

# Indian Point 2

## 2Q/2009 Plant Inspection Findings

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### Initiating Events

**Significance:**  Apr 03, 2009

Identified By: NRC

Item Type: FIN Finding

#### **Inadequate Design Change Package for Installation of Main Boiler Feed Pump Control System Tubing**

•Green. The inspectors documented a self-revealing finding of very low safety significance because Entergy engineers did not provide adequate guidance in a design change package for installation of tubing in the 21 main boiler feed water pump (MBFP) control system that eventually led to the tubing failure and an unplanned trip of the reactor plant. Entergy's design change procedure required that instructions delineating installation precautions be provided in the design change package. Entergy's corrective actions included repair of the affected tubing, identifying and replacing similar tubing on the 22 MBFP, and examining Unit 3 MBFPs to identify the extent of the condition. Entergy staff placed this issue into the corrective action program and performed a root cause analysis.

The finding was more than minor because it was associated with the design control attribute of the Initiating Events cornerstone and affected its objective to limit the likelihood of events that affect plant stability and challenge critical safety functions during shutdown, as well as power operations. Specifically, the incorrectly installed MBFP control tubing resulted in a loss of the 21 MBFP and, ultimately, a reactor trip due to low steam generator water level. The inspectors determined that the finding was of very low safety significance (Green) using the Phase 2 Indian Point Unit 2 risk-informed inspection notebook, in accordance with IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations."

The inspectors determined there was no cross-cutting issue associated with the finding because the performance deficiency did not reflect current licensee performance. Specifically, the performance deficiency occurred several years ago and was outside the current assessment period, and procedures have since been improved in the design control, work control and vendor control processes that reduced the likelihood of vendors working on equipment without sufficient training or work instructions.

Inspection Report# : [2009003](#) (*pdf*)

**Significance:**  Mar 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Identify Damaged Components in EDG Ventilation Motor Control Center #2**

The inspectors identified a NCV of very low safety significance related to 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions," because Entergy did not promptly identify and correct an adverse condition related to an electrical fault. Specifically, personnel did not identify a safety-related cubicle had experienced an electrical fault prior to replacement of upstream fuses and restoration of power to the damaged cubicle. Entergy entered the issue into the corrective action program as IP2-2009-00342 and IP2-2009-00483, trained all operations personnel on the requirements to replace fuses and re-energize electrical equipment, and plans to revise the operations procedure for operating electrical equipment.

This issue was more than minor because the finding was associated with the external factors attribute of the Initiating Events cornerstone and impacted the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety systems during shutdown as well as power operations. The inspectors determined that the issue increased the likelihood of a fire in the emergency diesel generator (EDG) building. The condition was evaluated by a Senior Reactor Analyst utilizing Phase 2 of IMC 0609 Appendix F, "Fire Protection Significance Determination Process." It was determined that in the event of a fire consuming the MCC, no transient would be

placed on the plant and no components required to safely shutdown the plant would be impacted. As a result, in accordance with task 2.3.5 of Appendix F, the issue was screened to Green.

The inspectors determined that a cross-cutting aspect was associated with this finding in the area of human performance related to conservative decision making. Specifically, Entergy's decision-making was non-conservative related to its decisions on the process used to identify the source of the acrid odor; re-energize the damaged electrical equipment; and keep a damaged electrical component energized for 14 days prior to its removal from the MCC.

Inspection Report# : [2009002](#) (*pdf*)

**Significance:**  Mar 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Maintenance Procedure for EDG Ventilation Motor Control Center #2**

The inspectors identified a NCV of very low safety significance related to TS 5.4.1, "Administrative Controls: Procedures," because Entergy did not maintain an adequate maintenance procedure for a safety-related electrical motor control center (MCC). Specifically, the eight-year maintenance procedure for the affected EDG ventilation MCC did not contain an adequate method to identify high resistance connections within the cubicle as was expected in the applicable preventative maintenance industry template. Subsequently, a high resistance connection within the MCC developed into a phase-to-phase electrical fault on January 28, 2009. Entergy entered the issue into the corrective action program, scoped the affected MCC and 21 additional MCCs into the site's thermography program, and planned to revise the maintenance procedure.

This issue was more than minor because the finding was associated with the external factors attribute of the Initiating Events cornerstone and impacted the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety systems during shutdown as well as power operations. Specifically, the high resistance connection degraded into a phase-to-phase fault and increased the likelihood of a fire in the EDG building. The condition was evaluated by a Senior Reactor Analyst utilizing Phase 2 of IMC 0609 Appendix F, "Fire Protection Significance Determination Process." It was determined that in the event of a fire consuming the MCC, no transient would be placed on the plant and no components required to safely shutdown the plant would be impacted. As a result, in accordance with task 2.3.5 of Appendix F, the issue was screened to Green.

The inspectors determined that the finding had a cross-cutting aspect associated with the area of problem identification and resolution related to the use of operating experience (OE). Specifically, Entergy personnel did not implement industry recommended practices, or an alternate equivalent method, for identifying high resistance connections in electrical switchgear.

Inspection Report# : [2009002](#) (*pdf*)

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## **Mitigating Systems**

**Significance:**  Mar 31, 2009

Identified By: NRC

Item Type: FIN Finding

### **Failure to Identify Open Louvers in 11 Fire Pump House**

The inspectors identified a finding of very low safety significance because Entergy personnel did not adequately implement procedure EN-LI-102, Corrective Action Process, and promptly identify a condition adverse to quality associated with open louvers in a fire protection pump room following pump testing on January 14, 2009. The open louvers resulted in freezing conditions in fire protection piping located in the room and cracked two six-inch header isolation valves on January 17, 2009. Entergy entered the issue into the corrective action program and performed a site-wide extent-of-condition walkdown of louvers.

The finding was more than minor because it was associated with the protection against external factors attribute of the Mitigating Systems cornerstone and it affected the cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. This finding was evaluated using Phase 1 of IMC 0609 Appendix F, "Fire Protection Significance Determination Process." The inspectors determined the issue was of very low safety significance (Green) because the cracked valves were easily isolated and did not pass sufficient water to render the fire header non-functional (low degradation rating).

The inspectors determined that the finding had a cross-cutting aspect in the area of human performance related to work practices - human error prevention techniques. Specifically, Entergy personnel that routinely tour the 11 fire pump house did not question the abnormally cold room temperatures.

Inspection Report# : [2009002](#) (*pdf*)

**G**

**Significance:** Mar 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Identify and Promptly Correct Degraded 480 Volt Switchgear Room Fire Door**

The inspectors identified a NCV of very low safety significance related to License Condition 2.K., fire protection program, because personnel did not promptly identify and correct a degraded three-hour rated fire door latch mechanism on the west entrance of the 480-Volt switchgear room. Specifically, inspectors identified the fire door in a non-functional state on several instances over the course of a month. Entergy personnel replaced the fire door latch mechanism on March 3, 2009. This issue was entered into the corrective action program as six condition reports spanning several weeks and included an extent of condition walkdown of site fire doors.

The finding was more than minor because it is associated with the protection against external factors attribute of the Mitigating Systems cornerstone and affected the cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. This fire door, when degraded, impacts the reliability of mitigating systems in the 480-Volt switchgear room that are relied upon during a postulated large fire in the turbine building, and vice versa. This finding was evaluated using Phase 1 of IMC 0609 Appendix F, "Fire Protection Significance Determination Process." Since the area in question had a fire watch posted during the time the door was degraded for an unrelated issue, an adequate level of protection was maintained to compensate for the degraded door. As such, according to task 1.3.1, the inspectors determined the finding was Green.

The inspectors determined that the finding had a cross-cutting aspect in the area of problem identification and resolution because Entergy personnel did not thoroughly evaluate a degraded fire door latch on several occasions, such that the resolution of the problems addressed the causes.

Inspection Report# : [2009002](#) (*pdf*)

**G**

**Significance:** Mar 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Include RWST Level Maintenance in Online Risk Assessment**

The inspectors identified a NCV of very low safety significance related to 10 CFR 50.65(a)(4), because Entergy personnel did not adequately assess the risk associated with the unavailability of the Refueling Water Storage Tank (RWST) level indication during planned maintenance on the level transmitters and instrumentation. Entergy entered the issue into the corrective action program (CR-IP2-2009-00342), updated the risk model to include the maintenance activity, assessed the risk, and appropriately coded the maintenance activity to ensure it would be risk assessed in the future.

The inspectors determined that this finding was more than minor because it was a maintenance risk assessment issue in which personnel did not consider risk significant SSCs that were unavailable during maintenance. The RWST level indication is specifically listed in Table 2 of the plant specific Phase 2 SDP risk-informed inspection notebook. The inspectors determined the significance of this issue in accordance with IMC 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process." The inspectors determined that this finding

was of very low safety significance because the Incremental Core Damage Probability Deficit was less than 1E-6.

The inspectors determined that the finding had a cross-cutting aspect in the area of human performance related to work control. Specifically, Entergy personnel did not appropriately plan work activities by incorporating risk insights for affected plant equipment.

Inspection Report# : [2009002](#) (*pdf*)

**Significance:**  Mar 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Test Acceptance Criteria for Auxiliary Component Cooling Check Valves**

The inspectors identified a NCV of very low safety significance related to 10 CFR 50.55a, “Codes and standards,” because Entergy’s procedure, 2-PT-Q031A for an auxiliary component cooling water pump, did not contain appropriate acceptance criteria for positively determining that safety-related check valves performed their safety function when required in accordance with the American Society of Mechanical Engineers (ASME) OM Code. Specifically, the test used reverse rotation of a parallel pump to verify that the pump’s discharge check valve was closed although previous site-specific experience demonstrated that the pump impeller would not rotate backwards when the check valve was stuck open. Entergy entered this issue into their corrective action program as CR-2009-1312.

The inspectors determined that the performance deficiency was greater than minor because it was associated with the procedure quality attribute of the Mitigating System cornerstone and it adversely affected the cornerstone’s objective to ensure the reliability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the test criterion used in procedure 2-PT-Q013A did not ensure that valve 755A reliably performed its safety function when tested as demonstrated by testing performed in January 2005. The inspectors determined that the performance deficiency was of very low safety significance (Green) IMC 0609, Attachment 4, “Phase 1 – Initial Screening and Characterization of Findings.” Specifically, the inspectors determined that this finding was of very low safety significance because the finding did not result in a loss of safety function and did not screen as potentially risk-significant due to external events initiating events.

The inspectors determined the finding had a cross-cutting aspect related to effective corrective actions in the corrective action program component of the problem identification and resolution area. Specifically, Entergy personnel did not implement effective corrective actions to resolve the testing inadequacy since 2005 and during subsequent quarterly testing.

Inspection Report# : [2009002](#) (*pdf*)

**Significance:**  Aug 15, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Design Control of Internal Recirculation Pumps**

•Green. The team identified a non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion III, Design Control, because Entergy did not verify the adequacy of the internal recirculation pump minimum flow rates. Specifically, Entergy did not verify the adequacy of the pump minimum flow rates for sustained operation under low flow rate conditions or for strong-pump to weak-pump interactions which could result in dead-heading the weaker pump during parallel pump operation. Following identification of the issue, Entergy revised the Emergency Operating Procedures (EOP) to not start a second internal recirculation pump during conditions of high head recirculation, submitted a licensee event report (LER) for each generating unit, and entered the issue into the corrective action program.

The finding was determined to be more than minor because it is associated with the design control attribute of the Mitigating Systems (MS) Cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. On Unit 2, the team determined the finding was of very low safety significance because it was a design or qualification deficiency confirmed not to result in loss of operability or functionality.

The deficiency was not indicative of current performance because the modification on Unit 2 was performed in May 2000. Therefore, there was no cross-cutting aspect.

Inspection Report# : [2008012](#) (*pdf*)

**Significance:**  Aug 08, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Auxiliary Feedwater System Configuration Control Deficiencies**

The inspectors identified a Green NCV of Technical Specification 5.4.1, "Administrative Controls - Procedures," because Entergy did not implement the Auxiliary Feedwater (AFW) operating procedures required by Regulatory Guide 1.33 Appendix A. Specifically, the inspectors identified an AFW drain valve that was not in the required position and an AFW isolation valve that was in the correct position but was not locked as required. Entergy evaluated the as-found configuration of the valves and determined that the AFW system operability was not impacted. Entergy also performed system alignment verifications of AFW and other safety-related systems as part of an extent-of-condition review.

The inspectors determined the finding was more than minor because it was associated with the configuration control attribute of the Mitigating Systems cornerstone and affected the cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. The inspectors determined the significance of the finding using Inspection Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings." The inspectors determined that this finding was of very low safety significance because the finding did not result in a loss of safety function and did not screen as potentially risk-significant due to external events initiating events. Specifically, the inspectors determined that the as-found configuration of the identified components did not adversely impact system operability. The finding had a cross-cutting aspect in the area of human performance because operators did not use adequate self and peer checking techniques when shutting an open drain valve or when attaching a locking device to an isolation valve. (H.4(a))

Inspection Report# : [2008004](#) (*pdf*)

**Significance:**  Jul 29, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

#### **On-line Leak Repairs Made Without Use of Proper Procedures**

The inspectors identified a non-cited violation of Technical Specification 5.4.1, "Procedures," when Entergy did not implement on-line leak repair procedures to repair a steam leak on valve MS-2A. Specifically, Entergy performed multiple leak sealant injections on valve MS-2A without engineering controls described in station on-line leak repair procedures. Corrective actions planned included reviewing this issue with the planning and component engineering departments and determining if training on the on-line leak sealing procedures is warranted.

The finding was more than minor because, if left uncorrected, inadequate control of leak-sealant injections would become a more significant safety concern. The inspectors determined the significance of the finding using Inspection Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings." The finding was determined to be of very low safety significance (Green) because it did not represent a loss of system safety function. Specifically, Entergy's operability evaluation concluded that the sealant that was injected extruded back out of the leak path and likely did not reach the valve's seat or hinge. The finding had a cross cutting aspect related to work control in the area of Human Performance. Entergy personnel did not appropriately plan work activities to conduct online leak repairs on a safety related component. Specifically, Entergy did not identify necessary engineering procedures to adequately perform leak seal repairs on MS-2A during the planning process. These procedures provide necessary limitations, contingencies, and abort criteria. (H.3.(a))

Inspection Report# : [2008004](#) (*pdf*)

**Significance:**  Jul 26, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

### **City Water Tank Below Required Level due to Inadequate Design Change Implementation**

The inspectors identified a non-cited violation of Technical Specification 5.4.1, "Procedures," because Entergy did not implement portions of an engineering change package for an alarm setpoint change following modification to the city water tank minimum required water volume calculation. As a result, city water tank level dropped below the minimum water level required by the Technical Requirements Manual. Corrective actions included updating plant procedures and training of personnel.

The finding was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and affected the Cornerstone's objective to ensure the capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors determined the significance of the finding using a phase 1 analysis described in Inspection Manual Chapter 0609 Appendix F, "Fire Protection Significance Determination Process." The finding was determined to be of very low safety significance (Green) because the degradation rating was determined to be low. The finding had a cross-cutting aspect related to formally defining the authority and roles for decisions affecting nuclear safety in the area of Human Performance in that Entergy management did not ensure that roles and responsibilities were communicated clearly to a member of the engineering change team responsible for implementing Operations procedure changes. As a result, the proper procedure changes were not made to plant procedures and logs which ultimately led to unmitigated low levels in the city water tank. (H.1(a))

Inspection Report# : [2008004](#) (*pdf*)

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## **Barrier Integrity**

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## **Emergency Preparedness**

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## **Occupational Radiation Safety**

**Significance:**  Mar 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Follow Radiation Protection Procedures**

The inspectors identified a NCV of very low safety significance related to Technical Specification 5.4.1.a, "Procedures," because Entergy personnel did not generate condition reports or investigation paperwork for multiple high dose-rate alarms as required by station procedures. Specifically, personnel did not generate the required condition reports and adequately document the investigations for six instances of unplanned or un-briefed electronic dosimeter alarms that occurred between January 2009 and March 2009. The performance deficiency resulted in workers receiving unanticipated dose rate alarms with no formally-documented investigation prior to returning to work in a Radiologically Controlled Area. Entergy entered the finding into the corrective action program as condition report CR-IP3-2009-01253 and 01318.

The finding is more than minor because it is associated with the Occupational Radiation Safety cornerstone attribute of programs and process, and adversely affected the objective to ensure adequate protection of worker health and safety from exposure to radiation. Moreover, the inspectors identified a programmatic deficiency to maintain and implement programs to keep exposures as low as reasonably achievable, because multiple examples were identified regarding the failure to satisfy station radiation protection procedures. Using the Occupational Radiation Safety Significance Determination Process, the inspectors determined that the finding was of very low safety significance (Green) because it did not involve: (1) as low as is reasonably achievable planning and controls, (2) an overexposure

of an individual, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose.

The inspectors determined that the finding had a cross-cutting aspect related to procedural adherence in the work practices component of the human performance area. Specifically, Entergy personnel did not follow procedures to generate condition reports and document investigations when high dose-rate alarms were received by workers.

Inspection Report# : [2009002](#) (*pdf*)

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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:** SL-IV Dec 31, 2008

Identified By: NRC

Item Type: VIO Violation

**Site Access Procedure Violation**

Site Access Procedure Violation - SLIV (involved willfulness)

There was no cross-cutting aspect

Inspection Report# : [2008014](#) (*pdf*)

Last modified : August 31, 2009