September 19, 2017

Mr. Richard DiLorenzo
Quality Assurance Director
The Okonite Company
102 Hilltop Road
Ramsey, NJ 07446

SUBJECT: NUCLEAR REGULATORY COMMISSION VENDOR INSPECTION REPORT OF THE OKONITE COMPANY NO. 99901482/2017-201

Dear Mr. DiLorenzo:

From August 7-10, 2017, the U.S. Nuclear Regulatory Commission (NRC) staff conducted an inspection at the Okonite Company (here after referred to as Okonite) facility in Richmond, Kentucky. The purpose of this limited-scope routine inspection was to assess Okonite'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 Okonite's implementation of quality activities associated design control, qualification, control of purchased materials, test control, measuring and test equipment (M&TE), nonconforming materials, internal audits, 10 CFR Part 21, and corrective action activities for operating reactor plants. The enclosed report presents the results of the inspection. This NRC inspection report does not constitute NRC endorsement of Okonite's overall quality assurance (QA) or Part 21 programs.

Based on the results of this inspection, the NRC inspection team found the implementation of your QA program met the requirements imposed on you by your customers or NRC licensees. No findings of significance were identified.

In accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding," of the NRC's "Rules of Practice," the NRC will make available electronically for public inspection a copy of this letter, its enclosure, and your response through the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System, which is accessible at http://www.nrc.gov/reading-rm/adams.html. To the extent possible, your response (and if applicable), should not include any personal privacy, proprietary, or Safeguards Information so that it can be made available to the public without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request that such material be withheld from public disclosure, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim (e.g., explain why the disclosure of information would create an unwarranted invasion of personal privacy or

provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If Safeguards Information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21, "Protection of Safeguards Information: Performance Requirements."

Sincerely,

/RA/

Terry W. Jackson, Chief
Quality Assurance Vendor Inspection Branch-1
Division of Construction Inspection
and Operational Programs
Office of New Reactors

Docket No.: 99901482

Enclosure:
Inspection Report No. 99901482/2017-201
and Attachment

SUBJECT: NUCLEAR REGULATORY COMMISSION VENDOR INSPECTION REPORT OF THE OKONITE COMPANY NO. 99901482/2017-201

Dated: September 19, 2017

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DATE	09/11/17	09/19/17	

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U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF NEW REACTORS
DIVISION OF CONSTRUCTION INSPECTION AND OPERATIONAL PROGRAMS
VENDOR INSPECTION REPORT

Docket No.:	99901482	
Report No.:	99901482/2017-201	
Vendor:	The Okonite Company 1740 Berea Road Richmond, KY 40475	
Vendor Contact:	Richard DiLorenzo Quality Assurance Director Dilorenzo@okonite.com (201) 825-0300	
Nuclear Industry Activity:	Okonite is a manufacturer of Class 1E low and medium voltage power and instrumentation cable. The Okonite manufacturing plant is located in Richmond, KY.	
Inspection Dates:	August 7-10, 2017	
Inspectors:	Jermaine Heath Jeffrey Jacobson Nicholas Savwoir Sheila Ray	NRO/DCIP/QVIB-1 Team Leader NRO/DCIP/QVIB-1 NRO/DCIP/QVIB-1 NRR/DE/EENB
Approved by:	Terry Jackson, Chief Quality Assurance Vendor Inspection Branch-1 Division of Construction Inspection and Operational Programs Office of New Reactors	

Enclosure

EXECUTIVE SUMMARY

The Okonite Company
99901482/2017-201

From August 7 to August 10, 2017, the U.S. Nuclear Regulatory Commission (NRC) staff conducted a vendor inspection at the Okonite Company (hereafter referred to as Okonite) manufacturing facility in Richmond, Kentucky, to verify that it 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." In addition, the NRC inspection team also verified that Okonite implemented a program under 10 CFR Part 21, "Reporting of Defects and Noncompliance," that met the NRC's regulatory requirements.

This technically-focused inspection specifically evaluated Okonite's implementation of quality activities associated with design control, qualification testing, control of purchased materials, test controls, measuring and test equipment (M&TE), nonconforming materials, internal audits, 10 CFR Part 21, and corrective action activities for operating reactor plants. The enclosed report presents the results of the inspection. This NRC inspection report does not constitute NRC endorsement of Okonite's overall QA or Part 21 programs.

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 the following Inspection Procedures (IP):

- IP 43002, "Routine Vendor Inspections"
- IP 43004, "Inspection of Commercial-Grade Dedication Programs"
- IP 36100, "Inspection of 10 CFR Part 21 and Programs for Reporting Defects and Noncompliance"

This was the first NRC inspection of Okonite's manufacturing facility located in Richmond, Kentucky. The NRC inspection team concluded that Okonite's QA policies and procedures comply with the applicable requirements of Appendix B to 10 CFR Part 50 and 10 CFR Part 21, and that Okonite's personnel are implementing these policies and procedures effectively.

The results of this inspection are summarized below.

10 CFR Part 21 Program Implementation

The NRC inspection team concluded that Okonite established a 10 CFR Part 21 program in accordance with the regulatory requirements of 10 CFR Part 21. No findings of significance were identified.

Design Control and Qualification

The NRC inspection team determined that the implementation of Okonite's program for design and qualification was consistent with the regulatory requirements Criterion III, "Design Control," of Appendix B to 10 CFR Part 50. No findings of significance were identified.

Control of Purchased Material

The inspectors determined that Okonite was properly controlling their purchased materials consistent with the regulatory requirements of Criterion VII, "Control of Purchased Material, Equipment, and Services," of Appendix B to 10 CFR Part 50. No findings of significance were identified.

Inspection and Test Control

The NRC inspection team determined that the implementation of Okonite's programs for inspection and testing were consistent with the regulatory requirements of Criterion X, "Inspections," and Criterion XI, "Test Control," of Appendix B to 10 CFR Part 50. No findings of significance were identified.

Control of Measuring and Test Equipment (M&TE)

The NRC inspection team concluded that Okonite has established control of M&TE in accordance with the regulatory requirements of Criterion XII, "Control of Measuring and Test Equipment," of Appendix B to 10 CFR Part 50. No findings of significance were identified.

Nonconformance Control and Corrective Action Program

The NRC inspection team concluded that Okonite has established nonconformance and corrective action programs in accordance with the regulatory requirements of Criterion XV, "Nonconforming Material, Parts and Components," and Criterion XVI, "Corrective Action," of Appendix B to 10 CFR Part 50. No findings of significance were identified.

Internal Audits

The NRC inspection team concluded that Okonite is implementing its internal audit program in accordance with the regulatory requirements of Criterion XVIII, "Audits," of Appendix B to 10 CFR Part 50. No findings of significance were identified.

REPORT DETAILS

1. 10 CFR Part 21 Program

   a. Inspection Scope

      The NRC inspection team reviewed Okonite's policies and implementing procedures that govern Okonite's 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 and a sample of Okonite's purchase orders (PO) for compliance with the requirements of 10 CFR 21.21, "Notification of Failure to Comply or Existence of a Defect and its Evaluation," and 10 CFR 21.31, "Procurement Documents." The NRC inspection team also verified that Okonite's nonconformance and corrective action procedures provide a link to the 10 CFR Part 21 program, and reviewed a sample of Okonite's' nonconformance and corrective actions for Part 21 applicability. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

   b. Observations and Findings

      No findings of significance were identified.

   c. Conclusion

      The NRC inspection team concluded that Okonite is implementing its 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 Okonite is implementing its policies and procedures associated with the 10 CFR Part 21 program. No findings of significance were identified.

2. Design Control and Qualification

   a. Inspection Scope

      The NRC inspection team reviewed Okonite's policies and test reports for safety-related cable design control and qualification to verify compliance with Criterion III, "Design Control," of Appendix B to 10 CFR Part 50. The NRC inspection team evaluated Okonite's design change control process, and the effectiveness of Okonite's QA processes on controlling component design.

      The NRC inspection team evaluated the adequacy of equipment qualification test reports for environmental qualification. Specifically, the NRC inspection team evaluated the qualification reports to verify consistency with technical requirements and Institute of Electrical and Electronics Engineers (IEEE) standards.

      In addition, the NRC inspection team reviewed the evaluations performed to assess the impact to qualification for changes in materials. Specifically, for formula changes in materials, Okonite evaluated and documented any impact on qualification. The NRC inspection team reviewed the evaluations on Okoguard C52 and G63 materials to verify consistency with technical requirements and IEEE standards.

The NRC inspection team reviewed the following procedures for the repair and restoration of defects identified during the manufacturing process: 1) Okonite Manufacturing Specifications – Plant 7, 2.28, "R14N/LTN Jacket Restorations," Revision 0, dated August 2008, and 2) Okonite Manufacturing Specifications – Plant 7, 2.0, "Guidelines for Restorations and Repairs," Revision 4, dated August 2008. The procedures specify that for Class 1E cables, repairs cannot be made to the insulation, only jacket restorations are allowed. Furthermore, the procedure provides definitions for repairs and restorations (the repair process is more extensive than restorations). The NRC inspection team verified that restorations on safety-related cable jackets are performed with the same material as the jacket. As such, there is no impact to environmental qualification since the restoration process does not introduce any new materials to the cable.

The NRC inspection team reviewed Okonite's Product Line Specifications for low and medium voltage safety-related cables. The NRC inspection team verified that Order No. 07-1333 (for 1/C 4/0 19X Tinned Copper – SS -115 Okoguard EPR – 024 SC EPR – 005 Copper Tape – 080 Okolon TS-CPE cable) met the medium voltage Okonite Product Line Specification #25, dated May 14, 2013. The NRC inspection team reviewed documentation to determine that the cables met the requisite purchase order requirements, including qualification to Okonite EQ Report 527, Revision 1, dated March 24, 2007. Furthermore, the NRC inspection team verified that Order No. 07-1200 (for 1/C 2/0 – 19X Tinned Copper – 080 Okonite FMR-N EP – Black 600V cable) met the low voltage Okonite Product Line Specification #13, dated March 8, 2016. The NRC inspection team reviewed documentation to determine that the cables met the requisite purchase order requirements, including qualification to Okonite EQ Report 526, Revision 2, dated November 17, 2006.

The NRC inspection team discussed the design control program with Okonite's management and technical staff. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

b. Observations and Findings

No findings of significance were identified.

c. Conclusion

The NRC inspection team determined that the implementation of Okonite's program for design and qualification was consistent with the regulatory requirements Criterion III, "Design Control," of Appendix B to 10 CFR Part 50. No findings of significance were identified.

3. Control of Purchased Material

a. Inspection Scope

The inspectors reviewed documentation and interviewed personnel associated with Okonite's control of purchased material utilized in the manufacture of safety-related cables, as required by Criterion VII of Appendix B to 10 CFR Part 50, "Control of Purchased Material, Equipment, and Services."

The inspection team reviewed Purchase Order #2721096, Revision 4, dated February 3, 2017, for 11,000 feet of #4/0 AWG, Copper, EPSJ, 8KV, 90 DEG C, CPE Jacketed, Class 1E Cable. The cable was manufactured in June of 2017. The NRC inspection team reviewed documentation to determine that the cable met the requisite purchase order requirements, including qualification to Okonite EQ Report 527, Revision 1, dated May 24, 2007, and all production testing.

The Okonite Richmond facility manufactures all cables from raw materials either purchased directly from commercial suppliers or received from their subsidiary facilities. Okonite controls all materials utilized in the production of cables under their 10 CFR Part 50 Appendix B program. For all raw materials, Okonite generates a Technical Requirements Document that specifies what tests and/or certifications are required before the material can be accepted for use. Some of these tests are performed by Okonite and some are accepted based upon testing results provided by the raw material suppliers. The extent of independent testing and the testing frequency is based upon evaluations of the material criticality as well as past supplier performance.

The inspectors focused their review on the manufacture and control of the Okoguard G63 material as it is a critical component of the medium voltage nuclear cable insulation system and is one of the primary materials used in the manufacture of the cables supplied to TVA under the purchase order referenced above. Okonite manufactures the Okoguard insulation material, which is used in manufacture of their medium voltage nuclear safety related cables, at their Orangeburg, South Carolina facility and supplies it to the Richmond facility in pelletized form. All raw materials utilized in the manufacture of the Okoguard are purchased by Okonite Orangeburg as commercial products. In addition to the testing of the raw materials, Okonite also performs testing on each batch of Okoguard compound at various points in the production process. This testing is governed by Manufacturing Specification 9.3.1.1, “Sampling & Test Program for Pelletized Compounds Prepared via Continuous Process,” Revision 8, dated July 2011.

The inspectors reviewed the Technical Requirements Document for Okoguard G63, #80658, Revision 10, dated November 3, 2010. TR 80658 contains a listing of desired physical and electrical properties of the cured Okoguard product. The team reviewed Technical Requirements Document #31142 for Okonite Clay, Revision 8, dated August 4, 2007, which is an element of the Okoguard insulation system. The Technical Requirements Document contained a number of parameters requiring verification by test, both by the supplier and independently by Okonite.

In addition to the testing of the raw materials and of the finished Okoguard product at the Orangeburg facility, testing of the Okoguard insulation is also performed at the Richmond facility from samples removed from finished cables. The Richmond testing is called out in a Quality Plan that is specific to each order. For the TVA order, Quality Plan #07-1212-1, dated July 6, 2017, included tests for insulation thickness, tensile strength, elongation, voids and contaminants.

b. Observations and Findings

No findings of significance were identified.

c. Conclusions

The inspectors determined that Okonite was properly controlling their purchased materials as required by Criterion VII of Appendix B to 10 CFR Part 50. The inspectors concluded that the testing of the raw materials and finished product at Orangeburg, combined with the testing of the finished cables at the Richmond manufacturing facility provide reasonable assurance that the cables being supplied and certified today meet all technical requirements. The inspectors also concluded that the controls implemented by Okonite provide reasonable assurance that the cables being supplied today contain materials that are similar to those samples that underwent qualification testing. The inspectors verified that for the TVA order reviewed, the testing implemented was sufficient to meet the purchase order requirements.

4. Inspection and Test Control

a. Inspection Scope

The NRC inspection team reviewed Okonite's policies and implementing procedures in compliance with the regulatory requirements of Criterion X, "Inspection," and Criterion XI, "Test Control," of Appendix B to 10 CFR Part 50. Specifically, the NRC inspection team witnessed and reviewed final electrical testing and verified that adequate checklists and testing procedures were implemented correctly. Specifically, for the electrical tests, the NRC inspection team witnessed corona (i.e. partial discharge) and AC hi-pot testing. The NRC inspection team also witnessed mechanical testing, including testing for elongation at break and tensile strength. The NRC inspection team also verified that the inspection results, including deviations, were properly documented. In addition, the NRC inspection team discussed the processes with Okonite's management and technical staff.

The NRC inspection team witnessed spark testing of a safety-related cable and verified that the test procedures were implemented correctly. Specifically, the spark testing was performed during a rewind operation for medium voltage cable for Order No. 07-1333, for 1/C 4/0 19X Tinned Copper – SS -115 Okoguard EPR – 024 SC EPR – 005 Copper Tape – 080 Okolon TS-CPE cable. For this cable, spark testing was performed during the rewind operation after a buff in one location and after a jacket restoration on a different location of the cable were performed. The NRC inspection team viewed the location at which the restoration was performed and verified that the restoration was performed per the procedure. Furthermore, the NRC inspection team reviewed the Quality Control Checklist for Order No. 07-1333, which documented the locations of the buff and restoration as well as the batch number of the jacket material used for the restoration procedure. The NRC inspection team verified that the Quality Control Checklist for Order No. 07-1333 was completed according to Okonite procedures.

In addition to spark testing, the NRC inspection team witnessed a cable rewind inspection, in which an Okonite Quality Control inspector performed a hand check on the cable in order to identify bumps, blisters or swells on the cable.

The attachment to this inspection report lists the individuals interviewed and documents reviewed by the NRC inspection team.

b. Observations and Findings

No findings of significance were identified.

c. Conclusions

The NRC inspection team determined that the implementation of Okonite's programs for inspection and testing were consistent with the regulatory requirements of Criterion X, "Inspections," and Criterion XI, "Test Control," of Appendix B to 10 CFR Part 50. No findings of significance were identified.

5. Control of Measuring and Test Equipment

a. Inspection Scope

The NRC inspection team reviewed Okonite's policies and implementing procedures that govern the measuring and testing equipment (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. For a sample of M&TE, the NRC inspection team verified that the M&TE had been calibrated, adjusted, and maintained at prescribed intervals prior to use. The NRC inspection team verified M&TE was calibrated appropriately to the range of operation for each described activity using procedures traceable to known industry standards. The NRC inspection team also verified the implementation of M&TE control through direct observation of Okonite activities. Specifically, the NRC inspection team verified calibration of thickness pin gauges and air ovens used in the manufacturing of Class 1E electrical cables. The NRC inspection team also inspected multiple dies used for cable jacket sampling along with frequently used temperature equipment used to monitor the continuous vulcanization and extruder processes. The NRC inspection team also reviewed certificates of calibration for tensile testers to ensure that M&TE was traceable to nationally recognized standards.

The NRC inspection team discussed the M&TE program with Okonite's management and technical staff. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

b. Observations and Findings

No findings of significance were identified.

c. Conclusion

The NRC inspection team concluded that Okonite 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 Okonite is implementing its policies and procedures associated with the M&TE program. No findings of significance were identified.

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

a. Inspection Scope

The NRC inspection team reviewed Okonite's policies and implementing procedures that govern the evaluation of nonconformances and the implementation of corrective actions to verify compliance with the requirements of Criterion XV, "Nonconforming Material, Parts and Components," and Criterion XVI, "Corrective Action," of Appendix B to 10 CFR Part 50. The NRC inspection team reviewed samples of documented nonconformances and their corrective actions to ensure that the dispositions and specified corrective actions were appropriate. In addition, the NRC inspection team verified that both programs provided a connection to 10 CFR Part 21. Okonite's Richmond plant captures and documents cable nonconformances via an electronic disposition system by means of an electronic CRD-2 (Cable Request for Disposition) form. The NRC inspection team reviewed, "Quality System Nonconformance Corrective and Preventative Action Report", (CPAR) #2017-01, which was opened on August 10, 2017. The NRC inspection team interviewed Okonite's Director of Marketing located in the Ramsey, NJ office to verify deficiencies identified or reported by customers are adequately assessed and entered into either the nonconformance or corrective action program.

The attachment to this inspection report lists the individuals interviewed and documents reviewed by the NRC inspection team.

d. Observations and Findings

No findings of significance were identified.

e. Conclusions

The NRC inspection team concluded that Okonite has established 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 Okonite is implementing its policies and procedures associated with its nonconformance and corrective action programs. No findings of significance were identified.

6. Internal Audits

a. Inspection Scope

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

The NRC inspection team verified that Okonite prepared and approved plans that identify the audit scope and applicable checklist criteria before the initiation of the audit activity. The NRC inspection team confirmed that the audit reports contained objective evidence of the review of the relevant QA criteria of Appendix B to 10 CFR Part 50.

The NRC inspection team reviewed the disposition of audit findings for adequacy and timeliness. The NRC inspection team reviewed a sample of training and qualification records of Okonite audit personnel and confirmed that auditing and inspection personnel had completed all the required training and had maintained qualification and certification in accordance with Okonite's policies and procedures.

The NRC inspection team discussed the internal audit program with Okonite's management. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

b. Observations and Findings

No findings of significance were identified.

c. Conclusion

The NRC inspection team concluded that Okonite is implementing its internal audit 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 Okonite is implementing its policies and procedures associated with its procurement document control, oversight of contracted activities and internal audits programs. No findings of significance were identified.

7. Entrance and Exit Meetings

On August 7, 2017 the NRC inspection team discussed the scope of the inspection with Richard DiLorenzo, Director of Quality Assurance and other members of Okonite's management and technical staff. On August 10, 2017 the NRC inspection team presented the inspection results and observations during an exit meeting with Richard DiLorenzo, Director of Quality Assurance, and other members of Okonite'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	Title	Affiliation	Entrance	Exit	Interviewed
Jermaine Heath	Inspection Team Leader	NRC	X	X	
Jeffrey Jacobson	Inspector	NRC	X	X	
Nicholas Savwoir	Inspector	NRC	X	X	
Sheila Ray	Inspector	NRC	X	X	
Bill Turner	Executive Vice President	Okonite		X	
Richard DiLorenzo	Director – QA	Okonite	X		
Bill Crawford	Vice President - Engineering	Okonite		X	X
Mike Marriner	Test Mgr / QA Mgt Rep	Okonite	X	X	
Charles Gunn	Plant Manager	Okonite	X	X	
Marshall Hogan	Plant Superintendent	Okonite	X	X	
Tim Adams	Manufacturing Engineer	Okonite	X	X	
Carl Bustle	Plant Engineer	Okonite	X	X	
Renee Todd	Plant Accounting Manager	Okonite	X	X	
David Craig	Manufacturing Engineer Manager	Okonite	X	X	
Kevin Bellamy	Test Operations	Okonite	X	X	
Lewis Reams	Assistant Plant Engineer	Okonite	X	X	
Alan Spalding	Plant Superintendent	Okonite	X	X	
Jason Pierce	HR Manager	Okonite	X		
Don Domi	Quality Engineer	Okonite	X	X	
ED Vaughn	Production Control Manager	Okonite	X	X	
Eric Loyka	Senior Director - Marketing	Okonite		X	X
Mike Tennant	Vice President – Engineering and Research	Okonite		X	X
Bod DeMair	Auxiliary Director - Research	Okonite			X

Name	Title	Affiliation	Entrance	Exit	Interviewed
Thomas Skourlis	Director – Materials Lab	Okonite			X
John Cancelosi	Vice President (Retired)	Okonite			X
Carl Zuidema	Director- Materials Laboratory (Retired)	Okonite			X
John Hiers	Assistant Manager – Compound Plant	Okonite			X
Asberry Brown	Laboratory Technician	Okonite			X
Kellie Cameron	Laboratory Supervisor	Okonite			X
James Hicks	Test Foreman	Okonite			X
Larry Miller	QC Inspector	Okonite			X
Joe McGee	QC Inspector	Okonite			X

2. INSPECTION PROCEDURES USED

- Inspection Procedure (IP) 36100, “Inspection of 10 CFR Part 21 and Programs for Reporting Defects and Noncompliance,” dated February 13, 2012
- IP 43002, “Routine Vendor Inspections,” dated January 27, 2017
- IP 43004, “Inspection of Commercial-Grade Dedication Programs,” dated January 27, 2017

3. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSIONS

Item Number	Status	Type	Description
N/A	N/A	N/A	N/A

4. DOCUMENTS REVIEWED

Policies & Procedure Documents (P&PD)

- P&PD QA-16, Quality Audits, Revision 8, dated July 2014
- P&PD QA-4, Quality Training/Qualification, dated September 30, 2016
- P&PD F-1, “Scrap Reporting”, Revision 1, May 2004
- P&PD QA-2, “Customer Nonconformance Response Procedure”, Revision 17 August 5, 2014
- P&PD QA-3, “Calibration Service Purchase Orders”, Revision 11, February 10, 2015
- P&PD QA-7, “Compliance to 10 CFR Part 21”, Revision 8, September 28, 2016
- P&PD QA-8, “Hold Procedure”, Revision 5, July 23 2014
- P&PD QA-9, “Corrective and Preventative Action Program”, Revision 6, November 6, 2013
- P&PD QA-17, “Control of Inspection, Measuring, and Test (IM&T) Equipment”, Revision 4, May 5, 2015
- P&PD MF-4, "Customer Waiver Procedure,” Revision 3, dated March 4, 2013

Equipment Qualification Test Reports

- Engineering Report #526, “Class 1E Qualification of Okonite FMR-N Insulation for Nuclear Power Generating Stations,” Revision 2, dated November 17, 2006
- Okonite 52541-1, “Nuclear Environmental Qualification Test Report of EPR Insulated Low Voltage Power Cables,” dated March 21, 2006
- Okonite 51055-02, “Nuclear Environmental Qualification Test Report of EPR Insulated Low and Medium Voltage Power Cables,” Revision A, dated September 20, 2005
- NTS Test Report No. TR62871-06N, “Qualification Test Report for Okonite Insulated Wire,” Revision 0, dated March 22, 2006
- “Annex 1 to Okonite Report No. 51055-2 Revision B,” dated November 20, 2006
- Engineering Report #527, “Class 1E Qualification of Okoguard Insulated Cables for Nuclear Power Generating Stations,” Revision 1, dated November 17, 2007
- “Errata Sheet for Engineering Report #527 Revision 1 Class 1E Qualification of Okoguard Insulated Cables for Nuclear Power Generating Stations,” dated November 1, 2007
- Okonite Report NO NQRN-3, “Nuclear Environmental Qualification Report for Okoguard Insulated Cables and T-95 & No. 35 Splicing Tapes,” Revision 4, dated October 24, 1988
- Okonite 51055-1, “Nuclear Environmental Qualification Test Report of Okoguard Insulated Medium Voltage Power Cables,” Revision A, dated July 25, 2005

Purchase Orders (PO)

- PO Calibration Service Quality Requirements-Checklist Q-142A Revision 1 July 25, 2013
- PO Calibration Service Quality Requirements – checklist February 27, 2017
- PO Calibration Service Quality Requirements – checklist August 31, 2016
- PO 7672490-0000-000, Protemp calibration & service August 30, 2016
- PO 7175227-0000-000 Protemp calibration & service February 24, 2017

- PO 7672658-0000-000, Pioneer Dietecs corp, Calibration & Sharpen Dies, Manufacturers part no 2016-2061, Qty:4 October 4, 2016
- PO 7774159-0000-001,Standard Testing Equipment , Calibration Services of Tensile Testers, July 11, 2017
- PO 7672062-0000-000, Standard Testing Equipment, Annual calibration of tensile testing Eq June 6, 2016
- PO 7773857-0000-000, Supplier: 343650 (Trescal), RQ01445-01 calibration of measuring and test equip, April 28, 2017
- PO 07-1333, "Alabama Power Company, 1/C 4/0 19X Tinned Copper – SS-115 Okoguard EPR – 024 SC EPR – 005 Copper Tape – 080 Okolon TS-CPE," dated April 25, 2017
- PO 07-1200, "Union Electric Co DBA Ameren MO Callaway Energy Center, 1/C 2/0 – 19X Tinned Copper – 080 Okonite FMR-N EP – Black 600V," dated January 25, 2017
- PO 2721096, Revision 4, dated February 3, 2017

Manufacturing Standards (MS)

- MS 8-1-119, "Instructions for form Q-119c-Manufafturimg Specifications", Revision 9, October 29, 2013
- MS 8-1-142 "Local Purchase Order for Calibration Services Instructions for Form Q142A", Revision 1 July 25, 2013
- MS 8-1-206, Instructions form Q-206 Okonite Preventative Action Log", Revision Original, May 6, 2014
- MS 8-1-213, "Instructions-form Q-213 Nuclear Safety Committee Evaluation Form", Rev Original, July 29, 2011
- MS 8-1-214, "Instructions-form Q-214 Deviation Disposition Request (DDR)"
- MS 6-2-6, "DC Resistance of Electrical Conductors", Revision 11, June 19, 2014
- MS 8-4, "Nonconforming Materials, Parts or Components", Revision 5, November 25, 2013
- MS 8-11, "Approved Calibration Suppliers Listing", Revision 17, October 4, 2016
- MS 8-11-1, "Equipment Calibration Accuracy Requirements", Revision 9, March 17, 2016
- MS 9.3.1.1, "Sampling & Test Program for Pelletized Componds Prepared via Continuous Process," Revision 8, dated July 2011
- MS 15.10, "Instructions for filling out QAC-3 Quality Control Checklist," Revision 5, dated October 2014
- MS7.0, "Non-conforming and Suspect Material Hold Procedures," Revision 17, dated February 2017
- MS 8-4, "Non-conforming Materials, Parts, or Components," Revision 5, dated November 22, 2013
- MS 8-1-214, "Instructions Form Q-214, 'Deviation Disposition Request'," Revision 1, dated July 21, 2014

Test Procedures, Reports, Plans

- MS 6-2-5-5, “Partial Discharge Set Capacities,“ Rev 2, dated September 26, 2006
- MS 6-2-3, “Insulation Resistance – Test Procedure,“ Rev 6A, dated November 21, 2000
- MS 6-2-4, “Spark Testing,“ Rev 4, dated 11/17/08
- MS 10.3.7, “Sample Preparation for Cable Physical Testing,” Rev 1, dated August 2000
- MS 6-5-1-2, “Testing Requirements for Compounds,” Rev 50, dated April 27, 2017
- Okonite Manufacturing Specifications – Plant 7, 1.15.1, “AC Testing of Shielded Multiconductor Cables Using the Mid-Tap Transformer,” Rev 3, dated October 2002
- Okonite Manufacturing Specifications – Plant 7, 1.10, “Electrical Test Procedures and I.R. Testing,” Revision 1, dated July 1999
- Okonite Manufacturing Specifications – Plant 7, 1.9, “A.C. Testing,” Revision 2, dated January 2013
- Okonite Manufacturing Specifications – Plant 7, 1.11, “Electrical Test Procedures – D/C Test,” Revision 2, dated August 2000
- Okonite Manufacturing Specifications – Plant 7, 61_1_11_1, “Jacket Integrity Test – End Preparation and Test Procedure for Cable with Optional Semiconducting Coating,” Rev Orig., dated October 2015
- Okonite Manufacturing Specifications – Plant 7, 1.12, “Corona Testing with Lemke Test Set,” Revision 1, dated March 2005
- Okonite Manufacturing Specifications – Plant 7, 10.3.4, “Method for Obtaining Tensile Strength, Elongation, and Modulus,” Revision 1, dated August 2000
- Okonite Manufacturing Specifications – Plant 7, 1.1.1, “Failure Identification Program,” Revision 4, dated September 2013
- Okonite Manufacturing Specifications – Plant 7, 2.28, “R14N/LTN Jacket Restorations,” Revision 0, dated August 2008
- Okonite Manufacturing Specifications – Plant 7, 1.28 Anhydrous Cupric Sulfate Moisture Test,” Revision 1, dated January 2003
- Okonite Manufacturing Specifications – Plant 7, 2.0, “Guidelines for Restorations and Repairs,” Revision 4, dated August 2008
- Okonite Manufacturing Specifications – Plant 7, 10.3.11, “Oil Immersion Test,” Revision 2, dated 11/2003
- Okonite Manufacturing Specifications – Plant 7, 1.12.1, “Fault Location with Lemke Test,” Revision 1, dated June 2000
- Okonite Manufacturing Specifications – Plant 7, 2.8, “Corona Testing with Lemke Test Set,” Revision 1, dated August 2000
- “Quality Plan for Order 07-1333”, Revision 1, dated August 9, 2017
- Product Line Specification, Spec. # 21, “600 V Okonite FMR-N (B22) 90 C Instrumentation Cable for Class 1E applications,” Revision 1C, dated July 24, 2017
- Product Line Specification, Spec. # 13, “Okonite FMR-N Okolon TS-CPE M/C Power and Control Cable for Class 1E Applications and 600 and 2000 V Okonite FMR-N insulation, Okolon Ts-CPE jacket,” Revision 3, dated July 8, 2016
- Product Line Specification, Spec. # 25, “Okoguard Shielded Power Cable for Class 1E applications 1/C 5-15 kV,” Revision 3, dated May 24, 2013
- Product Line Specification, Spec. # 17.3, “Single and Multi Unit Okozel Flame Retardant Thermocouple Extension Cable Class 1E Rated 90 C – 600 V,” Revision 0B, dated May 9, 2017
- Product Line Specification, Spec. # 17.1, “Single and Multi Unit Okozel Flame Retardant Instrumentation Cable Class 1E Rated 90 C – 600 V,” Revision 0B, dated May 9, 2017

- Product Line Specification, Spec. # 13, "1/C Okonite FMR-N Power and Control Cable for Class 1E Applications 600 and 2000 V," Revision 2, dated March 8, 2016

Internal Audits

- Quality Audit Report # 2016-01, dated June 7, 2016
- Quality Audit Report # 2017-01, dated April 4, 2017

Corrective Action Reports and Non-conformances

- CPAR #2017-01 "Disposition System"
- Cable Request for Disposition:
    - CRD, FO No. 07151, Dispo 16 33426
    - CRD, FO No. 08202, Dispo 16 34286
    - CRD, FO No. 08202, Dispo 16 34485
    - CRD, FO No. 08201, Dispo 16 34639
    - CRD, FO No. 08201, Dispo 16 34757
    - CRD, FO No. 06022, Dispo 16 35252
    - CRD, FO No. 06023, Dispo 16 35397
    - CRD, FO No. 06541, Dispo 16 35775
    - CRD, FO No. 06541, Dispo 16 35851
    - CRD, FO No. 12001, Dispo 17 37364
    - CRD, FO No. 12001, Dispo 17 37370
    - CRD, FO No. 12121, Dispo 17 37874
    - CRD, FO No. 11111, Dispo 16 36313
    - CRD, FO No. 06022, Dispo 16 34969
    - CRD, FO No. 11111, Dispo 17 36619
    - CRD, FO No. 78805, Dispo 16 35112

- Okonite Audit Finding Report (AFR) #05 June 8, 2016 response to 2016-0001-05, Closed: October 4, 2016
- NUPIC Closure Letter to Okonite, Finding Closure Report Audit 2016-0043 NUPIC #24253
- Corrective/Preventative Action Summary Sheet – 2016, Richmond Cable Plant – 4th Quarter

Part 21 Evaluations

- EQ Impact Analysis (CPAR 2016-01) dated March 17, 2016
- Nonconformance on Class 1E (07-0272), dated April 26, 2016
- Curtis-Wright Part 21 Notification, dated February 23, 2016

Measuring and Test Equipment Calibration

- Commercial Grade Dedication Report Calibration Suppliers Report Number: STE-2016 Supplier: Standard Testing Equipment, Accreditation: iso 17025, September 24, 2016
- Commercial Grade Dedication Report Calibration Suppliers Report Number: Pro-temp 2016, Supplier: Pro temp calibration services November 15, 2016
- Okonite Electronic Calibration M&TE Record 2017
- Pro-temp Calibration Service Report, September 2016
  Commercial Grade Dedication Report Calibration Suppliers Report Number: GenCal-2015, Supplier: General Calibration, a Trescal Company, Accreditation: iso 17025 (cert 2353.01, January 31, 2016), iso 9001:2008 (cert 10878, September 6, 2017) Date: August 6, 2015
- Pioneer Die-tecs, Certificate of compliance ASTM D-412-D, Cert number 16838, Die number 11082

Qualification and Training Records

- Lead auditor qualification for James Lozos, dated September 25, 2015
- Lead auditor qualification for Sharon Monaca, dated August 10, 2014

Miscellaneous

- Quality Control 85 Cost Center Okonite Manufacturing Specifications (Richmond Plant)
- Disposition 17-38405, dated July 25, 2017
- Quality Control Checklist for Order 07-1331-1, dated August 4, 2017
- EQ Impact for Nuclear qualified material C52, TR# 24052, dated September 4, 2001
- EQ Impact for Nuclear qualified material C52, TR# 80252, dated February 10, 2005
- EQ Impact for Nuclear qualified material C52, TR# 80252, dated January 29, 2008
- EQ Impact for Nuclear qualified material C52, TR# 80252, dated June 18, 2012
- EQ Impact for Nuclear qualified material G63, TR# 80658, dated October 24, 2005
- EQ Impact for Nuclear qualified material G63, TR# 80658, dated December 9, 2011
- Technical Requirements Document for Okoguard G63, #80658, Revision 10, dated November 3, 2010
- Technical Requirements Document #31142 for Okonite 210 Clay, Revision 8, dated August 4, 2007
- Quality Plan #07-1212-1, dated 7/6/2017
- 2nd Quarter (Q2 -2017) Richmond Corrective and Preventative (CAPA) Table
- Cost Center (CC) dispositions 1st Quarter (Q1 2017) January, February, March, Chart; Number of Dispos vs. Dispos Category Chart; Richmond top 3 remake Q1 2017
- Hold tags - Nuclear Hold Area; PSEG order numbers: 07-0602-1; 07-0602-2; 07-0602-3

Corrective Action Reports Opened During the NRC Inspection

- CPAR #2017-01 (Plant 7 Richmond), Electronic Disposition System corrective action closeout dates – dated August 10, 2017
- CPAR #2017-01 (HQ/Lab), Okonite EQ reports 527 Revision 1 and 526 Revision 2 qualified life and IEEE 383-2003 versions, dated August 10, 2017