April 6, 2015

MEMORANDUM TO: Richard Rasmussen, Chief
Electrical Vendor Inspection Branch
Division of Construction, Inspection & Operational Programs
Office of New Reactors

FROM: Jeffrey Jacobson, Senior Reactor Operations Engineer ***/RA/***
Electrical Vendor Inspection Branch
Division of Construction, Inspection & Operational Programs
Office of New Reactors

SUBJECT: TRIP REPORT BY THE NUCLEAR REGULATORY COMMISSION STAFF OF THE JOINT UTILITY TEAM AUDIT AT TE CONNECTIVITY

On February 2-6, 2015, Jeffrey Jacobson and Stacy Smith of the Office of New Reactors (NRO) Division of Construction Inspection and Operational Programs (DCIP) observed the performance of a joint utility audit of TE Connectivity, in Fuquay-Varina, North Carolina. Southern Company led the audit, with participation from Duke Energy and Arizona Public Service Company, using the Nuclear Procurement Issues Committee (NUPIC) checklist. The purpose of the staff's observation was to assess the NUPIC quality assurance audit process used for suppliers of components to the nuclear industry. The trip report of the staff's observations, including a list of persons contacted, is enclosed.

Enclosure:
As stated

CONTACT: Jeffrey Jacobson, NRO/DCIP/EVIB
(301) 415-2977

MEMORANDUM TO: Richard Rasmussen, Chief
Electrical Vendor Inspection Branch
Division of Construction, Inspection & Operational Programs
Office of New Reactors

FROM: Jeffrey Jacobson, Senior Reactor Operations Engineer ***/RA/***
Electrical Vendor Inspection Branch
Division of Construction, Inspection & Operational Programs
Office of New Reactors

SUBJECT: TRIP REPORT BY THE NUCLEAR REGULATORY COMMISSION STAFF OF THE JOINT UTILITY TEAM AUDIT AT TE CONNECTIVITY

On February 2-6, 2015, Jeffrey Jacobson and Stacy Smith of the Office of New Reactors (NRO) Division of Construction Inspection and Operational Programs (DCIP) observed the performance of a joint utility audit of TE Connectivity, in Fuquay-Varina, North Carolina. Southern Company led the audit, with participation from Duke Energy and Arizona Public Service Company, using the Nuclear Procurement Issues Committee (NUPIC) checklist. The purpose of the staff's observation was to assess the NUPIC quality assurance audit process used for suppliers of components to the nuclear industry. The trip report of the staff's observations, including a list of persons contacted, is enclosed.

Enclosure:
As stated

CONTACT: Jeffrey Jacobson, NRO/DCIP/EVIB
(301) 415-2977

ADAMS ACCESSION NO.: ML15056A086 NRO-002

OFFICE	NRO/DCIP/EVIB	NRO/DCIP/EVIB	NRO/DCIP/EVIB
NAME	JJacobson	SSmith non-concur via NRC form 757	RRamussen (AValentin for)
DATE	04/01/15	04/03/15	04/06/15

OFFICIAL RECORD COPY

NUPIC AUDIT OBSERVATION TRIP REPORT

Vendor Audited:	TE Connectivity 800 Purfoy Road Fuquay-Varina, NC 27526	
Lead Licensee:	Southern Company	
Lead Contact:	Herbert Mayes	
Nuclear Industry Activity:	TE Connectivity provides electrical splice kits and related materials under its Raychem subsidiary.	
Observation Dates:	February 2-6, 2015	
Observers:	Jeffrey Jacobson Stacy Smith	NRO/DCIP/EVIB NRO/DCIP/EVIB
Approved by:	Richard Rasmussen, Chief Electrical Vendor Inspection Branch Division of Construction Inspection and Operational Programs Office of New Reactors	

Subject

This trip report documents observations made by members of the Nuclear Regulatory Commission (NRC) Office of New Reactors (NRO), Division of Construction Inspection and Operational Programs (DCIP) during a joint utility audit conducted on February 2-6, 2015, at TE Connectivity, located in Fuquay-Varina, NC.

Background/Purpose

NUPIC was formed in 1989, by a partnership involving all domestic and several international nuclear utilities. The NUPIC program evaluates suppliers furnishing safety-related components and services and commercial-grade items to nuclear utilities. The audit team followed the NUPIC audit process and plans to provide the results to NUPIC members that procure parts and services from TE Connectivity.

This was a limited scope audit which was performed using the Nuclear Procurement Issues Committee (NUPIC) checklist. The purpose of the audit was to assess the effectiveness of corrective actions that TE Connectivity had taken to previous NUPIC findings in selected areas. The four person audit team was led by Southern Company and included representatives from AMEREN and Arizona Power Company. The audit was limited to TE Connectivity's Raychem line of electrical splice materials being supplied to the U.S. nuclear industry from TE's

Fuquay-Varina, NC facility. Since this was a limited scope audit, a review was not done of TE's Menlo Park, California facility which produces many of the raw materials used to form the Raychem products. This facility maintains a nuclear Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50 Appendix B quality assurance program. The raw materials from Menlo Park are then sent to TE's facility in Juarez, Mexico where they are molded into Raychem parts. This facility does not maintain a nuclear Appendix B program, and as such, the molded products are "dedicated" for safety-related use once they come to Fuquay Varina. The dedication of these products at Fuquay Varina was part of the NUPIC audit scope.

Other TE Connectivity products supplied to the nuclear industry, including Agastat relays, were not the subject of this audit, as these components are supplied by other TE divisions that are audited separately by NUPIC, and are under different quality programs. The limited scope audit was performed in accordance with NUPIC Document No. 4, "NUPIC Joint Audit Procedure," Revision 37, dated 8/17/2012.

The purpose of the NRC staff's observation of this audit was to ensure the NUPIC audit process meets the requirements of Appendix B to 10 CFR 50 (Appendix B). The staff implemented Inspection Procedure (IP) 43005, "NRC Oversight of Third-Party Organizations Implementing Quality Assurance Requirements."

Discussion

The joint utility audit scope was to determine the acceptability and verify the effective implementation of TE's quality assurance (QA) program in accordance with the requirements of Appendix B to 10 CFR Part 50 and 10 CFR Part 21. The audit also assessed the ongoing status of TE's program to maintain environmental qualification of its components to IEEE 323, as well as other specifically imposed technical requirements and industry standards.

TE provided its QA manual and other implementing procedures to the NUPIC audit team. The audit team reviewed the implementation of the requirements of 10 CFR 50, Appendix B in the QA program and supporting implementing procedures, evaluated the documentation associated with the activities that had been performed, and discussed the activities with TE personnel. The audit team observed work practices to verify activities were in accordance with applicable procedures.

The quality areas reviewed during the audit included the following: commercial-grade dedication, procurement, organization/program, internal audit, corrective action, and records. In addition, a technical specialist was included on the NUPIC team to review the status of TE's ongoing efforts to maintain environmental qualification of the Raychem product line that has been supplied to the current U.S. nuclear fleet and to establish a new qualification basis for the more stringent environmental requirements of the Westinghouse AP1000 reactors which are currently under construction. The technical specialist reviewed the adequacy with which TE had evaluated product design changes with respect to maintaining the validity of the original qualification reports. The technical specialist also assessed the adequacy of supplemental testing programs completed as a result of product design changes.

The NUPIC audit team conducted daily team meetings to discuss observations and findings.

At the exit meeting, the audit team presented three potential findings to TE management in the areas of Internal Audits, External Audits, and Commercial Grade Dedication. The findings were relatively minor and did not call into question the adequacy of any previously supplied TE components. With the exception of the audit findings identified above, the NUPIC audit team determined that TE was effectively implementing its QA program for the program elements that were audited.

Conclusions

For the audit observation, the two NRC staff members each verified a sample of the audit checklist review areas. The NRC staff observed NUPIC's review and evaluation processes for the implementation of TE's QA program for ensuring design requirements, and for ensuring associated design specifications were adequately incorporated into the qualification, engineering, and dedication processes. The NRC staff observed all of the NUPIC audit team members perform in part, or in whole, their portion of the audit.

The NRC observers verified NUPIC's assessment of TE's commercial grade dedication process by performing an independent sample. This was considered to be an important attribute for audit as Raychem molded parts are manufactured at commercial Raychem facilities in Mexico and then dedicated for safety-related use in Fuquay Varina, NC; therefor the NRC observer engaged the vendor during the initial walk down of the facility to ask specific questions about how the critical characteristics of the molded parts were verified and accepted. In addition, the NRC observers engaged the vendor to independently asses the batching process of the raw material (as discussed in the background section) and controls of molded parts before they arrived at this TE facility.

The NUPIC technical specialist's review appeared thorough with respect to ensuring that TE's design control program was being sufficiently implemented to ensure the validity of the previous environmental qualification reports.

List of Participants

Name	Title	Affiliation	Entrance	Exit
Herbert Mayes	Lead Auditor	Southern Nuclear Company	X	X
Alan Giles	Team Member	Arizona Public Service	X	X
Earl Mayhorn	Team Member	Ameren	X	X
John Wheless	Technical Specialist	Southern Company	X	X