December 5, 2014

Wiley Finley, Director
Business Segment
Curtiss-Wright QualTech NP, Huntsville
125 West Park Loop
Huntsville, AL 35806

SUBJECT: NUCLEAR REGULATORY COMMISSION INSPECTION OF CURTISS-WRIGHT QUALTECH NP - HUNTSVILLE REPORT NO. 99901441/2014-202 AND NOTICE OF NONCONFORMANCE

Dear Mr. Finley:

On October 27, 2014, to October 31, 2014, the U.S. Nuclear Regulatory Commission (NRC) staff conducted an inspection at the Curtiss-Wright QualTech NP (QualTech) facility in Huntsville, AL. The purpose of the limited-scope inspection was to assess QualTech's compliance with the provisions of selected portions 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."

This inspection specifically evaluated QualTech's quality assurance (QA) program associated with qualification testing, testing controls, and oversight of contracting activities for operating reactor plants. The enclosed report presents the results of the inspection. This NRC inspection report does not constitute NRC endorsement of your overall QA or 10 CFR Part 21 programs.

Based on the results of this inspection, the NRC inspection team found that the implementation of your QA program did not meet certain NRC requirements imposed on you by NRC licensees in the areas of design control and test control. Specifically, there are three examples where QualTech failed to do an adequate review of suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of structures, systems, and components. Additionally, the NRC inspection team identified three examples where QualTech failed to ensure that deviations from acceptance criteria (i.e. test anomalies) and purchase order (PO) specifications were documented and evaluated. The specific findings and references to the pertinent requirements are identified in the enclosures to this letter.

Please provide a written statement or explanation within 30 days from the date of this letter in accordance with the instructions specified in the enclosed Notice of Nonconformance (NON). We will consider extending the response time if you show good cause for us to do so.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosures, and your response will be made available electronically for public inspection in the NRC's Public Document Room or through the NRC's document system, Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html. To the extent possible, your response 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, then 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 is 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 will 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.

Sincerely,

/RA/

Richard A. Rasmussen, Chief
Electrical Vendor Inspection Branch
Division of Construction Inspection
and Operational Programs
Office of New Reactors

Docket No.: 99901441

Enclosures:
1. Notice of Nonconformance
2. Inspection Report 99901441/2014-202
   and Attachment

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosures, and your response will be made available electronically for public inspection in the NRC's Public Document Room or through the NRC's document system, Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html. To the extent possible, your response 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, then 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 is 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 will 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.

Sincerely,

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Richard A. Rasmussen, Chief
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Division of Construction Inspection
and Operational Programs
Office of New Reactors

Docket No.: 99901441

Enclosures:
1. Notice of Nonconformance
2. Inspection Report 99901441/2014-202 and Attachment

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OFC	NRO/DCIP/ EVIB	NRO/DCIP/ EVIB	NRO/DCIP/EVIB	NRO/DCIP:ES	NRR/DE/EEEB
NAME	EHuang	SSmith	ARamirez*	TFrye*	TMartinez-Navedo*
DATE	11/19/2014	12/03/2014	11/19/2014	12/04/2014	12/03/2014
OFC	RII	KINS/I&CD	KINS/QAD	NRO/DCIP/ EVIB	
NAME	GCrespo*	JLee*	HChang*	RRasmussen	
DATE	11/19/2014	12/03/2014	12/03/2014	12/05/2014	

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NOTICE OF NONCONFORMANCE

Curtiss-Wright QualTech NP
Huntsville, AL 35806

Docket No.: 99901441
Inspection Report No.: 99901441/2014-202

Based on the results of an NRC inspection conducted at the Curtiss-Wright QualTech NP (QualTech) facility in Huntsville, AL, on October 27–31, 2014, certain activities were not conducted in accordance with NRC requirements which were contractually imposed on QualTech by NRC licensees:

A. Criterion III, "Design Control," of Appendix B to 10 CFR Part 50 states, in part, that, "Measures shall also be established for the selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of the structures, systems and components."

   Contrary to the above, the NRC inspection team identified three examples where there was an inadequate review for suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of structures, systems, or components (SSCs).

   - QualTech failed to adequately identify and review critical characteristics for the dedication of a pinch valve liner in commercial dedication report EGS-HC-1535-01. Specifically, QualTech did not evaluate critical characteristics such as porosity, surface finish, and structural integrity which would affect the ability of the pinch valve liner to perform its intended safety function.

   - QualTech failed to ensure that material requirements listed in purchase order (PO) 4700664988 for two safety relief valves were met. Specifically, QualTech failed to verify that the: body and bonnet material was bronze; disc and spring material was stainless steel; nozzle material was bronze; and seal and O-ring material was Teflon as required by the PO.

   - QualTech failed to ensure that item specifications required in customer POs were met. Specifically, QualTech failed to ensure that item specifications, such as original equipment manufacturers, were met in accordance with PSEG POs 00643044 and 4500746367 to maintain equipment qualification. In addition, the NRC inspectors noted that for a transistor in PO 4500746367, the PO required Microsemi as the OEM, the test report identified Westinghouse as the OEM, and the pictures taken by QualTech at receipt inspection showed what appeared to be Solid State Inc. as the OEM.

   This issue has been identified as Nonconformance 99901441/2014-202-01.

B. Criterion XI, "Test Control," of Appendix B to 10 CFR Part 50 states in part that, "A test program shall be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents. Test results shall be documented and evaluated to assure that test requirements have been satisfied."

   Contrary to the above, the NRC inspection team identified three examples where test requirements were not satisfied and there was no documentation of evaluations for these test deviations.

   - QualTech failed to document and evaluate a change in test configuration that affixed a power supply, VGA extender, and USB extender to the shaker table rather than the rear of the mounting plate as required for PO 19-25392.

   - QualTech failed to document and evaluate pressure drops during a design basis event (DBE) / high energy line break (HELB) test that went below the test requirements specified in EGS-TR-HC521.

   - QualTech failed to document and evaluate test requirements for PO 00151667 for pinch valves. Specifically, there was a PO requirement to pressurize the shell to test pressure 225 pounds per square inch (psi) during the seismic test, but the test procedure only pressurized to 80 psi. Additionally, during the hydrostatic and seat leakage tests, QualTech did not provide ranges to account for instrument uncertainty and did not record the actual gage readings during the test. Also, QualTech did not document the air pressure applied to the valves during the seat leakage test. Finally, there was no documentation of the actual test configuration used to perform the hydrostatic and leak tightness tests.

   This issue has been identified as Nonconformance 99901441/2014-202-02.

Please provide a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Chief, Construction Electrical Vendor Inspection Branch, Division of Construction Inspection and Operational Programs, Office of New Reactors, within 30 days of the date of the letter transmitting this NON. This reply should be clearly marked as a "Reply to a Notice of Nonconformance" and should include for each noncompliance: (1) the reason for the noncompliance, or if contested, the basis for disputing the noncompliance; (2) the corrective steps that have been taken and the results achieved; (3) the corrective steps that will be taken to avoid noncompliances; and (4) the date when your corrective action will be completed. Where good cause is shown, consideration will be given to extending the response time.

Because your response will be made available electronically for public inspection in the NRC Public Document Room or through NRC's ADAMS, accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html, to the extent possible, it 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, then 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 withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will 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.

Dated this the 5th day of December 2014.

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

Docket No.:	99901441
Report No.:	99901441/2014-202
Vendor:	Curtiss-Wright QualTech NP 125 West Park Loop Huntsville, AL 35806
Vendor Contact:	Mr. Wiley Finley, Director, Business Segment wfinley@curtisswright.com
Nuclear Industry Activity:	Curtiss-Wright QualTech NP, located at 125 West Park Loop, Huntsville, AL, provides testing services, equipment qualification, electrical connectors, penetration assemblies, motor control centers, electrical panels, and commercial grade dedication to U.S. nuclear power plants.
Inspection Dates:	October 27–31, 2014
Inspection Team Leader:	Eugene Huang, NRO/DCIP/EVIB
NRC inspection team:	Stacy Smith, NRO/DCIP/EVIB Annie Ramirez, NRO/DCIP/EVIB Tania Martinez-Navedo, NRR/DE/EEEB Guillermo Crespo, RII Jea-Do Lee, KINS Hyun-Sop Chang, KINS
Approved by:	Richard A. Rasmussen, Chief Electrical Vendor Inspection Branch Division of Construction Inspection and Operational Programs Office of New Reactors

EXECUTIVE SUMMARY

Curtiss-Wright QualTech NP - Huntsville
99901441/2014-202

The NRC conducted this vendor inspection to verify that Curtiss-Wright QualTech NP (hereafter referred to as QualTech), implemented an adequate QA program that complies with the requirements of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," and 10 CFR Part 21, "Reporting of Defects and Noncompliance." This inspection specifically evaluated QualTech's implementation of equipment qualification (EQ), test control, and oversight of contracted activities programs. The NRC conducted this inspection at QualTech's facility in Huntsville, AL.

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

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

The NRC inspection team used Inspection Procedure (IP) 43003, "Reactive Inspections of Nuclear Vendors," dated October 3, 2013, IP 43002, "Routine Inspections of Nuclear Vendors," dated July 15, 2013, IP 43004, "Inspection of Commercial-Grade Dedication Programs," dated April 25, 2011, and IP 36100, "Inspection of 10 CFR Part 21 and Programs for Reporting Defects and Noncompliance," dated February 13, 2012.

The information below summarizes the results of this inspection.

Equipment Qualification

The NRC inspection team determined that QualTech did not adequately implement the requirements of Criterion III, "Design Control," of Appendix B to 10 CFR Part 50. The NRC inspection team issued Nonconformance 99901441/2014-202-01 for QualTech's failure to do an adequate review of suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of structures, systems, and components (SSCs) in three examples: (1) QualTech failed to adequately identify and review critical characteristics for the dedication of a pinch valve liner; (2) QualTech failed to identify and review material requirements for the dedication of two safety relief valves; and (3) QualTech failed to ensure that item specifications, such as original equipment manufacturers, were met to maintain EQ.

Oversight of Contracted Activities

The NRC inspection team determined that the implementation of QualTech's programs for governing the oversight of contract activities were consistent with the requirements of Criterion IV, "Procurement Document Control," and Criterion VII, "Control of Purchased Material, Equipment, and Services," of Appendix B to 10 CFR Part 50. No findings of significance were identified.

Test Control

The NRC inspection team determined that QualTech did not adequately implement the requirements of Criterion XI, “Test Control,” of Appendix B to 10 CFR Part 50. The NRC inspection team issued Nonconformance 99901441/2014-202-02 for QualTech’s failure to ensure that deviations from acceptance criteria (i.e. test anomalies) and PO specifications were documented and evaluated in three examples: (1) QualTech failed to document and evaluate the change in test configuration for PO 19-25392; (2) QualTech failed to document and evaluate pressure drops during a DBE/HELB test that went below the test requirements in EGS-TR-HC521; and (3) QualTech failed to document and evaluate a number of test requirements for pinch valves in PO 00151667.

REPORT DETAILS

1. Equipment Qualification (EQ)

a. Inspection Scope

The NRC inspection team examined the implementation of EQ activities for components and assemblies for the operating fleet. Qualification test procedures, instructions, and records were compared to the requirements of customer specifications and specified industry standards.

EQs and dedications for the following items were reviewed by the NRC inspection team:

- Qualification of ½ inch Quick Disconnect Electrical Connector Assembly in relation to Dominion (Millstone Power Station) PO 4500157497 dated July 31, 2014,
- Qualification of Square D 600VAC Circuit Breaker in relation to Dominion (Kewaunee) PO 45938122, dated July 12, 2012,
- Qualification of DBE/HELB KXL-804 Irradiation Cross-Linked Polyethylene XLPE Insulated Wire/Cable in relation to Rockbestos PO 133896, dated May 14, 2008,
- Qualification of Nova Inverter Supplemental Testing for Part Number NGL1K60-120-8461 in relation to Detroit Edison PO HC2214, Change Order 1, dated May 14, 2008,
- Dedication and Qualification Test Procedures for Technipower Power Supplies Model Nos. PM23.3-6.0 & PM23.3-0.750A in relation to Vermont Yankee PO VY013285 (along with Change Orders 1, 2, and 3) and VY013291 (along with Change Order 1),
- Generic Dedication/Seismic Procedures for Crydom and Allen Bradley Relays in relation to Scientech PO 12-0216, dated September 18, 2012,
- Qualification of Delta Pinch Valve in relation to Omaha Public Power District (OPPD) PO 00185855, dated February 22, 2013,
- Qualification of Prefabricated Cable Assemblies (SWN 1&2) in relation to KHNP Purchase Contract B06-E248-000, dated August 31, 2007,
- Qualification of Temperature Sensors (SKN 3&4) in relation to Ultra Electronics PO 102795, dated January 5, 2013,
- Dedication and Seismic Test of Linear Electric Actuators (SKN 3&4) in relation to Target Rock PO 36564, dated December 1, 2011,
- Dedication for Zener Diodes in relation to PSEG PO 00643044, dated August 11, 2011,
- Dedication for Transistors in relation to PSEG PO 4500746367, dated April 3, 2013, and
- Dedication for Safety Relief Valves in relation to DTE Energy Fermi PO 4700664988, dated July 3, 2013.

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

b. Observations and Findings

b.1 Pinch Valves

The NRC inspection team reviewed Fort Calhoun PO 00185855 for commercially dedicated replacement liners for 3 inch Glaigher Pinch Valves. The NRC inspection assessed the dedication activity QualTech used to verify the manufacturer, part number, markings, material type, and that the configuration would fit into a 3 inch Glaigher Pinch Valve body. However, QualTech did not consider or address the safety functions of pressure boundary integrity and ability to seal and stop flow. The NRC inspection team considered that the dedication process should have, at a minimum, included an evaluation of porosity, structural integrity and surface finish since those would affect the ability of the pinch valve liner to perform its intended safety function. QualTech's commercial-grade dedication (CGD) report number, EGS-TR-HC1535-01, Test Report for 3-inch Delta Pinch Valve Rubber Liner, dated April 12, 2013, did not address two of the safety functions of the pinch valve liner. Specifically, the functions of pressure boundary integrity and ability to seal were not identified or assessed in the report.

This issue has been identified as an example of Nonconformance 99901441/2014-202-01.

b.2 Safety Relief Valves

The NRC inspection team identified that QualTech failed to ensure that two safety relief valves for DTE Energy Fermi, obtained through commercial vendor Kunkle Valve, met specific requirements specified in QualTech PO 4700664988. The valves were procured as commercial grade items and dedicated thru QualTech's CGD program. The safety relief valves were specified as to provide pressure boundary integrity and set to trigger at 40 pounds per square inch (psi). The dedication plan provided critical characteristics and acceptance criteria for the relief valves to perform under the safety related functions as designed, including specific materials of construction for the seat of the valve. The dedication plan, EGS-TR-HC1972, verified the seat material to be Viton, however the plan failed to identify and verify other construction materials such as the: seal to be Viton; O-ring to be Teflon; bonnet to be bronze; and spring and disc to be stainless steel, as specified on the PO. Specifically, QualTech failed to verify all of the materials conformed to the requirements listed in the PO.

This issue has been identified as an example of Nonconformance 99901441/2014-202-01.

b.3 Zener Diodes and Transistors

The team reviewed PO 00643044, dated August 17, 2011 from PSEG, for zener diodes and PO 4500746367, dated April 3, 2013, from PSEG, for transistors. The NRC inspection team identified that QualTech failed to ensure that item specifications required to maintain EQ were met in accordance with the PSEG POs. Specifically, the PSEG POs required specific original equipment manufacturers for a zener diode and a

transistor, which will be installed in equipment that has been designed, rated, and tested in accordance with IEEE 344-1974 or IEEE 323-1974. Specifically, PSEG required exact OEMs to maintain EQ. However, QualTech provided certificates of conformance stating that the items supplied were in accordance with PO requirements despite the items having different OEMs than what was required or an evaluation to show like for like replacement. In addition, the NRC inspectors noted that for the transistor, the PO required Microsemi as the OEM, the test report identified Westinghouse as the OEM, and the pictures taken by QualTech at receipt inspection showed what appeared to be Solid State Inc. as the OEM. QualTech initiated corrective action report (CAR) 2014-009, dated October 30, 2014, to address the validity of the certification.

This issue has been identified as an example of Nonconformance 99901441/2014-202-01.

c. Conclusions

The NRC inspection team determined that QualTech did not adequately implement the requirements of Criterion III, "Design Control," of Appendix B to 10 CFR Part 50. The NRC inspection team issued Nonconformance 99901441/2014-202-01 for QualTech's failure to do an adequate review of suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of SSCs in three examples: (1) QualTech failed to adequately identify and review critical characteristics for the dedication of a pinch valve liner; (2) QualTech failed to identify and review material requirements for the dedication of two safety relief valves; and (3) QualTech failed to ensure that item specifications, such as original equipment manufacturers, were met to maintain EQ.

2. Oversight of Contracted Activities

a. Inspection Scope

The NRC inspection team reviewed QualTech's policies and implementing procedures that govern the implementation of QualTech's oversight of contracted activities to verify compliance with Criterion IV, "Procurement Document Control," and Criterion VII, "Control of Purchased Material, Equipment, and Services," of Appendix B to 10 CFR Part 50. Specifically, the NRC inspection team verified that applicable quality requirements, including technical, regulatory, and reporting requirements, were specified in the procurement documents reviewed and extended to lower-tier suppliers when necessary. Additionally, the NRC inspection team reviewed the procedures and implementation to select and qualify vendors supplying basic components and services, through a sample of certificates of calibrations, audits, surveys, and receiving inspections.

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 in this area were identified.

c. Conclusions

The NRC inspection team determined that the implementation of QualTech's programs for governing the oversight of contract activities were consistent with the requirements of Criterion IV, "Procurement Document Control," and Criterion VII, "Control of Purchased Material, Equipment, and Services," of Appendix B to 10 CFR Part 50. No findings of significance were identified.

3. Test Control

a. Inspection Scope

The NRC inspection team examined the implementation of EQ tests that were performed to verify the equipment designs adequately addressed specified requirements for performance under worst case earthquakes and harsh operating environments. In addition, the team reviewed the five examples of test anomalies documented in nonconformance 99901441/2014-201-03 in NRC inspection report (IR) 99901441/20 14-201.

In addition, the NRC team reviewed the following POs:

- PO 45928122, dated July 12, 2012, from Dominion (Kewaunee) for molded case circuit breakers (MCCBs),
- PO 4500088957, dated February 4, 2014, from AAF International for a temperature switch,
- PO 19-25392 from Scientech for CyberResearch Monitors,
- PO 00151667 from OPPD for Glaigher pinch valves, and
- PO 146177 from RSCC for DBE/HELB qualification of firezone 3HR insulated wire/cable.

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

b. Observations and Findings

b.1 Research Monitors

The NRC inspection team identified that PO 19-25392 required the monitor power supply to be mounted to the back of the test plate. However, the NRC inspection team noted that during the test, the power supply was mounted to the shaker table instead of the mounting plate. The power supply was mounted with tie wraps that were not mentioned in the test summary sheet although the actual test configuration was documented in photos included in the body of the test report. However, PO Section 1.1,

"Scope of Work", required, in part, that the associated power supply, VGA Extender and USB Extender will be affixed to the rear of the mounting plate. The actual test configuration utilized tie wraps to attach these items to the base of the shaker table. The associated QualTech NP Data Sheet for the test lists the power pack as "attached hardware" and indicates the specimen was attached in the vertical plane. Additionally, the hardware list did not include the tie wraps as mounting hardware. The test report data sheet and summary did not document the alternate mounting of the power supply, VGA and USB Extenders. However, based on an e-mail dated October 29, 2014, the inspector learned that the actual test configuration was observed and accepted by the client representative at the time of the test. However, in the final test record summary this change in configuration is not mentioned and there is no evaluation of the technical acceptability of the change.

This issue has been identified as an example of Nonconformance 99901441/2014-202-02 for QualTech's failure to document test anomalies and evaluate them against test requirements for acceptability.

b.2 Pinch Valves

The NRC inspection team reviewed PO 00151667, for Fort Calhoun, which specified test criteria for 3-inch Glaigher Pinch Valves. To meet the requirements of the PO, QualTech developed a dedication plan and issued a test report to document the performance of the dedication activities. However, QualTech did not fully implement the test requirements, and in some cases performed testing without adequately documenting the test activities and results. For example, QualTech did not comply with a PO requirement to pressurize the shell to test pressure 225 psi during the seismic test. Instead the test procedure only pressurized the valve to 80 psi and did not document a basis for the difference. During the hydrostatic and seat leakage tests, the test plan provided nominal pressures to be maintained but QualTech did not provide ranges to account for instrument uncertainty and did not record the actual gage readings during the test. Additionally, QualTech did not record the air pressure applied to the valves during the seat leakage test. Finally, there was no record of the actual test configuration used to perform the hydrostatic and leak tightness tests.

This issue has been identified as an example of Nonconformance 99901441/2014-202-02 for QualTech's failure to document test anomalies and evaluate them against test requirements for acceptability.

b.3 Design Basis Event (DBE) / High Energy Line Break (HELB) Test

The NRC inspection team reviewed RSCC PO 146177 which required DBE/HELB testing to be done in accordance with test procedure EGS-TR-HC531-01. The test procedure specified temperature and pressure curve requirements to meet the desired profile. The NRC inspection team reviewed test report EGS-TR-HC531-02 and noted that there were multiple occasions during the initial ramp of testing that did not meet the pressure requirement curve. The NRC inspection team noted that the initial curve requirements are usually performed on a best attempt method; however, the pressure dropped off at the end of the initial curve below the curve requirement and there was

insufficient documentation on how far and how long the pressure dropped below the test curve requirement in terms of the remaining duration of the test profile. QualTech failed to document and evaluate the test anomaly of multiple pressure drops during the initial curve and a drop-off at the end of the initial curve to ensure that test requirements were met.

This issue has been identified as an example of Nonconformance 99901441/2014-202-02 for QualTech's failure to document test anomalies and evaluate them against test requirements for acceptability.

c. Conclusions

The NRC inspection team determined that QualTech did not adequately implement the requirements of Criterion XI, "Test Control," of Appendix B to 10 CFR Part 50. The NRC inspection team issued Nonconformance 99901441/2014-202-02 for QualTech's failure to ensure that deviations from acceptance criteria (i.e. test anomalies) and PO specifications were documented and evaluated in three examples: (1) QualTech failed to document and evaluate the change in test configuration for PO 19-25392; (2) QualTech failed to document and evaluate pressure drops during a DBE/HELB test that went below the test requirements in EGS-TR-HC521; and (3) QualTech failed to document and evaluate a number of test requirements for pinch valves in PO 00151667.

4. Entrance and Exit Meetings

On October 27, 2014, the NRC inspection team presented the inspection scope during an entrance meeting with Mr. Wiley Finley, Director, Business Segment, and other QualTech personnel. On October 31, 2014, the NRC inspection team presented the inspection results during an exit meeting with Mr. Wiley Finley, Director, Business Segment, and other QualTech personnel.

ATTACHMENT

1. PERSONS CONTACTED AND NRC STAFF INVOLVED

Name	Title	Affiliation	Entrance	Exit	Interviewed
W. Finley	Director, Business Segment	QUALTECH	X	X	
T. Gill	QA Manager	QUALTECH	X	X	X
G. Elam	R&D/EPA Manager	QUALTECH	X		X
J. Tumlinson	Products Engineering Manager	QUALTECH	X		X
C. Covan	Quality Assurance Administrator	QUALTECH		X	X
T. Franchuk	Director Quality	QUALTECH		X	
R. Golub	EQ/CGD Engineering Manager	QUALTECH		X	X
M. Noblitt	Sr. Engineer	QUALTECH			X
H. Melinz	Seismic Level 3 Engineer	QUALTECH			X
E. Huang	Inspection Team Leader	NRC	X	X	
S. Smith	Inspection Team Member	NRC	X	X	
A. Ramirez	Inspection Team Member	NRC	X	X	
T. Martinez-Navedo	Inspection Team Member	NRC	X	X	
G. Crespo	Inspection Team Member	NRC	X	X	
R. Rasmussen	Branch Chief	NRC	X	X	
H. Chang	Inspection Team Member	KINS	X	X	
J. Lee	Inspection Team Member	KINS	X	X	

2. INSPECTION PROCEDURES USED:

IP 43002, “Routine Inspections of Nuclear Vendors”
IP 43003, “Reactive Inspections of Nuclear Vendors”
IP 43004, “Inspection of Commercial-Grade Dedication Programs”
IP 36100, “Inspection of 10 CFR Part 21 and Programs for Reporting Defects and Noncompliance”

3. ITEMS OPENED, CLOSED, AND DISCUSSED:

Item Number	Status	Type	Description
99901441/2014-202-01	OPEN	NON	Criterion III
99901441/2014-202-02	OPEN	NON	Criterion XI

4. DOCUMENTS REVIEWED:

Procedures

- Generic Dedication Procedure for Mechanical Commodity Items Report No. EGS-DP-M16-01, dated June 3, 2004
- Generic Seismic Test Procedure for Random Multi-frequency (RMF) Testing (Triaxial) Report No. EGS-RMF-01 for IE Nuclear Power Qualification Testing, dated, April 3, 1998, Revision A, February 7, 2000
- Qualification Test Procedure for Technipower Power Supplies Model No. PM23.3-6.0 & PM23.3-0.750AW, Report No. EGS-TR-23050-0153-02, dated: January 6, 2003, Revision A, March 12, 2003, Revision B May 29, 2014.
- EGS-DP-M56-01 Generic Dedication/Seismic Procedure for Relief Valves, dated September 18, 2003.

Purchase Orders

- PO 133896, dated May 14, 2008
- PO 4700731942, Change Order 1, dated February 20, 2014
- PO 4700140394, Change Order 1, dated February 18, 2009
- PO VY013285, Change Order 1, dated September 3, 2002
- PO VY013285, Change Order 2, dated February 18, 2003
- PO VY013285, Change Order 3, dated June 24, 2003
- PO VY013291, Change Order 1, dated February 11, 2002
- PO 12-0216, dated September 18, 2012
- PO 00185855, dated February 22, 2013
- PO 10388504, dated, July 22, 2013
- PO 4252001340, Revision 2, dated June 4, 2014
- PO 4700664988, dated July 03, 2013
- PO 470017468, dated September 25, 2008
- PO 12-0214, dated November 08, 2012
- Purchase Contract #B06-E248-000, dated August 31, 2007
- PO 4500088957, dated February 4, 2014
- PO HP00004337, dated February 25, 2014
- PO HP00003032, dated August 23, 2013
- PO HP00004210, dated April 24, 2014
- PO HP00004641, dated June 2, 2014
- PO 4500088957, dated February 4, 2014
- PO 45928122, dated July 12, 2012

- PO 102795, dated January 5, 2013
- PO 36564-0, dated December 1, 2011
- PO 767160, Revision 0
- PO 4500654047 Revision 001
- PO 146177, dated September 16, 2011
- PO 00179556, Revision 2
- PO 45410237, dated December 3, 2012
- PO 12-0241, dated February 5, 2013
- PO 754000, dated March 10, 2011
- PO 19-25392
- PO 00151667

Equipment Qualification and Test Reports

- EGS-TR-HC1741-01, "Test Report for LOCA/DBA Environmental Qualification Test of Firewall III Insulated Wire/Cab le Manufactured by RSCC Wire and Cable, LLC," Revision A, dated October 8, 2014
- PEI-TR-880701-04, "Test Report for Nuclear Environmental Qualification of Patel/EGS ½ Inch Electrical Connector," Revision A, dated November 1, 1994
- EGS-TR-HC1706-01, "Dedication/Seismic Test Report for Magnehelic Pressure Gage, Photohelic Pressure Switch, Indecco Thermodisc, Bimetal Dial Thermometer Reotemp Thermowell, Reotemp RTD," Revision A, dated March 14, 2014
- EGS-TR-HC1166-01, "Square D Molded Case Circuit Breakers Model Numbers FHL36015 and FHL36050," dated September 21, 2012
- EGS-DP-E08-01, "Generic Dedication/Seismic Procedure for Molded Case Circuit Breakers and Accessories," dated May 15, 2012
- EGS-TR-23050-0505-02, "DBE/HELB Qualification of KXL-804 Irradiation Cross-Linked Polyethylene XLPE Insulated Wire/Cable Manufactured by Rockbestos-Surprenant Cable Corporation," dated May 19, 2010
- EGS-TR-HC2214-02, "Supplemental Nova Inverter Testing Part Number NGL1K60-120-8461," dated March 1, 2014
- EGS-TR-23050-0153-04, "Supplemental Qualification Test Report for Technipower Power Supply Model No. PM23.3-6.0," dated July 29, 2003
- EGS-TR-23050-0153-05, "Supplemental Qualification Test Report for Technipower Power Supply Model No. PM23.3-6.0," dated November 19, 2003
- EGS-TR-23050-0362-01, "Qualification Test Report for Technipower Power Supply Model No. PM23.3-6.0," dated September 29, 2005
- EGS-TR-HC1295-02, "Test Report for Crydom and Allen Bradley Relays," dated October 31, 2012
- EGS-TR-HC2149-03, "Qualification Procedure for GE-Hitachi Solenoid Assembly Model Number DD233A3620P001," Revision B, dated June 20, 2014
- EGS-TR-HC2045-01, "Seismic Test Report of Various CyberResearch Monitors"
- EGS-TR-HC1535-01, "Test Report for 3-inch Delta Pinch Valve Rubber Liner," dated April 12, 2013
- EGS-TR-23050-0675-04, "Test Report for Glaigher "Delta" Air-Operated Pinch Valve," dated May 25, 2011

- EGS-187, “HP34907A Data Acquisition Unit used on Technipower Power Supply testing,” dated July 16, 2003
- EGS-188, “HP349002A 16 Channel Multiplexer used on Technipower Power Supply testing,” dated July 16, 2003 and November 6, 2003
- EGS-210, “Fluke 189 Multimeter used on Technipower Power Supply testing,” dated on July 16, 2003 and Fairchild Semi-conductor rectifiers on January 17, 2012
- EGS-138, “Fluke 87 Multimeter used on Technipower Power Supply testing,” dated on July 16, 2003
- EGS-139, “Fluke 87 Multimeter used on Technipower Power Supply testing,” dated on July 16, 2003
- EGS-190, “Thermotron SM-32-C Humidity Chamber used on Technipower Power Supply testing,” dated on July 16, 2003 and November 6, 2003
- EGS-8, “Fluke 51 Digital Thermometer used on Technipower Power Supply testing,” dated on July 16, 2003
- EGS-261, “Agilent 34970A Data Acquisition System used on Firezone 3HR Insulated Wire/Cable Manufactured by RSCC Wire and Cable, LLC,” dated December 12, 2012
- EGS-632, “Agilent 34902A Multiplexer Card used on Firezone 3HR Insulated Wire/Cable Manufactured by RSCC Wire and Cable, LLC,” dated December 12, 2012
- EGS-477, “Omega PX-309-150GV Pressure Transducer used on Firezone 3HR Insulated Wire/Cable Manufactured by RSCC Wire and Cable, LLC,” dated December 12, 2012
- EGS-323, “QualTech 1030 Hipot Tester used on Firezone 3HR Insulated Wire/Cable Manufactured by RSCC Wire and Cable, LLC,” dated December 12, 2012 and on Johnson Controls Pressure Transducer dated March 10, 2014
- EGS-624, “Fluke 289 Digital Multimeter used on Firezone 3HR Insulated Wire/Cable Manufactured by RSCC Wire and Cable, LLC,” dated December 12, 2012
- EGS-867, “Fluke 325 Clamp-on Meter used on Firezone 3HR Insulated Wire/Cable Manufactured by RSCC Wire and Cable, LLC,” dated December 12, 2012
- EGS-666, “Mensor 6100 Pressure Transducer used on Firezone 3HR Insulated Wire/Cable Manufactured by RSCC Wire and Cable, LLC,” dated December 12, 2012
- EGS-401, “Ohaus SP2001 Digital Scale used on GE Overload Relay and Heater Elements on July 24, 2012; used on Fairchild Semi-conductor rectifiers on January 17, 2012; and on transistors and rectifiers on April 23, 2013”
- EGS-244, “QualTech LR2000 Miliohmmeter used on GE Overload Relay and Heater Elements on July 24, 2012”
- EGS-581, “QualTech 1030S Hipot Tester used on GE Overload Relay and Heater Elements on July 24, 2012”
- EGS-634, “Megger CB845 Circuit Breaker Tester used on GE Overload Relay and Heater Elements on July 24, 2012”
- EGS-213, “Brown & Sharpe 599-571-2000 Digital Caliper used on Fairchild Semi-conductor rectifiers on January 17, 2012 and on transistors and rectifiers on April 23, 2013”
- EGS-453, “Agilent DSO5034A Oscilloscope Caliper used on Fairchild Semi-conductor rectifiers on January 17, 2012”
- EGS-501, “Fluke 1587 Multimeter Caliper used on Fairchild Semi-conductor rectifiers on January 17, 2012”

- EGS-541, “Mitutoyo 500-196-20 Digital Caliper used on Fairchild Semi-conductor rectifiers on January 17, 2012”
- EGS-517, “Wingfield 675 Digital Scale / Platform used on transistors and rectifiers on April 23, 2013”
- EGS-152, “Hewlett Packard HP34970A Data Acquisition/Switch Unit used on Technipower Power Supply testing,” dated on November 6, 2003
- EGS-42, “Fluke 87 Multimeter used on Technipower Power Supply testing,” dated November 6, 2003
- EGS-164, “Fluke 87E Multimeter used on Technipower Power Supply testing,” dated on November 6, 2003
- EGS-8, “Fluke 51 Digital Thermometer used on Technipower Power Supply testing,” dated on November 6, 2003
- EGS-358, “Dytran Instruments 305682T Accelerometer 50g used on Technipower Heat Sink,” dated December 2, 2013
- EGS-361, “Dytran Instruments 305682T Accelerometer 50g used on Technipower Heat Sink,” dated December 2, 2013
- EGS-555, “Dytran Instruments 305682T Accelerometer 50g used on Technipower Heat Sink,” dated December 2, 2013
- EGS-389, “Vibration Research Corp. VR8500-24 Vibration Controller (Channel 1 thru 4) used on Technipower Heat Sink,” dated December 2, 2013
- EGS-390, “Vibration Research Corp. VR8500-24 Vibration Controller (Channel 5 thru 8) used on Technipower Heat Sink,” dated December 2, 2013
- EGS-391, “Vibration Research Corp. VR8500-24 Vibration Controller (Channel 9 thru 12) used on Technipower Heat Sink,” dated December 2, 2013
- EGS-350, “Vibration Research Corp. VR8500 GEOBOX Translation Box VRC Three Axis used on Technipower Heat Sink,” dated December 2, 2013
- EGS-434, “Mensor APC-600 Pressure Controller (with Pressure Transducers Installed) used on Johnson Controls Pressure Transducer,” dated March 10, 2014
- EGS-500, “Fluke 1587 Multimeter used on Johnson Controls Pressure Transducer,” dated March 10, 2014
- EGS-468, “Fluke 289 Digital Multimeter used on Johnson Controls Pressure Transducer,” dated March 10, 2014
- EGS-648, “Mensor CP6000 Pressure Controller (with Pressure Transducers Installed) used on Johnson Controls Pressure Transducer,” dated March 10, 2014
- EGS-TR-HC1365-02, “Test Report for DBE/HELB Qualification of Firezone 3HR Insulated Wire/Cable Manufactured by RSCC Wire and Cable, LLC,” Revision 02
- EGS-TR-HC2033-01, ”Test Report for Johnson Controls Pressure Transducer (Part Number: P499VCP-105K) with wiring harness (WHA-PKD3600C),” dated April 01, 2014
- Supplemental Qualification Test Report for Technipower Power Supply Model No. PM23.3-6.0 Report No. EGS-TR-23050-0153-04, EGS Job No. 23050-0153 dated: July 29, 2003. Seismic testing showed one flaw and there was a voltage interruption during seismic test neither of which appear to be documented. QualTech indicates the discrepancy due to typographic error.
- Supplemental Qualification Test Report for Technipower Power Supply Model No. PM23.3-6.0 Report No. EGS-TR-23050-0153-05, EGS Job No. 23050-0153 dated: November 19, 2003.

- EGS-TR-HC1592-01, “Test Report for Transistors and Rectifiers for PSEG P.O. 4500743993,” dated May 30, 2013
- EGS-TR-H1186-03, “Dedication and Seismic Test Report for GE Overload Relay and Heater Elements,” dated: July 24, 2012
- EGS-TR-HC504-01, “Test Report for Fairchild Semi-Conductor Rectifiers P/N 1N5393 and New Jersey Semi-conductor Rectifiers P/N 2N4101,” dated: January 26, 2012
- EGS-TR-HC1827-01, “Test Report for Technipower Heat Sink Part No.: 140-21114,” dated December 13, 2013
- EGS-TR-HC1360-3159A-15, “LOCA/HELB Steam Temperature Testing Rosemount 3159 Remote Diaphragm Seal with 3150 Series Nuclear Pressure Transmitters,” dated May 29, 2014
- EGS-TR-HC1360-3159A-12, “Seismic Testing per IEEE-344 Rosemount 3159 Remote Diaphragm Seal with 3150 Series Nuclear Pressure Transmitters,” Revision A, dated May 21, 2014
- EGS-TR-HC1360-3159A-17, “Final Functional Testing Rosemount 3159 Remote Diaphragm Seal with 3150 Series Nuclear Pressure Transmitters,” Revision A, dated May 2, 2014
- EGS-TR –HC1792-01, “Dedication/Seismic Test Report for Kunkle Relief Valve Model No. 918BEFEV06-ME0040,” dated September 17, 2013
- EGS-TR-23076-9030-01, “Final Report for Kunkel Relief Valves Model Number 918BFEV06-ME0040,” dated October 14, 2008
- EGS-TR-HC1366-01, “Wika Temperature Transmitters Model T32.1S Seismic Test Specimens”
- EGS-TR-23093-22, “Environmental Qualification Documentation for Prefabricated Cable Assemblies,” dated April 22, 2009
- EGS-TR-HC1433-01, “Test Report for LOCA/MSLB Accident Test of N9025 IRWST Thermocouples and Protection Assembly to Levels Required by Shin Kori Units 3 and 4,” dated April 18, 2013
- Ultra Electronics nuclear component qualification program 3129-379039-010, “Nuclear Component Qualification Program for N9025 IRWST Thermocouples and Protection Assembly to Levels Required by Shin Kori Units 3 and 4,” Revision 2
- EGS-TR-HC713-01, “Final Test Report for Linear Electric Actuators Model D66,” dated December 22, 2011
- EGS-TR-HC531-02, “Test Report for DBE/HELB Qualification of Firezone 3HR Insulated Wire/Cable Manufactured by RSCC Wire and Cable, LLC,” dated November 16, 2011
  EGS-TR-HC531-01, “Test Procedure for DBE/HELB Qualification of Firezone 3HR Insulated Wire/Cable Manufactured by RSCC Wire and Cable, LLC,” dated September 16, 2011
- EGS-TR-23047-90, “Environmental Qualification Test Report for EGS Subhull and PAL Door Electrical Penetration Assemblies Part Numbers 23047-418 and 23047-425 for use in Fort Calhoun Station,” dated December 21, 2012, Revision A
- EGS-TR-23047-85, “Design Basis Document for Electrical Penetration Assembly P/N 23047-418 and P/N 23047-425 for Fort Calhoun Station Omaha Public Power District,” dated November 5, 2012
- EGS-TR-23047-48, “Test Report for Nuclear Environmental Qualification of EGS Model 23047-LV-01 Electrical Penetration Assembly for Low Voltage Power and Control,” dated February 29, 2008

- EGS-TR-23047-55, “Supplemental Test Report for Nuclear Environmental Qualification Extension of EGS Model 23047-LV-01 Electrical Penetration Assembly,” dated May 26, 2009
- EGS-TR-23047-82, “Test Report for Nuclear Environmental Qualification of C-Seal External Module Seal Design for EGS Electrical Penetration Assemblies,” dated November 2, 2012
- EGS-TR-23047-87, “ASME Design Report for PAL Electrical Penetration Fort Calhoun Station P/N 23047-425 Omaha Public Power District,” dated December 21, 2012
- EGS-TR-23047-88, “ASME Design Report Subhull Electrical Penetration Fort Calhoun Station P/N 23047-418,” dated November 27, 2012
- EGS-TR-23047-101, “Test Report for Final Acceptance Testing of PAL (P/N 23047-425) and Subhull (P/N 23047-418) Electrical Penetration Assemblies,” dated April 17, 2013
- EGS-TR-23047-106, “Environmental Qualification Test Report for Electrical Penetration Assembly 1RCP-3F EGS Part Number 23047-547 for use in Beaver Valley Station 1,” dated May 8, 2013
- EGS-TR-23047-110, “ASME Design report containment electrical penetration Beaver Valley Unit 1 power station P/N 23047-547,” dated July 3, 2013
- EGS-TR-23047-97, “Design Basis Document for Electrical Penetration Assembly P/N 23047-547 for Beaver Valley Power Station Unit 1,” dated March 27, 2013
- EGS-TR-HC1827-01, “Test Report for Technipower Heat Sink Part Number 140-21114,” dated December 13, 2013
- EGS-TR-HC1366-02, “Test Report for Transtronics Digital Display Model PD765-6X0-00 Test Specimans,” dated February 4, 2013
- EGS-TR-HC144-01, “Dedication and Seismic Qualification Test Report for Electroswitch Transfer Switch Part Number KW100-910C8-2,” dated May 27, 2011

Test Plans:

- D2009015 RNII Qualification Test Plan for Rosemount 3159 Remote Diaphragm Seal Revision G, dated July 3, 2013
- TP- 1201 In support of the qualification of Firewall III Irradiation Cross-linked polyethylene insulation KXL-760G with Chlorosulfonated Polyethylene Jacket KH-131 or Irradiation Cross-Linked Polyethylene Jacket KXL-760G for nuclear class 1E service in AP1000 Nuclear Generating Power Stations for 60 years of qualified life at 90 C Revision 0, dated July 17, 2012
- Test Procedure EGS-TR-949200-02, “Test Procedure for Nuclear Environmental Qualification of Prefabricated Cable Assemblies,” Revision A
- Commercial Grade Dedication Plan EGS-DP-E46-01, “Generic Dedication/Seismic Procedure for Linear Electric Actuators,” dated June 4, 2008
- RSSC Test Plan #0701, Revision 3, “Qualification of Firewall® III Irradiation Cross-Linked Polyethylene Insulation KXL-804 for Generic Nuclear Incident Class 1E Service in Nuclear Generating Power Stations for 60 Years of Qualified Life at 90°C,” dated May 12, 2008
- EGS-TR-23050-0153-02, Revision B, “Qualification Test Procedure for Technipower Power Supplies Model No. PM23.3-6.0 & PM23.3-0.750A W,” dated May 29, 2014
- EGS-DP-E35-01, “Generic Dedication/Seismic Procedure for Meters,” dated August 11, 2003

Commercial Grade Dedication

- Commercial Grade Dedication Plan EGS-DP-E38-01, "Generic Dedication/Seismic Procedure for Inverters," Revision C, dated January 22, 2009
- Commercial Grade Dedication Plan EGS-DP-23050-0153-01, "Dedication Procedure for Technipower Power Supplies Model No. PM23.3-6.0 & PM23.3-0.750A W," Revision A, dated March 3, 2003
- Commercial Grade Dedication Plan EGS-DP-E17-01, "Generic Dedication/Seismic Procedure for Time Delay Relays," Revision C, dated May 29, 2001
- Commercial Grade Dedication Plan EGS-DP-E13-01, "Generic Dedication/Seismic Procedure for Electromechanical Control Relays," Revision C, dated April 24, 2009

Nonconformances

- NOA 2014-134, dated September 12, 2014

Condition Reports

- CAR 2014-001, dated July 22, 2014
- CAR 2014-009, dated October 30, 2014
- CAR 2014-010, dated October 30, 2014
- CAR 2014-011, dated October 30, 2014
- CAR 2014-013, dated October 30, 2014

Miscellaneous

- Certificate of Conformance for one-half inch Quick Disconnect Electrical Connector Assembly, dated September 11, 2014
- Certificate of Conformance for (4) 3 pole 600V circuit breakers, dated September 24, 2014
- Report No. 880706-2614, shipping inspection report for Dominion, dated September 12, 2014
- EGS-TR-880706-01, "Instructions for Installation of EGS/Patel 880701-B, 913601-B and 913602-B Bayonet Connectors," Revision D, dated June 27, 20001
- Project Summary Sheet C1166/HJ2961, for a molded case circuit breaker, dated August 24, 2012
- EGS Project Summary Sheet for Project No. HC1166/HJ2961
- EGS Project Summary Sheet for Interposing RCP Relay, Project No. HC1295 (HJ3228), dated October 4, 2012
- EGS Project Summary Sheet for Time Delay Relay, Project No. HC1295 (HJ3228), dated October 4, 2012
- EGS Project Summary Sheet for Nova Inverter NGL1K60-120-8461, Project No. HC2214(HJ5716), dated February 20, 2014
- EGS Project Summary Sheet for Nova Electric Inverter GL1K60-120R-8461, Project No. 23076-9027, dated March 10, 2009

- Certificate of Conformance/Compliance for 2 ea. Inverter, Test, Repair, DTE Material/Service No. 100310231, associated to DTE PO #4700731942, Change Order 1, dated March 1, 2014
- Certificate of Conformance/Compliance for 3 ea. Inverter Model No. GL1K60-120R-8461, associated to DTE PO #4700140394, Change Order 1, dated March 27, 2009
- Certificate of Conformance/Compliance for 2 ea. Inverter Model No. GL1K60-120R-8461, associated to DTE PO #4700140394, Change Order 1, dated May 5, 2009
- Certificate of Conformance/Compliance for Performing Commercial Grade Dedication Testing of Parts Listed in the Technical Provisions, dated November 6, 2012
- KOPEC Technical Specification #9-171-E248, Revision 2
- Work Order #HC1433/HJ3628
- Work Order #HC713/HJ2026
- Drawing B-N-23047-140, "Threaded Seal Fabrication detail 1" EPA module assembly with type 5 potting model 23047-lv-01, "dated September 20, 2007
- Drawing B-N-230470370, "C-Seal Qualification Specimen P/N: 23047-370," dated January 10, 2012
- Drawing B-N-230477-448, "12 AWG Socket Contact Modified for EPA P/N 23047-448," dated October 9, 2012
- Drawing B-N-23047-446, "12 AWG Pin Contact modified for EPA P/N 23047-446," dated October 9, 2012
- Drawing B-N-23047-395, "1" extension tube insulator 12/C-12 AWG solid wire/peek threaded style P/N 23047-395," dated October 8, 2012
- Drawing B-N-23047-140, "Threaded seal fabrication detail 1" EPA module assembly with type 5 potting model 23047-lv-01," dated September 20, 2007
- Specification number 8700-DES-0534, "Specification for containment electrical penetration 1RCP-3F for Beaver Valley Power Station Unit No. 1," Revision 1, dated April 19, 2013
- Statement of compliance to BVS1 technical specification 8700-DES-0534-Rev 0, dated March 11, 2013
- Drawing B-N-23047-534, "1-1/2 inch EPA module assembly 3/C-2 AWG for Beaver Valley P/N 23047-534," dated February 25, 2013
- Material Used List for PO 45410237, Revision 1
- NIAC audit report number 17105, dated February 14, 2012

ACRONYMS USED:

ADAMS	Agencywide Documents Access and Management System
CAR	corrective action request
CFR	Code of Federal Regulations
CGD	commercial grade dedication
DBE	design basis event
EQ	equipment qualification
EVIB	Electrical Vendor Inspection Branch
HELB	high energy line break
IEEE	Institute of Electrical and Electronics Engineers
IP	inspection procedure
LOCA	loss of coolant accident

MCCB	molded case circuit breakers
NON	Notice of Nonconformance
NRC	Nuclear Regulatory Commission
NRO	Office of New Reactors
PO	purchase order
psi	pounds per square inch
QA	quality assurance
SSC	structure, system, or component
VAC	volts alternating current