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Research and Test Reactors Licensing Branch
Division of Licensing Projects
Office of Nuclear Reactor Regulation
One White Flint North
11555 Rockville Pike
Rockville, MD 20852

March 2, 2018

SUBJECT: Purdue University – Augmented Request For Additional Information Response For Digital Control and Instrumentation Upgrade License Amendment Request

Dear Ms. Montgomery,

The Purdue University Reactor staff submits herein the remaining responses to the Request for Additional Information (RAI) which were sent regarding the Purdue University license amendment request dated February 27 and 28, and June 21, 2017 (Agencywide Documents Access and Management System Accession Package Nos. ML17061A257 and ML17220A077), which requests an upgrade of the PUR-1 Instrumentation and Controls (I&C). Unanswered questions concerned the Quality Assurance Plan, configuration management control and Test Exception Reports.

RAI #22: Provide an updated excerpt for Appendix II to the RCOM that describes how configuration management for the RCS software will be maintained and controlled in accordance with the PUR-1 SAR or explain why software configuration management is not needed.

Below is an excerpt to be at the top of Appendix II to the RCOM.

Properly documenting software changes to the PUR-1 Instrumentation and Control system is a central component to safe and responsible facility operations. Software changes should be monitored with the same level of control and authority as a core loading change and done with great care. This Reactor Characteristics and Operations Manual (RCOM) shall contain a reverse chronologically ordered list of changes to the software which have been made following final installation of the system. This list of software changes shall include an updated Reactor Control System release version identification number as well as an explanation of each set of changes made. Any calibration parameters should note their old and new values. Additionally, operators conducting each day's startup will verify the current software version listed on the RPS operator screen matches the version listed at the top of this section of the RCOM.

RAI#23: Describe the QA program used as part of this I&C modification or describe the Purdue administrative procedures and processes to be used as part of this modification to ensure

components and modules that impact safety-related items are designed, fabricated, installed, modified, and of sufficient quality to minimize the potential for challenges to safety systems.

The Quality Assurance Plan was developed directly following the guidance of ANS/ANSI 15.8-1995. It describes the Design, Construction, and Modifications to the PUR-1 I&C. Requirements for the documentation and proper structure of the design process are detailed as well as the control of documents and purchased items. Test control and management are also discussed.

RAI #25: Provide evidence that the TERs generated included a description of the changes made to the system, that the changes are permanent and that they were retested.

As noted in the response to RAI #24, some TERs generated in the testing phase were due to the inability to fully implement the system interface with the facility as the Factory Acceptance Testing was performed in Idaho Falls and Munich, Germany. Additionally, during the Site Acceptance Testing, some construction was ongoing within the facility preventing an integral test. All TERs generated as well as their resolution will be reperformed as part of the start-up plan and PUR-1 Quality Assurance plan.

RAI #26: Provide evidence that the TERs generated included a description of the changes made to the system, that the changes are permanent and that they were retested.

TER #8532 generated in resolution to control functionality enhancements discussed at the regulatory audit has not been retested at this time due to the inability to connect the upgraded control system to control rods. A completed TER and retesting will be performed in accordance with the PUR-1 and vendor Quality Assurance Plans.

PUR-1 staff hope these resolutions fully address the Request For Additional Information sent by the US NRC reviewing personnel. If there are any questions regarding this submission, please contact me at clive@purdue.edu or 765.494.5764.

I hereby certify under penalty of perjury with my signature below that the information contained in this submission is true and correct to the best of my knowledge.

Sincerely,



Clive Townsend
PUR-1, Reactor Supervisor
School of Nuclear Engineering
Docket No. 50-182
License No. R-87

Enclosure: PUR-1 Digital I&C Quality Assurance Plan

