



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, ILLINOIS 60532-4352

May 14, 2020

Mr. Frank Payne
Site Vice President
Energy Harbor Nuclear Corp.
Perry Nuclear Power Plant
Reg Affairs—A210
10 Center Road, P.O. Box 97
Perry, OH 44081-0097

SUBJECT: PERRY NUCLEAR POWER PLANT – INTEGRATED INSPECTION REPORT
05000440/2020001

Dear Mr. Payne:

On March 31, 2020, 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.

No findings or violations of more than minor significance were identified during this inspection.

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,

/RA/

Billy C. Dickson, Jr., Chief
Branch 2
Division of Reactor Projects

Docket No. 05000440
License No. NPF-58

Enclosure:
As stated

cc w/ encl: Distribution via LISTSERV®

Letter to Frank Payne from Billy C. Dickson, Jr. dated May 14, 2020.

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05000440/2020001

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U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Number: 05000440

License Number: NPF-58

Report Number: 05000440/2020001

Enterprise Identifier: I-2020-001-0050

Licensee: Energy Harbor Nuclear Corp.

Facility: Perry Nuclear Power Plant

Location: Perry, OH

Inspection Dates: January 01, 2020 to March 31, 2020

Inspectors: L. Alvarado Guilloty, Reactor Engineer
T. McGowan, Reactor Engineer
J. Nance, Reactor Engineer
J. Steffes, Senior Resident Inspector

Approved By: Billy C. Dickson, Jr., Chief
Branch 2
Division of Reactor Projects

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting an integrated 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

No findings or violations of more than minor significance were identified.

Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
URI	05000440/2019004-01	Degraded Turbine Overspeed Reset Limit Switch Results in an Extension in USAR Described Test Frequency	71111.18	Closed
LER	05000440/2018-002-00	LER 2018-002-00 for Perry Nuclear Power Plant, Failed Fuse Leads to Loss of Safety Function.	71153	Closed

PLANT STATUS

The plant began the inspection period at rated thermal power. On January 4, 2020, operators lowered reactor power to 57 percent to perform power suppression testing. Following successful suppression testing, operators increased reactor power. The licensee achieved full power operations on January 7, 2020. On March 13, 2020, operators lowered reactor power to 53 percent to perform rod pattern adjustment as well as planned surveillances. Following completion of these activities, the operators commenced power ascension activities. Full power operations resumed on March 16, 2020. The plant remained at or near full power for the rest of the inspection period.

On February 27, 2020, the licensee's parent company successfully completed its Chapter 11 restructuring process and emerged from bankruptcy as Energy Harbor Nuclear Corp. The NRC Region III inspectors used flexibility in the baseline inspection program to assess the potential impact of the financial conditions on licensee performance. Through February 27, 2020, the inspectors applied additional focus to the following areas: (1) impact on regulatory required plant staffing, (2) corrective maintenance backlog, (3) changes to the planned maintenance schedule, (4) corrective action program implementation, and (5) reduction in outage scope, including risk-significant modifications. No concerns were identified.

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/readingrm/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." From January 1 – March 19, 2020, the inspectors performed plant status activities described in IMC 2515, Appendix D, "Plant Status," and conducted routine reviews using IP 71152, "Problem Identification and Resolution." 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.

Starting on March 20, 2020, in response to the National Emergency declared by the President of the United States on the public health risks of the coronavirus (COVID-19), resident inspectors were directed to begin telework and to remotely access licensee information using available technology. During this time the resident inspectors performed periodic site visits each week and during that time conducted plant status activities as described in IMC 2515, Appendix D; and observed risk significant activities when warranted. In addition, resident and regional baseline inspections were evaluated to determine if all or portion of the objectives and requirements stated in the IP could be performed remotely. If the inspections could be performed remotely, they were conducted per the applicable IP. In the cases where it was determined the objectives and requirements could not be performed remotely, management elected to postpone and reschedule the inspection to a later date.

REACTOR SAFETY

71111.01 - Adverse Weather Protection

Seasonal Extreme Weather Sample (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated readiness for seasonal extreme weather conditions prior to the onset of extreme cold weather for two systems on February 3 and 4, 2020. Verified temporary heating staged for potential extreme weather IAW Attachment 1 in ONI-R36-2, Rev. 10.

71111.04 - Equipment Alignment

Partial Walkdown Sample (IP Section 03.01) (3 Samples)

The inspectors evaluated system configurations during partial walkdowns of the following systems/trains:

- (1) Division 3 diesel generator while the Reactor Core Isolation Cooling (RCIC) system was unavailable for maintenance on January 30, 2020.
- (2) Control room heating, ventilation, air conditioning, and emergency recirculation "B" system following division 2 emergency diesel generator run on March 31, 2020.
- (3) Low pressure core spray on March 25, 2020.

Complete Walkdown Sample (IP Section 03.02) (1 Sample)

- (1) The inspectors evaluated system configurations during a complete walkdown of the licensee's direct current (DC) distribution systems to include: normal and reserve battery chargers, batteries and battery racks, DC load centers, DC motor control centers and DC distribution panels system on February 26 to March 2, 2020.

71111.05 - Fire Protection

Fire Area Walkdown and Inspection Sample (IP Section 03.01) (4 Samples)

The inspectors evaluated the implementation of the fire protection program by conducting a walkdown and performing a review to verify program compliance, equipment functionality, material condition, and operational readiness of the following fire areas:

- (1) Control Complex 654 foot elevation on January 6, 2020.
- (2) Nuclear closed cooling pumps and heat exchanger 599 foot elevation fire zone OCC-2A on January 7, 2020.
- (3) Unit 1 containment on January 8, 2020.
- (4) Intermediate building 574 and 585 foot elevations fire zone OIB-1 on January 9, 2020.

71111.11Q - Licensed Operator Regualification Program and Licensed Operator Performance

Licensed Operator Performance in the Actual Plant/Main Control Room (IP Section 03.01) (1 Sample)

- (1) The inspectors observed and evaluated licensed operator performance in the Control Room during downpower and rod control manipulations for power suppression testing on January 4, 2020.

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (IP Section 03.01) (4 Samples)

The inspectors evaluated the accuracy and completeness of risk assessments for the following planned and emergent work activities to ensure configuration changes and appropriate work controls were addressed;

- (1) Plant risk evaluation during unavailability of the RCIC system for planned maintenance from January 21-23, 2020.
- (2) Emergent work on the RCIC overspeed mechanism due to test failure January 24-25, 2020.
- (3) Emergent work on the RCIC trip throttle valve due to test failure January 28-29, 2020.
- (4) Risk assessment associated with emergent work activities to isolate and locate a underground water leak near the pump house on February 12, 2020.

71111.15 - Operability Determinations and Functionality Assessments

Operability Determination or Functionality Assessment (IP Section 03.01) (2 Samples)

The inspectors evaluated the licensee's justifications and actions associated with the following operability determinations and functionality assessments:

- (1) Fire protection system functionality determination with fire protection water being supplied to non-safety pump seals on February 20-21, 2020.
- (2) Main turbine valve surveillance failure on March 26-27, 2020.

71111.18 - Plant Modifications

Temporary Modifications and/or Permanent Modifications (IP Section 03.01 and/or 03.02) (1 Sample)

The inspectors evaluated the following temporary or permanent modifications:

- (1) Installation of a manual lockout switch for main turbine mechanical and electrical overspeed trips on March 18-30, 2020.

71111.19 - Post-Maintenance Testing

Post-Maintenance Test Sample (IP Section 03.01) (2 Samples)

The inspectors evaluated the following post maintenance test activities to verify system operability and functionality:

- (1) RCIC trip throttle valve test following corrective maintenance on January 26, 2020.
- (2) RCIC systems pump and valve operability test following extended maintenance window on January 26, 2020.

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

Surveillance Tests (other) (IP Section 03.01) (1 Sample)

- (1) RCIC system pump and valve surveillance on January 31, 2020.

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

IE01: Unplanned Scrams per 7000 Critical Hours Sample (IP Section 02.01) (1 Sample)

- (1) Unit 1 (January-December 2019)

IE03: Unplanned Power Changes per 7000 Critical Hours Sample (IP Section 02.02) (1 Sample)

- (1) Unit 1 (January-December 2019)

IE04: Unplanned Scrams with Complications (USwC) Sample (IP Section 02.03) (1 Sample)

- (1) Unit 1 (January-December 2019)

71153 - Followup of Events and Notices of Enforcement Discretion

Event Report (IP Section 03.02) (1 Sample)

The inspectors evaluated the following licensee event reports (LERs):

- (1) Licensee Event Report 05000440/2018-002-00, Failed Fuse Leads to Loss of Safety Function (ADAMS Accession No. ML18236A294)

The inspectors determined that the cause of the condition described in the LER was not reasonably within the licensee's ability to have foreseen and corrected and therefore was not reasonably preventable. No performance deficiency nor violation of NRC requirements was identified.

INSPECTION RESULTS

Unresolved Item (Closed)	Degraded Turbine Overspeed Reset Limit Switch Results in an Extension in USAR Described Test Frequency URI 05000440/2019004-01	71111.18
<p>Description: On July 27, 2019, a turbine trip and reactor scram occurred during performance of weekly Main Turbine overspeed testing. The turbine trip occurred during performance of the mechanical overspeed portion of the testing procedure. The inspectors determined that troubleshooting efforts identified a ground associated with the reset limit switch on the turbine overspeed system. The inspectors reviewed the prompt functionality assessment (PFA) contained in CR 2019-06321, "Turbine Trip during Weekly Turbine Overspeed Test" and noted that the licensee did not immediately address the reset limit switch ground by fixing the issue but would instead correct the condition following the corrective action process in a timely manner commensurate with its safety significance. The inspectors additionally determined the licensee had contracted with an outside vendor to assess the impacts of changing the turbine overspeed testing frequency on the design/license basis turbine missile hazard likelihood which could in turn change the turbine missile probability. The inspectors determine the vendor used a Monte Carlo methodology to decrease the testing frequency from weekly to semi-annually rather than a methodology by General Electric or Siemens-Westinghouse, as stated in USAR 10.2.3.6.1.1. The inspectors noted that the licensee determined that extending testing from weekly to semi-annually constituted a non-conforming condition with respect to the design basis.</p> <p>As a result, the inspectors generated an Unresolved Item (URI) 05000440/2019004-01, "Degraded Turbine Overspeed Reset Limit Switch Results in an Extension in USAR Described Test Frequency," to ascertain the appropriateness of the licensee using the PFA process to change USAR described testing rather than the 10 CFR 50.59 process. Specifically, (1) whether the change in overspeed testing frequency, i.e. non-performance on a weekly basis, constituted a compensatory measure for the degraded condition, and (2) whether the compensatory measure should have been evaluated in accordance with the 10 CFR 50.59 process. The licensee entered the inspectors concerns in CR 2020-01004, "NRC Open Unresolved Item – Degraded Overspeed Limit Switch Results in an Extension in USAR Described Test Frequency."</p> <p>In response to inspector questions the licensee developed a position paper explaining their decision-making. The position paper stated that, "the less frequent test interval that is implemented by the PFA is not viewed to be a compensatory action for the degraded condition, as it does not restore or maintain functionality for the turbine overspeed trip test system. The PFA is not intended to accept the degraded condition "as-is", or to change the facility or its procedures. As such, the less frequent turbine trip test interval that is implemented by the PFA was concluded to not require further review under 10 CFR 50.59."</p> <p>The inspectors consulted subject matter experts in the Office of Nuclear Reactor Regulation (NRR) and ultimately agreed that the change in testing frequency was not subject to 10 CFR 50.59 requirements but disagreed with the licensee's reasoning. The inspectors concluded that regardless of whether the change in frequency was in response to a degraded condition, the change in frequency itself was a separate stand-alone non-conforming condition for which evaluation should've been performed. However, NEI 96-07, Revision 1, "Guidelines for 10 CFR 50.59 Evaluations," Section 4.1.2 contained guidance for changes made to maintenance procedures. Surveillances are considered maintenance activities and changes to</p>		

surveillances are made in accordance with applicable 10 CFR Part 50, Appendix B assuming those changes do not alter plant configurations.

The inspectors determined that in this case the licensee implemented the temporary change to the turbine overspeed test interval using the PFA process rather than changing the test procedure for the turbine overspeed protection test and that those changes did not inadvertently alter the design, performance requirements, operation or control of the turbine overspeed mechanism and therefore was not subject to 10 CFR 50.59 requirements. Based on this review, no performance deficiencies and associated violations of NRC regulations were identified, and URI 05000440/2019004-01 is closed.

EXIT MEETINGS AND DEBRIEFS

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

- On March 31, 2020, the inspectors presented the integrated inspection results to Mr. F. Payne, Site Vice President and other members of the licensee staff.
- On April 22, 2020, the inspectors presented the integrated inspection results to Mr. F. Payne, Site Vice President and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.01	Procedures	IOI-0015	Seasonal Variations	33
		ONI-R36-2	Extreme Cold Weather	10
		ONI-ZZZ-1	Act of Nature – Severe Weather	32
71111.04	Corrective Action Documents	CR 2020-01139	Evaluation of Part 21 for Batteries	02/12/2020
	Drawings	206-0050-00000	One Line Diagram - Class 1E DC System Division 3	Z
		206-0051-00000	One Line Diagram Class 1E DC System	DDD
		206-0052-00000	One Line Diagram Non-Class 1E DC System Bus D1A and D1B	DDD
	Miscellaneous	SOI-E22B	Division 3 Diesel Generator	34
	Procedures	ARI-H13-P601-0016	Division 3 Diesel Generator and High Pressure Core Spray	20
		ARI-H13-P877-0002	Division 2 Power	18
		ARI-H13-P887-0001	Division 1 Power	15
		SOI-E22A	High Pressure Core Spray System	40
		SOI-R42 (DIV 1)	Div 1 DC Distribution, Buses ED-1-A and ED-2-A, Batteries, Chargers, and Switchgear	22
		SOI-R42 (DIV 2)	Div 2 DC Distribution, Buses ED-1-B and ED-2-B, Batteries, Chargers, and Switchgear	15
		SOI-R42 (DIV 3)	Div 3 DC Distribution, Buses ED-1-C and ED-2-C: Batteries, Chargers, and Switchgear	10
		VLI-E21	Low Pressure Core Spray System	11
		VLI-E22A	Valve Lineup Instruction for HPCS	10
		VLI-M25/26	Control Room HVAC and Emergency Recirculation System	7
		200548141	Replace K1 Relay for 125 Volt DC Division 1 Battery Charger	01/26/2020
	Work Orders			
71111.05	Procedures	FPI-0CC	Conference Room, Corridor, Kitchen and Storage Room 654 Foot Elevation	11
		FPI-0CC	Unit 2 Control Room 654 Foot Elevation	11
		FPI-0CC	Unit 1 Control Room 654 Foot Elevation	11

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		FPI-0CC	NCC Pump/Heat Exchangers 599 Foot Elevation East	11
		FPI-0IB	Intermediate Building 574 Foot Elevation and Pipe Chase 585 Foot Elevation	10
		FPI-1RB	Unit 1 Containment to Drywell Space	5
	Work Orders	200717072	Portable Fire Extinguishers Maintenance Inspection	05/19/2019
71111.11Q	Miscellaneous	Evolution Specific Reactivity Plan	Perry Nuclear Power Plant January 2020 Power Suppression Test	0
71111.13	Corrective Action Documents	2020-00486	Unexpected Mechanical Component Contact Identified during RCIC Pump Dissassembly	01/22/2020
		2020-00599	Delays Encountered While Performing PTI-E51-P0003 RCIC Terry Turbine Overspeed Trip Test Due to Erratic Governor Controls	01/25/2020
		2020-00611	Issue Identified with the RCIC Turbine Mechanical Overspeed Trip while Performing Overspeed Trip Testing	01/26/2020
		2020-00621	Degraded Part Identified During Inspection of Overspeed Trip Assembly	01/26/2020
		2020-00660	RCIC Trip Throttle Valve Did Not Trip	01/28/2020
		2020-00979	ONI-ZZZ-0006 Water Leaking Out of Ground in Front of Service Water Pump House	02/07/2020
		2020-01142	Unable to Perform Operations Evolution Order for Shifting from the Clearwell to Fire Water	02/13/2020
	Procedures	NOP-OP-1007	Risk Management	31
		PAP-1924	Risk-Informed Safety Assessment and Risk Management	9
	Work Orders	200518430	Replacement of RCIC EGM Control Box, Overspeed Test Controller, and Ramp Generator and Signal Converter	0
		200741073	RCIC Terry Turbine Overspeed Trip Test	0
		200754241	Diesel Generator Start and Load Division 1	0
71111.15	Calculations	P54-124	Fire Protection Suppression System Water Supply Calculation	1
	Corrective Action Documents	2020-02235	Unsat Continuity Reading During Performance of SVI-N31-T1151, Main Turbine Valve Exercise Test	03/15/2020
	Engineering Evaluations	EER 601260168	Fire Protection Engineering Evaluation to Permit the Use of the Water-Based Fire Protection System in Support of SOI-P20/21/22	02/17/2020

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Work Orders	200625795	Main Turbine Valve Exercise Test	03/15/2020
		200756819	Motor Driven Fire Pump Flow Data and Control Panel Functional Test	01/25/2020
71111.18	Corrective Action Documents	CR 2020-01004	NRC Open Unresolved Item-Degraded Overspeed Limit Switch Results in an Extension in USAR Described Test Frequency	02/10/2020
	Engineering Changes	19-0173-001	Manual Lockout Switch for Main Turbine Mechanical and Electrical Trips	01/16/2020
	Work Orders	200801461	Modification 19-0173-001 to Install a 3-Position Keylock Switch on the EHC Panel for Use During the Electrical and Mechanical Turbine Overspeed Tests	03/13/2020
71111.19	Procedures	GMI-0182	RCIC Trip and Throttle Valve Maintenance and Trip Linkage Adjustment	5
	Work Orders	200718798	RCIC Pump and Valve Operability Test	01/21/2019
		200741073	PTI-E51-P0003 RCIC Turbine Overspeed Trip Test	01/28/2020
		200810835	RHR and RCIC Steam Supply Second Drain Shutoff Valve Packing Replacement	01/21/2020
71111.22	Corrective Action Documents	2020-00745	RCIC Pump and Valve Surveillance Discrepancies	01/30/2020
	Drawings	302-0632-00000	Reactor Core Isolation Cooling	LL
	Procedures	SVI-E51-T2001	RCIC Pump and Valve Operability Test	45
	Work Orders	200740485	RCIC Cold Quick Start and Position Indication Verification Test	01/31/2020
71151	Miscellaneous	SPYA227-P20012319310	Performance Indicator Summary Report	01/01/2019 - 12/31/2019
71153	Corrective Action Documents	2018-05997	Received Unexpected RHR A Out of Service Alarm	06/30/2018
	Work Orders	200758862	Troubleshoot to Determine the Cause of the Unexpected RHR A Out of Service and LPCS Out of Service Alarms	0