



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

July 31, 2024

Richard Knott, Vice President, Quality Assurance
Paragon Energy Solutions, LLC,
7410 Pebble Dr,
Fort Worth, TX 76118

SUBJECT: NUCLEAR REGULATORY COMMISSION VENDOR INSPECTION REPORT
OF PARAGON ENERGY SOLUTIONS, LLC NO. 99902105/2024-201

Dear Mr. Knott:

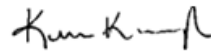
On June 24 – 28, 2024, the U.S. Nuclear Regulatory Commission (NRC) staff conducted an inspection at Paragon Energy Solutions, LLC's (hereafter referred to as PES) facility in Fort Worth, TX (formerly owned by AZZ Nuclear | NLI). The purpose of this limited-scope routine inspection was to assess PES's compliance with provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 21, "Reporting of Defects and Noncompliance," and selected portions of Appendix B, "Quality Assurance Program Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities."

This technically focused inspection specifically evaluated PES's implementation of quality activities associated with the supply of safety-related design, reverse engineering, commercial grade dedication, equipment testing and qualification, repair and replacement services to NRC regulated facilities. In addition, the NRC inspection team evaluated PES's closure of two Notices of Nonconformance NON 99901471/2016-201-04 and NON 99901471/2019-201-01 documented in inspection report No. 99901471/2016-201, dated December 14, 2016 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16305A097) and inspection report No. 99901471/2019-201, dated July 3, 2019 (ADAMS Accession No. ML19175A138), respectively. This NRC inspection report does not constitute NRC endorsement of PES's overall quality assurance (QA) or 10 CFR Part 21 programs.

Within the scope of this inspection, no violations or nonconformances were identified.

In accordance with 10 CFR 2.390, "Public inspections, exemptions, requests for withholding" and the NRC's "Rule of Practice," a copy of this letter, its enclosure(s), and your response will be made available electronically for public inspection in the NRC's Public Document Room or from the NRC's document system (ADAMS), accessible at <http://www.nrc.gov/reading-rm/adams.html>.

Sincerely,



Signed by Kavanagh, Kerri
on 07/31/24

Kerri Kavanagh, Chief
Quality Assurance Vendor Inspection Branch
Division of Reactor Oversight
Office of Nuclear Reactor Regulation

Docket No.: 99902105

EPID No.: I-2024-201-0038

Enclosure:
Inspection Report No. 99902105/2024-201
and Attachment

SUBJECT: NUCLEAR REGULATORY COMMISSION VENDOR INSPECTION REPORT OF
PARAGON ENERGY SOLUTIONS, LLC NO. 99902105/2024-201
DATE: JULY 31, 2024

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NRR-106

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NAME	BHughes	OAyegbusi	KKavanagh
DATE	07/25/2024	07/24/2024	07/31/2024

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**U.S. NUCLEAR REGULATORY COMMISSION OFFICE OF NUCLEAR REACTOR
REGULATION DIVISION OF REACTOR OVERSIGHT VENDOR INSPECTION REPORT**

Docket No.: 99902105

Report No.: 99902105/2024-201

Vendor: Paragon Energy Solutions, LLC
7410 Pebble Dr,
Fort Worth, TX 76118

Vendor Contact: Richard Knott
Vice President Quality Assurance
Phone: 518-450-9706
Email: RKnott@paragones.com

Nuclear Industry Activity: Paragon Energy Solutions, LLC is an American Society of Mechanical Engineers Boiler and Pressure Vessel Code N, NPT, and NS certificate holder. Paragon's scope of supply includes safety-related design, reverse engineering, commercial grade dedication, equipment testing and qualification, repair and replacement services for NRC regulated facilities.

Inspection Dates: June 24 – 28, 2024

Inspectors: Odunayo Ayegbusi NRR/DRO/IQVB, Team Leader
Deanna Zhang NRR/DRO/IQVB
Michael Fitzgerald NRR/DRO/IQVB, Trainee
Yiu Law NRR/DRO/IQVB, Remote

Approved by: Kerri Kavanagh, Chief
Quality Assurance and Vendor Inspection
Branch Division of Reactor Oversight
Office of Nuclear Reactor Regulation

Enclosure

EXECUTIVE SUMMARY

Paragon Energy Solutions, LLC
99902105/2024-201

The U.S. Nuclear Regulatory Commission (NRC) staff conducted a limited-scope routine vendor inspection at the Paragon Energy Solutions, LLC's (hereafter referred to as PES) facility in Fort Worth, TX, to verify it had implemented an adequate quality assurance (QA) program that complies with the requirements of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," and 10 CFR Part 21, "Reporting of Defects and Noncompliance." The NRC inspection team conducted this inspection on-site from June 24 – 28, 2024. This was the first NRC inspection of PES's Fort Worth facility, after PES purchased AZZ Nuclear | NLI in 2020.

This technically focused inspection specifically evaluated PES's implementation of the quality activities associated with the supply of safety-related design, reverse engineering, commercial grade dedication, equipment testing and qualification, repair and replacement services for NRC regulated facilities.

The following regulations served as the bases for the NRC inspection:

- Appendix B to 10 CFR Part 50
- 10 CFR Part 21

During this inspection, the NRC inspection team implemented Inspection Procedure (IP) 43002, "Routine Inspections of Nuclear Vendors," dated February 10, 2023, IP 43004, "Inspection of Commercial-Grade Dedication Programs," dated February 10, 2023; and IP 36100, "Inspection of 10 CFR Part 21 and Programs for Reporting of Defects and Noncompliance," dated February 10, 2023.

The NRC inspection team observed the following specific activities:

- Seismic qualification testing of a nuclear instrument assembly
- Receipt inspection of electrical breakers
- Walkdown of measuring and test equipment and nonconformance storage lockers
- Acceptance testing for the commercial grade dedication of a pressure regulator valve
- Pre-job brief and factory acceptance test for a charge alarm & load sharing assembly

The results of this inspection are summarized below.

Corrective Action Program

The NRC inspection team reviewed the corrective actions that PES took to address Nonconformance No. 99901471/2016-201-04, documented in inspection report No. 99901471/2016-201, dated December 14, 2016, and Nonconformance No. 99901471/2019-201-01, documented in inspection report No. 99901471/2019-201, dated July 3, 2019. The NRC inspection team reviewed the documentation that provided the objective evidence that all the corrective actions were completed and adequately implemented. Based on this review, the NRC inspection team closed Nonconformance No. 99901471/2016-201-04 and 99901471/2019-201-01.

Inspection Areas

The NRC inspection team determined that PES established its programs for 10 CFR Part 21, design control, commercial grade dedication, equipment testing and qualification, procurement document control and oversight of contracted activities, identification and control of materials, parts, and components, special processes, control of measuring and test equipment, nonconforming materials, parts, or components, corrective action, and internal audits, in accordance with the applicable regulatory requirements of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed and activities observed, the NRC inspection team also determined that PES is implementing its policies and procedures associated with these programs. No findings of significance were identified in these areas.

REPORT DETAILS

1. 10 CFR Part 21 Program

a. Inspection Scope

The U.S. Nuclear Regulatory Commission (NRC) inspection team reviewed Paragon Energy Solutions, LLC's (hereafter referred to as PES) policies and implementing procedures that govern the implementation of its Title 10 of the *Code of Federal Regulations* (10 CFR) Part 21, "Reporting of Defects and Noncompliance," program to verify compliance with the regulatory requirements. The NRC inspection team evaluated the 10 CFR Part 21 postings and a sample of PES's purchase orders (POs) to verify compliance with the requirements of 10 CFR 21.6, "Posting Requirements," and 10 CFR 21.31, "Procurement Documents," respectively. The NRC inspection team also verified that PES's nonconformance and corrective action procedures provide a link to its 10 CFR Part 21 program. Furthermore, for a sample of 10 CFR Part 21 evaluations performed by PES, the NRC inspection team verified that PES had effectively implemented the requirements of evaluating deviations and failures to comply. The NRC inspection team verified that the notifications were performed in accordance with the requirements of 10 CFR 21.21, "Notification of Failure to Comply or Existence of a Defect and its Evaluation," as applicable.

The NRC inspection team discussed the 10 CFR Part 21 program with PES's management and technical staff. The attachment to this inspection report lists the documents reviewed and personnel interviewed by the NRC inspection team.

b. Observations and Findings

No findings of significance were identified.

c. Conclusion

The NRC inspection team concluded that PES is implementing its 10 CFR Part 21 program in accordance with the regulatory requirements of 10 CFR Part 21. Based on the limited sample of documents reviewed, the NRC inspection team also determined that PES is adequately implementing its policies and procedures associated with the 10 CFR Part 21 program. No findings of significance were identified.

2. Design Control and Reverse Engineering

a. Inspection Scope

The NRC inspection team reviewed PES's policies and procedures that govern the implementation of its design control program to verify compliance with the requirements of Criterion III, "Design Control" of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities." The NRC inspection team reviewed a completed reverse engineering project for an undervoltage auxiliary relay cabinet system control logic board and verified that the design management plans for the control logic board and decoder logic board, acceptance and inspection procedures, and drawings for these boards were completed in accordance with PES's reverse engineering procedures.

The NRC inspection team also discussed the design control program with PES's management and technical staff. The attachment to this inspection report lists the procedures reviewed, and personnel interviewed by the NRC inspection team.

b. Observations and Findings

No findings of significance were identified.

c. Conclusion

The NRC inspection team concluded that PES is implementing its design control program and reverse engineering controls in accordance with the regulatory requirements of Criterion III of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the NRC inspection team determined that PES is implementing its policies and procedures associated with its design control program and reverse engineering controls. No findings of significance were identified.

3. Commercial-Grade Dedication

a. Inspection Scope

The NRC inspection team reviewed PES's policies and implementing procedures that govern the implementation of its commercial-grade dedication (CGD) program to verify compliance with the regulatory requirements of Criterion III and Criterion VII, "Control of Purchased Material, Equipment, and Services," of Appendix B to 10 CFR Part 50.

The NRC inspection team reviewed a sample of PES's completed CGD project documents, including CGD technical evaluations and plans, inspection and acceptance procedures, dedication and verification and validation reports, and associated POs and receipt inspection forms. The NRC inspection team verified that the technical evaluations identified appropriate (1) critical characteristics to be verified for the item under dedication, and (2) acceptance methods and acceptance criteria for each critical characteristic. The NRC inspection team observed the performance of acceptance testing for the commercial grade dedication of a pressure regulator.

The NRC inspection team also discussed the CGD program with PES's management and technical staff. The attachment to this inspection report lists the documents reviewed and personnel interviewed by the NRC inspection team.

b. Observations and Findings

No findings of significance were identified.

c. Conclusion

The NRC inspection team concluded that PES is implementing its CGD program in accordance with the regulatory requirements of Criterion III and Criterion VII of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed and activities observed, the NRC inspection team determined that PES is implementing its policies and procedures associated with the CGD program. No findings of significance were identified.

4. Procurement Document Control and Oversight of Contracted Activities

a. Inspection Scope

The NRC inspection team reviewed PES's policies and implementing procedures that govern the implementation of its procurement document control and supplier oversight programs to verify compliance with the regulatory requirements of Criterion IV, "Procurement Document Control," and Criterion VII of Appendix B to 10 CFR Part 50.

The NRC inspection team reviewed PES's approved vendor list (AVL), and a sample of POs, supplier audits, job travelers, and receipt inspection records. For the sample of POs reviewed, the NRC inspection team verified that the POs included, as appropriate: scope of work, right of access to the suppliers' facilities, and conditions and restrictions imposed to sub-suppliers. The NRC inspection team confirmed that the POs adequately invoked the applicable technical, regulatory, and quality requirements. In addition, the NRC inspection team verified that for the sample of receipt inspection records reviewed (e.g., receipt inspection reports, Certificates of Compliance, and Certificate of Calibration), these records were (1) reviewed by PES for compliance with the requirements of the POs, (2) the records were approved by qualified individuals, and (3) the records contained the applicable technical and regulatory information. The NRC inspection team performed a walkdown of the receipt inspection and quality control inspection area.

The NRC inspection team selected a sample of suppliers from the AVL to review the methodology for conducting and documenting audits or commercial grade surveys (surveys) to verify adequate evaluation of the suppliers' controls for meeting the applicable requirements of Appendix B to 10 CFR Part 50. For the sample of supplier audits or surveys reviewed, the NRC inspection team verified the following: the audit/survey reports included an audit/survey plan; audits/surveys were performed according to established frequency; audit/survey reports included adequate documented objective evidence of compliance with the applicable requirements; and audit/survey documentation was reviewed by PES's responsible management. The NRC inspection team also verified that audits performed by the Nuclear Industry Assessment Committee were evaluated by PES in accordance with its written procedures for applicability to its scope of activities.

The NRC inspection team also discussed the procurement document control and supplier oversight programs with PES's management and technical staff. The attachment to this inspection report lists the documents reviewed and personnel interviewed by the NRC inspection team.

b. Observations and Findings

No findings of significance were identified.

c. Conclusion

The NRC inspection team concluded that PES is implementing its procurement document control and supplier oversight programs in accordance with the regulatory requirements of Criterion IV and Criterion VII of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the NRC inspection team determined that PES is adequately

implementing its policies and procedures associated with the procurement document control and supplier oversight programs. No findings of significance were identified.

5. Test Control and Equipment Qualification

a. Inspection Scope

The NRC inspection team reviewed PES's policies and implementing procedures that govern the implementation of its test control program to verify compliance with the regulatory requirements of Criterion XI, "Test Control," of Appendix B to 10 CFR Part 50. The NRC inspection team reviewed PES's equipment qualification test procedures and factory acceptance test procedures.

The NRC inspection team reviewed a select sample of PES environmental and seismic test reports for safety-related equipment and verified that the test reports specified applicable standards, test methods, and acceptance criteria. The NRC inspection team also verified that test anomalies identified in these reports were appropriately evaluated and dispositioned. The NRC inspection team observed the pre-job briefing and performance of a factory acceptance test for a charge alarm and load sharing assembly and verified that the test was completed in accordance with the test procedure.

The NRC inspection team also discussed the test control program with PES's management and technical staff. The attachment to this inspection report lists the documents reviewed and personnel interviewed by the NRC inspection team.

b. Observations and Findings

No findings of significance were identified.

c. Conclusion

The NRC inspection team concluded that PES is implementing its test control program in accordance with the regulatory requirements of Criterion XI of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed and activities observed, the NRC inspection team determined that PES is implementing its policies and procedures associated with the test control program. No findings of significance were identified.

6. Identification and Control of Materials, Parts, and Components

a. Inspection Scope

The NRC inspection team reviewed PES's policies and implementing procedures that govern the implementation of its material identification and control program to verify compliance with the regulatory requirements of Criterion VIII, "Identification and Control of Materials, Parts, and Components," of Appendix B to 10 CFR Part 50.

The NRC inspection team performed a walk-down of PES's facility and verified that components were identified with a traceability number that is attached with a label to the component. The traceability number is based on PES's job number. The NRC inspection team also noted that the traceability number is included in all the documentation associated with the component, as applicable.

The NRC inspection team also discussed the material identification and control program with PES's management and technical staff. The attachment to this inspection report lists the documents reviewed and personnel interviewed by the NRC inspection team.

b. Observations and Findings

No findings of significance were identified.

c. Conclusion

The NRC inspection team concluded that PES is implementing its material identification and control program in accordance with the regulatory requirements of Criterion VIII of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed and activities observed, the NRC inspection team determined that PES is adequately implementing its policies and procedures associated with the material identification and control program. No findings of significance were identified.

7. Control of Special Processes

a. Inspection Scope

The NRC inspection team reviewed PES's policies and implementing procedures that govern the implementation of its control of special processes to verify compliance with the regulatory requirements of Criterion IX, "Control of Special Processes," of Appendix B to 10 CFR Part 50.

During the week of the inspection, there were no safety-related welding or non-destructive examination activities being performed. The NRC inspection team reviewed completed welding documentation and training records associated with the PES personnel that completed the welding activities.

The NRC inspection team also discussed the control of special processes program with PES's management and technical staff. The attachment to this inspection report lists the documents reviewed and personnel interviewed by the NRC inspection team.

b. Observations and Findings

No findings of significance were identified.

c. Conclusion

The NRC inspection team determined that PES has established policies and procedures associated with the control of special processes program in accordance with the regulatory requirements of Criterion IX of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the NRC inspection team determined that PES is adequately implementing its policies and procedures associated with the special processes program. No findings of significance were identified.

8. Control of Measuring and Test Equipment

a. Inspection Scope

The NRC inspection team reviewed PES's policies and implementing procedures that govern the implementation of its M&TE program to verify compliance with the requirements of Criterion XII, "Control of Measuring and Test Equipment," of Appendix B to 10 CFR Part 50.

The NRC inspection team performed a walkdown of the M&TE storage and production areas and selected a sample of M&TE for review. The NRC inspection team verified that the M&TE were labeled, handled, and stored in a manner that indicated the calibration status of the instrument and ensured its traceability to calibration test data, including appropriate calibration stickers and current calibration dates. The NRC inspection team also verified that the M&TE had been calibrated, adjusted, and maintained at prescribed intervals prior to use. Additionally, the NRC inspection team verified that the certificate of calibration stated the traceability to a nationally recognized standard. The NRC inspection team confirmed that when M&TE is found to be out of calibration, a discrepancy report (DR) is initiated, and an evaluation is performed to determine if the M&TE was previously used. The NRC inspection team reviewed the M&TE log, which included M&TE that were transferred from closed PES facilities.

The NRC inspection team discussed the control of M&TE with PES's management and technical staff. The attachment to this inspection report lists the documents reviewed and personnel interviewed by the NRC inspection team.

b. Observations and Findings

No findings of significance were identified.

c. Conclusion

The NRC inspection team concluded that PES is implementing its M&TE program in accordance with the regulatory requirements of Criterion XII of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the NRC inspection team also determined that PES is implementing its policies and procedures associated with the M&TE program. No findings of significance were identified.

9. Nonconforming Materials, Parts, or Components and Corrective Action

a. Inspection Scope

The NRC inspection team reviewed PES's policies and implementing procedures that govern the implementation of its nonconforming materials, parts, or components and corrective action programs to verify compliance with the requirements of Criterion XV, "Nonconforming Materials, Parts, or Components," and Criterion XVI, "Corrective Action," of Appendix B to 10 CFR Part 50.

The NRC inspection team verified that PES's processes and procedures provide for the identification, documentation, segregation, evaluation, and disposition of nonconforming items. These processes also apply the principles of rework, repair, reject, use-as-is.

The NRC inspection team observed PES's assembly floor operations and verified that nonconforming materials, parts, or components were properly identified, marked, and segregated, when practical, to ensure that they were not reintroduced into the production processes. The NRC inspection team reviewed a sample of nonconforming material reports (NCRs) generated between 2021 to 2024 that were associated with the production of safety-related parts to confirm that PES dispositioned the nonconforming materials in accordance with the applicable procedures, documented an appropriate technical justification for various dispositions, and took adequate corrective action regarding the nonconforming items to prevent recurrence, as appropriate. In addition, the NRC inspection team confirmed that the nonconformance process provides a link to the 10 CFR Part 21 program.

The NRC inspection team also reviewed a sample of corrective action program assessments (CAPAs) to verify: (1) adequate documentation and description of conditions adverse to quality; (2) an appropriate analysis of the cause of these conditions and the corrective actions taken to prevent recurrence; (3) direction for review and approval by the responsible authority; (4) a description of the current status of the corrective actions; and (5) the actions taken to verify timely and effective implementation of the corrective actions. In addition, the NRC inspection team confirmed that the corrective action process provides a link to the 10 CFR Part 21 program.

In addition, the NRC inspection team reviewed the implementation and closure of the corrective actions taken in response to two Notice of Nonconformances (NON) documented in NRC inspection report No. 99901471/2016-201, dated December 14, 2016 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16305A097) and inspection report No. 99901471/2019-201, dated July 3, 2019 (ADAMS Accession No. ML19175A138).

The NRC inspection team discussed the nonconformance and corrective action programs with PES's management and technical staff. The attachment to this inspection report lists the documents reviewed and personnel interviewed by the NRC inspection team.

b. Observations and Findings

Corrective Action Associated with Notice of Nonconformance 99901471/2016-201-04

Following the December 2016 inspection of PES (formerly AZZ Nuclear | NLI), the NRC issued NON 99901471/2016-201-04 for PES's failure to ensure the suitability of equipment that is essential to the safety-related functions for certain components supplied to the nuclear industry on two occasions. In the first instance, PES failed to verify the critical characteristic of total harmonic distortion and power quality on the output of a repaired Exeltec inverter supplied to an NRC licensee. In the second instance, PES failed to identify and verify the critical characteristic of current interrupting rating for Masterpact circuit breakers supplied to an NRC licensee.

Regarding the first part of the NON, the 2019 NRC inspection of PES's facility verified the corrective actions taken and closed the first part of the NON.

Regarding the second part of the NON, the 2019 NRC inspection team did not consider the corrective action taken to be adequate. Specifically, the 2019 NRC inspection team identified that for circuit breakers and other similar devices supplied by PES as part of motor control centers, PES had not taken sufficient actions to verify that the supplied items were identical

in form, fit, and function to those that were previously qualified and tested by PES. PES did not have control of the design process for these commercial devices and did not repeat the qualification testing, which was used to validate the commercial ratings on the original supplied equipment. In addition, PES did not perform inspections, surveys, or other activities that might be sufficient to verify that no changes had occurred to the commercial components that would invalidate their previously established commercial ratings, including interrupting ratings. Based on these concerns, the second part of the NON was left open after the 2019 NRC inspection of PES's facility.

In its response, dated September 26, 2019 (ADAMS Accession No. ML19282A381), PES stated that it initiated NLI-CAPA-534 to address the second part of the NON.

The NRC inspection team reviewed the documentation that provided the objective evidence for the completion of the corrective actions in NLI-CAPA-534. The NRC inspection team verified that 1) procedures were revised to document how the circuit interrupt rating for motor control center devices will be verified; and 2) training was administered to the engineering staff regarding identifying Short Circuit Interrupt (SCI) or Short Circuit Withstand (SCW) when it is determined to be a critical characteristic for the application of a specific safety function. Based on its review, the NRC inspection team determined that PES adequately corrected the issue. Therefore, the NRC inspection team closed NON 99901471/2016-201-04.

Corrective Action Associated with Notice of Nonconformance 99901471/2019-201-01

Following the July 2019 NRC inspection of PES (formerly AZZ Nuclear | NLI), the NRC issued NON 99901471/2019-201-01 for PES's failure to ensure the suitability of equipment that is essential to the safety-related functions for certain components supplied to the nuclear industry associated with the environmental qualification testing of certain relays. Specifically, as part of its process for performing qualification testing, PES failed to justify the activation energies used in the thermal aging analysis/calculations. Also, PES failed to fully evaluate anomalies that were identified during the functional testing portion of the qualification program.

In its response, dated September 26, 2019 (ADAMS Accession No. ML19282A381), PES stated that it initiated NLI-CAPA-539 and NLI-CAPA-543 to address the NON. As part of the corrective actions, PES performed an extent of condition review, which resulted in additional training to ensure that individuals dispositioning anomalies provide the necessary information to substantiate the decision to accept or reject anomalies.

The NRC inspection team reviewed the documentation that provided the objective evidence for the completion of the corrective actions in NLI-CAPA-539 and NLI-CAPA-543. The NRC inspection team verified that 1) the procedure that governs the qualification process had been revised to include details of the steps and justification that are necessary to be performed before selecting an activation energy for any material; 2) training was conducted for PES's engineering group; 3) anomalies during functional testing are to be well explained, description of the issue and resolution must be clear without the need to interview other stakeholders, decisions to resolve the anomalies must be explained, and resolution must be substantiated. Based on its review, the NRC inspection team determined that PES adequately corrected the issue. Therefore, the NRC inspection team closed NON 99901471/2019-201-01.

c. Conclusion

The NRC inspection team concluded that PES is implementing its nonconformance and corrective action programs in accordance with the regulatory requirements of Criterion XV and Criterion XVI of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the NRC inspection team also determined that PES is implementing its policies and procedures associated with its nonconformance and corrective action programs. No findings of significance were identified.

10. Internal Audits

a. Inspection Scope

The NRC inspection team reviewed PES's policies and implementing procedures that govern its internal audit program to verify compliance with the requirements of Criterion XVIII, "Audits," of Appendix B to 10 CFR Part 50. The NRC inspection team reviewed PES's internal audit plans, internal audit reports, and CAPAs generated during internal audits when applicable. The NRC inspection team verified that the audit documents reviewed were adequately completed and that PES adequately corrected the conditions identified in CAPAs generated during internal audits. The NRC inspection team verified that PES's procedures described the scope and purpose of audits to be performed, the frequency, audit criteria, and corrective actions when required. The NRC inspection team verified that the audit teams were selected using qualified auditors and that they were not auditing their own work. The NRC inspection team verified that internal audits were performed using checklists.

The NRC inspection team discussed the internal audits program with PES's management and technical staff. The attachment to this inspection report lists the documents reviewed and personnel interviewed by the NRC inspection team.

b. Observations and Findings

No findings of significance were identified.

c. Conclusion

The NRC inspection team concluded that PES is implementing its internal audits program in accordance with the regulatory requirements of Criterion XVIII of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the NRC inspection team determined that PES is adequately implementing its policies and procedures associated with the internal audit program. No findings of significance were identified.

11. Entrance and Exit Meetings

On June 24, 2024, the NRC inspection team presented the inspection scope during an entrance meeting with Mr. Doug VanTassell, PES's President/Chief Executive Officer, and other members of PES's management and technical staff. On June 28, 2024, the NRC inspection team presented the inspection results to Mr. Doug VanTassell and other members of PES's management and technical staff. The attachment to this report lists the attendees of the entrance and exit meetings, as well as those individuals whom the NRC inspection team interviewed.

ATTACHMENT

1. ENTRANCE/EXIT MEETING ATTENDEES

Name	Position	Affiliation	Entrance	Exit	Interviewed
Doug VanTassell	President/Chief Executive Officer	Paragon Energy Solutions, LLC (PES)	X	X*	
Tighe Smith	Chief Nuclear Officer	PES	X*	X	
Howard LeCompte	Director, Business Development	PES	X	X*	X
Richard Knott	Vice President (VP), Quality Assurance	PES	X	X	X
Kenny Morrison	Supplier Quality Manager	PES	X	X	X
Tracy Muller	QA Manager	PES	X	X	X
Chip VanTassell	Chief Financial Officer	PES	X	X	
John Wisniewski	VP, Major Projects	PES	X		
Joe Garguilo	VP, Engineering	PES	X	X	X
Daniel Dale	Chief Operating Officer	PES	X	X	
Leo Lara	Director, Lab Operations	PES	X	X	
Josh Ricci	Training Manager	PES	X	X	

Kim Tomlinson	Director, Procurement & Inventory	PES	X	X	
Henry Moana	QA Engineering Supervisor	PES	X	X	X
Matt Novotny	QC Supervisor	PES	X	X	X
Ross Lorberbaum	Director, Electrical Engineering	PES	X*	X*	
Brenan Kelley	I&C Lab Manager	PES	X*	X*	
James Nguyen	Electrical Engineering Manager	PES	X*	X*	
Chad Michaelis	Innovation Team Manager	PES	X*		
Michael Norris	PMO Manager	PES	X*		
Marcus Oates	Mechanical Engineering Manager	PES	X*	X*	X
Nathan Newland	I&C Engineering Manager	PES	X*		
Nick Phan	ASME Mechanical Engineer	PES	X*	X*	X

Tim Lara	Mechanical Lab Manager	PES	X*	X*	X
Cole Howard	CGD Lab Manager	PES	X*	X*	
Heather Born	VP, Human Resources	PES	X*	X*	
Sean Beedy	I&C Engineering Manager	PES	X*	X*	
Chris Harrington	Chief Innovation Officer	PES	X*		X
Larry Forist	Assembly Lab Supervisor	PES	X*		
Chris Medley	ASME Quality Engineer	PES		X*	X
Sandra Thompson	M&TE Technician	PES			X
Violet Mowrer	Receipt Inspector	PES			X
Jeff Stubblefield	Principal Electrical Engineer	PES			X

Bennett Miller	Senior Electrical Engineer	PES			X
Jose Alvarez	I&C Engineer	PES			X
Eric Laise	Level II Technician	PES			X
Ezra Israel	Level I Technician	PES			X
Henry Le	Supplier Quality Engineer	PES	X	X	X
Robert Goller	Lead Mechanical Engineer	PES			X
Joshua Brandon	Project Engineer	PES			X
Odunayo Ayegbusi	Inspection Team Leader	Nuclear Regulatory Commission (NRC)	X	X	
Deanna Zhang	Inspector	NRC	X	X	
Michael Fitzgerald	Inspector	NRC	X	X	
Yiu Law	Inspector	NRC	X*	X*	
Aaron Armstrong	Acting Branch Chief	NRC	X*	X*	

*Remote

2. INSPECTION PROCEDURES USED:

- Inspection Procedure (IP) 43002, "Routine Inspections of Nuclear Vendors," dated February 10, 2023
- IP 43004, "Inspection of Commercial-Grade Dedication Programs," dated February 10, 2023
- IP 36100, "Inspection of 10 CFR Part 21 and Programs for Reporting of Defects and Noncompliance," dated February 10, 2023

3. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Item Number	Status	Type	Description
99901471/2016-201-04	CLOSED	Nonconformance (NON)	Criterion III
99901471/2019-201-01	CLOSED	NON	Criterion III

4. DOCUMENTS REVIEWED

Quality Assurance Procedures (QAP):

- Paragon Energy Solutions, LLC Quality Assurance Manual Second Edition, Revision 1, dated February 27, 2023
- ASME Quality Assurance Manual, Revision 28, dated December 2023
- QSP-01, "ASME Code Program, Scope and Requirements Procedure," Revision 14, dated December 21, 2023
- QAP-02, "Training," Revision 11, dated April 1, 2024
- QAP-03, "Design Control," Revision 9
- QAP-07, "Control of Purchased Items and Services," Revision 16, dated December 21, 2023
- QAP-08, "Identification & Control of Material, Parts, & Components," Revision 2, dated March 7, 2021
- QAP-09, "Control of Special Processes," Revision 3, dated November 5, 2020
- QAP-12, "Control of Measuring and Test Equipment," Revision 6, dated May 8, 2024
- QAP-13, "Handling, Storage, & Shipping," Revision 6, dated December 7, 2023
- QAP-14, "Inspection, Test, and Operating Status," Revision 3, dated March 23, 2023
- QAP-15, "Control of Nonconforming Items," Revision 8, dated July 4, 2024
- QAP-16, "Corrective and Preventive Actions," Revision 4, dated July 4, 2024
- QAP-18, "Audits," Revision 5, dated December 21, 2023
- QAP-19, "10CFR21 Reporting," Revision 4, dated July 4, 2024

Engineering Procedures (ENG) and Standard Operating Procedures (SOP):

- ENG-01, "Commercial Grade Dedication," Revision 7
- ENG-03, "Equipment Qualification," Revision 5, dated July 4, 2024
- ENG-04, "Welding & Brazing," Revision 4, dated August 21, 2023
- ENG-05, "Reverse Engineering of Electronic Components and Assemblies" Revision 7
- ENG-13, "Non-Destructive Examination," Revision 3, dated November 14, 2023

- ENG-16, "General Requirements for Painting, Powder Coating, & Plating," Revision 2, dated November 18, 2020
- ENG-18, "Engineering Change Notice," Revision 4
- ENG-20, "Factory Acceptance Testing," Revision 4, dated January 19, 2024
- SOP-PRD-004, "Production Discrepancy Report Process" Revision 3
- MCC-Cubicle-FMEA-1, "Failure Modes and Effects Analysis (FMEA), Equipment: Motor control Center Cubicles," Revision 3, dated April 29, 2020
- FMEA-ICP, "Failure Modes and Effects Analysis (FMEA), Equipment: Industrial Control Panels," Revision 2, dated April 1, 2020
- SVP-101, Revision 11, dated January 31, 2024

Completed Commercial Grade Dedication Packages (CGD) project packages:

- Commercial Grade Item Dedication Technical Evaluation, Plan, and Test Data Sheet: CGD-GFH45AS3204G1, Revision 0, dated July 10, 2024
- Commercial Grade Item Dedication Technical Evaluation and Test Plan: CGD-BXXXX-Series Transformer, Revision 0, dated February 2, 2023
- Commercial Grade Item Dedication Technical Evaluation, Test Plan, and Test Datasheet: CGD-MBC-2920-130B-E, Revision 6, dated April 1, 2024
- Commercial Grade Item Dedication Technical Evaluation, Test Plan, and Test Datasheet: CGD-Micrologic-5.0A, Revision 0, dated October 18, 2022

Design Documents and Qualification Reports:

- QR-065027-1, Revision 10, dated May 14, 2020
- RR-21000772-1, Revision 0, dated November 30, 2022
- VVR-042181-1, Revision 19, February 17, 2017
- VVR-042181-1, Revision 20, dated April 4, 2022
- DMP-22000559-01-01, Revision 0, August 22, 2022
- DMP-22000559-02-01, Revision 0, dated May 23, 2023
- IEE22000559-01-02, Revision 0, dated September 12, 2023
- QR33013-904-1, Revision 0, dated September 12, 2023
- QP-21000065-1, "Seismic Test Plan," Revision 5, dated May 30, 2024
- DWG No 33013-904-PCB-1, Revision 0, dated September 12, 2023
- DWG No 33013-904-SD-1, Revision 0, dated September 12, 2023

Audits/Surveys:

- QAA-2022-01, "Paragon Energy Solutions (PES) 2022 Internal Audit," Revision 0, dated March 3, 2023
- QAA-2023-01, "Paragon Energy Solutions (PES) 2023 Internal Audit", Revision 0, dated November 8, 2023
- APXBR-AVL-129-004, Third Part Audit/Survey Assessment Evaluation, Revision 0, dated January 20, 2023
- PAC-AVL-129, Performance Assessment Checklist, dated October 3, 2023
- CGSR-AVL-1187-01, Commercial Grade Survey Report, Revision 0, dated April 13, 2023
- PAC-AVL-1187-01, Performance Assessment Checklist, dated September 8, 2022
- PAC-AVL-1187-02, Performance Assessment Checklist, dated April 2, 2024
- APXBR-AVL-1111-03, Third Party Audit/Survey Assessment Evaluation, Revision 1, dated June 1, 2022

- PAC-AVL-1111-04, Performance Assessment Checklist, dated October 3, 2023
- CGSR-AVL-191-11, Commercial Grade Survey Report, Revision 0, dated July 5, 2022

Purchase Orders (PO):

- PO 018480, dated January 20, 2023
- PO 019179, dated February 21, 2023
- PO 027736, dated May 6, 2024
- PO 45010255968, dated October 5, 2023
- PO 024047, dated October 16, 2023
- PO 10657079, dated May 9, 2024
- PO NLI-108978, dated April 13, 2020
- PO 03172476, dated November 8, 2023
- PO 10643889, dated February 3, 2023
- PO 4501241844, dated February 29, 2024
- PO 01368380, dated September 15, 2023
- PO 1384756, dated February 25, 2023
- PO 01389979, dated March 29, 2023

Measuring and Test Equipment Documents:

- M&TE Records - 3207 Fluke Multimeter, 3120 Fowler 12" Digital Caliper, 2794 Fluke Multimeter, 2613 Pressure Gauge, 1913 Pressure Transducer, 707 Stopwatch, 1896 Pressure Transducer, 3136 Fluke Multimeter, 1604 Signal Conditioner, 1903 Accelerometer, 2475 Digital Manometer, Torque Screwdriver, 2622 Current Probe, 2661 Flowmeter, 3130 Fluke Multimeter, 2017 Oscilloscope, 3129 Digital Multimeter, 1523 Multimeter, 897 Fluke Multimeter
- Calibration Certificates - 173279, 176790, 0011507813, 0011512456, 176360, 170313, 172077, 173038, 555865, 570109, 0011465025, 176786, 171736, 510456.2024, 172830, 0011456683, 0011522957, 168185, 173837

Material Receipt Forms:

- 36051 - Breaker
- 8310 - Electrical, Glass Cloth Type
- 24983 - Seal Oil, Nitrile
- 22545 - Seal Oil, Viton
- 23831 - Gasket, Actuator
- 13043 - Gasket
- 31961 - Breaker
- 26815 - Ferrule
- 25918 - Cable, 14 AWG
- 25980 - Power Supply

DRs/NCRs:

- DR-24845
- DR-24847
- DR-19974

- DR-27928
- DR-27929
- NCR-964
- NCR-1057
- NCR-1081
- NCR-1088
- NCR-1089
- NCR-1109
- NCR-1113
- NCR-1133
- NCR-1148
- NCR-1154
- NCR-1169
- NCR-1171
- NCR-1173
- NCR-1179

Corrective and Preventive Actions (CAPAs):

- 534, 539, 543, 746, 767, 768, 786, 781, 830, 838, 881, 884, 885, 898, 899, 904, 905, 915, 932, 939, 957

CAPAs Opened During the Inspection:

- 964, 965, 966, 967

Training and Qualification Records:

- Lead Auditor Training and Qualification Records for Kevin Buckley, Randy Butz, Kenny Morrison, Henry Le, and Chris Goddard
- Training Records for Ezra Israel, Tim Lara, Eric Laise, Jose Alvarez, Daniel Maze, Violet Mowrer, and Sandra Thompson
- Welder Qualification Records for David Flores and Joey Bryan

Test Control Documents:

- AP-MBC-3720-E, Revision 1, dated March 7, 2024
- IP 33013-904-01-01, "Material Inspection Procedure for Fuse," Revision 0, dated September 1, 2022
- TD-PR22000559, Test Data Associated with IP33013-904-01-01, Revision 0

Receipt Inspection Record:

- Receipt Inspection Record for PO NLI-108978
- Receipt Inspection Record for PO 015821

Miscellaneous:

- CC-PR21000772-1, Revision 0
- Job Order PR 23001043