

Indian Point 2

2Q/2016 Plant Inspection Findings

Initiating Events

Significance: G Mar 31, 2016

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

Failure to Provide Adequate Procedural Guidance in Order to Prevent an Overcurrent Condition

A self-revealing NCV of Technical Specification (TS) 5.4.1, "Procedures," was identified for Entergy's failure to provide adequate guidance in procedure 2-PT-R084C, "23 Emergency Diesel Generator (EDG) Eight-Hour Load Test." Specifically, Entergy failed to provide adequate procedural guidance in order to prevent an overcurrent condition on the 52/3A 480 volt (V) bus normal feeder breaker. As a result, the plant experienced a loss of normal power to their four 480V vital buses and a momentary loss of residual heat removal (RHR) cooling. Entergy wrote condition report (CR)-IP2-2016-01256 and revised the test procedure to add a specific amperage restriction on the vital buses and designate the control indication to be used.

The finding was more than minor because it is associated with the procedure quality attribute of the Initiating Events cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown. The performance deficiency caused a loss of normal power to the vital 480V buses, which also resulted in a loss of RHR event. The Region I Senior Risk Analyst (SRA) used IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process," to assess the safety significance of this event. The SRA determined that Worksheet 3 in Plant Operating State 1 [reactor coolant system (RCS) closed with steam generators available for decay heat removal], best represents the actual event and associated mitigation system available. Throughout the event, the RCS was intact with steam generators available and 24 reactor coolant pump (RCP) running; therefore, it was determined that this finding was of very low safety significance (Green). This finding had a cross-cutting aspect in the area of Human Performance, Challenge the Unknown, because personnel did not stop when faced with uncertain conditions. Risks were not adequately evaluated and managed before proceeding. Inspection Report# : [2016001](#) (*pdf*)

Mitigating Systems

Significance: G Mar 31, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Implement Surveillance Requirement for Main Boiler Feed Pump Trip Function

The inspectors identified an NCV of TS 3.7.3, "Main Feedwater Isolation," Surveillance Requirement (SR) 3.7.3.3 on March 26, 2016, when the inspectors determined that Entergy had not conducted surveillance testing on the main boiler feed pump (MBFP) trip function as required. Specifically, the MBFP trip function had never been tested. The MBFP trip is designed to ensure isolation of feedwater flow into containment during a feedline break accident to prevent exceeding pressure and temperature limits inside containment. Entergy wrote CR-IP2-2016-02247 and assigned a mode 3 hold to evaluate the testing to comply with the TS.

This finding is more than minor because it is associated with the procedural quality attribute of the Mitigating Systems cornerstone because Entergy had not prepared a testing procedure to verify that the surveillance requirements were met. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 3 of IMC 0609, Appendix A, "The Significance Determination Process for Findings at Power," the inspectors determined that a detailed risk evaluation was required because the finding represented a loss of function of a single train for greater than its TS allowable outage time (AOT). The detailed risk evaluation concluded that the finding was of very low safety significance (Green) because of the very low probability of a feedwater line break inside containment when combined with the high probability that the feedwater regulating valve (FRV) and feedwater isolation valve (FWIV) would successfully close from a safety injection signal to isolate feedwater flow into containment. The total core damage contribution of this event is approximately $1E-7$ and based on the above considerations, the core damage risk was assessed to be very low or Green. This finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Evaluation, because Entergy failed to thoroughly evaluate the MBFP failure to trip during a reactor trip to ensure that corrective actions address causes and extent of conditions commensurate with their safety significance. Inspection Report# : [2016001](#) (*pdf*)

Significance:  Sep 20, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

Inadequate Design Verif. that Prot. Device Settings Do Not Allow Connected Class 1E Loads to Become Damaged or Unavail. Under Normal & Sustained Degraded Voltage Condition During Design Basis Event

The team identified a finding of very low safety significance involving a non-cited violation of Title 10 of the Code of Federal Regulations (10 CFR) Part 50, Appendix B, Criterion III, "Design Control." Specifically, Entergy failed to verify, in design basis calculations for Unit 2, that protective device settings do not allow connected Class 1E loads to become damaged or unavailable during a design basis event: (a) under normal voltage conditions; or (b) for a sustained degraded voltage and subsequent reconnection to the emergency diesel generator concurrent with: (1) a design basis event for the degraded voltage time delay of 8.4 - 11.4 seconds, and (2) a non-accident shutdown for the degraded voltage time delay of 153 - 207 seconds. Additionally, Entergy failed to periodically test the thermal overload relays protecting safety-related motor-operated valves (MOVs) to ensure that degradation or trip setpoint drift does not affect the reliability or availability of mitigating systems when called upon to operate. After identification, Entergy entered this issue into the corrective action program, performed several additional evaluations to verify operability, declared two low pressure injection valves inoperable, and replaced fuses to restore operability to these valves.

The performance deficiency was determined to be more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, and Appendix E, example 3j, because the engineering calculation error resulted in a condition where there was a reasonable doubt on the operability of a system. In addition, the performance deficiency was associated with the design control attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring the 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 for Findings at Power, Exhibit 2 – Mitigating Systems Screening Questions, and concluded it required a detailed risk evaluation. The detailed risk evaluation was performed by a Region I senior reactor analyst (SRA) and concluded that the postulated inoperability of the two low pressure injections valves resulted in a change in core damage frequency of $1E-7$ /year, or very low safety significance (Green).

The finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Operating Experience, because Entergy did not systematically and effectively collect, evaluate, and implement relevant internal and external operating experience in a timely matter. Specifically, Entergy did not systematically and effectively evaluate NRC Regulatory Issue Summary 2011-12, Revision 1, Adequacy of Station Electric Distribution System Voltages.

Inspection Report# : [2015007](#) (pdf)

Significance:  Sep 20, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

Inadequate Design Verification that Adequate Voltages Would Be Available to All Class 1E Motors, MOVs, Static Loads, and MCC Control Circuits and Contractors at the Minimum DVR Dropout Setting

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 did not verify the adequacy of their electrical design. Specifically, Entergy failed to verify, in design basis calculations and/or periodic testing, that adequate voltages would be available to all Class 1E motors, motor-operated valves (MOVs), static loads, and motor control center (MCC) control circuits and contactors powered from the 480 volt distribution system with the voltage at the 480 volt safety-related switchgear operating at the minimum degraded voltage dropout setting including tolerances. After identification, Entergy entered the issues into the corrective action program and performed several additional evaluations to verify adequate voltage to Class 1E motors, MOVs, static loads, and MCC control circuits.

The performance deficiency was determined to be more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, and Appendix E, example 3j, because the engineering calculation error resulted in a condition where there was a reasonable doubt on the operability of a system. In addition, the performance deficiency was associated with the design control attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring the 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 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.

The finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Operating Experience, because Entergy did not systematically and effectively collect, evaluate, and implement relevant internal and external operating experience in a timely matter. Specifically, Entergy did not systematically and effectively evaluate NRC Regulatory Issue Summary 2011-12, Revision 1, Adequacy of Station Electric Distribution System Voltages.

Inspection Report# : [2015007](#) (pdf)

Significance:  Sep 20, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

Less Than Adequate Corrective Actions Associated with an Evaluation of the Seismic Adequacy of a 138 kV Transmission Tower Located Near the Unit 2 EDG Building

The team identified a finding of very low safety significance involving a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," because Entergy did not promptly identify and correct a condition adverse to quality. Specifically, in April 2002, Entergy initiated a corrective action condition report (CR) to evaluate and document the seismic adequacy of a 138 kV transmission tower, located in close proximity to the Unit 2 emergency diesel generator (EDG) building; however, Entergy staff closed the CR without adequately evaluating and documenting the seismic qualification concern. Entergy's short-term corrective actions included initiating a corrective action CR and performing a seismic qualification evaluation.

The team determined that the inadequate resolution of the condition adverse to quality is a performance deficiency that was within Entergy's ability to foresee and correct. The performance deficiency was determined to be more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, and Appendix E, example 3j, because the engineering calculation error resulted in a condition where there was a reasonable doubt on the operability of a system. In addition, the performance deficiency was associated with the protection against external factors (seismic) attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems (the EDGs, in particular) 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 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 qualification deficiency confirmed not to result in a loss of operability.

The finding has a cross-cutting aspect in the area of Human Performance, Documentation, because Entergy did not create and maintain complete, accurate, and up-to-date documentation. Specifically, Entergy did not create and maintain complete, accurate, and up-to-date design basis documentation to ensure that an adverse seismic II/I interaction would not result in the loss of the EDG safety function following a seismic event.

Inspection Report# : [2015007](#) (*pdf*)

Barrier Integrity

Significance:  Mar 31, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Adequately Implement Risk Management Actions for the Containment Key Safety Function

The inspectors identified an NCV of Title 10 of the Code of Federal Regulations (10 CFR) 50.65(a)(4) because Entergy did not effectively manage the risk associated with refueling maintenance activities. Specifically, Entergy did not demonstrate they could implement their planned risk management action to restore the containment key safety function within the time-to-boil using the equipment hatch closure plug. Entergy wrote CR-IP2-2016-01503 and CR-

IP2-2016-01883 to address this issue.

This performance deficiency is more than minor because it impacted the barrier performance attribute of the Barrier Integrity cornerstone and affected the objective to provide reasonable assurance that containment protects the public from radionuclide releases caused by accidents or events. Specifically, Entergy did not demonstrate that they could install the hatch plug within the time-to-boil and that the plug would seal the equipment hatch opening, which affected the reliability of containment isolation in response to a loss of shutdown cooling or other event inside containment. The inspectors determined the finding could be evaluated using Attachment 0609.04, "Initial Characterization of Findings." Because the finding degraded the ability to close or isolate the containment, it required review using IMC 0609, Appendix H, "Containment Integrity Significance Determination Process." Since containment status was not intact and the finding occurred when decay heat was relatively high, it required a phase two analysis. Since the leakage from containment to the environment was less than 100 percent containment volume per day, the finding screens as very low safety significance (Green). A subsequent demonstration showed that the hatch plug provided an adequate seal with the containment hatch opening. The inspectors concluded this finding had a cross-cutting aspect in the area of Human Performance, Documentation, because Entergy did not maintain complete, accurate, and up to date documentation related to the use of the hatch plug. Specifically, they tested the seal integrity without using a work order (WO), and made pen-and-ink changes to the procedure without processing a procedure change form.

Inspection Report# : [2016001](#) (*pdf*)

Significance:  Sep 30, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

Incorrect Operability Determination Results in Failure to Comply with Technical Specification for Containment Integrity

The inspectors identified a Green NCV for Unit 2 Technical Specification (TS) 3.6.1, "Containment," because between August 11 and August 14, 2015, containment out-leakage during accident conditions would have exceeded the containment leakage rate testing program limit specified in TS 5.5.14.c. Specifically, the 24 fan cooler unit (FCU) SW piping developed a hole and Entergy's immediate operability determination (IOD) incorrectly concluded that it did not impact operability. Entergy entered this issue into their corrective action program (CAP) as CR-IP2-2015-3550, completed a prompt operability determination (POD) that required compensatory measures, and implemented those compensatory measures on August 14, 2015.

This finding is more than minor because it was associated with the configuration control attribute of the Barrier Integrity cornerstone, and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers, such as containment, protect the public from radionuclide releases caused by accidents or events. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 3 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, the inspectors determined that the finding was of very low safety significance (Green), because it did not represent an actual open pathway in the physical integrity of reactor containment or heat removal components. For the duration of the violation, SW system pressure remained higher than containment pressure, preventing out-leakage. This finding had a cross-cutting aspect in the area of Human Performance, Conservative Bias, because Entergy did not demonstrate a conservative bias when they assumed the opening in the pipe was too small to impact containment integrity [H.14].

Inspection Report# : [2015003](#) (*pdf*)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Significance:  Sep 30, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Conduct Operations to Minimize the Introduction of Residual Radioactivity to the Site

The inspectors identified a Green NCV of Title 10 of the Code of Federal Regulations (10 CFR) 20.1406(c) in that Entergy did not conduct operations to minimize the introduction of residual radioactivity into the site. Specifically, Entergy did not identify a new leak of tritium into groundwater based on monitoring well results obtained in February 2015 and did not take action to minimize the introduction of residual radioactivity into the subsurface of the site. Entergy entered this issue into their CAP as CR-IP2-2015-03806 with actions to characterize and evaluate this new leak.

The issue is more than minor because it is associated with the program and process attribute of the Public Radiation Safety cornerstone, and adversely affected the cornerstone objective to ensure Entergy's ability to prevent inadvertent release and/or loss of control of licensed material to an unrestricted area. In accordance with IMC 0609, Appendix D, "Public Radiation Safety Significance Determination Process," the finding was determined to be of very low safety significance (Green) because the issue involved radioactive material control but did not involve: (1) transportation or (2) public exposure in excess of 0.005 rem.

The finding had a cross-cutting aspect in the area of Human Performance, Problem Identification and Resolution, in that the resolutions to address the causes for the 2014 tritium leak did not include an extent of condition that recognized the February 2015 tritium spike as a new leak [P.2].

Inspection Report# : [2015003](#) (*pdf*)

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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