

July 29, 2008
Docket Number 50-027

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

A new Area Radiation Monitoring (ARM) system at the Washington State University Nuclear Radiation Center was installed, and became operational in May, 2008. The new ARM 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 same areas as the previous system. The replacement system provides improved display, data logging capability and local displays at the location of each detector.

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

Donald Wall

Donald Wall, Ph.D.
Director

Nuclear Radiation Center
Washington State University

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

A. SHORT DESCRIPTION OF PROPOSED CHANGE

The proposed change to the facility involves removing the existing area radiation monitoring system and replacing it with a new Ludlum Measurements Model 375 digital area radiation monitoring system equipped with Model 272 remote (console) readouts.

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 3.7 of the WSUNRC Technical Specifications requires that the reactor shall not be operated unless at least the bridge and one beam room area radiation monitor are operable. Each channel shall have a readout in the control room and be capable of sounding an audible alarm that can be heard in the Reactor Control Room. The new Ludlum Model 375 system is an upgrade in every way from the old equipment, and has local and remote (console) readouts with alarm functionality. 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 OCCURRENCE 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)

Proper monitoring of radiation throughout the facility is an imperative toward the safe operation of the reactor. This ensures that radiation levels do not exceed local, state, and federal levels. The upgraded system will allow monitoring and recording of radiation levels, with real time feedback for post processing and analysis with more robust performance and 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 area radiation 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 area radiation monitoring system. The addition of a new radiation monitoring system will not result in a higher risk of accidental fuel addition.

d. Accidental Pulse rod ejection.

The upgrade of the area radiation monitoring system has no interconnections with the pulse rod control interlocks, and will not result in the higher risk of an accidental pulse rod ejection.

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 previous area radiation monitoring system and has been verified to act in an identical manner to the replaced system.

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 area radiation monitoring system will decrease the possibility of a malfunction of an SSC, resulting in the overall increase in safety and reliability provided by the digital instrumentation as a replacement for analog circuitry.

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 area radiation monitoring system will decrease the possibility of a malfunction of an SSC, resulting in the overall increase in safety and reliability provided by the digital instrumentation as a replacement for analog circuitry.

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 the loss of signal to the detectors or their readouts (local and console). These devices have been installed in a failsafe mode and thus cause building evacuation upon loss of signal, and perform in an identical manner to the old system.

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. In normal operation, none of these limits will be exceeded by this upgrade.

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 area radiation monitoring 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.



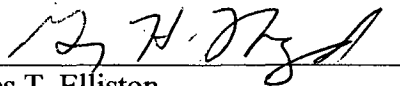
C. Corey Hines
Interim Reactor Supervisor, WSUNRC



Donald Wall, Ph.D.
Director, WSUNRC

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 can in this case 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 Reactor Safeguards
Committee member Gary
Thorgaard on behalf of the
RSC.

Donald Wall