

Indian Point 2 1Q/2013 Plant Inspection Findings

Initiating Events

Significance: G Mar 31, 2013

Identified By: Self-Revealing

Item Type: FIN Finding

Inadequate Maintenance Procedure Results in a Reactor Trip

A self-revealing finding of very low safety significance was identified when Entergy personnel did not use a procedure appropriate to the task for testing of a secondary plant valve, resulting in a transient that led to a manual reactor trip. On February 13, 2013, with Unit 2 at full power, Entergy personnel started testing of a heater drain tank dump valve without electrical isolation and other risk management precautions. When energized control power leads were lifted as specified in the work instruction, two electrically inter-connected valves opened causing loss of heater drain flow to the main feedwater pumps. The transient affected steam generator level and operators initiated a rapid down power followed by a manual reactor trip when steam generator level control limits were challenged. The transient was documented in their corrective action program (CAP) as CR-IP2-2013-721.

The finding was more than minor because the testing activity resulted in a reactor trip. The inspectors performed a Phase 1 screening in accordance with IMC 0609, "Significance Determination Process" and determined the finding to be of very low safety significance (Green) because all mitigating equipment remained available. The finding had a cross-cutting aspect in the area of Human Performance, Resources, because the licensee did not assure that procedures and other resources were available and adequate to assure nuclear safety, including accurate design documentation and procedures to support the work activity. Specifically, the work instruction used for the testing had not been appropriately planned or implemented when the electrical control power ties to valves outside the work scope was neither planned into the work nor recognized by the workers.

Inspection Report# : [2013002](#) (*pdf*)

Significance: G Jun 30, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Foreign Materials Control Procedure Not Followed Resulting in a Degraded 21 Reactor Coolant Pump Seal Package

A self-revealing NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified because Entergy personnel did not follow procedure 0-PMP-401-RCS, Reactor Coolant Pump Seal Package Inspection, to prevent foreign material from entering the 21 reactor coolant pump (RCP) seal package. Specifically, during the March 2010 refueling outage, Entergy personnel did not follow procedure 0-PMP-401-RCS and implement the foreign material exclusion procedural controls which resulted in a degraded 21 RCP seal package. Entergy personnel subsequently replaced the 21 RCP seal package and entered this issue into the CAP as condition report (CR) IP2 2011 5052.

The performance deficiency associated with this finding was that Entergy staff did not follow procedure 0-PMP-401-RCS to prevent foreign material from entering the 21 RCP seal assembly. This finding is more than minor because it is associated with the equipment performance attribute of the Initiating Events cornerstone and adversely affected the 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, the foreign material introduced into the 21 RCP seal package resulted in an increase in the likelihood of tripping the 21 RCP due to further potential for degradation of the 21 RCP seal package. Additionally, if left uncorrected, the foreign material had the potential to further damage the seal package and result in a more significant safety concern. 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 would not result in exceeding the technical specification limit for RCS leakage and would not have affected other mitigation systems resulting in a total loss of their safety function. The finding has a cross-cutting aspect in the area of human performance associated with the work practices attribute because Entergy personnel did not define and effectively communicate expectations regarding procedural compliance and personnel following procedures.

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

Mitigating Systems

Significance:  Feb 15, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Implement an Appropriate Procedure to Ensure That One of Two Strategies Provided Adequate Cooling Water Flow to the SGs per 50.54(hh)(2)

The team identified a non-cited violation (NCV) of Unit 2 Operating License Condition 2.N, Unit 3 Operating License Condition 2.AC, and 10 CFR 50.54(hh)(2) for Entergy's failure to implement guidance for one of the two strategies intended to maintain or restore core cooling by supplying water to the steam generators.

Entergy's failure to provide adequate procedural guidance to maintain or restore core cooling is considered a performance deficiency. This finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent core damage. In accordance Inspection Manual Chapter 0609, Appendix L, "B.5.b Significance Determination Process," the team concluded that this finding is of very low safety significance (Green). The team judged that as-found, one of the steam generator fill strategies was unavailable, because on initial implementation, given the assumed severity of plant damage and the procedural inadequacies, the required flow rate to the steam generators would not have been provided. The team determined that this strategy was recoverable, because the equipment would not have been damaged, and the operator likely would request and receive additional direction from emergency management personnel when they became available, such that the required flow rate could be achieved. The team determined that no cross-cutting aspect was applicable to this performance deficiency because this finding was not indicative of current licensee performance.

Inspection Report# : [2013007](#) (*pdf*)

Significance:  Dec 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Corrective Actions Regarding Operational Controls of the Steam Generator Blowdown Valve Radiation Bypass Switch

The inspectors identified a Green, NCV of Title 10 Code of Federal Regulations (CFR) Part 50, Criterion XVI, "Corrective Actions," because Entergy personnel did not adequately identify and correct a condition adverse to quality associated with maintenance procedures and activities that adversely impact the steam generator (SG) safety function to remove decay heat. Specifically, Entergy personnel did not implement adequate corrective actions to address existing procedure deficiencies regarding operational controls on the steam generator blowdown (SGBD) valve radiation bypass switch. Entergy's corrective actions included identifying and placing a hold on instructions directing use of the radiation bypass switch; implementing operator training; and identifying previous occurrences of the condition which resulted in the plant being placed in an unanalyzed condition. Entergy personnel entered this issue into the corrective action program (CAP) as CR-IP2-2013-0191.

This finding is more than minor because if left uncorrected, the performance deficiency could lead to a more significant safety concern. Specifically, maintenance procedures inappropriately allowing operation of the SGBD valve radiation bypass switch could adversely impact the SG safety function to remove decay heat. The inspectors determined that this finding is of very low safety significance (Green) because the finding is a deficiency affecting the design of a mitigating system that maintained its functionality. Specifically, failure of the SGBD isolation valves to close would cause loss of SG water level because the remaining motor driven auxiliary boiler feedwater pump would exceed its design flow rate. However, given the time available, existing procedures, and operator training on isolating the SGBD flowpaths, either from the control room or locally, SG decay heat removal functionality was maintained.

This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program because Entergy staff did not thoroughly evaluate this problem such that the resolutions address the causes and extent of condition. Specifically, Entergy staff did not properly evaluate the use and impact of the radiation bypass switch for the SGBD isolation when considering allowable configurations of the auxiliary feedwater system [P.1(c)].

Inspection Report# : [2012005](#) (*pdf*)

Significance: G Nov 09, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Design Verification that Bus 6A Supply Breaker Amptector Would Not Inadvertently Trip and Lockout Bus During Degraded Grid Accident SI Load Current

The team identified a finding of very low safety significance involving a non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion III, Design Control, because Entergy had not verified the adequacy of the design with respect to ensuring the Unit 2 480V emergency Bus 64 offsite power supply breaker amptector trip system would not inadvertently trip under accident load during degraded grid conditions. Specifically, Entergy's evaluation did not account for the overall accuracy of the amptector long-time over-current trip system and the loop calibration procedures did not verify that the breaker would trip within the assumed trip system tolerance of +4 percent. Entergy entered the issue into their corrective action program to address the design analysis deficiency and evaluate the adequacy of the calibration procedures, and performed an operability evaluation to ensure the breaker would not inadvertently trip during anticipated accident loads.

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 (Green) because it was a design deficiency confirmed not to result in 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 originated in a 1993 design evaluation.

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

Significance:  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:  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:  Sep 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Operability Evaluation of Non-Conforming Safety Related Batteries

The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," because Entergy personnel did not adequately implement procedure EN-OP-104, "Operability Determination Process," Section 5.1, to assess the operability of safety related station batteries on June 4, 2012. Specifically, Entergy personnel did not appropriately determine the impact on operability as a result of inadequate surveillance testing of the 21, 22 and 24 station batteries. Entergy staff re-performed the operability determination, identified the issues as non-conforming and implemented compensatory measures. Entergy entered this issue into the CAP as CR-IP2-2012-4009.

This finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone and affected the cornerstone objective to ensure the reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, after inspectors questioned the operability determination, the non-conforming condition was identified and resulted in the station batteries being declared operable with required compensatory measures, revising calculations and implementing a modification to reduce battery load. Using IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," the inspectors determined this 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 a seismic, flooding, or severe weather initiating event.

The finding had a cross-cutting aspect in the area of human performance with the Decision Making attribute because Entergy personnel did not use conservative assumptions in decision making with regards to the non-conservative testing of safety related batteries and adopt a requirement to demonstrate that the proposed action is safe in order to proceed rather than a requirement to demonstrate it is unsafe in order to disapprove the action.

Inspection Report# : [2012004](#) (*pdf*)

Significance:  Sep 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Test Control of Safety Related Batteries

The inspectors identified a Green NCV of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," because Entergy did not assure that all testing required to demonstrate safety related batteries will perform satisfactorily was identified and performed in accordance with written test procedures. Specifically, temperature compensation for battery discharge testing was performed incorrectly which caused errors in the battery capacity calculations. Entergy staff immediately reviewed historical test results to confirm the batteries remained operable. Entergy entered this issue into the CAP as CR-IP2-2012-5338.

This finding is more than minor because it is associated with the procedure quality 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. In addition, it was similar to Example 2c of NRC IMC 0612, Appendix E, Examples of Minor Issues, in that the test control inadequacies affected multiple batteries and the issue was repetitive. Using IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," the inspectors determined the finding screened as 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 a seismic, flooding, or severe weather initiating event.

This finding had a cross-cutting aspect in the area of Human Performance, Resources Component, because Entergy did not ensure that complete, accurate, and up-to-date procedures were available and adequate to assure nuclear safety. Specifically, the battery discharge test procedures did not ensure that temperature compensation was correctly applied to provide accurate capacity calculations.

Inspection Report# : [2012004](#) (pdf)

Significance:  Sep 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Operability Evaluation of 22 Static Inverter with a Degraded Frequency Meter

The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," because Entergy staff did not adequately implement procedure EN-OP-104 "Operability Determination Process," section 5.1, to assess the operability of the 22 static inverter due to a degraded frequency meter on September 7, 2012. Specifically, Entergy personnel did not adequately evaluate the impact of the degraded meter on the operability of the static inverter. This condition caused the inverter to be inoperable. As a result of inspector questions, Entergy staff immediately declared the static inverter inoperable and replaced the frequency meter. Entergy staff entered this issue into the CAP as CR-IP2-2012-5620.

This finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone and affected the cornerstone objective to ensure the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the degraded frequency meter resulted in the static inverter being declared inoperable on September 10, 2012 to replace the frequency meter. Using IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," the inspectors determined this 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 a seismic, flooding, or severe weather initiating event.

The finding had a cross-cutting aspect in the area of human performance with the Decision Making attribute because Entergy personnel did not make safety-significant decisions using a systematic process, especially when faced with uncertain or unexpected plant conditions, to ensure safety is maintained. Specifically, Entergy did not obtain interdisciplinary input and reviews in resolving degraded 22 static inverter frequency meter.

Inspection Report# : [2012004](#) (pdf)

Significance: G 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 2 Operating License Condition 2.K 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 (M1090770151) 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 post-fire safe shutdown is not as reliable as normal systems operation which could be utilized had the requirements of 10 CFR Part 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 was not considered indicative of current licensee performance.

Inspection Report# : [2012009](#) (*pdf*)

Significance: G Jul 20, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Violation of Transient Combustible Control Program

The inspectors identified a Green, Non-Cited Violation of the Indian Point Nuclear Generating Unit No. 2 Amended Facility Operating License, Condition 2.K, in that ENO failed to implement and maintain in effect all provisions of the NRC-approved fire protection program as described in the Updated Final Safety Analysis Report. Specifically, ENO failed to minimize transient combustible materials within the primary auxiliary building (PAB) and stored a compressed gas cylinder containing hydrogen gas under cable trays. The hydrogen gas cylinder was inappropriately left in its storage location after a calibration gas cylinder change-out occurred for the waste gas analyzer, ENO promptly entered this issue into its corrective action program and removed the hydrogen cylinder from the PAB. ENO initiated a corrective action to evaluate the identified condition and ensure actions to prevent its recurrence.

ENO's failure to remove the compressed hydrogen gas cylinder from the PAB after its intended use as a calibration gas for the waste gas analyzer was a performance deficiency. This finding was more than minor because it was

associated with the External Factors attribute (fire) of the Mitigating Systems Cornerstone and adversely affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the hydrogen gas cylinder was stored below cable trays in an area that includes safe shutdown circuits and the associated cables were at increased risk to fire damage. 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). The inspectors determined that this finding had a cross-cutting aspect in the area of Human Performance associated with the work practice attribute because ENO personnel did not follow procedure, Control of Combustibles, EN-DC-161, Rev. 6, as written and did not remove the hydrogen gas cylinder from the PAB after it was disconnected from the waste gas analyzer contrary to Control of Combustibles, EN-DC-161, Rev. 6. (H.4(b) per IMC 0310).

Inspection Report# : [2012009](#) (*pdf*)

Significance: N/A Jun 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

An LER for an Inoperable Main Steam Safety Valve Was Not Submitted When Required

The inspectors identified a Severity Level IV, NCV of 10 CFR 50.73(a)(2)(i)(B), because Entergy personnel did not provide a written licensee event report (LER) to the NRC within 60 days of identifying during testing that MS-46D, main steam line safety valve, was inoperable and in a condition prohibited by the plant's Technical Specification (TS). Entergy personnel adjusted the valve's lift setpoint to within the TS operability limit, repaired and tested the valve before plant startup. Entergy staff entered this issue into the CAP as CR-IP2-2012-3320 and CR-IP2-2012-4153.

The inspectors determined that the failure to provide a written LER within 60 days was a performance deficiency that was reasonably within Entergy's ability to foresee and correct, and should have been prevented. 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 NRC Enforcement Policy Section 6.9, "Inaccurate and Incomplete Information or Failure to Make a Required Report," example (d)(9), 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# : [2012003](#) (*pdf*)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

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.

Miscellaneous

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