



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

April 7, 2025

Mr. Colby Tate
Group Leader
Institute Process Assessment Section
Institute Quality Systems
Southwest Research Institute
P.O. Drawer 28510
San Antonio, TX 78228-0510

SUBJECT: NUCLEAR REGULATORY COMMISSION'S VENDOR INSPECTION REPORT
OF SOUTHWEST RESEARCH INSTITUTE, NO. 99900238/2025-201

Dear Mr. Tate:

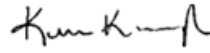
On March 3 - 7, 2025, the U.S. Nuclear Regulatory Commission (NRC) staff conducted an inspection at the Southwest Research Institute's (hereafter referred to as SwRI) facility in San Antonio, TX. The purpose of this limited-scope routine inspection was to assess SwRI's compliance with provisions of Title 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 SwRI's quality activities associated with the analysis and testing services for U.S. nuclear power plants. The enclosed report presents the results of the inspection. In addition, the NRC inspection team evaluated SwRI's closure of the inspection findings documented in the NRC's inspection report No. 99900238/2014-201, dated November 21, 2014 (Agencywide Documents Access and Management System Accession No. ML14323A732). This NRC inspection report does not constitute NRC's endorsement of SwRI'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/readingrm/adams.html>.

Sincerely,



Signed by Kavanagh, Kerri
on 04/07/25

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

Docket No.: 99900238

EPID No.: I-2025-201-0017

Enclosures:

Inspection Report No. 99900238/2025-201
and Attachment

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OF SOUTHWEST RESEARCH INSTITUTE, NO. 99900238/2025-201
DATE: April 7, 2025

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NRR-106

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

Docket No.: 99900238

Report No.: 99900238/2025-201

Vendor: Southwest Research Institute
6220 Culebra Road
San Antonio, TX 78228

Vendor Contact: Mr. Colby Tate
Group Leader - Institute Process Assessment Section
Institute Quality Systems
Email: colby.tate@swri.org
Phone: (210) 522-2365

Nuclear Industry Activity: Southwest Research Institute's scope of supply includes analysis and testing services for U.S. nuclear power plants.

Inspection Dates: March 3 - 7, 2025

Inspectors: Yamir Diaz-Castillo NRR/DRO/IQVB Team Leader
Andrea Keim NRR/DRO/IQVB
Frankie Vega NRR/DRO/IQVB
Yiu Law NRR/DRO/IQVB Remote

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

EXECUTIVE SUMMARY

Southwest Research Institute
99900238/2025-201

The U.S. Nuclear Regulatory Commission (NRC) staff conducted a limited-scope routine vendor inspection at the Southwest Research Institute's (hereafter referred to as SwRI) facility in San Antonio, TX, to verify that 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 on March 3 - 7, 2025. This was the second NRC inspection at this facility. The last NRC inspection of this facility was conducted on October 6 - 9, 2014.

This technically-focused inspection specifically evaluated SwRI's implementation of quality activities associated with the analysis and testing services for U.S. nuclear power plants. In addition, the NRC inspection team evaluated SwRI's closure of the inspection findings documented in the NRC's inspection report No. 99900238/2014-201, dated November 21, 2014 (Agencywide Documents Access and Management System Accession No. ML14323A732).

Specific activities observed by the NRC inspection team included:

- spectrometric testing of sulfur in diesel samples for the Beaver Valley Power Station;
- receipt inspection of a plunger and a cage of a pressurizer power-operated relief valve from Sequoyah Nuclear Plant for testing; and
- irradiation testing of 17 connectors and electrical wire, as well as two mandrels of electrical wire.

These regulations served as the bases for the NRC inspection:

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

During the course of 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 Defects and Noncompliance," dated February 10, 2023.

The results of the inspection are summarized below.

Inspection Areas

The NRC inspection team determined that SwRI established its programs for commercial-grade dedication, procurement document control, supplier oversight, control of special processes, test control, 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 SwRI is implementing its policies and procedures associated with these programs. In addition, the NRC inspection team determined that SwRI is implementing its 10 CFR Part 21 program for evaluating deviations and reporting defects that could create a substantial safety hazard in accordance with the applicable regulatory requirements. No findings of significance were identified in these areas.

Corrective Action

The NRC inspection team reviewed the corrective actions that SwRI took to address Nonconformance No. 99900238/2014-201-01 and Nonconformance No. 99900238/2014-201-02, documented in inspection report No. 99900238/2014-201, dated November 21, 2014. The NRC inspection team reviewed the documentation that provided the objective evidence that all of the corrective actions were completed and adequately implemented. Based on this review, the NRC inspection team closed Nonconformance No. 99900238/2014-201-01 and Nonconformance No. 99900238/2014-201-02.

REPORT DETAILS

Southwest Research Institute (hereafter referred to as SwRI) has several divisions that perform safety-related work for U.S. nuclear power plants:

- a. Division 1 - Chemistry and Chemical Engineering Analysis and Testing
- b. Division 8 - Fuels and Lubricant Analysis and Testing
- c. Division 18 - Material Testing and Failure Analysis; Plasma Enhanced Magnetron Sputtering (PEMS), Equipment Qualification; Seismic Testing and Qualification, and Fracture Analysis.

For the inspection areas documented below, the NRC inspection team selected a sample for inspection from each of these divisions, as applicable.

1. 10 CFR Part 21 Program

a. Inspection Scope

The NRC inspection team reviewed SwRI's 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. In addition, the NRC inspection team evaluated the 10 CFR Part 21 postings for compliance with the requirements of 10 CFR 21.6, "Posting Requirements." The NRC inspection team also verified that SwRI's nonconformance and corrective action procedures provide a link to the 10 CFR Part 21 program.

For the limited sample of 10 CFR Part 21 evaluations performed by SwRI, the NRC inspection team verified that SwRI had effectively implemented the requirements for evaluating deviations and failures to comply. The NRC inspection team also reviewed SWRI's procedure IQS-W081.2, "10 CFR Part 21 Posting Surveillance," Revision 1, dated November 9, 2018, and confirmed the surveillances were performed in accordance with the procedure.

The NRC inspection team also discussed the 10 CFR Part 21 program with SwRI'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

During the review of SwRI's 10 CFR Part 21 procedure, OPP 9.1.5, "Reports to Nuclear Regulatory Commission Concerning Defects and Non-Compliances," dated February 2019, the NRC inspection team noted that the terms "defect" and "deviation" were used interchangeably and not as defined in 10 CFR Part 21. The NRC inspection team also noted that the reporting requirements detailed in 10 CFR 21.21(d)(4) and the record retention requirements from 10 CFR Part 21.51, "Maintenance and inspection of records," were not included in OPP 9.1.5. The NRC inspection team determine these issues to be minor because: (1) SwRI's staff was knowledgeable in 10 CFR Part 21 and its definitions; (2) none of the evaluations performed by SwRI staff required a written notification to the NRC; and (3) SwRI staff is keeping the records associated with

previous 10 CFR Part 21 evaluations. SwRI initiated preventive action report No. 2025-PAR-0031 to address this issue. No findings of significance were identified.

c. Conclusion

With the exception of the minor issues identified above, the NRC inspection team concluded that SwRI 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 SwRI is implementing its policies and procedures associated with the 10 CFR Part 21 program. No findings of significance were identified.

2. Commercial-Grade Dedication

a. Inspection Scope

The NRC inspection team reviewed SwRI'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, "Design Control," and Criterion VII, "Control of Purchased Material, Equipment, and Services," of Appendix B, to 10 CFR Part 50.

The NRC inspection team reviewed SwRI's program for the CGD of commercial-grade items for use in safety-related applications. This review included the policies and procedures governing the implementation of CGD activities, interviews with SwRI's staff, and applicable documentation. SwRI's CGD process consists of developing CGD plans that include: (1) technical evaluation; (2) safety functions; (3) failure modes and effect analyses (FMEA); (4) critical characteristics; and (5) the verification methods for acceptance. The NRC inspection team reviewed a sample of CGD packages for the following: (1) calibration and testing services; (2) consumables used for plating; (3) and test dust particles. Within these CGD packages, the NRC inspection team reviewed: (1) purchase orders (POs); (2) technical evaluations; (3) inspection and test reports; (4) commercial-grade surveys; and (5) calibration certificates. The NRC inspection team evaluated the criteria for the identification of safety functions, FMEA, selection of critical characteristics and acceptance criteria, and identification of the verification methods. The NRC inspection team confirmed that SwRI's CGD process provided reasonable assurance that the items services being dedicated would perform their intended safety function.

The NRC inspection team also reviewed SwRI's measures for using the International Laboratory Accreditation Cooperation (ILAC) accreditation process in lieu of performing a commercial-grade survey for the procurement of calibration and testing services as part of the CGD process. SwRI implements this process as described in the Nuclear Energy Institute document No. 14-05A, "Guidelines for the Use of Accreditation in Lieu of Commercial Grade Surveys for Procurement of Laboratory Calibration and Test Services," Revision 1, dated September 2020, which was recognized for use by the NRC in a safety evaluation (SE) dated November 23, 2020 (Agencywide Documents Access Management System Accession (ADAMS) No. ML20322A019).

The NRC inspection team also discussed the CGD program with SwRI'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

During the review of SwRI's implementation of the ILAC accreditation process, the NRC inspection team noted that it is not being adequately implemented in accordance with the requirements of Revision 1 of NEI 14-05A and the NRC's SE. Specifically, the NRC inspection team noted that the PO for the dynamic mechanical analysis testing service of four O-rings did not invoke any of the conditions required to accept the ILAC accreditation of a testing laboratory in lieu of performing a commercial-grade survey. In addition, one of the conditions from the NRC's SE states that at receipt inspection, it is validated that: (1) the laboratory's documentation certifies that the calibration was performed in accordance with the laboratory's 2017 edition of the International Standard Organization (ISO)/International Electrotechnical Commission (IEC) 17025, "General Requirements for the Competence of Testing and Calibration Laboratories," and (2) that the PO requirements were met. For this testing, SwRI did not perform a receipt inspection.

The NRC inspection team also noted that for the sample of certificates of calibration, testing reports, and laboratory documentation reviewed, none of the documents certified that the PO requirements were met in accordance with condition No. 2 described above.

The NRC inspection team determined these issues to be minor because: (1) it is a documentation issue with no impact on the calibration and testing services provided; and (2) the NRC inspection team confirmed the laboratories were accredited to the 2017 edition of ISO/IEC 17025. SwRI initiated corrective action reports (CARs) No. 2025-CAR-0098 and 2025-CAR-0100 to address these issues.

c. Conclusion

With the exception of the minor issues identified above, the NRC inspection team concluded that SwRI 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, the NRC inspection team also determined that SwRI is implementing its policies and procedures associated with the CGD program. No findings of significance were identified.

3. Supplier Oversight

a. Inspection Scope

The NRC inspection team reviewed SwRI's policies and implementing procedures that govern the implementation of its supplier oversight program to verify compliance with the requirements of Criterion IV, "Procurement Document Control," and Criterion VII of Appendix B to 10 CFR Part 50. The NRC inspection team reviewed a sample of POs, SwRI's Approved Suppliers List (ASL), commercial-grade surveys, and annual evaluations. SwRI does not have any safety-related suppliers on its ASL. Instead, SwRI performs commercial-grade surveys or uses the ILAC accreditation process for procuring calibration and testing services. The commercial-grade surveys are used to

accept the programmatic process and controls of the selected critical characteristics related to the commercial-grade item or service provided by SwRI's suppliers. The NRC inspection team verified that commercial-grade surveys contained the objective evidence necessary to demonstrate adequate control of the critical characteristics by the commercial vendors.

For the review of a sample of supplier annual evaluations, the NRC inspection team confirmed they included the information required by SwRI's policies and procedures. In addition, the NRC inspection team also verified that the commercial-grade surveys were performed in accordance with the established frequency and by qualified lead auditors.

The NRC inspection team observed the receipt inspection of a plunger and a cage of a pressurizer power-operated relief valve from Sequoyah Nuclear Plant for testing by SwRI. The NRC inspection team verified the receipt inspection was performed in accordance with SwRI's procedures and by a qualified engineer, as applicable.

The NRC inspection team also reviewed the training and qualification records of the lead auditors and auditors who performed the commercial-grade surveys and the engineer who performed the receipt inspection. The NRC inspection team confirmed that the auditing personnel and the engineer had completed all the required training and maintained the applicable qualifications in accordance with SwRI's policies and procedures.

The NRC inspection team also discussed the supplier oversight program with SwRI'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

During the review of a PO for test dust particles, which are procured as commercial and then dedicated, the NRC inspection team noted that SwRI incorrectly invoked the requirements of Appendix B to 10 CFR Part 50 and 10 CFR Part 21. In addition, the PO did not invoke the commercial supplier's quality manual that was reviewed as part of the commercial-grade survey to ensure the critical characteristics are being appropriately controlled. The NRC inspection team determined this issue to be minor because it is a programmatic issue with no impact to the dust particles. SwRI initiated CAR No. 2025-CAR-0092 to address these issues. No findings of significance were identified.

c. Conclusion

With the exception of the minor issue identified above, the NRC inspection team concluded that SwRI is implementing its supplier oversight program 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 also determined that SwRI is implementing its policies and procedures associated with the supplier oversight program. No findings of significance were identified.

4. Control of Special Processes

a. Inspection Scope

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

Safety-related special processes at SWRI are limited to the PEMS process. The PEMS process involves the coating of safety relief valves' pilot discs with platinum. During the week of the inspection, PEMS was not performed by SWRI. The PEMS process is controlled by SWRI's procedure SPQP-IBAD-PEMS, "Ion Beam Assisted Deposition (IBAD) and Plasma Enhanced Magnetron Sputtering (PEMS) Deposition of Pilot Discs," Revision 5, dated October 5, 2022, as well as by the utility specific PEMS procedures based on the Boiling Water Owners Group PEMS procedure. The NRC inspection team performed a walkdown of the laboratory where the PEMS is performed, and discussed the PEMS process with the laboratory manager.

The NRC inspection team reviewed a sample of documentation for three recently completed safety-related PEMS jobs. The NRC inspection team reviewed POs, work orders, test reports, and Certificates of Conformance (CoCs) associated with the PEMS process. The NRC inspection team confirmed the PEMS process was performed in accordance with the PEMS procedures, as applicable. In addition, the NRC inspection team reviewed a sample of SWRI personnel training and qualification records and confirmed that the PEMS personnel had completed the required training and had maintained their qualifications in accordance with SWRI's policies and procedures.

The NRC inspection team also discussed the control of special processes program with SwRI'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 SwRI is implementing its 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 also determined that SwRI is implementing its policies and procedures associated with the control of special processes program. No findings of significance were identified.

5. Test Control

a. Inspection Scope

The NRC inspection team reviewed SwRI's policies and implementing procedures that govern the implementation of its test control program to verify compliance with the requirements of Criterion XI, "Test Control," of Appendix B to 10 CFR Part 50. The NRC inspection reviewed a sample of completed tests reports and witnessed spectrometric testing of sulfur in diesel samples and irradiation testing of 17 connectors and electrical wire, as well as two mandrels of electrical wire.

The NRC inspection team reviewed the testing documents associated with the following completed tests: (1) irradiation of O-rings in metal housings; (2) kinematic viscosity testing perform on diesel samples; and (3) a failure analysis test of a fractured polymer filter cage. The NRC inspection team reviewed test procedures, receipt inspection reports, POs, certificates of calibration for measuring and test equipment (M&TE) used, test reports, and CoCs.

The NRC inspection team verified that SWRI's test procedures adequately included the applicable technical, quality, and regulatory requirements. The NRC inspection team confirmed that the following testing elements were satisfied, verified, and recorded, as appropriate: (1) test parameters and initial conditions, (2) test acceptance criteria, (3) test prerequisites, (4) test instrument range, accuracy, and uncertainty appropriate for the test; and (5) current calibration. The NRC inspection team also reviewed the training and qualification records of the test technicians identified in the reports and confirmed that the testing personnel had completed all the required training and had maintained their qualifications in accordance with SwRI's policies and procedures.

The NRC inspection team also witnessed spectrometric testing of sulfur in diesel samples using the X-ray spectrographic method and irradiation testing of 17 connectors and electrical wire, as well as two mandrels of electrical wire. The NRC inspection reviewed the applicable standards associated with these tests, the POs from the customers including the testing requirements, the training and qualification records of the laboratory technicians, and the work order with specific instructions. The NRC inspection team also confirmed that the M&TE used for the testing was properly calibrated.

The NRC inspection team also discussed the test control program with SwRI'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 SwRI 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, the NRC inspection team also determined that SwRI is implementing its policies and procedures associated with the test control program. No findings of significance were identified.

6. Control of Measuring and Test Equipment

a. Inspection Scope

The NRC inspection team reviewed SwRI's policies and implementing procedures that govern the implementation of its control of 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 reviewed a sample of M&TE used for nuclear applications and verified that each item was assigned a unique asset number and had the appropriate calibration stickers and current calibration dates, including the calibration due date. The NRC inspection team also reviewed a sample of calibration records for selected M&TE, which included the as-found and as-left conditions, accuracy requirements, calibration results, calibration dates, and the due date for recalibration.

The NRC inspection team verified that SwRI's M&TE program includes provisions to ensure that when M&TE is found to be out of calibration, it is appropriately removed from service to prevent its use. The NRC inspection team also verified that M&TE found out of calibration is evaluated for its potential impact on previous inspections and tests performed, and that the affected M&TE cannot be returned to service until it has been repaired or recalibrated.

The NRC inspection team also discussed the control of M&TE program with SwRI'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 SwRI is implementing its control of 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 SwRI is implementing its policies and procedures associated with the control of M&TE program. No findings of significance were identified.

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

a. Inspection Scope

The NRC inspection team reviewed SwRI'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. Each division providing safety-related services to the nuclear industry within SwRI has their own implementing procedures for issuing and controlling nonconformances and corrective actions. The NRC inspection

team confirmed that all of the procedures contain the necessary information to adequately implement Criterion XV and Criterion XVI of Appendix B to 10 CFR Part 50.

For a sample of nonconformance reports (NCRs) reviewed from each division, the NRC inspection team verified that SwRI: (1) dispositioned the NCRs in accordance with applicable procedures, (2) documented an appropriate technical justification for the selected disposition; and (3) took adequate corrective actions regarding the nonconforming items, as applicable.

For sample of CARs from each division, the NRC inspection team verified that the CARs contained, as applicable: (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 action taken to verify timely and effective implementation of the corrective actions.

In addition, the NRC inspection team reviewed the implementation and closure of the corrective actions taken by SwRI in response to Nonconformance 99900238/2014-201-01 and Nonconformance 9990238/2014-201-02, documented in the NRC's inspection report (IR) No. 99900238/2014-201, dated November 21, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML14323A732).

The NRC inspection team also discussed the nonconforming materials, parts, or components and corrective action programs with SwRI'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 Actions Associated with Nonconformance 99900238/2014-201-01

Following the 2014 inspection of SwRI, the NRC issued Nonconformance 99900238/2014-201-01 for SwRI's failure to ensure that activities affecting quality were prescribed by documented instructions or procedures or failed to ensure that test procedures contained instructions and associated quantitative or qualitative acceptance criteria. Specifically, (1) SwRI's procedure TAP-01-0412-004, "Irradiation Testing Working Instructions," Revision 0, dated April 2013, did not require that overall measurement uncertainty be determined as necessary to account for all errors that could impact the accuracy of the measured and reported dose during the radiation exposure of components in hot cell environment testing; (2) SwRI did not have a procedure or instruction to describe when or how to account for differences in test methods associated with the use of biaxial versus triaxial seismic test equipment; and (3) SwRI did not have a procedure or instruction for performing testing to verify the purity of commercially procured platinum used to coat main steam safety relief pilot valve internals.

In its response to the NRC dated December 19, 2014 (ADAMS Accession No. ML15008A153), and its follow-up response dated March 31, 2015 (ADAMS Accession No. ML15099A503), SwRI stated that it would: (1) revise the relevant procedure to provide additional instruction regarding the documentation of measurement uncertainty

and of the dosimetry line used relative to samples being irradiated; (2) implement a process regarding the documentation required when biaxial testing is performed in lieu of triaxial testing during seismic testing; and (3) ensure the purity of commercially procured platinum will, in the future, be analyzed using the Analytical and Environmental Chemistry laboratory at SwRI. SwRI also stated that it had initiated CAR Nos. 2014-CAR-0466, 2014-CAR-0557, and 2014-CAR-0559 to address these issues.

The NRC inspection team reviewed the documentation that provided objective evidence that all the corrective actions were completed and adequately implemented. To address example No. 1 from the nonconformance, the NRC inspection team verified that SwRI updated procedure No. TAP-01-0412-004 to include an Irradiation Plan to be prepared prior to each project; and an Uncertainty Calculation to determine the total propagated uncertainty, which is used to estimate the 95% confidence interval to ensure that the margin added will exceed the uncertainty to assure the minimum dose is met during irradiation. SwRI performed an extent of condition evaluation and reviewed all the irradiation reports issued since October 2012 to determine that the appropriate dose was achieved during irradiation. In addition, SwRI performed a 10 CFR Part 21 evaluation and determined that no defects were identified.

To address example No. 2 from the nonconformance, the NRC inspection team verified that SwRI performed an evaluation and determined that for a total of six relevant projects, the testing was requested by the customers, through test plans or site-specific procedures, to be performed as biaxial testing instead of triaxial testing. SwRI performed an independent verification to show that the process used on these projects was valid, and that the table motion sent to the shaker during seismic testing matched the programmed input. SwRI also performed a software verification check to determine that the seismic profile sent to the shaker matched the actual profile achieved throughout the required frequency range. In addition, SwRI performed an extent of condition evaluation related to the seismic testing for safety-related projects for the previous 3 years and determined that all the seismic testing was requested and quoted to be performed using biaxial testing, not triaxial testing. Further, SwRI performed a 10 CFR Part 21 evaluation and determined that no defects were identified.

To address example No. 3 from the nonconformance, the NRC inspection team verified that SwRI revised procedure SPQP-IBAD-PEMS to include a sampling plan and an acceptance method for commercial grade platinum to ensure that each platinum source to have a minimum acceptance purity of 99.5%. SwRI also changed the technique used in the analysis to determine the purity of platinum from Energy Dispersive X-Ray Spectroscopy to the Inductively Coupled Plasma Spectrometry. This test method is accurate to provide results to show that the purity of platinum is at least 99.5% pure. Since then, SwRI has changed the process to determine the purity of platinum in the latest revision of procedure SPQP-IBAD-PEMS. The NRC inspection team verified that, for a more recent platinum coating project, the latest revision of the procedure and process of determining the purity of platinum is being used, and the platinum level is at least 99.5% pure.

The NRC inspection team determined that SwRI's corrective actions were adequately implemented to address Nonconformance 99900238/2014-201-01. Based on its review, the NRC inspection team closed Nonconformance No. 99900238/2014-201-01.

Corrective Actions Associated with Nonconformance 99900238/2014-201-02

Following the 2014 inspection, the NRC issued Nonconformance 99900238/2014-201-02 for SwRI's failure to ensure that measures were established to assure that instruments used in activities affecting quality were properly controlled, calibrated, and adjusted at specified periods to maintain accuracy within necessary limits. Specifically, SwRI failed to ensure that: (1) the measuring and testing system (e.g., radiation survey instrument, associated procedures, and the temperature and barometric measuring equipment) used to determine the applied radiation dose to nuclear components was properly controlled and calibrated; (2) the systems used to performed seismic testing of nuclear safety-related equipment were properly calibrated; and (3) the test instrumentation used to verify the purity of commercially procured platinum used in the plating of main-steam safety relief pilot valve internals was properly controlled.

In its response dated December 19, 2014 and its follow-up response dated March 31, 2015, SwRI stated that it would: (1) perform an assessment of all equipment used in the laboratory to determine and document the appropriate range of use, and to prepare documentation to support the previous use and calibration of equipment; (2) define a software validation process for the systems used to perform seismic testing to include independent verification that the resulting digital signals, including table motion, match the programmatic inputs, with periodic verification to include physical and electrical testing; and (3) use a different analytical technique to determine the purity of commercially purchased platinum, in which the test instrument to be used will have the required sensitivity for the measurement. SwRI also stated that it had initiated CAR Nos. 2014-CAR-0463, 2014-CAR-0465, 2014-CAR-0560, and 2014-CAR-0562 to address these issues.

The NRC inspection team reviewed the documentation that provided objective evidence that all the corrective actions were completed and adequately implemented. To address example No. 1 from the nonconformance, the NRC inspection team verified that SwRI confirmed with the manufacturer of the probe meter in question was acceptable for use to accommodate higher irradiation rate in excess of 1000kR/hr. In addition, SwRI performed an extent of condition by using a new device capable of a much greater range and was used to verify that the older meter readings were valid greater than 1 MR/hr. Further, SwRI verified that irradiation of components for Project No. 17669.16.001, Project No. 19347.01.001 and Project No. 17669.15.001, as identified in the NRC's IR, was appropriate and the measuring and testing system used to measure the applied radiation dose was appropriate and capable of measuring radiation dose rate in excess of 1000 kR/hr.

To address example No. 2 from the nonconformance, the NRC inspection team verified that SwRI is implementing a software validation process for performing seismic testing. This process includes independent verification that ensures the resulting digital signals match the programmed inputs and periodic verification that includes physical and electrical testing.

To address example No. 3 from the nonconformance, the NRC inspection team confirmed the new technique discussed in the response to example No. 3 from Nonconformance 99900238/2014-201-01 has the required sensitivity for the measurement.

The NRC inspection team determined that SwRI's corrective actions were adequately implemented to address Nonconformance 99900238/2014-201-02. Based on its review, the NRC inspection team closed Nonconformance No. 99900238/2014-201-02.

c. Conclusion

The NRC inspection team concluded that SwRI is implementing its nonconforming materials, parts, or components 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 SwRI is implementing its policies and procedures associated with the nonconforming materials, parts, or components and corrective action programs. No findings of significance were identified.

8. Internal Audits

a. Inspection Scope

The NRC inspection team reviewed SwRI's policies and implementing procedures that govern the implementation of its internal audits program to verify compliance with the requirements of Criterion XVIII, "Audits," of Appendix B to 10 CFR Part 50.

The NRC inspection team reviewed a sample of internal audits and surveillance reports, internal audit and surveillance plans, and CARs generated in response to the internal audit or surveillance. The NRC inspection team verified that internal audits have been scheduled at least annually and had been conducted using a checklist to ensure that all the applicable regulatory and quality assurance requirements and criteria were evaluated. The checklists contained an adequate level of objective evidence to support whether the criteria were met or not. The NRC inspection team also verified that the internal audit documents were reviewed by SwRI responsible management and that SwRI entered conditions identified during the internal audits and surveillances into their corrective action program. In addition, the NRC inspection team verified that SwRI's procedures described the scope and purpose of audits to be performed, the frequency, audit criteria, and issuance of CARs when required. The NRC inspection team verified that the internal audits were performed by qualified auditors, and that these audits were performed by personnel not having direct responsibilities in the areas being audited.

The NRC inspection team also discussed the internal audits program with SwRI'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 SwRI 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 also determined that SwRI is implementing its policies and procedures associated with the internal audits program. No findings of significance were identified.

9. Entrance and Exit Meetings

On March 3, 2025, the NRC inspection team discussed the scope of the inspection with Mr. Michael Lewis, Executive Director of Environmental, Safety, and Quality, and other members of SwRI's management and technical staff. On March 7, 2025, the NRC inspection team presented the inspection results and observations during an exit meeting with Mr. Joseph McDonough, Vice-President (VP) of Division 1, and Steve Marty, VP of Division 8, and other members of SwRI's management and technical staff. The attachment to this report lists the attendees of the entrance and exit meetings, as well as those individuals interviewed by the NRC inspection team.

ATTACHMENT

1. ENTRANCE/EXIT MEETING ATTENDEES

Name	Title	Affiliation	Entrance	Exit	Interviewed
Joseph McDonough	Vice President Division 1	Southwest Research Institute (SwRI)		X	
Steve Marty	Vice President Division 8	SwRI		X	
Michael Lewis	Executive Director, Environmental, Safety and Quality	SwRI	X	X	
Tim Fey	Executive Director Division 18	SwRI		X	
Robert Legg	Director Division 8	SwRI	X		
Jenny Ferren	Director Division 18	SwRI		X	
Elaine Wild	Manager Division 1	SwRI	X	X	
Vicky Poenitzsch	Manager Division 18	SwRI	X	X	X
John Macha	Manager Division 18	SwRI	X	X	
Sarah Rogers	Manager Division 18	SwRI	X	X	
Yongli McFarland	Assistant Manager Division 8	SwRI		X	
Colby Tate	Group Lead Institute Quality System (IQS)	SwRI	X	X	X
Carlos Barberino	Group Lead IQS	SwRI	X	X	X
Angel Samaniego	Senior Quality Engineer IQS	SwRI	X		

Name	Title	Affiliation	Entrance	Exit	Interviewed
Mark Ehnstrom	Quality Technician IQS	SwRI	X	X	
Linda Gómez	Quality Scientist Division 1	SwRI	X	X	
Micheal Bohl	Quality Technician Division 8	SwRI	X		X
Clint Rowe	Calibration Laboratory Manager	SwRI			X
John Macha	Project Manager	SwRI	X	X	X
Walter Mejia	Laboratory Technician	SwRI			X
Laura Zuniga	Laboratory Technician	SwRI			X
Patricia Jacobson	Research Technologist	SwRI			X
Madeline Roberts	Associate Quality Assurance Engineer	SwRI			X
Ty Schraeder	Principal Research Technologist	SwRI			X
Steven Douglas	Principal Technician	SwRI			X
Yamir Diaz-Castillo	Inspection Team Leader	Nuclear Regulatory Commission (NRC)	X	X	
Andrea Keim	Inspector	NRC	X	X	
Frankie Vega	Inspector	NRC	X	X	
Yiu Law*	Inspector	NRC	X	X	

*Participated remotely.

2. INSPECTION PROCEDURES USED

Inspection Procedure (IP) 36100, "Inspection of 10 CFR Part 21 and Programs for Reporting Defects and Noncompliance," dated February 10, 2023

IP 43002, "Routine Inspections of Nuclear Vendors," dated February 10, 2023

IP 43004, "Inspection of Commercial-Grade Dedication Programs," dated February 10, 2023

3. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Item Number	Status	Type	Description
99900238/2014-201-01	CLOSED	NON	Criterion V and XI
99900238/2014-201-02	CLOSED	NON	Criterion XII

4. DOCUMENTS REVIEWED

Policies and Procedures

- SwRI's Program Quality Plan, "Nuclear Services," Revision 6, dated April 2022
- SwRI's Quality Project Plan, "Performance of Chemical Analyses and Testing for Nuclear and Radiation Related Industries Within the Chemistry and Chemical Engineering Division," Revision 1, dated January 2019
- SwRI's Standard Project Quality Plan SPQP-FA, "Failure Analysis of Nuclear Plant Components," Revision 12, dated July 2020
- SwRI's Petroleum Products Research Department Procedure, "Analysis of Fuel Oils and Lubricants from Commercial Nuclear Power Plants," Revision 7, dated February 19, 2020
- SwRI's Standard Project Quality Plan SPQP-IBAD-PEMS, "Ion Beam Assisted Deposition (IBAD) and Plasma Enhanced Magnetron Sputtering (PEMS) Deposition of Pilot Discs," Revision 5, dated October 5, 2022
- Laboratory Operating Procedure (LOP)-03, "Purchasing," Revision 12, dated August 29, 2023
- Standard Operating Procedure (SOP)-01-5.6.1, "Management Review," Revision 10, dated December 2024
- SOP-01-6.2.1, "Qualification and Training," Revision 13, dated November 2023
- SOP-01-6.2.2, "Employee Training Program," Revision 4, dated January 2022
- SOP-01-7.4.1, "Purchasing," Revision 11, dated March 2021

- SOP-01-7.5.2, "Control of Customer-Supplied Items," Revision 2, dated August 2021
- SOP-01-8.2.3, "External Quality Audits," Revision 5, dated April 2021
- SOP-01-8.2.4, "Monitoring and Measurement," Revision 4, dated September 2020
- SOP-01-8.3.1, "Nonconformance Reporting," Revision 12, dated January 2025
- SOP-01-8.4.1, "Quality System Trending," Revision 7, dated March 2021
- SOP-01-8.5.1, "Corrective and Preventive Action (CAPA) Program," Revision 13, dated 2023
- SOP-102-01, "Nonconformance Control," Revision 5, dated January 2019
- SOP-103-01, "Corrective and Preventive Action," Revision 3, dated January 2019
- SOP-715-01, "Control of Monitoring and Measuring Resources," Revision 10, dated January 27, 2023
- SOP-840-01, "Purchasing," Revision 6, dated June 1, 2023
- SOP-920-02, "Assuring the Quality of Accredited Test Activities," Revision 2, dated June 21, 2016
- SOP 4.11.1, "Calibration and Maintenance," Revision 10, dated September 28, 2021
- SOP 4.11.2, "Calibration Recall," Revision 3, dated April 11, 2012
- SOP 4.13, "Corrective and Preventive Actions for Nonconformances and Customer Complaints," Revision 5, dated July 2016
- IQS-P101, "Nonconformity and Corrective Actions," Revision 2, dated September 2023
- Procedure No. IQS-P084, "Management of Approved Suppliers List (ASL)," Revision 1, dated December 25, 2023
- Procedure No. IQS-P086, "Commercial Grade Dedication Plan for the Calibration of Measuring and Test Equipment Used for Nuclear Safety Related Projects," Revision 3, dated February 24, 2025
- Procedure No. IQS-P087, "Commercial-Grade Dedication Plan for Special Testing Pertaining to Reference Materials Identified on Certificates of Analysis Used for Nuclear Safety-Related Projects," Revision 3, dated December 7, 2022
- Test/Analytical Procedure-01-0412-004, "Irradiation Testing Work Instructions," Revision 1, dated July 2015
- Work Instruction (WI) No. IQS-W081.1, "Audit and Surveillance Conduct," Revision 4, dated September 29, 2023

- WI No. IQS-W083.1, “Visual and Dimensional Inspection,” Revision 2, dated July 25, 2024
- WI No. IQA-W084.1, “Maintaining the Approved Suppliers List,” Revision 6, dated December 14, 2023
- WI No. IQS-W084.2, “Quality Assurance Clauses - Supplier Requirements,” Revision 12, dated June 14, 2024
- WI No. IQS-W084.3, “Supplier Ratings,” Revision 3, dated August 9, 2024
- OPP 9.1.5, “Reports to the Nuclear Regulatory Commission Concerning Defects and Noncompliance,” dated February 2019 (no revision provided)
- IQS-W081.2 “10 CFR, Part 21 Posting Surveillance,” Revision 1, dated November 9, 2018
- IQS-P072 “Training and Qualification Program,” Revision 5, dated October 24, 2024
- 01-QAP-004, “Quality Assurance Plan for Analytical and Environmental Services,” Revision 23, April 18, 2024
- 01-QPP-015, “Quality Project Plan for Performance of Chemical Analyses and Testing for Nuclear and Radiation related industries within the Chemistry and Chemical Engineering Division,” Revision 12, dated January 2019
- Standard Project Quality Plan SPQP-FA, “Failure Analysis of Nuclear Power Plant Components,” Revision 12, dated July 2020

Commercial-Grade Dedication Records

- Memorandum from Christopher Hobson to John Macha, Subject: “Accreditation of Dynamic Mechanical Analysis Testing from Akron Rubber Development Laboratory (ARDL),” dated August 17, 2022
- Memorandum from Larry Hollingsworth to SwRI Institute Quality Systems (IQS) and Project 08.27469.05 for Paragon Energy Solutions, Subject: “Technical Evaluation for the use of a Technical Survey for test dust particles produced at Powder Technology Inc.,” dated August 16, 2022
- Memorandum from Michael Dammann and Robert Legg to Christopher Hobson, Subject: “Technical Evaluation - Use of Accreditation or Commercial Grade Survey as a Means for Commercial Grade Dedication of Special Testing Pertaining to Reference Materials Identified on Certificates of Analysis (COA),” dated November 14, 2022
- Memorandum from Jorge Lopez to Faye Brockwell, Subject: “Technical Evaluation - Use of Accreditation and Commercial Grade Survey As a Means for Commercial Grade Dedication,” dated October 18, 2019
- Commercial Grade Dedication Plan for Project No. 29165.01.001, Platinum Serial No. PLA75698561774, dated December 17, 2024

Supplier Oversight Records

- Purchase Order (PO) No. 013818 for radiation services by SwRI, dated November 14, 2024
- PO No. 18538 for radiation services by SwRI, dated November 8, 2024
- PO No. T05643JB for platinum sputtering target 99.99% composition, dated November 13, 2024
- PO No. S40817SS for chemical standards, dated November 11, 2024
- PO No. T11123KR for calibration services, dated January 15, 2025
- PO No. S57205MR for calibration services, dated January 27, 2024
- PO No. T12028MM for medium test powder, dated January 23, 2025
- PO No. 7692250 from Tennessee Valley Authority for a metallographic analysis, Revision 0, dated November 14, 2024
- PO No. Q72576JKD for dynamic mechanical analysis, dated July 20, 2022
- PO No. AP00003152 for testing services, dated April 26, 2023
- PO No. 7557451 for testing services. dated November 13, 2023
- PO No. 03179574 for platinum coating services, dated March 14, 2024
- PO No. 7528645 for platinum coating services, dated September 18, 2023
- PO No. 7683053 for platinum coating services, Revision 2dated December 4, 2024
- PO No. 3501254765 for testing services, dated June 30, 2023
- PO No. 4500278261 for testing services, dated January 3, 2025
- PO No. 4500278812 for testing services, dated January 21, 2025
- PO No. 55128128 for testing services, dated June 28, 2019
- Institute Quality Systems Audit Notice/Plan No. 2022-AR-0006, dated February 21, 2022
- Institute Quality Systems Audit Report No. 2022-AR-0006, dated March 29, 2022

Calibration, Inspection and Test Records

- Calibration Certificate No. 238835 for a radiation monitor, Serial Number (S/N) 55-2898, dated December 10, 2024

- Calibration Certificate No. 238858 for an ion chamber, S/N 01-0123, dated December 10, 2024
- Calibration Certificate No. 234026 for a temperature/humidity data logger, S/N P68934, dated September 26, 2024
- Calibration Certificate No. 221436 for a digital thermometer, S/N 4016510, dated March 19, 2024
- Calibration Certificate No. 220688 for a radio atomic clock, S/N 140672365, dated March 8, 2024
- Calibration Certificate No. 233905 for an alarm ratemeter, S/N 14865, dated September 25, 2024
- Calibration Certificate No. 239187 for a timer, S/N 160878263, dated December 16, 2024
- Calibration Certificate No. US011-BOS-CI-24041993 for a two-part gaging system, dated February 6, 2024
- Calibration Certificate No. 242174 for a temperature controller, dated January 30, 2025
- Calibration Certificate No. 227198 for a pH Meter, dated June 18, 2024
- Petroleum Products Research Department (PPRD) Out of Tolerance (OOT) Evaluation for Asset No. 025535 Anemometer, dated November 14, 2024
- PPRD OOT Evaluation for Asset No. 019324, dated December 10, 2024
- PPRD OOT Evaluation for Asset No. 017639, dated December 23, 2024
- PPRD Asset Calibration Due List, dated February 6, 2025
- SwRI's Irradiation Plan for Task Order No. PO 013818, Item Description: 17 Connectors and Wire, dated November 25, 2024
- SwRI's Irradiation Plan for Task Order No. PO 185038, Item Description: Two Mandrels of Wire, dated February 10, 2025
- SwRI's Dosimetry Report for PO No. 185308, dated February 14, 2025
- SwRI's Dosimetry Report for PO No. 013818, dated January 18, 2025
- Institute Calibration Laboratory (ICL) Receiving Inspection Form: Radiation Monitor, S/N 55-2898, dated December 9, 2024
- ICL Receiving Inspection Form: Ion Chamber, S/N 01-0123, dated December 9, 2024
- ICL Receiving Inspection Form: Two Part Gaging System, SN/ 106539, dated February 23, 2024

- Low Level Sulfur Curve for Bruker S8 Tiger SN: 213431, D2622LS_0624, using ASTM D-2622, calibrated on June 24, 2024
- Report No. ION20419, "Report of Calibration for Ionization Chamber and Electrometer System," S/N 55-2898, dated December 4, 2024
- Report No. ION20418, "Report of Calibration for Ionization Chamber and Electrometer System," S/N 01-0123, dated December 4, 2024
- Receiving Inspection Report for Supplier Code No. 514064, Project No. 29165.01.001, Platinum Sputtering Target, Composition 99.99%, dated December 19, 2024
- Certificate of Analysis for Single Analyte Custom Grade Solution, Catalog No. CGAS1, Lot No. U2-AS737571, 1,000 µg/mL of Arsenic Standard (no date provided)
- Receipt Traveler No. RC-1004771 for 1,000 µg/mL of Arsenic Standard, dated March 5, 2025
- SwRI's Project Report, "Fuel Filter Testing," for Project No. 08.29119.12, dated March 4, 2025
- Test Report No. PN 165722, "DMA Temperature Sweep Testing on Four O-Rings," dated August 15, 2022
- Final Report for Project No. 18.8056.22.129, "Analysis of Degraded Elastomer O-Rings," dated August 2022
- Failure Analysis of Fractured Polymer Filter Cages Final Report Project Number 18.18074.24.102, Tennessee Valley Authority Project No. 7557451, dated February 2024
- PQP 18.18074.24.102, "Failure Analysis of a Fractured Polymer Filter Cage," Revision 0, dated November 30, 2023
- SPQP-IBAD-PEMS, "Ion Beam Assisted Deposition (IBAD) and Plasma Enhanced Magnetron Sputtering (PEMS) Deposition of Pilot Discs", Revision 5, October 5, 2022
- TPP-PEMS-SRV-PD, "Plasma Enhanced Magnetron Sputtering Deposition (PEMS) of Platinum on Safety Relief Valve Pilot Discs," Revision 1, dated November 19, 2019
- Quality Plan No. 18.28338.01.001, "PEMS PT Coating of Pilot Discs for U3R21," Revision 0, September 29, 2023
- Project Work Order No. NUCR/BVOH-296, "Sulfur X-Ray Florescence Test on Diesel Samples, dated February 28, 2025
- Project Work Order No. NUCR/PAAC-139, "Fluorescent Indicator Adsorption Standard Test," dated February 28, 2025

- Project Work Order No. NECN-394, “Density, Specific Gravity, API Gravity,” dated March 4, 2025
- Test Summary Report for PO No. 4500267549, dated December 17, 2024
- Final Test Report on Irradiations Services for O-Rings in Metal Housings, Project No. 17669.96.001, dated June 19, 2023
- Certificate of Conformance for PO No. 03179574, dated October 30, 2024
- Certificate of Conformance for PO No. 03179574, October 30, 2024
- Certificate of Conformance for PO No. 7528645, dated November 1, 2024
- Certificate of Conformance for PO No. 7683053 Revision 2, dated December 10, 2024

American Society of Testing and Materials (ASTM) Standards

- ASTM D2622-82, “Sulfur in Petroleum Products (X-Ray Spectrographic Method)”
- ASTM D1319-03, “Standard Method for Hydrocarbon Types in Liquid Petroleum Products by Fluorescent Indicator Adsorption”
- ASTM D1298-12b, “Standard Test Method for Density, Relative Density, or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method”
- ASTM D445-88, “Kinematic Viscosity of Transparent and Opaque Liquids”

Internal Audits and Surveillance Records

- “CY 2025 Internal Audit / Surveillance and IGS Activity Schedule,” Revision 3, dated February 28, 2025
- 2024-SR-0399, “Surveillance Report of Surface Engineering and Materials,” dated October 30, 2024
- 2022-SR-02510, “Surveillance Report of Materials Science and Failure Analysis,” dated June 7, 2022
- Institute Quality System (IQS) Audit Report 2024-AR,0020, “Division 8 Fuels and Lubricants Research,” dated November 4, 2024
- SwRI Surveillance Report 2024-SR-0399, “PEMS Process,” dated October 30, 2024
- IWS Audit Report 2024-AR-0012, “Institute Calibration Lab,” dated May 7, 2024

Nonconformance Reports (NCRs)

- 2023-NCR-0011, 2023-NCR-0087, 2023-NCR-0093, 2023-NCR-0165, 2023-NCR-0458, 2023-NCR-0589, 2023-NCR-0600, 2024-NCR-0681, 2024-NCR-0682, 2024-NCR-0683,

2024-NCR-0684, 2024-NCR-0695, 2024-NCR-0696, 2024-NCR-0697, 2025-NCR-0066, 2025-NCR-0121

Corrective Action Reports (CARs)

- 2014-CAR-0463, 2014-CAR-0465, 2014-CAR-0466, 2014-CAR-0557, 2014-CAR-0559, 2014-CAR-0560, 2014-CAR-0562, 2022-CAR-0357, 2023-CAR-0156, 2023-CAR-0157, 2023-CAR-0158, 2024-CAR-0243, 2024-CAR-0244, 2024-CAR-0245, 2024-CAR-0246, 2024-CAR-0247, 2024-CAR-0321

Preventive and Corrective Action Reports Opened During the NRC Inspection

- 2025-PAR-0031, 2025-CAR-0092, 2025-CAR-0098 and 2025-CAR-0100

Training and Qualification Records

- Madeline Roberts - Associate Quality Assurance Engineer
- Steven Douglas - Principal Technician
- Ty Schraeder - Principal Research Technologist
- John Macha - Project Manager
- Laura Zuniga - Laboratory Technician
- Michael Bohl - Project Manager
- Vicky Poenitzsch - Project Manager
- Walter Mejia - Laboratory Technician

Miscellaneous Records

- Contract Review Record and Quality Plan for Nuclear Safety Related Activities, Project No. 29334, "Failure Analysis of Target Rock 3-inch Solenoid Valve, Sequoyah Nuclear Plant - Rev. 2," dated February 27, 2025
- Contract Review Record and Quality Plan for Nuclear Safety-Related Activities, Project No. 29119.12.100, "Fuel Filter Flow Resistance and Particle Removal," dated November 20, 2024
- Contract Review Record and Quality Plan for Nuclear Safety Related Activities for Project Number 28685.01.001 "2024 PEMS PT Coating of SRV Pilot Discs," Revision 0, dated August 15, 2024
- Contract Review Record and Quality Plan for Nuclear Safety Related Activities for Project Number for Project Number 28338.01.001, dated September 29, 2023

- Contract Review Record and Quality Plan for Nuclear Safety Related Activities for Project Number for Project Number 29165.01.001, Revision 1, dated December 4, 2024