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U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

A new pool water conductivity monitoring system at the Washington State University Nuclear Radiation Center was installed, and became operational in March, 2008. The new conductivity monitoring system has all of the capabilities of the previous system, and also includes some added functionality. The installation of the replacement system has been reviewed and approved by the Washington State University Reactor Safeguards Committee.

The replacement system monitors the pool water conductivity using the same locations for the sensors as the previous system. The replacement system provides an improved digital display and allows simultaneous indication of data from all of the conductivity sensors.

A review of the 10 CFR 50.59 criteria for the system change is included as an attachment. The enhanced functionality of the system will not reduce the safety or performance of the reactor and associated systems.

This letter is submitted in accordance with 10 CFR 50.54 and 10 CFR 50.59 (d)(2).

Please contact me at (509) 335-8641 if there are any comments or questions

Respectfully Submitted

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NRR*

PROPOSED CHANGE PER 10 CFR 50.59: DIRECT UPGRADE AND REPLACEMENT OF THE CONDUCTIVITY MONITORING SYSTEM

A. SHORT DESCRIPTION OF PROPOSED CHANGE

The proposed change to the facility involves removing the existing conductivity monitoring system and replacing it with a new Aquamatrix "Shark" conductivity monitoring system.

B. EVALUATION TO DETERMINE IF THE PROPOSED MODIFICATION INVOLVES A TECHNICAL SPECIFICATION CHANGE OR MEETS 10 CFR 50.59 CRITERIA.

1. THE PROPOSED CHANGE DOES NOT INVOLVE A CHANGE TO THE TECHNICAL SPECIFICATIONS

Section 3.13 of the WSUNRC Technical Specifications require that the conductivity of the pool water not exceed 5×10^{-6} mhos/cm. Modern units of conductivity are expressed in Siemens, with one siemen equal to one mho. The new equipment is a direct replacement for the failed conductivity system. The new Aquamatrix system is an upgrade in every way from the old equipment. This upgrade does not involve changing the Technical Specifications in any way.

2. THE PROPOSED CHANGE SHALL NOT RESULT IN MORE THAN A MINIMAL INCREASE IN THE FREQUENCY OR OCCURENCE OF AN ACCIDENT PREVIOUSLY EVALUATED IN THE FSAR (AS UPDATED).

There are four major accidents considered in the SAR. These are: the design base accident (fuel failure in air), a loss of coolant accident, an accidental fuel addition, and the accidental ejection of the pulse rod. Each is evaluated below.

a. The design base accident. (fuel failure in air.)

Maintaining the proper pool pH and conductivity are essential to minimize the rate of corrosion that occurs in the reactor pool and to ensure the longevity of the fuel cladding. The upgraded conductivity system will allow the facility to monitor the conductivity of the pool water with greater precision. This upgrade will not increase the frequency or occurrence of an accident previously evaluated in the FSAR.

b. The loss of coolant accident.

Coolant loss is not linked to the conductivity monitoring system. Cooling and pool level systems will remain unchanged.

c. Accidental fuel addition.

Fuel addition is not a function of console controls or the conductivity monitoring system.

d. Accidental Pulse rod ejection.

The upgrade of the conductivity monitoring system has no interconnections with the pulse rod control interlocks.

In addition to these postulated accidents, the SAR gives criteria for meter installation including: readability, ease of use, and connection to the SCRAM chain. The new system directly replaces the failed conductivity system and has no connection to the Reactor Protection Systems.

3. *THE PROPOSED CHANGE SHALL NOT RESULT IN MORE THAN A MINIMAL INCREASE IN THE LIKELIHOOD OCCURRENCE OF A MALFUNCTION OF A STRUCTURE, SYSTEM, OR COMPONENT (SSC) IMPORTANT TO SAFETY PREVIOUSLY EVALUATED IN THE FSAR (AS UPDATED).*

The installation of the new conductivity monitoring system will decrease the possibility of a malfunction of an SSC, resulting in the overall increase in safety and reliability.

4. *THE PROPOSED CHANGE SHALL NOT RESULT IN MORE THAN A MINIMAL INCREASE IN THE CONSEQUENCES OF AN ACCIDENT PREVIOUSLY EVALUATED IN THE FSAR (AS UPDATED).*

Instrumentation changes in the console will have no effect on the consequences of a postulated accident, as described in Appendix A of the WSUNRC SAR.

5. *THE PROPOSED CHANGE SHALL NOT RESULT IN MORE THAN A MINIMAL INCREASE IN THE CONSEQUENCES A MALFUNCTION OF A SSC IMPORTANT TO SAFETY PREVIOUSLY EVALUATED IN THE FSAR (AS UPDATED).*

The installation of the new conductivity monitoring system will decrease the possibility of a malfunction of an SSC, resulting in the overall increase in safety and reliability.

6. *THE PROPOSED CHANGE SHALL NOT CREATE A POSSIBILITY FOR AN ACCIDENT OF A DIFFERENT TYPE THAN ANY PREVIOUSLY EVALUATED IN THE FINAL SAFETY ANALYSIS REPORT (AS UPDATED).*

The replacement components have the same failure modes as the previous instrumentation. Therefore, no new accidents are postulated.

7. *THE PROPOSED CHANGE SHALL NOT CREATE A POSSIBILITY FOR A MALFUNCTION OF AN SSC IMPORTANT TO SAFETY WITH A DIFFERENT RESULT THAN ANY PREVIOUSLY EVALUATED IN THE FSAR (AS UPDATED).*

An instrument failure of this type would lead to the same scenario as a failure of the current instrumentation, namely incorrect pool water conductivity indication. Portable conductivity meters are on hand to measure pool conductivity should the installed equipment fail.

8. *THE PROPOSED CHANGE SHALL NOT RESULT IN A DESIGN BASIS LIMIT FOR A FISSION PRODUCT BARRIER AS DESCRIBED IN THE SAR BEING EXCEEDED OR ALTERED.*

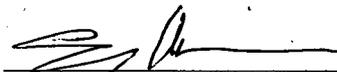
The design limits for this reactor, as listed in section 6.3 of the SAR are: shutdown margin limit, reactivity addition rate limit, fuel operating temperature limit, operating power limit, reactivity addition during pulsing, and the various fuel inspection limits. None of these limits will be exceeded by this upgrade during normal operation.

9. *THE PROPOSED CHANGE WILL NOT RESULT IN DEPARTURE FROM A METHOD OF EVALUATION DESCRIBED IN THE FSAR (AS UPDATED) USED IN ESTABLISHING THE DESIGN BASES OR IN THE SAFETY ANALYSIS.*

Upgrade of the conductivity indication system does not cause a departure from methods of evaluation described in the SAR.

C. RECOMMENDATION

This change meets the criteria for an acceptable change under 10 CFR 50.59 criteria. I hereby submit this proposal for review by the Facility Director and the RSC. Should there be any more question or comment, please feel free to contact the facility.



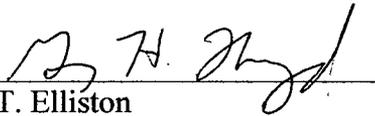
C. Corey Hines
Interim Reactor Supervisor, WSUNRC



Donald Wall, Ph.D.
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D. DETERMINATION OF RSC REVIEW NECESSITY

Under current procedures, changes to the facility, as described in the SAR, must be approved by the Reactor Safeguards Committee (RSC), and in this case can be done after the change is made. This proposal was reviewed and approved by the RSC on July 21, 2008


James T. Elliston
Chair of the Reactor Safeguards Committee

Signed by Gary Thorgaard on
behalf of the Reactor Safeguards
Committee.
Doubtless