

December 22, 2016

Mr. Nick Eggemeyer
Corporate Quality Assurance Manager
Enercon Services, Inc.
500 Town Park Lane
Kennesaw, GA 30144

SUBJECT: NUCLEAR REGULATORY COMMISSION VENDOR INSPECTION OF
ENERCON SERVICES, INC. REPORT NO. 99901474/2016-201

Dear Mr. Eggemeyer,

On November 14 through November 18, 2016, the U.S. Nuclear Regulatory Commission (NRC) staff conducted an inspection at the Enercon Services, Inc. (Enercon) facility in Oklahoma City, Oklahoma. The purpose of this limited-scope routine inspection was to assess Enercon'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 Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities."

This inspection specifically evaluated Enercon's implementation of quality activities associated with the commercial-grade dedication of the Storm Precipitation Analysis System (SPAS) software, Versions 9.5 and 10.0. The enclosed report presents the results of the inspection. This NRC inspection report does not constitute NRC endorsement of your overall quality assurance (QA) or 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 your customers or NRC licensees. The NRC inspection team determined that Enercon was not fully implementing its QA program in the area of design control, related to commercial-grade dedication. Enercon failed to completely verify the critical characteristic to derive hourly/sub-hourly precipitation and Depth-Area-Duration (DAD) analysis during the dedication of the SPAS software, Versions 9.5 and 10.0. Specifically, Enercon did not evaluate SPAS functionality for processing radar data which is an input to deriving hourly/sub-hourly precipitation and DAD values for Tennessee Valley Authority's flooding calculation. Notwithstanding, the NRC inspection team determined the finding did not have immediate safety concerns since the radar data is one of many inputs to the flooding calculation, and the flood calculation is the subject of an on-going NRC licensing review and does not affect the current flooding calculation. 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. The NRC will consider extending the response time if you show good cause for the agency 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 Public Document Room or from the NRC's document system (ADAMS), accessible at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response, (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, 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 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 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/ (JJimenez for)

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

Docket No.: 99901474

Enclosures:

1. Notice of Nonconformance
2. Inspection Report No. 99901474/2016-201
and Attachment

NRC Public Document Room or from the NRC’s document system (ADAMS), accessible at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response, (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, 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 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 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/ (JJimenez for)

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

Docket No.: 99901474

Enclosures:

1. Notice of Nonconformance
2. Inspection Report No. 99901474/2016-201 and Attachment

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*via email

NRO-002

OFC	NRO/DCIP/QVIB-1	NRO/DCIP/QVIB-3	NRO/DSEA/RHM1/RMOT	NRO/DCIP/QVIB-1
NAME	AArmstrong*	AFerguson	KQuinlan*	TJackson (JJimenez for)
DATE	12/21/16	12/21/16	12/21/16	12/22/16

OFFICIAL RECORD COPY

NOTICE OF NONCOMFORMANCE

Enercon
500 Town Park Lane
Kennesaw, GA 30144

Docket No. 99901474

Based on the results of a U.S. Nuclear Regulatory Commission (NRC) inspection conducted at the Enercon Services, Inc. (Enercon) facility located in Oklahoma City, OK, on November 14, 2016, through November 18, 2016, certain activities were not conducted in accordance with NRC requirements which were contractually imposed on Enercon by its customers or NRC licensees.

Criterion III, "Design Control," 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," states, in part, that, "measures shall 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, as of November 18, 2016, Enercon failed to establish measures for the selection and review of suitability of application and processes essential to the safety-related functions of the Storm Precipitation Analysis System (SPAS) software, Versions 9.5 and 10.0. Enercon did not fully identify and verify the critical characteristic to derive hourly/sub-hourly precipitation and Depth-Area-Duration (DAD) analysis during the dedication of SPAS. Specifically, Enercon did not identify and evaluate SPAS functionality for processing radar data which is a sub-function of deriving hourly/sub-hourly precipitation and DAD values. The hourly/sub-hourly precipitation and DAD values were used as input to the safety-related design basis flooding calculation supplied to TVA under Purchase Order No. 1396771, dated October 26, 2015. This issue was not an immediate safety concern because the radar data is one of many inputs to the flood analysis and not expected to have a sizeable impact, and the flooding calculation is the subject of an on-going NRC licensing review and does not affect the current flooding calculation.

This issue has been identified as Nonconformance 99901474/2016-201-01.

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, Quality Assurance Vendor Inspection Branch-1, Division of Construction Inspection and Operational Programs, Office of New Reactors, within 30 days of the date of the letter transmitting this Notice of Nonconformance. 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 noncompliance; 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 from the NRC's document system (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 22nd day of December 2016.

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

Docket No.: 99901474

Report No.: 99901474/2016-201

Vendor: Enercon Services Inc.
1601 Northwest Expressway
Suite 1000
Oklahoma City, OK 73118

Vendor Contact: Mr. Nick Eggemeyer
Corporate Quality Assurance Manager
neggemeyer@enercon.com
(770) 590-2031

Nuclear Industry Activity: Enercon Services Inc. is an architectural engineering,
environmental, technical and management services firm providing
a broad range of professional services to the nuclear industry.

Inspection Dates: November 14-18, 2016

Inspectors: Aaron Armstrong NRO/DCIP/QVIB-1, Inspection Leader
Ashley Ferguson NRO/DCIP/QVIB-3
Kevin Quinlan NRO/DSEA/RHM1/RMOT
Shih-Chieh Kao Oakridge Ridge National Laboratory

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

EXECUTIVE SUMMARY

Enercon
99901474/2016-201

The U.S. Nuclear Regulatory Commission (NRC) staff conducted a vendor inspection at the Enercon Services Inc. (Enercon) facility 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 inspectors also verified that Enercon implemented a program under 10 CFR Part 21, "Reporting of Defects and Noncompliance," that met the NRC's regulatory requirements. The inspection was conducted from November 14 through November 18, 2016. This was the first NRC vendor inspection at this facility.

This technically focused inspection evaluated Enercon's implementation of quality activities associated with the commercial-grade dedication of the Storm Precipitation Analysis System (SPAS) software in support of Tennessee Valley Authority's (TVA's) design basis flooding analysis. SPAS is a commercial off-the-shelf computer program developed by Applied Weather Associates, LLC (AWA) and Metstat, Inc. used to characterize the magnitude, temporal, and spatial details of precipitation events.

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

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

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

The information below summarizes the results of this inspection.

10 CFR Part 21 Program

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

Design Control and Commercial-Grade Dedication

The NRC inspection team issued Notice of Nonconformance (NON) 99901474/2016-201-01 in association with Enercon's failure to implement the requirements of Criterion III, "Design Control," of Appendix B to 10 CFR Part 50. NON 99901474/2016-201-01 describes Enercon's failure to establish measures for the selection and review of suitability of application and processes essential to the safety-related functions of the SPAS software. Specifically, Enercon failed to identify and verify SPAS functionality for processing the sub-function of radar input data as part of the functional critical characteristic to derive hourly/sub-hourly precipitation and

Depth-Area-Duration (DAD) analysis. The hourly/sub-hourly precipitation and DAD values were used as input to the safety-related design basis flooding calculation supplied to TVA under Purchase Order (PO) No. 1396771, dated October 26, 2015. This issue was not an immediate safety concern because the radar data is one of many inputs to the flooding calculation and not expected to have a sizeable impact, and the flooding calculation is the subject of an on-going NRC licensing review and does not affect the current flooding calculation.

Corrective Action Program

The NRC inspection team concluded that Enercon established a program that adequately implemented corrective actions in accordance with the regulatory requirements of Criterion XVI, "Corrective Action," of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the NRC inspection team determined that Enercon is effectively implementing its policies and procedures governing the corrective action program. No findings of significance were identified.

Oversight of Contracted Activities

The NRC inspection team concluded that Enercon established a program that adequately controls the oversight of contracted activities in accordance with the regulatory requirements of Criterion IV, "Procurement Document Control;" Criterion VII, "Control of Purchased Material, Equipment, and Services;" and Criterion XVIII, "Audits," of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the NRC inspection team determined that Enercon is effectively implementing its policies and procedures associated with the oversight of contracted activities. No findings of significance were identified.

REPORT DETAILS

1. 10 CFR Part 21 Program

a. Inspection Scope

The NRC inspection team reviewed the policies and implementing procedures of Enercon that govern the facility's compliance with the requirements of 10 CFR Part 21, "Reporting of Defects and Noncompliance." In addition, the inspectors evaluated the 10 CFR Part 21 postings and a sample of Enercon's purchase orders (POs) 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." Furthermore, the NRC inspection team discussed the 10 CFR Part 21 program with Enercon'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 Enercon established a 10 CFR Part 21 program in accordance with the regulatory requirements. Based on the limited sample of documents reviewed, the NRC inspection team determined that Enercon is effectively implementing its policies and procedures associated with 10 CFR Part 21. No findings of significance were identified.

2. Design Control and Commercial-Grade Dedication

a. Inspection Scope

The NRC inspection team reviewed Enercon's policies and implementing procedures that govern the design control program to verify compliance with the regulatory requirements of Criterion III, "Design Control," of Appendix B to 10 CFR Part 50. Specifically, the NRC inspection team reviewed the implementing procedures for the dedication of the Storm Precipitation Analysis System (SPAS) software, Versions 9.5 and 10.0, in support of the project converting Applied Weather Associates, LLC (AWA) probable maximum precipitation (PMP) analysis's as a safety-related calculation for Tennessee Valley Authority (TVA) (Project No. TVA-085).

The NRC inspection team reviewed Cooperate Standard Procedure (CSP) 7.01, "Commercial Grade Dedication," which provides the methodology for dedicating commercial-grade items and services for use in safety-related applications, including performing a technical evaluation to identify all safety functions, the development of critical characteristics, determination of dedication methods, and the acceptance criteria. The NRC inspection team also reviewed CSP 3.09, "Control of Computer Software," which provides the requirements for the acceptance of computer software to be utilized for safety-related applications and handling of software error notices. The NRC inspection team reviewed Enercon's process for software version control to verify that configuration of the computer program is maintained and changes are controlled in

accordance with CSP 7.01 and CSP 3.09. CSP 3.09 requires the re-dedication of previously dedicated and accepted commercial grade software, if any revision to the software occurs during the conduct of a project. During the course of Project No. TVA-085, SPAS Version 9.5 was updated to Version 10.0. Enercon determined the update did not affect the critical characteristics and acceptance, thereof, for SPAS. Therefore, the dedication package for SPAS Versions 9.5 and 10.0 were identical.

The NRC inspection team reviewed the dedication package for SPAS, Version 10.0, to verify that a technical evaluation was documented, critical characteristics developed, dedication methods determined, and acceptance criteria specified. The inspectors verified supporting documentation, such as testing documentation and POs, and documented implementation of the commercial-grade dedication package requirements. The NRC inspection team discussed the design control and commercial-grade dedication programs with Enercon's management and technical staff. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

b. Observations and Findings

The NRC inspection team reviewed and discussed the identification and verification of the critical characteristics for SPAS, Version 10.0 with Enercon staff. During the NRC inspection team's review, the following observations were made (these issues are also applicable to SPAS, Version 9.5):

b.1 The dedication plan identified two functions for the critical characteristic of the specific function/applications of SPAS: (1) Derive Hourly/Sub-hourly Precipitation and (2) Depth-Area-Duration (DAD) Analysis. The acceptance criteria for specific function/applications stated, "Outputs are consistent and accurate within ± 1 percent range for various applications." The NRC inspection team reviewed the acceptance report, however the report did not specify what items or criteria were used to test the ± 1 percent threshold or include any quantitative data to support meeting the acceptance criteria. Enercon provided documentation that showed an idealized test storm (Pyramidville) was used for testing SPAS functionality and met the ± 1 percent acceptance criteria. The Pyramidville test case is a theoretical storm represented by a pyramid shaped pattern of contour lines with constant rain. The test case used two areas of fabricated precipitation (a smaller area embedded within a larger area) to demonstrate that SPAS DAD output precipitation values were equal to the known input values, thus proving that the estimates were properly calculated. The results showed that SPAS derived gridded precipitation estimates equal to the theoretical input both spatially and temporally. Enercon provided tables and charts comparing input values against the SPAS output values. In each of the tests, the input values matched the SPAS output values. These comparison tables and charts demonstrated that SPAS met the ± 1 percent acceptance criteria.

Notwithstanding, the NRC inspection team identified the Pyramidville test case did not verify all of SPAS functionality to derive hourly/sub-hourly precipitation and DAD analysis. Specifically, the Pyramidville test case did not verify SPAS functionality for processing radar input data. SPAS has the capability to process three types of input data, radar, rain gauge, and basemaps, to derive the hourly/sub-hourly precipitation and DAD values. Each input type is processed differently by SPAS. The Pyramidville test case only included rain gauge and basemap input. The hourly/sub-hourly precipitation and DAD values, which were based in part on radar

input data, were, in turn, used as input to the safety-related design basis flooding calculation supplied to TVA under PO No. 1396771, dated October 26, 2015.

Criterion III, "Design Control," of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," states, in part, that, "measures shall 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, as of November 18, 2016, Enercon failed to verify the processing of radar data input which was essential to the safety-related functions of the Storm Precipitation Analysis System (SPAS) software, Versions 9.5 and 10.0. The NRC inspection team identified this issue as Nonconformance (NON) 99901474/2016-201-01. This issue was not an immediate safety concern because the radar data is one of many inputs to the TVA flooding calculation and not expected to have a sizeable impact, and the flooding calculation is the subject of an on-going NRC licensing review and does not affect the current flooding calculation.

- b.2 The Dedication Plan identified range (input variables/limits of application) as a critical characteristic of SPAS. The acceptance criteria for the range stated, "Outputs are consistent and accurate over a range of inputs and within ± 5 percent range for various applications." The Acceptance Report included an evaluation of the difference between SPAS and National Weather Service (NWS) DAD values for the 1955 Westfield, Massachusetts storm for verification of the range. The NRC inspection team observed the comparison of SPAS and NWS DAD values did not provide evidence the ± 5 percent acceptance criteria had been satisfied. Enercon provided the NRC inspection team with an additional 16 storms comparing SPAS results with NWS and U.S. Army Corp of Engineers (USACE) DAD values. While the results were not consistently within the ± 5 percent acceptance criteria, Enercon noted the 16 storms were merely meant to provide a sensitivity analysis since the ground truth is unknown. To address the processing of input variables and the limits of the application of SPAS, Enercon stated that input data checking is a part of SPAS Quality Control (QC) functionality.

The NRC inspection team discussed the preparation and processing of input data for the SPAS and pre-processing steps that are required to remove erroneous input data before it is used in SPAS. When SPAS analyzes a new storm, it will return various warning and error messages which indicate potential input data issues or inconsistencies. This error reporting is controlled by the various SPAS QC functions and require Enercon to analyze and remove the erroneous data until all warning and error messages are resolved. The NRC inspection team reviewed the testing and verification of the SPAS QC functions. Enercon provided log files that are created as a standard output from SPAS. The staff reviewed Enercon's log files and determined they contained information supporting QC tests performed by the software and determined the process was acceptable.

- b.3 The dedication plan stated the methodology used by SPAS to derive DAD values as a critical characteristic. The acceptance criteria for the methodology stated, "journal article(s) conclude that the methodology is appropriate and compares results produced by the Weather Bureau." The NRC inspection reviewed the two journal articles (HydroReview) referenced in the acceptance criteria, which discussed the

general process used to derive site-specific probable maximum precipitation (PMP). The NRC inspection team determined that the articles did not fully support Enercon's conclusion. During discussion with Enercon regarding the HydroReview articles, the NRC inspection team noted the Pyramidville test case results supported the conclusion that the methodology to derive DAD values was appropriate and, thus, provided acceptable verification of DAD values.

c. Conclusion

The NRC inspection team issued NON 99901474/2016-201-01 in association with Enercon's failure to implement the requirements of Criterion III, "Design Control," of Appendix B to 10 CFR Part 50. NON 99901474/2016-201-01 describes Enercon's failure to establish measures for the selection and review of suitability of application and processes essential to the safety-related functions of the SPAS software. Specifically, Enercon failed to verify SPAS functionality for processing radar input data as part of the functional critical characteristic to derive hourly/sub-hourly precipitation and DAD analysis. The hourly/sub-hourly precipitation and DAD values were used as input to the safety-related design basis flooding calculation supplied to TVA under Purchase Order No. 1396771, dated October 26, 2015. This issue was not an immediate safety concern because the radar data is one of many inputs to the TVA flooding calculation and not expected to have a sizeable impact, and the flooding calculation is the subject of an on-going NRC licensing review and does not affect the current flooding calculation.

3. Corrective Action

a. Inspection Scope

The inspectors reviewed Enercon's policies and implementing procedures that govern the Corrective Action Program (CAP) to verify compliance with the requirements of Criterion XVI, "Corrective Action," of Appendix B to 10 CFR Part 50.

The inspectors reviewed the Enercon's Corrective Action Report (CAR) log and several CAR's to ensure that Enercon implemented an adequate program to ensure that conditions adverse to quality were promptly identified and corrected. Additionally, the inspectors interviewed Enercon staff. Finally, the inspectors verified that the Enercon corrective action process provided a link to the 10 CFR Part 21 program.

The inspectors discussed the CAP with Enercon 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 Enercon established a program that adequately implements the regulatory requirements of Criterion XVI, "Corrective Action," of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the NRC inspection team determined that Enercon is implementing its policies and

procedures governing the corrective action program. No findings of significance were identified.

4. Oversight of Contracted Activities

a. Inspection Scope

The NRC inspection team reviewed Enercon's policies and implementing procedures that govern the oversight of contracted activities to verify compliance with the requirements of Criterion IV, "Procurement Document Control;" Criterion VII, "Control of Purchased Material, Equipment, and Services;" and Criterion XVIII, "Audits," of Appendix B to 10 CFR Part 50.

The NRC inspection team verified that applicable quality requirements, including technical, regulatory, and reporting requirements, were specified in the procurement documents reviewed. In addition, the NRC inspection team confirmed that all of the safety-related POs reviewed included clauses that invoke the provisions of 10 CFR Part 21 and that required the supplier to conduct safety-related work under an approved QA program.

Specifically, the NRC inspection team reviewed the safety-related POs issued in support of Project No. TVA-085 to verify that specific procurement requirements were met and documented correctly. The NRC inspection team reviewed the project-planning document for Project No. TVA-085, which outlined the project scope and responsibilities and deliverables for the services procured from AWA. The NRC inspection team reviewed the project training agenda and certification to verify that AWA staff received training on the applicable sections of Enercon's QA manual and governing procedures as identified in the project planning document as applicable.

The NRC inspection team noted that AWA performed work under Enercon's QA program and was not audited for inclusion on Enercon's approved supplier list (ASL). The NRC inspection team reviewed the internal audits performed in December 2015 and December 2013 of Project No. TVA-085 project, which included a review of the contract, commercial-grade dedication, software quality assurance, procurement, document control, 10 CFR 21, corrective action, training and qualification, and records. The NRC inspection team verified the audit reports contained objective evidence the review performed was in accordance with the applicable requirements of Appendix B to 10 CFR Part 50. For audits that resulted in findings, the NRC inspection team verified that Enercon initiated adequate corrective actions.

The NRC inspection team discussed the oversight of contracted activities and audit programs with Enercon'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 Enercon established a program that adequately controls the oversight of contracted activities in accordance with the regulatory requirements of Criterion IV, "Procurement Document Control;" Criterion VII, "Control of Purchased Material, Equipment, and Services;" and Criterion XVIII, "Audits," of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the NRC inspection team determined that Enercon is effectively implementing its policies and procedures associated with the oversight of contracted activities. No findings of significance were identified.

8. Entrance and Exit Meetings

On November 14, 2016, the inspectors discussed the scope of the inspection with Mr. Nick Eggemeyer, Cooperate Quality Assurance Manager, and other members of Enercon's management and technical staff. On November 18, 2016, the inspectors presented the inspection results and observations during an exit meeting with Mr. Pete Capponi, Vice President, and other members of Enercon'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 inspectors interviewed.

ATTACHMENT

1. ENTRANCE AND EXIT MEETING ATTENDEES

Name	Title	Affiliation	Entrance	Exit	Interviewed
John Brandon	Quality Engineer	Enercon	X	X	
Robert Bryan	Chief Operating Officer	Enercon	X	X	
Patt Brunette	Project Manager	Enercon	X	X	
Pete Capponi	Vice President	Enercon		X	
Robert Davis	Manager	Enercon		X	
Nick Eggemeyer	Corporate Quality Assurance Manager	Enercon	X	X	X
Dominic Evans	QA Engineer	Enercon	X	X	
Anu Gaur	SPAS 10.0 Cognizant Engineer	Enercon	X	X	X
Doug Hultstrand	Meteorologist	AWA	X	X	X
Bill Kappel	President	AWA	X	X	X
Susan Larrow	QA Specialist	Enercon	X	X	
Lana Lawrence	Project Manager	Enercon	X	X	
Ed Pugh	QA Engineer	Enercon	X	X	
Dereck Richard	Division Manager	Enercon	X	X	
Helen Robertson	Qa Records	Enercon	X	X	X
Rachel Turney-Work	ArcGIS CE	Enercon	X		
Aaron Armstrong	Inspection Team Lead	NRC	X	X	
Ashley Ferguson	Inspector	NRC	X	X	
Shih-Chieh Kao	Meteorologist	NRC	X	X	
Kevin Quinlan	Meteorologist	ORNL	X	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 Inspections of Nuclear Vendors," dated July 15, 2013.

IP 43004, "Inspection of Commercial-Grade Dedication Programs," dated November 29, 2013.

3. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

<u>Item Number</u>	<u>Status</u>	<u>Type</u>	<u>Description</u>	<u>Applicable ITAAC</u>
99901474/2016-201-01	Opened	NON	Criterion III	N/A

4. DOCUMENTS REVIEWED

Procedures

- Corporate Standard Procedure (CSP) 3.02, "Control of Computer Software," Revision 5, dated June 7, 1998
- CSP 3.09, "Control of Computer Software," Revision 1, dated August 1, 2016
- CSP 7.02, "Control of Purchased Items and Services," Revision 3, dated March 27, 2015
- CSP 16.01, "Corrective Action," Revision 9, dated December 21, 2015
- CSP 16.01, "Corrective Action," Revision 10, dated September 2, 2016
- CSP 16.02, "Evaluating and Reporting of 10 CFR Defects and Noncompliance," Revision 7, dated March 8, 2008
- CSP 16.02, "Evaluating and Reporting of 10 CFR Defects and Noncompliance," Revision 8, dated March 27, 2015
- CSP 18.01, "Quality Assurance Assessment," Revision 2, dated March 27, 2015

Commercial-Grade Dedication Documents

- Dedication Plan No. CGDG-SPAS 10.0, Revision 0, dated December 22, 2015
- SC-SPAS 10.001, "SPAS 10.0 Acceptance Report," dated December 30, 2015

Corrective Action Reports (CARs)

- CAR 2013-0093.0.0, dated November 6, 2013
- CAR 2013-0109.1.1, dated November 25, 2013
- CAR 2013-0093.0.1, dated December 6, 2013
- CAR 2013-0109.0.0, dated December 27, 2013
- CAR 2015-0010.0.0, dated January 16, 2015
- CAR 2015-0114.0.2, dated May 26, 2015
- CAR 2015-0133.0.3, dated June 15, 2015
- CAR 2015-0139.0.0, dated June 22, 2015
- CAR 2015-0154.0.0, dated July 1, 2015

- CAR 2015-0281.0.0, dated October 12, 2015
- CAR 2016-0389.0.0, dated October 30, 2015
- CAR 2016-0092.0.0, dated April 15, 2016
- CAR 2016-0192.0.0, dated June 8, 2016
- CAR 2016-0258.0.0, dated August 4, 2016
- CAR 2016-0416.0.0, dated November 11, 2016

CARs Generated During the Inspection

- CAR 2016-0423.0.0, "Documentation of Technical Evacuation and Acceptance Report," dated November 15, 2016
- CAR 2016-0424.0.0, "Critical Characteristic not fully verified," dated November 16, 2016
- CAR 2016-0425.0.0, "Lack of documentation regarding Part 21 reportability evaluations," dated November 17, 2016
- CAR 2016-0427.0.0, "Documentation of Objective Evidence for meeting Acceptance Criteria," dated November 17, 2016

Procurement Documentation

- Purchase Order No. AWA-1017-00-S for project TVAECRP028, dated November 30, 2015
- Project Planning Document for TVA085 in support of Converting AWA PMP Analysis as a Safety-Related Calculation, Revision 2, dated January 8, 2016
- TVACORP-015-J001, "TVA Proposal," Revision 0, dated May 26, 2015
- TVA Purchase Order No. 1396771, Revision 0, dated October 26, 2015

Audits

- OKC-AUD-04, "Quality Assurance Audit Report," dated January 16, 2014
- OKC-AUD-05, "Quality Assurance Audit Report," dated December 17, 2015
- OKC-AUD-04, "Internal Audit Checklist," dated December 1-3, 2015
- OKC-AUD-05, "Internal Audit Checklist," dated December 17-19, 2013

Training and Qualification Records

- Project Training Attendance Certification for Project No. TVA085, dated December 2, 2015
- Project Training Agenda for Project No. TVA085, dated December 2, 2015

Other

- Software Error Review SPAS Version 10.0, dated October 10, 2016
- Software Error Review SPAS Version 9.5, dated August 18, 2015
- Enercon Quality Assurance Manual, "Quality Assurance Manual Enercon Services, Inc." Revision 10, dated September 1, 2015
- Enercon Quality Assurance Manual, "Quality Assurance Manual Enercon Services, Inc." Revision 11, dated January 4, 2016