

Indian Point 3

4Q/2008 Plant Inspection Findings

Initiating Events

Significance:  Sep 29, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Follow Procedures Results in the Inadvertent Start of Two Auxiliary Boiler Feed Pumps at Power.

A self-revealing, non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified when maintenance technicians incorrectly attached electrical jumpers during a surveillance test and caused the inadvertent start of two motor-driven auxiliary feedwater pumps while at the plant was at full power operation. Entergy entered this issue into the corrective action program for resolution as CR-IP3-2008-01863. Additional actions included a root cause evaluation, communication to maintenance personnel regarding similar events in 2008, as well as reinforcement of human error reduction tools, and proper actions when faced with unexpected circumstances or results.

The inspectors determined that the finding was more than minor because it was associated with the Human Performance attribute of the Initiating Events cornerstone, and impacted its objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. Specifically, that human error resulted in a plant transient that unnecessarily challenged an automatic safety function and the unexpected start of safety-related pumps when not warranted. This finding was determined to be of very low safety significance, using Phase 1 guidance contained in IMC 0609, "Determining the Significance of Reactor Inspection Findings for At-Power Situations." Specifically, that the finding did not contribute to both the likelihood of a reactor trip and 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 Human Performance. The significant contributor to the event was that the technicians did not utilize self-check and peer-check skills that would have prevented the event, and proceeded in the face of unexpected circumstances when a jumper became dislodged during testing. (H.4(a))

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

Significance:  May 15, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to establish and implement adequate corrective actions for procedural inadequacy

Green. The inspectors identified a Green NCV of Title 10 of the Code of Federal Regulations Part 50 (10 CFR 50), Appendix B, Criterion XVI, "Corrective Action," because Entergy did not establish and implement adequate corrective actions for a condition adverse to quality involving procedural inadequacy associated with reactor trips. Specifically, during Entergy's evaluation to determine reactor trip common causes performed in April 2007, Entergy identified that weak procedure guidance and procedural inadequacy was a common adverse cause associated with Unit 2 and Unit 3 reactor trips experienced during 2006 and 2007. The inspectors determined that Entergy's corrective action implemented to address the adverse condition in CR-IP3 2007-1849, specific to procedural adequacy as it relates to reactor trip reduction efforts, was not adequate. Entergy did not take specific or prompt action besides reliance upon on a long-standing, existing procedure upgrade project. As a result, timely and effective corrective actions were not taken to address procedural adequacy related to reactor trip reduction efforts. Entergy issued condition report CR-IP2-2008-2650 to address the issue.

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 impacts 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 failure to take effective and timely reactor trip reduction corrective actions for procedural inadequacy resulted in corrective actions not being implemented to ensure plant procedures reasonably prevent and minimize challenges that could result in unplanned reactor trips. This finding was evaluated using Phase 1 of Inspection Manual Chapter (IMC) 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations." This finding was determined to be of very low safety significance (Green) because, while it is a transient initiator contributor that could result 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 did not take appropriate corrective actions to address procedural adequacy issues in a timely manner commensurate with its significance. (P.1(d) per IMC 0305)

Inspection Report# : [2008009](#) (*pdf*)

Significance:  Mar 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Include AMSAC into Online Risk Assessments

The inspectors identified a Green non-cited violation (NCV) of Title 10 of the Code of Federal Regulations (CFR) Part 50.65(a)(4), because Entergy did not assess and manage the increase in risk from maintenance activities prior to performing work on the Unit 3 plant computer static inverter that required the Anticipated Transient Without Scram (ATWS) Mitigating Safety Actuating Circuitry (AMSAC) to be bypassed. When questioned by the inspectors, operations personnel included AMSAC unavailability in the risk calculation and observed an increase in the calculated risk. Entergy entered the issue into their corrective action program for evaluation.

The inspectors determined that this finding was more than minor because Entergy failed to include an unavailable, risk-significant system (AMSAC) in the plant on-line risk assessment during maintenance on the Unit 3 plant computer static inverter. In accordance with Inspection Manual Chapter (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 difference between the correctly calculated core damage frequency (CDF) and Entergy's original calculation was less than 1E-6.

The inspectors determined that this finding had a cross-cutting aspect in the area of Human Performance because Entergy did not appropriately plan work activities by incorporating appropriate risk insights for affected plant equipment. (H.3(a))

Inspection Report# : [2008002](#) (*pdf*)

Significance:  Mar 31, 2008

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Follow Procedures Results in Loss of Safety Bus 5A

A self-revealing, Green, non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified, because maintenance technicians improperly performed a surveillance test and caused the loss of 480 volt safety bus 5A and the automatic start and loading of the 33 emergency diesel generator. Entergy communicated the human error attributes that contributed to the event to plant personnel and entered this issue into the corrective action program.

The inspectors determined that the finding was more than minor because it was associated with the Human Performance attribute of the Initiating Events cornerstone, and impacted its objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. This finding was determined to be of very low safety significance, using Phase 1 guidance contained in IMC 0609, "Determining the Significance of Reactor Inspection Findings for At-Power Situations." Specifically, that the finding did not contribute

to both the likelihood of a reactor trip and 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 Human Performance, in that maintenance technicians did not follow procedures as written. Moreover, the underlying contributor to the event was that the technicians did not utilize self-check and peer-check skills that would have prevented the event, and proceeded in the face of unexpected circumstances. (H.4(a))

Inspection Report# : [2008002](#) (*pdf*)

Significance:  Feb 08, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Procedure Guidance to Diagnose and Align RCP Seal Cooling

The team identified a Green non-cited violation of technical specification 5.4.1.d for failure to provide adequate procedure directions in 3-AOP-SSD-1, "Control Room Inaccessibility Safe Shutdown Control," Rev. 6, for operators to properly determine if a loss of cooling to the reactor coolant pump (RCP) seal had occurred due to spurious closure of motor operated valves in the component cooling water (CCW) system.

This finding was more than minor because it affected the procedure quality attribute of the Initiating Events cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, establishing adequate guidance to diagnose and align RCP seal cooling functions is important to limit the likelihood of an RCP seal loss of coolant accident. The team assessed this finding in accordance with NRC IMC 0609, Appendix F, "Fire Protection Significance Determination Process." This finding screened to very low safety significance (Green) in Phase 1 of the SDP because it was assigned a low degradation rating.

The team determined that this finding has a cross-cutting aspect in the area of human performance because Entergy did not provide adequate procedure guidance to diagnose and align RCP seal cooling functions adequately to preclude seal leakage rates in excess of Appendix R Safe-Shutdown evaluation for a control building fire scenario. (H.2(c))

Inspection Report# : [2008007](#) (*pdf*)

Mitigating Systems

Significance:  Dec 31, 2008

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

34 Control Building Fan Bearing Failures Caused by Torque and Lubrication Deficiencies.

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 properly include the appropriate torque requirements and lubricant in plant instructions and procedures during replacement and maintenance of bearings for the 34 Control Building Exhaust Fan. Specifically, between January 2006 and September 2008, Entergy used a grease to lubricate 34 CB Fan bearings that was incompatible with grease contained in the pre-lubricated bearings supplied by the manufacturer. Additionally, Entergy failed to provide adequate procedural guidance to ensure proper torque values were used to torque the 34 CB Fan pillow block bolts to preclude movement of the fan bearings. Failure to provide the appropriate qualitative and quantitative guidance in maintenance procedures resulted in the 34 CB Fan bearings being replaced in January 2006; June 2008; and again in September 2008. Entergy has corrected the incompatible grease issue and included vendor-recommended torque values during the most-recent bearing replacement for the 34 CB Fan in September 2008.

The inspectors determined that this finding impacts the Mitigating Systems cornerstone. The finding is greater than

minor because it impacts the attribute of equipment performance and affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The significance of this finding was determined using a Phase 1 SDP screening and was determined to be Green because the high vibrations of the 34 CB Fan is a qualification deficiency that does not result in loss of operability or functionality.

The finding had a cross-cutting aspect in problem identification and resolution in that Entergy did not thoroughly evaluate problems such that the resolutions addressed the causes when equipment failed on an increased frequency. (P.1(c))

Inspection Report# : [2008005](#) (pdf)

Significance:  Sep 29, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Follow Maintenance Procedures Results in Degraded EDG for 37 Days.

A self-revealing, non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified when maintenance personnel improperly performed a maintenance procedure that resulted in two adjacent cylinders of the 33 emergency diesel generator (EDG) being locked-out without fuel oil supply for approximately 37 days. Entergy entered this issue into the corrective action program, performed a root cause evaluation, performed extent of condition inspections of similar EDGs on-site, instituted immediate procedure changes to preclude recurrence, and communicated the human error attributes that contributed to the event to plant personnel.

The inspectors determined that the finding was more than minor because it was associated with the Human Performance attribute of the Mitigating Systems cornerstone, and impacted its objective to ensure the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the locked-out cylinders degraded the full rated capacity of the EDG and unavailability hours were utilized to resolve the high exhaust temperatures identified during surveillance testing on July 11, 2008. This finding was determined to be of very low safety significance (Green), using Phase 3 guidance contained in IMC 0609, "Determining the Significance of Reactor Inspection Findings for At-Power Situations." Specifically, a bounding analysis was performed with the conservative assumption that the 33 EDG was considered inoperable for 37 days.

The inspectors determined that this finding had a cross-cutting aspect in the area of Human Performance, in that maintenance personnel did not utilize self-check, peer-check, and documentation skills that would have prevented the event. Specifically, maintenance personnel failed to verify that all fuel injection pump control latches were not engaged prior to the installation of injection pump covers, and required signature verification that indicated successful completion of this step in the applicable maintenance procedure. (H.4(a))

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

Significance:  Aug 14, 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. On Unit 3, the finding was determined to be of very low safety significance based on a Significance Determination Process (SDP) Phase 3 risk assessment.

Also, the Unit 3 finding had a crosscutting aspect in the area of Problem Identification and Resolution because Entergy did not implement operating experience information through changes to station processes, procedures, and equipment. (IMC 0305 aspect P.2 (b)) (Section 4OA5)

Inspection Report# : [2008010](#) (*pdf*)

Significance:  Mar 31, 2008

Identified By: NRC

Item Type: FIN Finding

Inappropriate Exiting of TS 3.3.4 "Remote Shutdown."

The inspectors identified a Green finding, of very low safety significance, because Entergy inappropriately exited Technical Specification (TS) 3.3.4, "Remote Shutdown." Specifically, on February 25, 2008, Entergy inappropriately determined that the 32 and 33 pressurizer backup heater groups could satisfy the remote shutdown safety function for the 31 pressurizer backup heater group and exited Technical Specification 3.3.4. The inspectors determined that this action was contrary to the Unit 3 Technical Specification Bases, Updated Final Safety Analysis Report (UFSAR), and procedure EN-OP-104, "Operability Determination." Following discussion between the inspectors and Entergy management, operators re-entered Technical Specification 3.3.4 until the repairs of the 31 pressurizer backup heater group were completed. Entergy entered this issue into their corrective action program, and submitted a Licensee Event Report to the NRC. This finding did not involve a violation of regulatory requirements because Entergy did not exceed the 30-day allowed outage time for the 31 pressurizer backup heater group.

The finding was more than minor because it was associated with the Mitigating Systems cornerstone attribute of Configuration Control and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events. Specifically, Entergy inappropriately restored operability of the pressurizer heater remote shutdown function. This finding was determined to be of very low safety significance, using Phase 1 guidance contained in IMC 0609, "Determining the Significance of Reactor Inspection Findings for At-Power Situations," because although it did represent a loss of operability of the component, it did not represent a loss of safety function, and the component was not lost for greater than its Technical Specification allowed outage time.

The inspectors determined that this finding had a cross-cutting aspect in the area of Human Performance because Entergy did not make safety-significant or risk significant decisions using a systematic process when faced with uncertainty and unexpected plant conditions to ensure that safety was maintained. (H.1(a))

Inspection Report# : [2008002](#) (*pdf*)

Significance: SL-IV Mar 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Report Under 10 CFR 50.72(b)(2)(v), the Loss of Pressurizer Heaters

The inspectors identified a Severity Level IV, non-cited violation of 10 CFR 50.72(b)(3)(v) because Entergy did not report the loss of the 31 backup pressurizer heater group. Entergy submitted a licensee event report and entered the issue into their corrective action program. This finding was evaluated using the traditional enforcement process since the failure to make a required report could adversely impact the NRC's ability to carry out its regulatory mission. The failure to report was entered into Entergy's corrective action program as CR-IP3-2008-00879, and Entergy is currently drafting a licensee event report regarding this event. Since this violation has been characterized as a Severity Level IV violation, and has been entered into Entergy's corrective action program, it is being treated as a non-cited violation in accordance with Section VI of the NRC Enforcement Policy.

The inspectors determined that this finding had a cross-cutting aspect in the area of Human Performance, in that

Entergy did not make risk significant decisions using a systematic process. Specifically, the Unit 3 current licensing and design bases contained the necessary information to reach an appropriate decision regarding compliance with applicable regulations. (H.1.(a))

Inspection Report# : [2008002](#) (pdf)

Significance:  Mar 31, 2008

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Maintain EDG Jacket Cooling Water Pressure Switch Design Control

A self-revealing, Green, non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion III, "Design Control," was identified because Entergy failed to ensure proper design control when modifying the jacket cooling water pressure switches in the Unit 3 emergency diesel generators. Specifically, in 2004 and 2005, Entergy replaced the existing Unit 3 emergency diesel generator jacket cooling water pressure switches but failed to ensure the new pressure switches had the proper material and classifications required for their application. The new pressure switches experienced failures on the 31 emergency diesel generator in August 2006, on the 32 emergency diesel generator in October 2007, and on the 33 emergency diesel generator in March 2008. Entergy entered this issue into their corrective action program for resolution, and is currently re-evaluating the appropriateness of the original modification, which may include pressure switch installations with different design capabilities.

This finding was more than minor because it impacted the Mitigating Systems cornerstone attribute of Equipment Performance and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, Entergy failed to ensure the availability of the emergency diesel generators following shutdown by installing pressure switches that do not meet the original emergency diesel generator design criteria. This finding was determined to be of very low safety significance, using Phase 1 guidance contained in IMC 0609, "Determining the Significance of Reactor Inspection Findings for At-Power Situations," because the design deficiency did not affect the operability of the emergency diesel generators.

Inspection Report# : [2008002](#) (pdf)

Significance:  Feb 08, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Procedure Guidance to Isolate Steam Generator Blowdown Flow

The team identified a Green non-cited violation of technical specification 5.4.1.d for failure to provide procedure directions in 3-AOP-SSD-1, "Control Room Inaccessibility Safe Shutdown Control," Rev. 6, that were adequate to ensure operators could isolate steam generator blowdown flow within the time assumed in supporting design calculations.

This finding was more than minor because it affected the procedure quality attribute of the Mitigating Systems cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The team assessed this finding in accordance with NRC IMC 0609, Appendix F, "Fire Protection Significance Determination Process." This finding affected post-fire safe shutdown procedures and systems and screened to very low safety significance (Green) in Phase 1 of the SDP because it was assigned a low degradation rating.

The team determined that this finding has a cross-cutting aspect in the area of human performance because Entergy did not provide adequate procedure guidance in 3-AOP-SSD-1 to ensure time critical actions are completed as quickly as possible and consistent with design calculation IP-CALC-06-00029 assumptions and operator training. (H.2(c))

Inspection Report# : [2008007](#) (pdf)

G**Significance:** Feb 08, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Procedure Directions to De-energize PORV and Letdown Valve Circuits

The team identified a non-cited violation of technical specification 5.4.1.d for failure to provide adequate procedure directions in 3-AOP-SSD-1, "Control Room Inaccessibility Safe Shutdown Control," Rev. 6, to prevent spurious opening of the power operated relief valves (PORVs) and letdown isolation valves in the event the affected circuits could not be de-energized prior to leaving the control room.

This finding was more than minor because it affected the procedure quality attribute of the Mitigating Systems cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The team assessed this finding in accordance with NRC IMC 0609, Appendix F, "Fire Protection Significance Determination Process." This finding affected post-fire safe shutdown procedures and systems and screened to very low safety significance (Green) in Phase 1 of the SDP because it was assigned a low degradation rating.

Inspection Report# : [2008007](#) (*pdf*)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

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.

Miscellaneous

Significance: SL-IV Dec 31, 2008

Identified By: NRC

Item Type: VIO Violation

Site Access Procedure Violation

Site Access Procedure Violation -EA-08-209. (Involved willfulness)

There was no cross-cutting aspect.
Inspection Report# : [2008012](#) (*pdf*)

Significance: N/A May 15, 2008

Identified By: NRC

Item Type: FIN Finding

95001 Supplemental Inspection (Unplanned Scrams per 7000 Critical Hours)

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 second quarter of 2007 when Indian Point Unit 3 experienced its fourth reactor trip. At the time of this inspection, the performance indicator for Unplanned Scrams per 7000 Critical Hours for Indian Point Unit 3 had returned to below the Green/White threshold.

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. However, the inspectors identified one finding and several observations associated with weaknesses in Entergy's causal evaluations and corrective actions. Additionally, the inspectors noted that Entergy personnel performed several self-assessments and revisions to their causal evaluations before fully identifying the performance issues and establishing appropriate corrective actions to prevent recurrence. This caused a delay of a scheduled NRC supplemental inspection for this issue in September 2007.

Notwithstanding the observations and one finding as 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. Additionally, Entergy had planned or completed corrective actions to prevent recurrence of 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 agency follow-up beyond the baseline inspection program is not warranted.

Inspection Report# : [2008009](#) (*pdf*)

Last modified : April 07, 2009