance of this finding using Phase 1 of IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," and determined that the finding was of very low safety significance (Green) because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. (Section 1R12)

Inspection Report# : [2007002](#) (*pdf*)

**Significance:**  Mar 31, 2007

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **INADEQUATE PROCEDURE FOR RECIRCULATION SUMP INTERFERENCE REMOVAL**

A Green, self-revealing, non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified, in that, Entergy's work package failed to ensure that piping interference was correctly planned for and removed during modifications to the vapor containment and recirculation sumps. On March 9, 2007, during the sump modifications, a section of pipe was cut for interference removal which was different from the piping specified in the work package. This resulted in approximately 385 - 500 gallons of reactor coolant being discharged from the reactor loops into the recirculation sump where personnel were working. The cause of the improper pipe being cut was misidentification of the piping by work planners, followed by a failure of workers to follow steps in the work package that should have identified the work package inadequacy. Immediate corrective actions included a revision to the work package that subsequently welded a cap on the open piping leading from the reactor coolant drain tank to the work site, and plant configuration tags were placed on the residual heat removal interface valves (SI-864E and 864F) to isolate the work area. Entergy entered this issue into the corrective action program as CR-IP3-2007-01059, performed a root cause analysis, and conducted a human performance error review.

The inspectors determined that this finding was more than minor because it was associated with the Procedure Quality attribute of the Initiating Events cornerstone; and, it affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, cutting the wrong pipe resulted in the inadvertent draining of reactor coolant system inventory and increased the likelihood of a loss of inventory control. This finding was evaluated using Phase 1 of IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process." The inspectors evaluated the plant conditions (cold shutdown, reactor coolant system open, refueling cavity less than 23 feet) in accordance with Checklist 3 of Appendix G, Attachment 1, and determined that the finding was of very low safety significance because it did not satisfy the criteria of Table 1 for a "Loss of Control," and the Checklist 3 criteria for maintaining adequate mitigation capability (Core Heat Removal Guidelines, Inventory Control Guidelines, Power Availability Guidelines, Containment Control Guidelines, and Reactivity Guidelines) were met.

The inspectors determined that this finding had a cross-cutting aspect in the area of human performance because the work package used for interference removal was not accurate and did not ensure the correct section of piping was identified and appropriately controlled. (Section 1R17)

Inspection Report# : [2007002](#) (*pdf*)

**Significance:**  Mar 31, 2007

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **INADEQUATE PROCEDURE FOR CONDUCT OF RTD CROSS CALIBRATIONS**

A Green, self-revealing, non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified, in that, Entergy failed to ensure that appropriate procedures existed to prevent conflicting activities which led to the opening of the pressurizer power operated relief valves (PORVs) when plant conditions did not require them to be open, leading to a partial plant depressurization during plant heat-up. Entergy entered this issue into their corrective action program as CR-IP3-2007-01691. Entergy took immediate corrective action to stop the

reactor coolant system pressure transient, and they generated corrective actions to clarify the applicable procedure prerequisites.

The inspectors determined that this finding was more than minor because it was associated with the Procedure Quality attribute of the Initiating Events cornerstone; and, it affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the lack of procedure clarity and poor interpretation of a procedure pre-requisite led to a loss of reactor coolant system pressure as a result of the pressurizer PORV actuation. This finding was evaluated using Phase 1 of IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At Power Situations." The inspectors determined that the finding was of very low safety significance because assuming the worst case degradation, the loss of inventory did not exceed the Technical Specification limit for identified reactor coolant system (RCS) leakage, and the finding would not have caused a total loss of another mitigating system safety function.

The inspectors determined that this finding had a cross-cutting aspect in the area of human performance because the applicable procedure prerequisites were not adequate as written to prevent a plant transient. (Section 1R20)

Inspection Report# : [2007002](#) (*pdf*)

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## Mitigating Systems

**Significance:**  Mar 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

### **INADEQUATE PROCEDURE FOR CONTROL OF TEMPORARY MODIFICATION**

The inspectors identified a Green, non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," because Entergy failed to generate a procedure of a type appropriate to the circumstances associated with the implementation of a temporary modification to normal control room lighting power. The procedure that was generated lacked precautions, limitations, and prerequisites to prevent a low lighting condition in the control room from existing during implementation of the temporary modification. Consequently, during implementation of this temporary modification there were several control panels that did not have adequate lighting for operators to conduct control board manipulations. Entergy entered this issue into the corrective action program as CR-IP3-2007-00821, took immediate corrective action to add additional lighting to the control room, and generated a contingency procedure to allow backup lighting to be energized, if needed.

The inspectors determined that this finding was more than minor because it caused an actual condition to exist in the control room where lighting at selected control panels was not adequate, and contingency plans were not developed for the potential cases where the temporary lighting that was provided could be lost. This condition was similar to IMC 0612, Appendix E, Example 4.d. Specifically, the lowered level of lighting in the control room was determined to significantly impact the operator's ability to perform certain tasks. The inspectors determined that this finding was not suitable for evaluation using the significance determination process. Consequently, it was reviewed by NRC management and determined to be a finding of very low safety significance in accordance with NRC IMC 0609 Appendix M, "Significance Determination Process Using Qualitative Criteria," because the condition existed for a very limited period of time, other contingency lighting would have been available to the control room staff, and the approximated risk as determined by the regional NRC Senior Reactor Analyst was determined to be very low.

The inspectors determined that this finding had a cross-cutting aspect in the area of human performance because Entergy did not provide an adequate procedure to implement a temporary modification, in that it lacked precautions, limitations, and prerequisites that ultimately resulted in degraded control room lighting. (Section 1R23)

Inspection Report# : [2007002](#) (*pdf*)

**Significance:**  Dec 31, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

## **FAILURE TO IMPLEMENT CORRECTIVE ACTIONS FOR DEGRADED NUCLEAR INSTRUMENTATION SYSTEM PERFORMANCE**

The inspectors identified a Green non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," because Entergy failed to take timely corrective actions for a condition adverse to quality associated with age-related degradation of the nuclear instrumentation system. Corrective action plans, which had been developed following repetitive equipment failures in 2003, had been deferred several times, resulting in the power range nuclear instrument 41 (N-41) over-temperature delta temperature reactor trip function being declared inoperable on March 20, 2006. Entergy entered this issue into the corrective action program and updated their corrective action plan to begin systematic replacement of the nuclear instrumentation system drawers in the upcoming refueling outage.

This finding is more than minor because it affected the Equipment Performance attribute of the Mitigating Systems cornerstone and impacted the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors determined the finding was of very low safety significance since it did not represent a design or qualification deficiency, loss of safety function for the train or system, and was not risk-significant due to external event initiators.

This finding had a cross-cutting aspect in the area of Human Performance because Entergy did not provide the resources necessary to maintain long term plant safety by minimization of long-standing equipment issues, and by minimizing preventive maintenance deferrals, to address a condition adverse to quality in the nuclear instrumentation system.

Inspection Report# : [2006005](#) (*pdf*)

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## **Barrier Integrity**

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## **Emergency Preparedness**

**Significance:**  Mar 31, 2007

Identified By: NRC

Item Type: FIN Finding

## **INADEQUATE CORRECTIVE ACTIONS FOR FAILURE TO APPROPRIATELY MONITOR SERVICE WATER INTAKE BAY LEVEL**

The inspectors identified a Green finding because Entergy failed to take adequate corrective actions for an issue associated with monitoring of service water intake bay level. This deficiency could have prevented identification of entry conditions for an emergency action level. Entergy entered this issue into the corrective action program as CR IP3-2007-00453, and initiated several corrective actions, including plans for enhanced monitoring of service water bay levels, backwashing of trash racks, procedural upgrades, correction of service water bay level instrumentation modification installation, development of modifications for enhanced service water level monitoring equipment, and enhanced inspection and cleaning of intake structure trash racks.

The inspectors determined that this finding was more than minor because it was associated with the Emergency Preparedness cornerstone attribute of facilities and equipment; and, it affected the cornerstone objective of ensuring that a licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, inadequate monitoring of service water intake bay level could have resulted in failure to declare a notification of unusual event (UE). The inspectors reviewed the EAL entry criteria and determined that this performance deficiency did not affect Entergy's ability to declare any event higher than a UE. The inspectors evaluated this finding using IMC 0609, Appendix B, "Emergency Preparedness Significance Determination Process," Sheet 1, "Failure to Comply," and determined that it was of very low safety significance because the declaration of a UE based on low service water bay level could have been missed or delayed, consistent with the example provided in the appendix.

The inspectors determined that this finding had a cross-cutting aspect in the area of problem identification and resolution because Entergy did not implement effective corrective actions for a previously identified issue associated with inadequate monitoring of service water intake bay level. (Section 1R17)

Inspection Report# : [2007002](#) (*pdf*)

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## Occupational Radiation Safety

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## Public Radiation Safety

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## Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

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## Miscellaneous

**Significance:**  Dec 05, 2006

Identified By: NRC

Item Type: FIN Finding

### **FAILURE TO ENTER SAFETY CULTURE ASSESSMENT RESULTS INTO CORRECTIVE ACTION PROGRAM**

The NRC inspectors identified a finding when Entergy failed to initiate condition reports in accordance with EN-LI-102, "Corrective Action Process," for the adverse conditions identified in the 2006 Safety Culture Assessment. Consequently, the adverse conditions were not evaluated and appropriate corrective actions were not identified in a timely manner. The contractor who performed the independent safety culture assessment presented the site specific results to Entergy management in June 2006. The negative responses and declining trends identified in the assessment constituted adverse conditions that should have been entered into the corrective action program. At the time of the inspection, Entergy had not initiated condition reports for the assessment results. Consequently, the results had not been fully evaluated to understand the causes and identify appropriate actions to address the identified issues. Additionally, organizations identified by the contractor as needing management attention had not developed departmental action plans at the time of the inspection. Entergy entered this issue into the corrective action program and initiated a learning organization condition report to track development and implementation of action plans to address the assessment results.

The inspectors determined that the finding was more than minor because if left uncorrected it would become a more significant safety concern. Without appropriate action, the weaknesses in the safety culture onsite would continue, increasing the potential that safety issues would not receive the attention warranted by their significance. The finding was not suitable for SDP evaluation, but has been reviewed by NRC management and has been determined to be a finding of very low safety significance. The finding was not greater than very low safety significance because the inspectors did not identify any issues that were not raised which had an actual impact on plant safety or were of more than minor safety significance.

The inspectors determined that this finding had a cross-cutting aspect in the area of problem identification and resolution because Entergy did not identify issues with the potential to impact nuclear safety in the corrective action process for evaluation and resolution in a timely manner.

**Significance:** N/A Dec 05, 2006

Identified By: NRC

Item Type: FIN Finding

### **IDENTIFICATION AND RESOLUTION OF PROBLEMS**

The inspectors concluded that the implementation of the corrective action program at Indian Point Unit 3 was generally effective. The inspectors noted that Entergy staff had a low threshold for identifying problems and entering them in the corrective action program. The inspectors also noted that once entered into the system, items were screened, prioritized, and evaluated commensurate with their significance using established criteria. The inspectors determined that corrective actions addressed the identified causes and were typically implemented in a timely manner. In addition, the team noted that Entergy was generally effective in reviewing and applying lessons learned from industry operating experience. The inspectors found that audits and assessments were critical and, in most cases, appropriate actions were taken to address identified issues. However, the inspectors also found that the results of an independent safety culture assessment were not entered into the corrective action program for timely evaluation and appropriate action.

The inspectors found that most workers indicated that they would raise issues that they recognized as nuclear safety issues. However, the inspectors also found that a number of workers interviewed indicated that they were aware of individuals they perceived as having been treated negatively by management for raising issues; most of these workers were in the Instrumentation and Controls (I&C) department. Some workers expressed reluctance to raise issues under certain circumstances due to a number of reasons, including fear of disciplinary action and concerns with the efficacy of the corrective action program. While most workers made a distinction between nuclear safety issues and other concerns, the inspectors noted that some of the illustrative examples provided by plant workers could have nuclear safety implications. However, the inspectors did not identify any more than minor issues, which had not been raised.

Inspection Report# : [2006006](#) (*pdf*)

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