



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION III  
2443 WARRENVILLE ROAD, SUITE 210  
LISLE, ILLINOIS 60532-4352

June 29, 2023

Rod Penfield  
Site Vice President  
Energy Harbor Nuclear Corp.  
Perry Nuclear Power Plant  
10 Center Road, P.O. Box 97  
Perry, OH 44081

**SUBJECT: PERRY NUCLEAR POWER PLANT – COMPREHENSIVE ENGINEERING  
TEAM INSPECTION REPORT 05000440/2023010**

Dear Rod Penfield:

On May 25, 2023, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Perry Nuclear Power Plant and discussed the results of this inspection with you and other members of your staff. The results of this inspection are documented in the enclosed report.

Four findings of very low safety significance (Green) are documented in this report. Four of these findings involved violations of NRC requirements. One Severity Level IV violation without an associated finding is documented in this report. We are treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2 of the Enforcement Policy.

If you contest the violations or the significance or severity of the violations documented in this inspection report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region III; the Director, Office of Enforcement; and the NRC Resident Inspector at Perry Nuclear Power Plant.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with Title 10 of the *Code of Federal Regulations* 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,



Signed by Benjamin, Jamie  
on 06/29/23

Jamie C. Benjamin, Acting Branch Chief  
Engineering Branch 1  
Division of Operating Reactor Safety

Docket No. 05000440  
License No. NPF-58

Enclosure:  
As stated

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Letter to Rod Penfield from Jamie C. Benjamin dated June 29, 2023.

SUBJECT: PERRY NUCLEAR POWER PLANT – COMPREHENSIVE ENGINEERING TEAM INSPECTION REPORT 05000440/2023010

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**U.S. NUCLEAR REGULATORY COMMISSION  
Inspection Report**

Docket Number: 05000440

License Number: NPF-58

Report Number: 05000440/2023010

Enterprise Identifier: I-2023-010-0039

Licensee: Energy Harbor Nuclear Corp.

Facility: Perry Nuclear Power Plant

Location: Perry, OH

Inspection Dates: April 24, 2023 to May 12, 2023

Inspectors: K. Barclay, Senior Reactor Inspector  
J. Corujo-Sandin, Senior Reactor Inspector  
I. Hafeez, Senior Reactor Inspector  
S. Liska, Reactor Inspector, Observer  
D. Melendez-Colon, Reactor Inspector  
J. Park, Reactor Inspector  
R. Waters, Contractor  
J. Zudans, Contractor

Approved By: Jamie C. Benjamin, Acting Branch Chief  
Engineering Branch 1  
Division of Operating Reactor Safety

Enclosure

## SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee’s performance by conducting a Comprehensive Engineering Team Inspection at Perry Nuclear Power Plant, in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC’s program for overseeing the safe operation of commercial nuclear power reactors. Refer to <https://www.nrc.gov/reactors/operating/oversight.html> for more information.

### List of Findings and Violations

Failure to Account for Instrument Uncertainties			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000440/2023010-01 Open/Closed	None (NPP)	71111.21M
The inspectors identified a Green finding and associated Non-Cited Violation (NCV) of 10 CFR 50, Appendix B, Criterion XI, “Test Control,” when the licensee failed to account for instrument uncertainty in the surveillance procedure’s acceptance criteria for High Pressure Core Spray required pump flow and differential pressure.			

Failure to Have Administrative Controls for the Upper Containment Pool Temperature			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000440/2023010-02 Open/Closed	None (NPP)	71111.21M
The inspectors identified a Green finding and associated Non-Cited Violation (NCV) of Title 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” for the licensee’s failure to translate the Station Blackout (SBO) analysis assumptions into procedures. Specifically, the licensee failed to establish administrative controls to ensure Upper Containment Pool temperature remained within the assumptions of the SBO analysis as delineated in NUMARC-8700 and ensured the final temperature of the Suppression Pool at the end of the 4-hour coping period of an SBO event would not exceed the design temperature of 185 degrees Fahrenheit (°F).			

Required Fuses to Implement a Credited Electrical Cross-Tie During a Station Blackout Event Were Missing			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000440/2023010-03 Open/Closed	None (NPP)	71111.21M
The team identified a Green finding and associated Non-Cited Violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” when the licensee failed to prescribe instructions and procedures appropriate for implementing the credited Division 3 to Division 2 480 Volt cross-tie required to power the Suppression Pool Makeup system, which is needed to mitigate the Station Blackout (SBO) event. Specifically, (1) procedure ONI-SPI C-7 directs operators to look for fuses in a location where the fuses were never stored/placed; and (2) Maintenance Plan 46399 was never updated to reflect the			

fuses and/or location to be inventoried to ensure the equipment required to implement the credited cross-tie could be performed in accordance with the SBO analysis.

**Failure to Assure Seismic Qualification of Division 3 Battery Charger 1E22S0006 Was Maintained**

Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000440/2023010-04 Open/Closed	None (NPP)	71111.21M

The inspectors identified a finding of very low safety significance (Green) and an associated non-cited violation (NCV) of Title 10 CFR 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to check the seismic design adequacy and operability requirements for the Division 3 Battery Charger 1E22S0006 were maintained. Specifically, upon discovering a bolt and wingnut hardware was not installed for the circuit control cards, the licensee failed to verify whether the discovered condition would have satisfied the seismic design qualification of the battery charger during a postulated design bases seismic event.

**Failure to Submit a Licensee Event Report (LER) for Condition That Could Have Prevented the Fulfillment of Safety Function**

Cornerstone	Severity	Cross-Cutting Aspect	Report Section
Not Applicable	Severity Level IV NCV 05000440/2023010-05 Open/Closed	Not Applicable	71111.21M

The inspectors identified a Severity Level IV (SL-IV) Non-Cited Violation (NCV) of 10 CFR 50.73(a)(2)(v), for the licensee's failure to report, within 60 days of discovery, a condition that could have prevented the fulfillment of the safety function. Specifically, the licensee failed to notify the NRC upon discovery of a condition that could have prevented the Division 3 Battery Charger 1E22S0006 from fulfilling its intended safety function.

**Additional Tracking Items**

None.

## INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at <http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html>. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

## REACTOR SAFETY

### 71111.21M - Comprehensive Engineering Team Inspection

The inspectors evaluated the following components and listed applicable attributes, permanent modifications, and operating experience:

#### Structures, Systems, and Components (SSCs) (IP Section 03.01) (8 Samples)

For each component sample, the inspectors reviewed the licensing and design bases including: (1) the Updated Safety Analysis Report (USAR); (2) the Technical Specifications (TS); and (3) the Operational Requirements Manual (ORM). The inspectors reviewed a sample of operating procedures (including normal, abnormal and emergency procedures), overall system/component health (including condition reports and operability evaluations, if any) and associated maintenance effectiveness (e.g., Maintenance Rule, procedures). The inspectors performed visual inspections of the accessible components to identify potential hazards and/or signs of degradation. Additional component specific design attributes reviewed by the inspectors are listed below.

- (1) Unit 1: High Pressure Core Spray (HPCS) Pump (1E22C0001)
  1. Translation of vendor specifications
  2. Environmental qualification
  3. Protection against external events: Seismic
  4. Mechanical design calculations and considerations:
    - a. Flow capacity & balance
    - b. Minimum flow
    - c. Runout flow
    - d. Required submergence (net positive suction head (NPSH) and vortexing)
    - e. Suction strainer blockage
    - f. Condensate Storage Tank (CST) vent and/or instrument line freeze protection
    - g. Pump cooling
    - h. Room heat up calculations
    - i. Room cooling
  5. Test/inspection procedures, acceptance criteria, and recent results:
    - a. Pump comprehensive In-Service Testing (IST) surveillances
    - b. Flow balance/capacity tests
    - c. Pump quarterly IST surveillances

- d. TS instrument surveillances
  - e. Full of water verification at suction piping
  - 6. Electrical design calculations and considerations:
    - a. Pump motor voltage drop
    - b. Pump motor degraded voltage
    - c. Pump motor brake horsepower
    - d. Protective devices
    - e. Cable ampacity
    - f. Minimum voltage
    - g. Control logic
- (2) Unit 1: HPCS Diesel Generator (DG) (1E22B0001)
- 1. Translation of vendor specifications
  - 2. Environmental qualification
  - 3. Protection against external events: Seismic
  - 4. Mechanical design calculations and considerations:
    - a. Room heat up calculations and environmental considerations
    - b. Lube oil cooler
    - c. Jacket water cooler
    - d. Fuel oil volume consumption
    - e. Fuel oil available volume/level
    - f. Fuel oil transfer design (e.g., flow capacity, NPSH)
    - g. Starting air design, including Station Blackout (SBO) recovery capability
    - h. Engine lubrication
    - i. Room heat up calculations
    - j. Room cooling
  - 5. Test/inspection procedures, acceptance criteria, and recent results:
    - a. Engine
    - b. TS surveillances
    - c. Lube oil cooler
    - d. Jacket water cooler
    - e. Fuel oil volume
    - f. Fuel oil quality
    - g. Starting air
  - 6. Electrical design calculations and considerations:
    - a. Dynamic calculation (Volts, Hertz, Amps, & loading sequence)
    - b. Output breaker control logic
    - c. DG relay coordination
    - d. Protective relay setpoint
    - e. Generator grounding scheme
    - f. Capability to start under degraded voltage conditions
- (3) Unit 1: HPCS Room Cooler (1M39B0003)
- 1. Translation of vendor specifications
  - 2. Environmental Qualification
  - 3. Design calculations and considerations:
    - a. Minimum cooling water flowrate
    - b. Maximum cooling water temperature
    - c. Tube plugging limit
    - d. Fan motor minimum voltage

- e. Fan motor cable ampacity
  - f. Control logic
  - g. Control circuit voltage
  - h. Fan motor protective device
  - i. Heat transfer capacity
  - 4. Test/inspection procedures, acceptance criteria, and recent results:
    - a. Flowrates
    - b. Inspection or thermal performance test
- (4) Unit 1: Emergency Service Water (ESW) Pump (P45-C002)
- 1. Translation of vendor specifications
  - 2. Environmental qualification
  - 3. Protection against external events:
    - a. Flooding, including sump pump
    - b. Seismic plus pump column seismic analysis
  - 4. Mechanical design calculations and considerations:
    - a. Flow capacity & balance
    - b. Minimum flow
    - c. Runout flow
    - d. Required submergence (NPSH, vortexing)
    - e. Level setpoints and instrument uncertainty
    - f. Sump/pool level setpoints and instrument uncertainty
    - g. Hydraulic transients (water hammer)
    - h. Gas intrusion & accumulation
    - i. Pump cooling
  - 5. Test/inspection procedures, acceptance criteria, and recent results:
    - a. Pump comprehensive IST surveillances
    - b. Flow balance/capacity tests
    - c. Pump quarterly IST surveillances
    - d. TS instrument surveillances
  - 6. Electrical design calculations and considerations:
    - a. Alarms
    - b. Pump motor brake horsepower
    - c. Protective devices
    - d. Minimum voltage
    - e. Control logic
- (5) Unit 1: ESW HPCS Strainer (1P45D0003)
- 1. Protection against external events: Seismic
  - 2. Mechanical design:
    - a. Debris loading impact to flow capacity/balance
    - b. Mesh size vs downstream component openings
    - c. Manual backwash capability
  - 3. Test/inspection procedures, acceptance criteria, and recent results:
    - a. Protective devices
    - b. Alarms
    - c. Minimum voltage
    - d. Control logic
- (6) Unit 1: 480 VAC 1E Motor Control Center (MCC) EF-1-E1/E2 (PY-1R24S0029 and PY-1R24S0030)

1. Environmental qualification
  2. Protection against external events: Seismic
  3. Electrical design calculations and considerations:
    - a. Bus capacity
    - b. Degraded voltage protection
    - c. Overcurrent protection
    - d. Cable ampacity
    - e. Protective devices and trip set points
- (7) Unit 1: Division 3 Battery Charger EF-D1-C (1E22S0006)
1. Protection against external events: Seismic
  2. Test/inspection procedures, acceptance criteria, and recent results
  3. Electrical design calculations and considerations:
    - a. Sizing
    - b. Current limiting setting
    - c. Duty cycle
    - d. Contribution to short circuit fault current
    - e. Sizing of protective fuses/breakers/relays
    - f. Configuration of electrical distribution
    - g. Cable ampacity
    - h. Protective relays/breakers
- (8) Unit 1: 125 VDC Bus ED-1-C (PY-1R42S0037)
1. Protection against external events: Seismic
  2. Test/inspection procedures, acceptance criteria, and recent results:
    - a. Relay/Meter calibration
  3. Electrical design calculations and considerations:
    - a. Short circuit calculations
    - b. Coordination calculations
    - c. Bus capacity
    - d. Overcurrent protection
    - e. Loss of voltage
    - f. Cable ampacity
    - g. Protective devices and trip set points

Modifications (IP Section 03.02) (6 Samples)

- (1) Calculation P45-084, Addendum No. A-01 - Determine Allowable Silt and Zebra Mussel Accumulations in ESW and SW Intake SSCS
- (2) Calculation M39-015, Revision 4 - High Pressure Core Spray Pump Room Cooler Performance Test Results
- (3) Calculation E22-043, PIN-05 - High Pressure Core Spray System Thermal Hydraulic Analysis
- (4) Calculation B13-027, Revision 0 - ASME Code NB-3200 Analysis of HPCS Piping Location
- (5) ECP-12-0037: Installation of 18 Inch Tall Flood Curb at Door IB 103
- (6) Engineering Design Change Request (EDCR) 92-0202, Revision 0 - Station Blackout Cross-Tie Between EF1E (Div.3) and EF1C07 (Div. 2)

10 CFR 50.59 Evaluations/Screening (IP Section 03.03) (11 Samples)

- (1) SCR 16-01392, Revision 1 - ECP 16-0139 2 Replacement of Valves 1E12F0084A/C
- (2) SCR 18-00926, Revision 0 - Calculation P45-057A/B/C Emergency Service Water Thermal Hydraulic Model
- (3) SCR 18-02362, Revision 1 - Other SCN-005 to ISS-2300 Insulation of Plant Systems
- (4) SCR 18-03530, Revision 9 - Procedure SOI-M32 Emergency Service Water Pump House Ventilation System
- (5) SCR 20-00488, Revision 0 - Calculation SBO-007 1/A-01 Loss of Heat Tracing - CST/HPCS Instrument Line
- (6) SCR 20-00581, Revision 0 - USAR CN 20-051 0 Emergency Service Water Operating Data Updates Based on EER 601268759
- (7) SCR 21-00871, Revision 0 - Calculation AOV-1 0, A-04 Perry Nuclear Power Plant Air Operated Valve Functional Evaluation
- (8) SCR 22-00075, Revision 0 - Calculation B13-027 0 ASME Code NB-3200 Analysis of HPCS Piping Location
- (9) SCR 22-00582, Revision 0 - Calculation M39-015 4 High Pressure Core Spray Pump Room Cooler Performance Test Results
- (10) SCR 17-01209, Revision 1 - ECP 17-0132: Replacement of Division 3 Diesel Generator Stator Analog Temperature Monitor 1E22R0716 with an Equivalent Digital Device
- (11) SCR 12-01602, Revision 1 - ECP 12-0037: Installation of 18 Inch Tall Flood Curb at Door IB-103

Operating Experience Samples (IP Section 03.04) (2 Samples)

- (1) CR-2023-01057 - FME: Division 1 Right Bank #6 Thermocouple Outer Sheath Found Missing During Replacement
- (2) Licensee Event Report (LER) 2011-004-00 & 2011-004-01 - Flooding Calculation Deficiency Results in Unanalyzed Condition

**INSPECTION RESULTS**

Failure to Account for Instrument Uncertainties			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000440/2023010-01 Open/Closed	None (NPP)	71111.21M
The inspectors identified a Green finding and associated Non-Cited Violation (NCV) of 10 CFR 50, Appendix B, Criterion XI, "Test Control," when the licensee failed to account for instrument uncertainty in the surveillance procedure's acceptance criteria for High Pressure Core Spray required pump flow and differential pressure.			
<u>Description:</u>			
When using an instrument to measure a quantity, the recorded value will always have an amount of uncertainty. These uncertainties need to be accounted for to ensure that when a quality related test is performed the results collected validate the associated SSCs remain within licensing and design bases values. During their review, the inspectors noted the			

High Pressure Core Spray (HPCS) pump's performance surveillance test failed to account for said instrument uncertainties.

For the HPCS system, the Technical Specifications (TS) Surveillance Requirement (SR) 3.5.1.4 requires, in part, verification that the HPCS pump develops a specified flow rate (greater than or equal to 6110 gpm) with sufficient pump total head to overcome the total system resistance which includes a specified reactor-to-containment wetwell (differential pressure greater than or equal to 128 psid).

The TS SR is met via procedure SVI-E22-T2001, "HPCS Pump and Valve Operability Test," Revision 37. Section 5.1.3.19, Section 5.1.4.20, and Section 5.1.5.19 of this procedure establishes the acceptance criteria as a HPCS pump flow rate between 6110 to 6140 gpm and differential pressure between 481.5 to 548.7 psid. These values are meant to ensure conformance with Design and Inservice Testing requirements.

The inspectors noted the design acceptance criteria was obtained from Calculation E22-029, "SVI-E22-T2001, HPCS Pump Performance Test Acceptance Criteria," Revision 7, which determined a minimum required value of 468 psid at 6110 gpm. Calculation E22-029 credited NEDC-32972P, BWR Owner's Group Report "Safety Analysis Evaluations Relative to Measurement Uncertainties for the BWR/6 Improved Standard Technical Specifications," for not including instrument measurement uncertainties in calculating the HPCS pump acceptance criteria. During the review of Calculation E22-029, the inspectors questioned the use of this guidance in the methodology for not separately including the instrument uncertainty. Although, NEDC-32972P is a BWR Owner's Group Report, it has not been endorsed by the NRC.

As a result of the inspectors' questioning, the licensee calculated the measurement uncertainty for the pressure differential was 23.90 psid. Therefore, the HPCS pump acceptance criteria accounting for all the instrument measurement uncertainties was actually 491.90 psid at 6110 gpm.

Based on the above, the inspectors were concerned the failure to account for said uncertainties could result in a situation where a surveillance test was declared satisfactory when in reality the HPCS pump could be within the unacceptable results range once uncertainties were considered. Since HPCS is a safety related and TS structure, system, or component (SSC), a failed TS Surveillance would result in the SSC becoming inoperable and the associated LCO action statement must be entered.

Corrective Actions: The licensee performed a review of previous test results and noted the last surveillance showed a result of 505.3 psid. The licensee also noted a review of data collected since 2006 showed the lowest result obtained in that period was 495.2 psid. Therefore, demonstrating the HPCS pump would have passed its required acceptance criteria even when accounting for the newly calculated uncertainties (i.e., greater than or equal to 491.90 psid). As a result, HPCS remained operable and able to perform its function.

In addition, the licensee was recommending: 1) A review of extent of condition, 2) Determine and document the applicability of NEDC-32972P and 3) If required, revise the applicable calculations to include instrument measurement uncertainties.

A preliminary extent of condition by the licensee recognized the Low Pressure Core Spray (LPCS) system was affected by a similar lack of accounting for uncertainties. The licensee

calculated an updated acceptance criteria and validated recent test results showed the LPCS pump would have been able to pass using the revised values.

Corrective Action References: CR-2023-03915, NRC Identified Measurement Uncertainties Potentially Not Fully Evaluated in SVI Acceptance Criteria Calculation  
CR-2023-03932, NRC Identified Measurement Uncertainties Potentially Not Fully Evaluated in SVI Acceptance Criteria Calculation for LPCS

Performance Assessment:

Performance Deficiency: The licensee's surveillance procedure SVI-E22-T2001, "HPCS Pump and Valve Operability Test," acceptance criteria for required flow and differential pressure failed to account for instrument uncertainty. This was contrary to Title 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," and was a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, implementing the acceptance criteria as written, without accounting for the associated instruments' uncertainty, could result in a satisfactory test result, when in actuality the SSCs had failed the surveillance test. This would have resulted in the licensee failing to declare the associated equipment inoperable, entering the required TS Limiting Condition of Operation (LCO) action and potentially place the plant in an unanalyzed configuration.

Significance: The inspectors assessed the significance of the finding using IMC 0609 Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." Specifically, the finding screened to Green (very low safety significance) because it did not result in the loss of operability or functionality. A review of surveillance test results since 2006, performed by the licensee, determined the HPCS pump would have passed even if using the updated acceptance criteria (which now accounted for all flow and pressure measurement uncertainties).

Cross-Cutting Aspect: Not Present Performance. No cross-cutting aspect was assigned to this finding because the inspectors determined the finding did not reflect present licensee performance.

Enforcement:

Violation: Title 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," requires, in part, that a test program be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents.

Technical Specifications Surveillance Requirement 3.5.1.4 requires, in part, the HPCS pump develops a specified flow rate (greater than or equal to 6110 gpm) with sufficient pump total head to overcome the total system resistance, which includes a specified reactor-to-containment wetwell differential pressure. The specified reactor-to-containment wetwell differential pressure was greater than or equal to 128 psid.

Procedure SVI-E22-T2001, "HPCS Pump and Valve Operability Test," Revision 37, was the implementing procedure to comply with applicable HPCS flow and differential pressure design and licensing documents. Section 5.1.3.19, Section 5.1.4.20 and Section 5.1.5.19 of

this procedure established the pump's acceptance criteria for flow rate (between 6110 to 6140 gpm) and differential pressure (between 481.5 to 548.7 psid).

Contrary to the above, as of May 12, 2023, the licensee failed to assure all the testing required to demonstrate the HPCS system would perform satisfactorily in service was identified and performed in accordance with written test procedures which incorporated the requirements and acceptance limits contained in applicable design documents.

Specifically, procedure SVI-E22-T2001 failed to account for instrument uncertainties when establishing the acceptance criteria used to ensure successful completion of these tests would ensure the associated SSCs would perform satisfactorily in service, remain operable and within the acceptable limits as determined by applicable design documents (e.g., the TS SR).

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

**Failure to Have Administrative Controls for the Upper Containment Pool Temperature**

Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000440/2023010-02 Open/Closed	None (NPP)	71111.21M

The inspectors identified a Green finding and associated Non-Cited Violation (NCV) of Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to translate the Station Blackout (SBO) analysis assumptions into procedures. Specifically, the licensee failed to establish administrative controls to ensure Upper Containment Pool temperature remained within the assumptions of the SBO analysis as delineated in NUMARC-8700 and ensured the final temperature of the Suppression Pool at the end of the 4-hour coping period of an SBO event would not exceed the design temperature of 185 degrees Fahrenheit (°F).

Description:

On June 1, 2000, the U.S. Nuclear Regulatory Commission issued Amendment No. 112 to Facility Operating License No. NPF-58 for the Perry Nuclear Power Plant (PNPP), Unit 1(ML003724441). Amendment No. 112 revised the Technical Specifications and increased the 100 percent authorized rated thermal power level of 3579 megawatts thermal to 3758 megawatts thermal. This represented a power level increase of five percent for PNPP. Analysis DRF-A22-00084-45, "Station Blackout," reevaluated the capability of PNPP following a station blackout event in support of the implementation of the 105 percent power uprate (PU). The licensee reevaluated its existing Station Blackout (SBO) analysis using the guidelines of Nuclear Management and Resources Council (NUMARC)-8700 under the power uprate conditions. NUMARC-8700, Section 2.2.1, "Assumptions," states, in part, "Immediately prior to the postulated station blackout event, the reactor and supporting systems are within normal operating ranges for pressure, temperature, and water level." The analysis was performed assuming a 4-hour coping duration.

The licensee reevaluated the SBO analysis assuming the Upper Containment Pool temperature at the Technical Specification maximum value of 110 degrees Fahrenheit (°F). The analysis showed that, at the end of 4 hours, the Suppression Pool temperature was

186.1 °F. The Suppression Pool temperature of 186.1°F exceeded the Suppression Pool design limit of 185°F. The licensee revised certain input parameters and reperformed the analysis for a second time. The licensee assumed an initial Suppression Pool temperature at the Technical Specification maximum value of 95°F, the Condensate Storage Tank normal temperature maximum value of 125°F, and a value of 95°F for the Upper Containment Pool temperature. This temperature value of 95°F for the Upper Containment Pool was based on historical operating temperature data. Using these new values, the analysis showed that, at the end of 4 hours, the Suppression Pool temperature was 184.6°F. The licensee determined the peak calculated Suppression Pool temperature remained below the 185°F temperature design limit assumed in the original SBO analysis submittal and therefore, PNPP continued to meet the requirements of Title 10 CFR 50.63, "Loss of All Alternating Current Power," after PU.

The inspectors noted the maximum allowed Technical Specification value for the Upper Containment Pool temperature was 110°F. Technical Specification Surveillance Requirement 3.6.2.4.2 states, "Verify upper containment pool water temperature is less than or equal to 110°F." Procedure PRI-TSR, "Technical Specification Rounds," Revision 48, provides the forms necessary for performance of plant rounds to satisfy Perry Improved Technical Specification Surveillance Requirements. Attachment 5 of procedure PRI-TSR, Item No. 15, "Upper Containment Pool Temperature Limits Verification," states the requirement for the temperature of the Upper Containment Pool as less than or equal to 110°F during Modes 1, 2, or 3. In addition, procedure SOI-G41(FPCC), "Fuel Pool Cooling and Cleanup System," Revision 43, monitors Upper Containment Pool temperature using instruments CNTMT FUEL STRG POOL TEMP, 1G41-R121 and SEPARATOR STRG POOL TEMP, 1G41-R106. Section 5.1, "Normal Operation," of procedure SOI-G41 states the range for both parameters is less than or equal to 110°F. The inspectors confirmed both procedures are covered by the licensee's Quality Assurance Program Manual.

The inspectors noted procedures PRI-TSR and SOI-G41(FPCC) did not contain administrative controls nor instructed operator actions if the Upper Containment Pool temperature exceeds 95°F. In the event of an SBO with the Upper Containment Pool temperature exceeding 95°F, and all other parameters at the assumed values in the SBO analysis, the final temperature of the Suppression Pool at the end of the 4-hour coping period could exceed the design temperature of 185°F and invalidate the SBO analysis. The inspectors reviewed Upper Containment Pool historical operating temperature data for the past five years and did not identify any temperature values above 95°F.

Corrective Actions: The licensee's recommended corrective actions included recommending a note be placed in a procedure or in the operator round that the Upper Containment Pool should be maintained less than 95°F per the SBO analysis.

Corrective Action References: Condition Report (CR) 2023-03938, 2023 CETI Inspection – NRC Identified Station Blackout Suppression Pool Analysis Input Temperature.

Performance Assessment:

Performance Deficiency: The inspectors determined the licensee's failure to establish administrative controls to ensure Upper Containment Pool temperature remained within the assumptions of the SBO analysis was a performance deficiency. Specifically, procedure SOI-G41(FPCC), "Fuel Pool Cooling and Cleanup System," Section 5.0, Normal Operations/Data, and Procedure PRI-TSR, Technical Specification Rounds, Item No. 15, state the allowable value/range for the temperature of the Upper Containment Pool as less than or equal to 110°F. The current SBO analysis (post power uprate) assumes an Upper Containment Pool temperature of 95°F.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Design Control attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to translate the assumptions in the SBO analysis to procedures, following the PU license amendment, to ensure Upper Containment Pool temperature remained within the assumptions of the analysis did not ensure the availability, reliability, and capability of the Suppression Pool to cope with an SBO event to prevent undesirable consequences (i.e., core damage).

Significance: The inspectors assessed the significance of the finding using IMC 0609 Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." The finding screened as having very low safety significance (Green) because the inspectors answered "No" to the risk screening questions listed in IMC 0609, Appendix A, Exhibit 2, Section A. Specifically, the inspectors reviewed Upper Containment Pool historical operating temperature data for the past five years and did not identify any Upper Containment Pool temperature values above 95°F. Therefore, Upper Containment Pool temperature remained within the assumptions of the SBO analysis and PRA functionality was not lost.

Cross-Cutting Aspect: Not Present Performance. No cross-cutting aspect was assigned to this finding because the inspectors determined the finding did not reflect present licensee performance.

Enforcement:

Violation: Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that measures shall be established to assure that applicable regulatory requirements and the design basis for those structures, systems, and components to which Appendix B applies are correctly translated into specifications, drawings, procedures, and instructions.

Perry Nuclear Power Plant Updated Safety Analysis Report (USAR), Table 1.8-1, "Conformance to NRC Regulatory Guides," states, in part, PNPP conforms to Regulatory Guide (RG) 1.155, "Station Blackout," Revision 0.

Regulatory Guide 1.155, states, in part, "Nuclear Management and Resource Council (NUMARC) developed guidelines and procedures for assessing station blackout coping capability and duration for light-water reactors (NUMARC-8700, November 1987)." Section C, "Regulatory Position," of RG 1.155, states, in part, NUMARC-8700 provides guidance acceptable to the staff for meeting the requirements of § 50.63 of 10 CFR Part 50.

NUMARC-8700, "Guidelines and Technical Bases for NUMARC Initiatives Addressing Station

Blackout at Light-Water Reactors,” Section 2.2.1, “Assumptions,” states, in part, “Immediately prior to the postulated station blackout event, the reactor and supporting systems are within normal operating ranges for pressure, temperature, and water level.”

Analysis DRF-A22-00084-45, “Station Blackout,” reevaluated the capability of Perry Nuclear Power Plant following a station blackout event in support of the implementation of a 105 percent power uprate. The analysis assumed a value of 95°F for the Upper Containment Pool temperature. Using this value, the analysis showed that, at the end of 4 hours, the Suppression Pool temperature was 184.6°F, meeting the Suppression Pool design limit of 185°F.

Procedure PRI-TSR, “Technical Specification Rounds,” Revision 48, provides the forms necessary for performance of plant rounds to satisfy Perry Improved Technical Specification Surveillance Requirements. Attachment 5 of procedure PRI-TSR, Item No. 15, “Upper Containment Pool Temperature Limits Verification,” states the requirement for the temperature of the Upper Containment Pool as less than or equal to 110°F during Modes 1, 2, or 3.

Procedure SOI-G41(FPCC), “Fuel Pool Cooling and Cleanup System,” Revision 43, monitors Upper Containment Pool temperature using instruments CNTMT FUEL STRG POOL TEMP, 1G41-R121 and SEPARATOR STRG POOL TEMP, 1G41-R106. Section 5.1, “Normal Operation,” of procedure SOI-G41 states the range for both parameters is less than or equal to 110°F.

Contrary to the above, as of May 12, 2023, the licensee failed to establish measures to assure that applicable regulatory requirements and the design basis for those structures, systems, and components to which Title 10 CFR Part 50, Appendix B applies are correctly translated into specifications, drawings, procedures, and instructions. Specifically, procedures PRI-TSR, “Technical Specification Rounds,” and SOI-G41(FPCC), “Fuel Pool Cooling and Cleanup System,” which are the procedures used to monitor and control the Upper Containment Pool temperature, do not include administrative controls to ensure the Upper Containment Pool temperature remained within the normal operating ranges assumed in the SBO analysis.

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

**Required Fuses to Implement a Credited Electrical Cross-Tie During a Station Blackout Event Were Missing**

Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000440/2023010-03 Open/Closed	None (NPP)	71111.21M

The team identified a Green finding and associated Non-Cited Violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” when the licensee failed to prescribe instructions and procedures appropriate for implementing the credited Division 3 to Division 2 480 Volt cross-tie required to power the Suppression Pool Makeup system, which is needed to mitigate the Station Blackout (SBO) event. Specifically,

(1) procedure ONI-SPI C-7 directs operators to look for fuses in a location where the fuses were never stored/placed; and (2) Maintenance Plan 46399 was never updated to reflect the fuses and/or location to be inventoried to ensure the equipment required to implement the credited cross-tie could be performed in accordance with the SBO analysis.

Description:

As part of the SBO event mitigation strategy, the licensee credits the ability to crosstie MCC EF1E (Division 3) to MCC EF1C07 (Division 2). This cross-tie allows the licensee to use the Division 3 Diesel Generator (which normally powers the High Pressure Core Spray system) to provide power to the Suppression Pool Makeup system. During an SBO, the licensee credits the Suppression Pool Makeup system to transfer water from the Upper Containment Pool over to the Suppression Pool. This ensures the Suppression Pool temperature stays within the analyzed limits. The cross-tie is implemented using procedure ONI-SPI C-7, "Division 3 to Division 2 480 Volt Cross-tie," Revision 5. The procedure directs operators to obtain two sets of three 600 VAC/60 Amp fuses from the Storage Area 7 File Cabinet at Control Complex (CC) 599. The ONI-SPI C-7 subsequently directs the operator to install the fuses (steps 2.1 and 4.3) in order to establish the cross-tie.

As part of the 2023 Comprehensive Engineering Team Inspection, licensee staff and the inspectors performed a walkdown of procedure ONI-SPI C-7. However, when the Storage Area 7 File Cabinet at CC 599 was checked, no fuses were found. Subsequently, the fuses were found in the bottom of electrical cubicles EF1C07-UU and EF1E-1-B. These were the previous storage locations for the fuses. On March 23, 2017, the licensee changed the intended storage location for the cross-tie fuses. A procedure revision to ONI-SPI C-7 was issued (from Revision 3 to Revision 4). However, the licensee believes the fuses were never physically moved to the new desired location (i.e., Storage Area 7 File Cabinet CC 599).

The inspectors inquired as to how the pre-staging of equipment was controlled. The licensee stated the inventory of the pre-staged equipment was controlled via procedure PAP-0524, "Emergency Operating Procedures," which states that tool inventory shall be done quarterly. While the procedure uses the term "tool," the licensee's practice is to verify the contents of a location including items that are not tools. The licensee was crediting Maintenance Plan 46399 for performing the required quarterly inventory of the cross-tie fuses, as well as other Emergency Operating Procedures (EOPs) required equipment and storage locations. However, it was subsequently discovered the Maintenance Plan 46399 was never updated to reflect the cross-tie fuses and/or the new location to be inventoried (i.e., Storage Area 7 File Cabinet at CC 599).

The inspectors confirmed both ONI-SPI C-7 and Maintenance Plan 46399 were covered by the licensee's Quality Assurance Program Manual.

Corrective Actions: The licensee located the fuses in their previous storage locations (electrical cubicles EF1C07-UU and EF1E-1-B). A continuity check was performed to ensure the fuses were in a good working condition. Subsequently, new fuses were obtained and tested from the site's main storage warehouse then placed in their required storage location as required by procedure ONI-SPI C-7. The licensee is evaluating actions to update Maintenance Plan 46399. The licensee also discovered procedure ONI-SPI C-6, which provides for establishing a similar cross-tie between Division 3 to Division 1, had the same deficiency (i.e., fuses were stored in the respective electrical cubicles instead of the required file cabinet). However, this cross-tie was not credited for mitigating the SBO event.

Corrective Action References: Corrective Action References:  
CR 2023-03570, 2023 CETI Inspection: NRC Identified ONI-SPI C7 Fuses Not in Specified Storage Location; 04/27/2023  
CR 2023-03776, 2023 CETI Inspection: NRC Identified EOP-2 Tool Inventory Maintenance Plan Needs Clarification; 05/04/2023

Performance Assessment:

Performance Deficiency: The licensee failed to prescribe appropriate instructions and procedures to ensure the Division 3 to Division 2 480 Volt cross-tie, required to power the Suppression Pool Makeup system, which is needed to mitigate the SBO event, could be implemented as required. Specifically, two examples of procedure deficiencies were identified. First, procedure ONI-SPI C-7, "Division 3 to Division 2 480 Volt cross-tie" directed operators to obtain a set of required fuses from a location which never housed said fuses. Second, Maintenance Plan 46399, which ensures an inventory of the required fuses is performed, was not updated to reflect the equipment or location to be inventoried. This was contrary to 10 CFR Appendix B, Criterion V, "Instructions, Procedures, and Drawings," and a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to pre-stage the required fuses could impede or delay establishing a flow path from the Upper Containment Pool to the Suppression Pool via the Suppression Pool Makeup system. The result of the delay would allow Suppression Pool temperatures to rise, potentially exceeding the previously evaluated limits established in the SBO analysis.

Significance: The inspectors assessed the significance of the finding using IMC 0609 Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." Specifically, based on the equipment available and working in consultation with the regional Senior Reactor Analyst (SRA) the inspectors were able to determine the degraded condition did not result in a loss of PRA function. As a result, the SRA and inspectors were able to answer "no" to the IMC 0609 Exhibit 2, "Mitigating Systems Screening Questions" discussed in Section A and the Exhibit 3, "Barrier Integrity Screening Questions" discussed in Section C. Therefore, this finding was assessed as having a very low safety significance (Green).

Cross-Cutting Aspect: Not Present Performance. No cross-cutting aspect was assigned to this finding because the inspectors determined the finding did not reflect present licensee performance.

Enforcement:

Violation: Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, activities affecting quality shall be prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances.

ONI-SPI C-7, "Division 3 to Division 2 480 Volt Cross-tie," Revision 5, was the procedure for establishing the electrical cross-tie required to power MCC EF1C07. Power to this MCC is required to initiate the Suppression Pool Makeup system, which is credited to mitigate the SBO event. To perform the cross-tie two sets of three 600 VAC/60 Amp fuses are required.

Under section “Necessary Equipment” the Storage Area 7 File Cabinet at CC 599 is the location designated for storage of this fuses.

Maintenance Plan 46399 was the instruction credited to perform the inventory of the required Division 3 to Division 2 480 Volt Cross-tie fuses. Item 2 of the maintenance plan lists the locations to be inventory.

Contrary to the above, since March 23, 2017, the licensee failed to prescribe instructions and procedures appropriate for implementing the credited Division 3 to Division 2 480 Volt cross-tie required to power the Suppression Pool Makeup system, which is needed to mitigate the SBO event. This is evidenced by the following examples:

- 1) Specifically, ONI-SPI C-7 directs operators to look for fuses in a location where the fuses were never stored/placed.
- 2) Specifically, Maintenance Plan 46399 was never updated to reflect the fuses and/or location to be inventoried to ensure the equipment required to implement the Division 3 to Division 2 480 Volt Cross-tie could be performed in accordance with the SBO analysis.

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

**Failure to Assure Seismic Qualification of Division 3 Battery Charger 1E22S0006 Was Maintained**

Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000440/2023010-04 Open/Closed	None (NPP)	71111.21M

The inspectors identified a finding of very low safety significance (Green) and an associated non-cited violation (NCV) of Title 10 CFR 50, Appendix B, Criterion III, “Design Control,” for the licensee’s failure to check the seismic design adequacy and operability requirements for the Division 3 Battery Charger 1E22S0006 were maintained. Specifically, upon discovering a bolt and wingnut hardware was not installed for the circuit control cards, the licensee failed to verify whether the discovered condition would have satisfied the seismic design qualification of the battery charger during a postulated design bases seismic event.

Description:

Perry Nuclear Power Plant’s (PNPP) Updated Safety Analysis Report (USAR), Revision 22, Section 8.3.2.1.3 , “High Pressure Core Spray – Division 3 – Engineered Safety Features DC System,” establishes the Division 3 Battery Charger as Class 1E. The USAR Table 3.2-1, “Equipment Classification,” also establishes the 125V battery chargers, which include Division 3 Battery Charger 1E22S0006, as Seismic Category I. Additionally, Technical Specification 3.8.4, “DC Sources – Operating,” requires the Division 3 electrical power subsystem shall be operable.

On August 11, 2017, the licensee generated condition report (CR) CR-2017-08373, “Potential Seismic Bolt Missing from Charger.” The CR identified a condition of Battery Charger 1E22S0006 in which a bolt and wingnut hardware was discovered to be not installed to secure its circuit control cards in place. This condition was discovered during its 10-year preventative maintenance to replace the circuit control cards. During review of the corrective

actions, the inspectors noted the licensee recommended an action to determine whether the bolt and wingnut hardware was needed to maintain the battery charger's seismic qualification. The licensee, as part of their investigation for this CR, attempted to contact the vendor and performed review of the seismic qualification report; however, the necessity of bolt and wingnut hardware for seismic capability still could not be determined. Nevertheless, the review of the condition resulted in no reportability concerns, and no past operability review was requested.

The inspectors questioned the basis for concluding there were no reportability or past operability concerns. The original seismic qualification of the battery charger was performed via shaker table testing utilizing seismic inputs that enveloped the site's design basis seismic criteria (discussed in USAR Section 3.7, "Seismic Design"). The seismic qualification report neither explicitly discussed the necessity of the subject bolt and wingnut hardware, nor did it specifically call them out in the drawings that were included in the test report. The licensee's work instruction for performing preventative maintenance to replace the control cards also did not explicitly discuss installation of the subject bolt and wingnut hardware.

The inspectors reviewed the vendor manuals for information on the circuit control cards. Additionally, walkdowns were performed to better understand the mounting configuration for the control cards. One of the two control card assemblies in the battery charger was in question. The assembly consisted of a mounting bracket, two control cards, and a bolt/wingnut combination. The mounting bracket was equipped with a guide piece on each side of the bracket for the control cards to slide in along the bracket, so that they could be fit into the connector slots. Once the control cards are fit into the connector slots, the bolt and wingnut hardware would then be inserted across the bracket and fastened to secure the control cards in place. Therefore, the absence of the bolt and wingnut hardware effectively eliminated the securing mechanism for the control cards in their respective mounting bracket. With the connector slots being the only mechanism holding the control cards in place without the bolt and wingnut hardware securing them, the inspectors challenged whether this condition would've been bounded by the testing configuration in their original seismic qualification test report.

Following discussions with the licensee, the inspectors concluded significant doubts existed in the battery charger's ability to perform its required safety functions had it been called upon to function during a design basis seismic event. The licensee was not able to determine the duration of this deficient condition prior to discovery. However, the inspectors noted the corrective actions from CR-2017-08373 included installing the bolt and wingnut hardware to secure the control cards. During walkdown of the battery charger, the inspectors verified the required bolt and wingnut hardware was in place. Therefore, this condition did not represent a current operability concern.

A violation regarding the failure to provide the required licensee event report to the NRC was dispositioned as a separate item in this report.

Corrective Actions: Based on a review of available documentation and conversations with the inspectors, the licensee concluded the missing bolt and wingnut hardware was required to maintain the battery charger's seismic qualification and consequently its operability requirements. The licensee staff and inspectors performed a walkdown of Battery Charger 1E22S0006 and verified the required bolt and wingnut hardware was installed in place.

Corrective Action References: CR-2023-03970, CETI Inspection: NRC Identified 50.72 Notification not conducted for CR-2017-08373

Performance Assessment:

**Performance Deficiency:** The licensee's failure to check the of seismic design adequacy and operability requirements for the Division 3 Battery Charger 1E22S0006 were maintained was contrary to Title 10 CFR 50, Appendix B, Criterion III, and a performance deficiency. Specifically, upon discovering the bolt and wingnut hardware was not installed for the circuit control cards, the licensee failed to verify whether the discovered condition would have satisfied the seismic design qualification of the battery charger during a postulated design bases seismic event.

**Screening:** The inspectors determined the performance deficiency was more than minor because it was associated with the Design Control attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the discovery of a degraded condition associated with the missing seismic bolt and wingnut hardware for the circuit control cards created significant doubts on the battery charger's ability to perform its required safety function during postulated design basis seismic events.

**Significance:** The inspectors assessed the significance of the finding using IMC 0609 Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." A detailed risk evaluation was performed to assess the significance of the finding. The finding was assumed to result in the loss of seismic capacity of the division 3 normal battery charger during and following a seismic event. The condition was assumed to exist for an exposure period of one year. A Region III senior reactor analyst (SRA) used the Standardized Plant Analysis Risk (SPAR) model version 8.80 for Perry Nuclear Power Plant, Unit 1 and SAPHIRE version 8.2.8 to analyze the finding. Flex equipment failure rates were estimated by using the latest failure rates from PWROG-18042-NP, "FLEX Equipment Data Collection and Analysis." The change in core damage frequency for the exposure period was estimated to be 3E-8/yr. Therefore, the finding screened as having very low safety significance (Green). Risk contributions for internal events were not evaluated because a seismic event would be needed to disconnect the division 3 battery charger control board and thereby cause failure of the associated battery charger. The risk associated with the failure of the division 3 battery charger control board comes from additional sequences which include common cause failure of the division 3 battery chargers. These sequences are not dominant sequences in the seismic model. The seismic model has a basic event for the division 3 battery chargers which assumes a seismic magnitude great enough to cause their failure, this basic event dominates the common cause failure of the division 3 battery chargers. In this detailed risk evaluation, the dominant core damage sequence involves a seismic event (> 1.0g), which results in the loss of the reactor building.

**Cross-Cutting Aspect:** Not Present Performance. No cross-cutting aspect was assigned to this finding because the inspectors determined the finding did not reflect present licensee performance.

Enforcement:

**Violation:** Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, the design control measures shall provide for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate or simplified calculational methods, or by the performance of a suitable testing program.

USAR Table 3.2-1, "Equipment Classification," Principal Component XXXIII.1, establishes the 125V battery chargers, which include the Division 3 Battery Charger 1E22S0006, as Seismic Category I.

USAR Section 3.7.1, "Seismic Input," establishes in part, that Seismic Category I structures, systems and components are necessary to assure: (1) the integrity of the reactor coolant pressure boundary, (2) the capability to shut down the reactor and maintain it in a safe shutdown condition or (3) the capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to the applicable exposure guidelines.

Contrary to the above, on August 11, 2017, the license failed to verify the adequacy of the design of Battery Charger 1E22S0006. Specifically, upon discovering the bolt and wingnut hardware was not installed for the circuit control cards, the licensee failed to verify whether the discovered condition would have satisfied the seismic design qualification of the battery charger, a safety related and seismic Category I equipment.

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

Failure to Submit a Licensee Event Report (LER) for Condition That Could Have Prevented the Fulfillment of Safety Function

Cornerstone	Severity	Cross-Cutting Aspect	Report Section
Not Applicable	Severity Level IV NCV 05000440/2023010-05 Open/Closed	Not Applicable	71111.21M

The inspectors identified a Severity Level IV (SL-IV) Non-Cited Violation (NCV) of 10 CFR 50.73(a)(2)(v), for the licensee's failure to report, within 60 days of discovery, a condition that could have prevented the fulfillment of the safety function. Specifically, the licensee failed to notify the NRC upon discovery of a condition that could have prevented the Division 3 Battery Charger 1E22S0006 from fulfilling its intended safety function.

Description:

Technical Specification 3.8.4, "DC Sources – Operating," requires the Division 3 electrical power subsystem shall be operable. During review of the licensee's condition report (CR) 2017-08373, "Potential Seismic Bolt Missing from Charger," the inspectors identified a condition that could have prevented the fulfillment of safety function of the Division 3 Battery Charger. Specifically, the CR identified a condition of Battery Charger 1E22S0006 in which a bolt and wingnut hardware was discovered to be not installed to secure its circuit control cards in place. Following discovery of the missing hardware, the inspectors noted an adequate reportability review was not conducted, nor a past operability evaluation was requested to determine whether the battery charger would have been operable. Following review of the vendor manuals and walkdowns to better understand the control card mounting configuration within the battery charger, and follow-up discussions with the licensee, it was concluded significant doubts existed in the battery charger's ability to perform its required safety function when called upon during the design basis seismic events. Licensee Procedure NOP-OP-1015, "Event Notifications," established the requirements for the identification and development of notifications. Section 4.2.3 of the procedure stated, "Any event or condition requiring an evaluation in order to determine reportability must be

evaluated on a schedule commensurate with its safety significance per the guidance of NRC Regulatory Issue Summary (RIS) 2005-20. Whenever a reasonable expectation no longer exists that the equipment in question is operable, or significant doubts begin to arise, appropriate actions, including event notifications, should be taken." In light of the discovered condition, and in conjunction with the licensee procedural requirements, it was concluded it constituted a condition that should have been reported under the provision of 10 CFR 50.73(a)(2)(v).

A separate violation regarding the failure to verify the adequacy of the seismic design of Battery Charger 1E22S0006 was dispositioned as a separate item in this report.

Corrective Actions: Based on a review of available documentation and conversations with the inspectors, the licensee concluded the missing bolt and wingnut hardware was required to maintain the battery charger's seismic qualification and consequently its operability requirements. The licensee entered this issue into their Corrective Actions Program and performed a review of NUREG-1022, "Event Report Guidelines 10 CFR 50.72 and 50.73," Revision 3. The licensee subsequently determined there were no reporting requirements associated with this condition since the event occurred more than 3 years ago.

Corrective Action References: CR-2023-03970, CETI Inspection: NRC Identified 50.72 Notification not conducted for CR-2017-08373

Performance Assessment:

The inspectors determined this violation was associated with a minor performance deficiency. Specifically, the performance deficiency is considered minor since it dealt with a reporting requirements. A separate, but related, finding of very low safety significance (Green) associated with the failure to assure the Battery charger's seismic qualification was maintained has been documented in this report.

Enforcement:

The ROP's significance determination process does not specifically consider the regulatory process impact in its assessment of licensee performance. Therefore, it is necessary to address this violation which impedes the NRC's ability to regulate using traditional enforcement to adequately deter non-compliance.

Severity: Based on the examples provided in Section 6.9 of the Enforcement Policy, dated January 13, 2023, "Inaccurate and Incomplete Information or Failure to Make a Required Report," the issue of concern was determined to be a Severity Level IV violation. Specifically, example 6.9.d.9 lists a failure to make a required report per 10 CFR Part 50.73, as an example of a Severity Level IV violation

Violation: 10 CFR 50.73(a)(2)(v) requires, in part, that an event or condition that could have prevented fulfillment of safety function be reported to the NRC within 60 days from the time of discovery.

Contrary to the above, the licensee failed to submit a LER within 60 days of August 11, 2017, after discovering a condition that could have prevented Division 3 Battery Charger from fulfilling its safety function.

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

## **EXIT MEETINGS AND DEBRIEFS**

The inspectors verified no proprietary information was retained or documented in this report.

- On May 25, 2023, the inspectors presented the Comprehensive Engineering Team Inspection results to Rod Penfield and other members of the licensee staff.
- On May 12, 2023, the inspectors presented the Interim Exit Meeting inspection results to Chris Elliott and other members of the licensee staff.

## DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.21M	Calculations	1 P45G071A	T: Evaluation of Emergency Service Water Piping and Supports for Package 1 P45G071A	0
		1E22G008A	Analysis of Piping for HPCS Diesel Exhaust	5 and A-01
		1P45H0010	Qualification of Emergency Service Water Pipe Support 1P45H0010	3
		B13-027	ASME Code NB-3200 Analysis of HPCS Piping Location	0
		DRF-A22-00084-45	Station Blackout	10/12/1999
		E22-029	SVI-E22-T2001 HPCS Pump Performance Test Acceptance Criteria	7
		E22-042	Division 3 EDG Jacket Water Heat Exchanger Performance Test	5
		E22-043	HPCS System Hydraulic Analysis	04/13/2006
		E22-C10	HPCS Pump Discharge Indicated Flow	1
		ECA-018	Environmental Conditions Analysis	4
		ECA-064	HPCS PRC Load for Steady State Room Temperatures	4
		EQ-151	Determine Effects on Safety Equipment for Accident Temperature Increase	1
		GEN-022	Mission Times	0
		JL-083	Flooding Analysis of CCB, IB, and FHB – Floor Elevation 574’-10”	3 and P-01
		M39-014	HPCS Pump Room Cooler Air Flow Rate and Performance Evaluation at Design Conditions	06/11/2012
		M39-015	HPCS Pump Room Cooler Performance Test Results	4
		M39-016	ECCS Pump Room Coolers Design Airflows	1
		M39-017	Minimum Reynolds Number to Verify Turbulence for 1M39B0003 Operating Ranges	0
		P45-030	Perry Unit #1 P45 System Operating Temperatures	10
		P45-031	SW-ECC Emergency Temperatures	4
P45-038	Evaluation for Cavitation in Butterfly/Globe Valves	2		
P45-051	Composite Bias Uncertainty of HPCS PRC ESW Flow	0		
P45-056	ESW Pump Performance Acceptance Criteria for SVI-P45	1		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			T2001	
		P45-057C	ESW System Thermal Hydraulic Model (Loop C)	0
		P45-075	Minimum Branch Flow Rates for P45 Surveillance Acceptance Criteria	2
		P45-078	Emergency Service Water Pump "C" as Built Head Capacity Curve	01/31/2006
		P45-081	Evaluation of Net Positive Suction Head (NPSH) and Submergence Requirements for the Emergency Service Water (ESW) Pumps	09/28/2004
		P45-44	Keep Fill Check Valve Leak Rate Standpipe Draindown Level	2
		P924	Penetration Analysis for P-108, P-310, P-311, and P-409	5
		PRDC-0002	Unit 1 Div 1, 2, 3 125 VDC System Coordination	4
		PRDC-0012	Evaluation of DC Loads for a 4 Hours Design Basis Station Blackout (SBO) and Also for a 24 Hours Beyond Design Basis Events	3 and 3 P-01
		PRDC-0016	Division 3, 125 VDC System Load Evaluation, Voltage Drop, Battery / Battery Charger Sizing Calculation	3, 3 P-01, 3 A-01, and 3 A-02
		PY-1R45A0005	Final Report on ASME Section III Analysis of Class 3 Nuclear Safety Related Shop Fabricated Tanks for the Perry Nuclear Power Plant	12/16/1977
		R45-003	Diesel Fuel Oil Pumps	1
		R45-007	Standby and HPCS DG Fuel Oil Day Tank Volume Level	2
		R45-012	HPCS and Div. I & II Fuel Oil Day Tank Setpoint Volumes	2
		R45-C04	Div. 1, 2&3 DG Fuel Oil Day Tank ITS Volume Calculation	0
		R48-10	Standby and HPCS DG Intake Air	1
		SQ-0147	Seismic Qualification for 1P45C0002 (ESW Pump)	1
	Corrective Action Documents	CR 1996-02889	HPCS DG Left Bank Admission Valve	09/05/1996
		CR 2003-05065	Track Activities to Completion That are Required to Close the Operability Determination	04/15/2005
		CR 2003-05354	Emergency Service Water Pump Couplings	12/04/2004
		CR 2017-08373	Potential Seismic Bolt Missing from Charger	08/11/2017
		CR 2017-08373	Potential Seismic Bolt Missing from Charger	08/11/2017

Inspection Procedure	Type	Designation	Description or Title	Revision or Date	
		CR 2017-08930	NRC ID DBAI Inspection: Calculation SBO-007 Conservatism and Degraded CST Instrumentation Line Insulation	08/29/2017	
		CR 2017-09006	NRC ID DBAI Inspection: The SBO Analysis Requires 150k Gallons of Water from the CST Which Affects ONI-R10 Requirements	08/31/2017	
		CR 2017-09033	NRC ID DBAI Inspection: ESW Discharge Strainer Differential Pressure Alarms are the Same Value as Design Maximum Value	08/31/2017	
		CR 2019-00742	Deficient 50.59 Screen for Temporary Insulation Removal Spec Change Notice	02/22/2019	
		CR 2019-06875	2019 NRC 50.59 Inspection: Inappropriate 10CFR 50.59 Exemption Applied for RAD	08/15/2019	
		CR 2020-04310	ED1C Bus Volts are Drifting on Normal Charger 1E22-S006	05/16/2020	
		CR 2020-05484	Prompt Operability Determination Form (NOP-OP-1009-01)	07/06/2020	
		CR 2021-05948	Division 3 Emergency Service Water Flow is Degrading	08/11/2021	
		CR 2021-07711	Diesel Fuel Storage Tank Cleaning	10/14/2021	
		CR 2022-03956	Division 3 Emergency Service Water Flow Lower After Maintenance	05/09/2022	
		CR 2022-04902	Division 3 ESW Degradation	06/16/2022	
		CR 2022-07882	Division 1 Diesel Right Bank Cylinder 6 Low Exhaust Temperature	10/18/2022	
		CR 2023-10157	FME: Division 1 Right Bank #6 Thermocouple Outer Sheath Found Missing During Replacement	02/15/2023	
		CR G202-2002-00329	Determine Operability of ESW with an ESWPH Ventilation Subsystem out of Service	01/31/2002	
		Corrective Action Documents Resulting from Inspection	CR 2023-03504	NRC ID: 2023 CETI Inspection: NRC Identified Material Cart Not Secured	04/25/2023
			CR 2023-03570	2023 CETI Inspection: NRC Identified ONI-SPI C-7 Fuses Not in Specified Storage Location	04/27/2023
CR 2023-03672	2023 CETI Inspection: NRC Identified Equivalent Instrument May Not Have Been Used		05/01/2023		
CR 2023-03714	2023 CETI Inspection: NRC Identified Deficiencies in DC Fault Analysis		05/02/2023		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		CR 2023-03776	NRC ID: 2023 CETI Inspection: EOP Tool Inventory Maintenance Plan Needs Clarification.	05/04/2023
		CR 2023-03889	2023 CETI Inspection: NRC Identified HPCS Dissimilar Weld Not Evaluated for License Renewal	05/08/2023
		CR 2023-03915	2023 CETI Inspection - NRC Identified Measurement Uncertainties Potentially Not Fully Evaluated in SVI Acceptance Criteria Calculation	05/09/2023
		CR 2023-03918	2023 CETI Inspection – NRC Identified Cable Tie Mount Detached on Inside of Division 3 Control Panel	05/09/2023
		CR 2023-03932	2023 CETI Inspection - NRC Identified Measurement Uncertainties Potentially Not Fully Evaluated in SVI Acceptance Criteria Calculation for LPCS	05/10/2023
		CR 2023-03938	2023 CETI Inspection - NRC Identified Station Blackout Suppression Pool Analysis Input Temperature	05/10/2023
		CR 2023-03961	2023 CETI Inspection – NRC Identified the Pyrocrete Installed on the Div 3 HPCS Fuel Oil Day Tank Was Not Considered in the Structural Qualification	05/11/2023
		CR 2023-03964	2023-CETI Inspection: NRC Identified Additional Deficiencies in DC Fault Analysis	05/11/2023
		CR 2023-03970	CETI Inspection: NRC Identified 50.72 Notification Not Conducted for CR-2017-08373	05/11/2023
	Drawings	12-0576-001-020	Division # ED Tube Plugging	0
		206-0018-00000	Class 1E 4.16KV Bus EH13	AA
		206-0020-00000	Electrical Main One Line Diagram 480V	GG
		206-0029-0000	Electrical Class 1E 480V Bus EF1E	NN
		206-0050-00000	Electrical Class 1E DC System - Division 3	Z
		208-0065-00003	High Pressure Core Spray System Pump Relay Logic	S
		208-0066-00001	High Pressure Core Spray Power Supply System Pump C001	GG
		208-0066-00116	High Pressure Core Spray 125V DC Battery Charger 1E22-S006 (EFD-1-C)	E
		208-0131-00003	Pump Room Cooling System HPCS Pump Room Cooler 1M39-B003	S
		208-0176-00003	Emergency Service Water System HPCS Emergency	U

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Service Water Pump C002	
		208-0176-00006	HPCS Emergency Service Water Pump Discharge Valve F140	Z
		208-0176-00020	Emergency Service Water System HPCS Discharge Strainer MOV 1P45--F160	T
		208-0215-00022	Division III 125V D.C. System Metering & Relaying	G
		22-0126-00001	Emergency Service Water Pump (1P45C002)	A
		302-0212-00000	Service Water System	VVV
		302-0356-00000	Division 3 Diesel Fuel Oil System	V
		302-0358-00000	Division 3 Diesel Starting Air System	G
		302-0359-00000	Division 3 Diesel Lube Oil System	E
		302-0360-00000	Division 3 Diesel Jacket Water Cooling System	G
		302-0701-00000	HPCS System	LL
		302-0791-00000	Emergency Service Water System	BBB
		302-0793-00000	Emergency Service Water Operating Data	P
		B-208-066	High Pressure Core Spray Power Supply System Pump C001 Manual Override Control	M
		B-208-176	Emergency Service Water System HPCS Discharge Strainer	P
	Engineering Changes	DCP 98-0052	Single Feedwater MOV Improvements Modification	1
		EC 04-0146	ESW C Pump Lift Setting	0
		EC 04-0263	Emergency Service Water Pump (ESW) Upgrade	0
		ECP 12-0037	Installation of 18" Tall Steel Flood Curb at Door IB-103	3
		EDCR 92-0202	Station Blackout Cross-Tie Between EF IE (DIV. 3) and EF IC07 (DIV. 2)	0
		P45-084	Determine Allowable Silt and Zebra Mussel Accumulation in ESW and SW Intake SSC's	0
		P45-084	Determine Allowable Silt and Zebra Mussel Accumulation in ESW and SW Intake SSC's, Addendum A-01	0
	Engineering Evaluations	05-03199	10 CFR 50.59 SCXREEN - P45-084 and Other P45 Calcs	08/12/2005
		05-06409	10 CFR 50.59 SCREEN - Calculation P-45-078	01/31/2006
		06-02235	10CFR 50.59 SVI-E22-T2001 HPCS Pump Test Acceptance Criteria	0

Inspection Procedure	Type	Designation	Description or Title	Revision or Date	
		12-01602	Installation of 18" Tall Steel Flood Curb at Door IB-103	1	
		16-01392	10 CFR 50.59 SCREEN - Replacement of Valves 1E12F0084A/C	02/28/2019	
		17-01209	10CFR 50.59 Screen ECP-17-0132	1	
		18-00926	10 CFR 50.59 SCREEN - Calculation P-45-057 A/B/C	04/05/2020	
		18-02362	10 CFR 50.59 SCREEN - Insulation of Plant Systems	08/24/2018	
		18-03530	Emergency Service Water Pump House Ventilation System	0	
		20-00488	10CFR 50.59 Screen SBO-007	0	
		20-00581	10 CFR 50.59 SCREEN - Emergency Service Water Operating Data Updates Based on EER601268759	05/11/2020	
		21-00871	SCR 21-00871 00 Calculation AOV-1 0, A-04 Perry Nuclear Power Plant Air Operated Valve Functional Evaluation	06/03/2021	
		22-00075	50.59 Screening for ASME Code NB-3200 Analysis of HPCS Piping Location	0	
	22-00582	10CFR 50.59 Screen M39-015	0		
	Miscellaneous			HPCS Room Air Handling Unit Vendor Manual	
				HPCS Pump Vendor Manual	
				Seismic Qualification Reevaluation Class 1E Equipment for HPCS Batteries, Rack and Charger	03/01/1985
		12-316		C&D Technologies KCR Lead-Calcium Specification Sheet	0512/CD and 1120/CD
		1P45-C002 ROCA 7-4-2022		1P45-C002 Five Point Curve Validation	07/06/2022
		200864310		SVI-R42T5227 Unit 1, Div 3, Annual Battery Inspections (1E22-S005)	08/31/2022
		200864316		SVI-R42T5225 Unit 1, Div 1, Annual Battery Inspections (1R42-S002)	07/21/2022
		200864319		SVI-R42T5226 Unit 1, Div 2, Annual Battery Inspections (1R42-S003)	08/23/2022
		43368-1		Seismic Simulation Test Report for Battery Charger and Battery Rack	09/12/1976
600503777			Engineering Evaluation Request	11/14/2008	
ATL-2018-1291-		SOI-M32	05/18/2018		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		ATA-40		
		DI-224	HPCS Pump Room Cooler Design Input	07/26/2012
		DSP-504-4549-00	Design Specification for Nuclear Safety Related Shop Fabricated Tanks	VII
		DSP-R44-R48-E22-3-4549-00	Design Specification for Standby and High Pressure Core Spray Diesel Generator Starting Air, Intake and Exhaust Systems Piping and Pipe Supports	3
		EMARP-0011	Emergency Service Water System Monitoring Program	9
		G239-061 D1-D7	Division 3 Battery Charger Vendor Manual: C & D Technologies, Inc. Model ARR130HK50	02/01/1976
		IB 6.1.2.7-1C	BBC Brown Boveri, Inc.; Installation/Maintenance Instructions; I-T-E Low Voltage Power Circuit Breakers; Type K-225 thru 2000 and K-600S thru 2000S	C
		LER 2011-004	Flooding Calculation Deficiency Results in Unanalyzed Condition	0 and 1
		Maintenance Rule System Basis Document	System S99	0
		MRN#5	C&D Technologies, Inc. Supplemental Data for KCR-7 Battery Cell	None
		NEDC-32931P	GE Safety Analysis Report for Perry PERFORM - Safety System Parameter Relaxations	03/01/2002
		NEDC-32972P	GE Safety Analysis Evaluations Relative to Measurement Uncertainties for the BWR/6 Improved Standard Technical Specifications	02/01/2001
		NORM-ER-3302	FENOC: I&C Relays	4
		NORM-ER-3311	FENOC: I&C Loop Components	10
		NUMARC-8700	Guidelines and Technical Bases for NUMARC Initiatives Addressing Station Blackout at Light Water Reactors	11/20/1987
		OE-2017-0561	Operating Experience Evaluation: IN 1706, Battery and Battery Charger Short-Circuit Current Contributions to a Fault on the Direct Current Distribution System	05/31/2019
		OE-2017-0561-1-FA002	Review of NUREG/CR-7229, "Testing to Evaluate Battery and Battery Charger Short-Circuit Contributions to a Fault	11/28/2017

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			on the DC Distribution System."	
		OTCOMBINEDP45	Emergency Service Water (ESW) System	15
		PHS-IST	Inservice Testing IST - Perry	02/02/2022
		Procurement Package - 1-19201	Pump Partial Assembly, ESW C	1, 2, and 3
		PRS-3202	Emergency Service Water Partial Pump Assemble Procurement Specification	5
		Pump IST Bases	Pump IST Basis Report - 1P45-C002 ESW Pump C	Various
		PY-1Z99	Perry Nuclear Pwr Plt Maintenance Plan Administrative Inventory EOP Files, Ladders	05/04/2023
		RS02098	C&D Technologies Standby Battery Rack Assembly Instructions	0114/CD
		SHR-E22A	System Health Report 2022-22 - System - E22B - High Pressure Core Spray Components	02/28/2023
		SHR-E22B	System Health Report 2022-2 - System - E22B - High Pressure Core Spray Diesel Components	02/28/2023
		SHR-R42	Perry System Health Report: R42 - DC Systems	07/28/2022
		SOI-P45/P49	Emergency Service Water and Screen Wash Systems	35
		SSC-001	Appendix R Evaluation: Safe Shutdown Capabilities Report	5
		TAF 081854	Maintenance Rule Walkdown Confirmation of Personnel Qualifications	05/28/2020
		TD-6694	Time-Current Characteristic Curves For K-Line and K-Don Circuit Breakers; ABB Power T&D Company Inc. Distribution Systems Division	7
		US-GN-RS-002	EnerSys PowerSafe GN Specification	02/01/2012
		US-GNRACK-IM	EnerSys; Instructions for Assembling Class 1E Racks	04/01/2004
		Valve IST Bases	Valve IST Basis Report - 1P45-F140 ESW Discharge Pump Valve	Various
	Procedures	ARI-H13-P601-0016	Div 3 Diesel Gen & HPCS	23
		ARI-H13-P601-0016-G4	HPCS ESW Disch Strainer Start Diff Press HI	24
		ELI-R42	Perry Operations Manual: Electrical Lineup Instruction: DC Systems: Batteries Chargers Switchboards	8

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		EOP-01	RPV Control	I
		EOP-02	Primary Containment Control	G
		EOP-SPI-3.2	SPMU Initiation	3
		EOP-SPI-6.4	HPCS Injection	6
		FTI-F0036	Post-Maintenance Test Manual	15
		GEI-0029	Testing of Molded Case Circuit Breakers and Overload Heater Relays	24
		GEI-0046	Perry Operations Manual: Generic Electrical Instruction: Division 3 125VDC Relays	5
		GEI-0057-B	Division 3 Normal Battery Charger Maintenance, Calibration, and Functional Testing	1
		GMI-0040	Disassembly and Reassembly of Division 3 Emergency Service Water Pump	10
		GMI-0145	Sluice Gate Maintenance	7
		NOBP-CC-7007	Part Interchangeability Evaluation	2
		NOBP-ER-3003-02	System Walkdown Check List	2
		NOBP-ER-3902	Component Template Development ER Workbench Module 2	8
		NOBP-OP-1113	Control of Time Sensitive Operator Actions	2
		NOBP-SS-3202	Delegation of Authority	0
		NOP-CC-1002	Drawing Control	4
		NOP-CC-2003	Engineering Changes	28
		NOP-CC-2004	Design Interface Reviews and Evaluations	10 and 12
		NOP-CC-3002	Calculations	8
		NOP-CC-7002	Procurement Engineering	14
		NOP-ER-3203	Snubber Program	6
		NOP-ER-3204	Inservice Testing Program	8
		NOP-LP-2601	Procedure/Work Instruction Use and Adherence	8
		NOP-LP-4003	Evaluation of Changes, Tests and Experiments	9
		NOP-OP-1013	Control of Time Critical Operator Actions	3
		NOP-OP-1015	Event Notifications	10
		NORM-ER-3103	Low & Medium Voltage Switchgear and Motor Control Centers	9

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		OAI-0201	Operations General Instructions and Operating Practices	49
		ONI-R10	Loss of AC Power	17
		ONI-R10-2	Station Blackout (SBO)	F
		ONI-R42-3	Loss of DC Bus ED-1-C	7
		ONI-SPI C-7	Division 3 to Division 2 480 Volt Cross-Tie	5
		ONI-SPI D-2	Nonessential DC Loads	7
		ONI-SPI D-3	Cross-Tying Unit 1 and Unit 2 Batteries	8
		ONI-SPI D-6	Containment Closure	3
		PAP-1115	Snubber Visual Inservice Examination and Testing Program	20
		PAP-1705	Diesel Generator Reports and Records	7
		PDB-R0001	Operational Requirements Manual	47
		PMI-0095	Division 3 Diesel Generator Electrical Maintenance	16
		PRI-TSR	Technical Specification Rounds	48
		PTI-P45-P0003	ESW System Loop C Flow and Differential Pressure Test	18
		PTI-P54-P0041	Semiannual Fire Door Inspection	18
		PYBP-POS-0029	Time Critical Operator Action Validation	5
		PYRM-SITE-0007	Drawing Categories	2
		SOI-E22A	HPCS System	41
		SOI-E22B	Division 3 Diesel Generator	35
		SOI-G41 (FPCC)	Fuel Pool Cooling and Cleanup System	43
		SOI-M32	Emergency Service Water Pump House Ventilation System	8 and 9
		SOI-M43	DG Building Ventilation System	17
		SOI-P45/P49	Emergency Service Water and Screen Wash Systems	35
		SOI-R42 (Div. 3)	Div 3 Distribution, Bus ED-1-C and ED-2-C: Batteries, Chargers, and Switchgear	11
		SOI-R44/E22B	Division 3 Diesel Generator Starting Air System	12
		SOI-R45/E22B	Division 3 Diesel Generator Fuel Oil System	20
		SOI-R46/E22B	Division 3 Diesel Generator Jacket Water System	8
		SOI-R47/E22B	Division 3 Diesel Generator Lube Oil System	12
		SVI-P45-T2003	HPCS ESW Pump and Valve Operability Test	29
		SVI-R42-T5225	Unit 1, Div 1, Annual Battery Inspections (1R42-S002)	5
		SVI-R42-T5227	Unit 1, Div 3, Annual Battery Inspections (1E22-S005)	6
		TAI-0513	Monitoring the Effectiveness of Maintenance Structure	7

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Monitoring Program	
	Work Orders	200116472	Replace HVSD & Control Circuit Boards for Battery Charger EFD-1-C	07/06/2006
		200412355	HPCS-Diesel GEN CT & PT Cubicle Panel; Test Molded Case Circuit Breakers	05/18/2012
		200516722	Replace HVSD & Control Circuit Boards, Battery Charger EFD-1-C	09/14/2017
		200727509	Potentiometer Thread Locker Sealant Application and Control Card Bracket Screw; Division 3 Battery Charger	09/18/2017
		200727542	Battery Charger EFD-2-C; Remove Bracket Screw and Wing Nut	09/12/2017
		200730816	Unit 1 Division 3 Charger (EFD-1-C) Load Test	08/12/2019
		200739647	PTI-M39P0002 HPCS Pump Room Cooler Performance Testing	12/15/2021
		200770452	PY-S99 Miscellaneous and Structures	07/16/2020
		200792978	ESW System Loop C Flow and Differential Pressure Test	10/07/2021
		200798895	Unit 1 Division 3 Charger (EFD-1-C) Load Test	08/06/2021
		200807328	HPCS ESW Pump and Valve Operability Test SVI-P45-T2003	07/05/2022
		200807329	HPCS ESW Pump and Valve Operability Test SVI-P45-T2003	10/04/2022
		200807330	HPCS ESW Pump and Valve Operability Test SVI-P45-T2003	01/03/2023
		200807424	1P45-C002 Pump Inspect/Tighten Packing	01/04/2023
		200807704	SVI-E22T1319 HPCS D/G Start and Load	10/04/2022
		200807708	SVI-E22T1319 HPCS D/G Start and Load	01/31/2023
		200807710	SVI-E22T1319 HPCS D/G Start and Load	04/13/2023
		200813753	Semiannual Fire Door Inspection	07/26/2022
		200823783	(6M) Semiannual Fire Door Inspection	02/10/2023
		200882815	1P45-C002 Pump Rebaseline	07/04/2022