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U.S. NRC
One White Flint North
11555 Rockville Pike
Rockville, MD 20852

June 21, 2017

SUBJECT: Supplemental Documentation - Submission of License Amendment Request (ML17061A262), PUR-1, Docket 50-182

Dear Ms. Montgomery,

This letter and attached documents are to support the License Amendment Request for the PUR-1 license, Docket 50-182. The documents enclosed are the Functional Requirements Specification, Cyber Security Plan, and Cyber Security Procedure. The Cyber Security Plan and Cyber Security Procedure primarily apply to the development, design, and testing stage of the PUR-1 I&C replacement project. Cyber needs following licensure are included in Section 7.9 of the initial amendment request submission. The team preparing the Safety Evaluation Report may find these documents useful in their review.

Three attachments to this letter are being withheld from public disclosure under 10 CFR 2.390 due to security related information being shared which may compromise the PUR-1 or the vendor who designed the system. Those documents protected under 10 CFR 2.390 have been duly redacted. The non-redacted versions are marked on all pages. This letter itself does not contain security related sensitive information. The following paragraphs justify the redactions with language taken from Regulatory Issue Summary 2005-31.

In the Functional Requirements Specification, Redactions 1-17 are withheld as they identify the exact locations of radioactive material, inventory of radionuclides, information on inventories of enriched uranium above 6% U-235, and the form of the U-235. Redactions 18 and 19 are withheld as they contain information on specific or predicted failures in the design of structures or equipment. Redactions 20-23 are withheld as they contain security information which could reasonably be expected to be useful to potential adversaries as vulnerability locations.

The Cyber Security Plan and Cyber Security Procedure are withheld as they contain information which could reasonably be expected to be useful means of determining the method by which information is moved to and from the new control console (non-secure to secure system). These movements and their procedures could be useful to potential adversaries as vulnerability locations.



Finally, the wiring diagrams, including PUR1-HDD-001-16 is withheld under 10 CFR 2.390 as it gives detailed design of safety significant wiring.

The PUR-1 Reactor Protection System is designed to initiate a scram on the indication of any value in excess of those prescribed in the Technical Specifications. The magnet power circuitry passes through relays in series which will remove a closed contact point thereby opening the circuit and causing the control rods to fall into the core under the force of gravity. Drawing PUR1-HDD-001-16 shows the magnet power circuitry. The current runs from the magnet power supply (an Acopian current supply) through the following units and returns to the current supply.

1. Magnet Power Supply
2. Pool top radiation area monitor
3. Reactor Operator Console Radiation Area Monitor
4. Water Make-up Radiation Area Monitor
5. Continuous Air Monitor
6. Console Key-switch
7. Reactor Control System PLC
8. Channel 1 (Start-up Channel) Change Rate Trip
9. Channel 2 (Log Power Channel) Power Level Trip
10. Channel 2 (Log Power Channel) Change Rate Trip
11. Channel 2 (Log Power Channel) Loss of Detector High Voltage Loss Trip
12. Channel 3 (Linear Power Channel) High Power Trip
13. Channel 4 (Safety Channel) High Power Trip
14. Manual Scram (Hallway)
15. Manual Scram (Operator Console)
16. Shim Safety #1 Magnet
17. Shim Safety #2 Magnet
18. Magnet Power Return

Any relay located in items 2-15 may interrupt the circuit and cause magnet power to be lost.

The Channel block diagrams are also included as supplement to this submission. For Channel 1, Drawing PJ0000396 P21 ed.2 shows the fission chamber's signal propagating through the DWK 250 and the final provided trip out of the NB28 module. Other binaries are provided (BO1.1-BO1.5) and are all monitored by the PLC. For Channel 2, Drawing PJ0000396 P22 ed.1 shows the compensated ionization chamber signal and the trips associated. These trips again come from a NB28 module. Similar block diagrams for Channel 3 (Drawing PJ0000396 P23 ed. 1) and Channel 4 (Drawing PJ0000396 P24 ed. 1)

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge. Executed on June 21, 2017.



Sincerely,



Clive Townsend
PUR-1, Reactor Supervisor
School of Nuclear Engineering

Enclosures:

PUR-1 Functional Requirements Specifications – Revision 4 (Nonpublic)
PUR-1 Functional Requirements Specifications – Revision 4 - Redacted (Public)
PUR-1 Cyber Security Plan (Nonpublic)
PUR-1 Cyber Security Procedure (Nonpublic)
Drawing PUR1-HDD-001-16 (Nonpublic)
Drawing PJ0000396 P21 Ed.2 (Public)
Drawing PJ0000396 P22 Ed.1 (Public)
Drawing PJ0000396 P23 Ed.1 (Public)
Drawing PJ0000396 P24 Ed.1 (Public)



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