

KSU Mechanical & Nuclear Engineering  
**Nuclear Research & Education Reactor**

20 March 2003

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555

Gentlemen:

Pursuant to 10CFR50.59(b) the following items are submitted for the Kansas State University TRIGA Mark II Nuclear Reactor Facility for the period 1 Oct 2001 through 30 Sep 2002.

**A. Changes to the Facility**

*Systems and Equipment Modifications In Progress*

**HVAC system modifications**

**Background**

The original reactor bay heating, ventilation and air conditioning system used distributed heating/cooling units (4 with fresh air intakes) in the walls of the reactor bay. Piping was configured in two circuits completely around the periphery of the reactor bay to ensure flow was capable of meeting design requirements. A University wide modification to improve efficiency of central hot- and chilled-water systems prevented the original units from operating as intended.

Research in air stratification used a fan coil unit installed in the reactor bay. The unit was placed on a pallet on the floor, and not permanently mounted. Two branches of ducts were installed using C-clamps to fasten the ducts to the reactor bay girders. Louvers were installed in the ducts at about the 12 foot and 22 foot levels.

The fan coil unit was converted for continuous use as the bay HVAC unit. The unit was modified with a temperature control system. One louver at each elevation was blanked off to configure the system for bay ventilation. The old HVAC units were abandoned in place, and service piping that previously supported 5 units was dedicated to the HVAC single unit. Two of the old fresh air intakes leak. The piping had become heavily corroded in spots, and insulation (some asbestos) had become wet and degraded.

In 2002, the abandoned-in-place units were removed, the interior side of the fresh air intakes was blocked, and the exterior was partially filled with concrete to reduce the water in-leakage. It is planned to finish the exterior of the building to match the natural limestone wall and complete the seal when weather permits.

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Replacement of the piping before failure was made a priority item in 2002. Since the piping no longer services multiple units, a supply and return line along one wall (rather than completely circuiting the reactor bay) was planned. The unit had a relatively large footprint; it was decided to minimize piping and recover floor space by relocating the HVAC unit on an elevated platform.

#### Status

The HVAC unit has been installed on a commercially supplied mezzanine. Ductwork previously supporting experiment operations has been removed, and a comprehensive evaluation of reactor bay ventilation systems is in progress as an educational project. The evaluation will recommend new duct configuration as well as make recommendations for unit size and reactor bay exhaust fan capacity.

This change is consistent with safe operating practice and no negative impact on safety

#### **22-Foot Level Alarm System and Pool Surface Monitor Modifications**

This modification, discussed in the previous 10CFR50.59 report, has been completed. As previously noted, this change is consistent with safe operating practice and no negative impact on safety

#### *Personnel*

Tracy Pinsent, Clay Bolinger, Sam Bays, and Evan Cullens completed licensing and joined staff as reactor operators. Katy Bors completed upgrade to Senior Reactor Operator.

Mike Anness and Ryan Hagler have left for employment with Westinghouse, Nuclear Fuels division. Sam Bays left for graduate work at the University of Florida.

#### **B. Changes in procedures**

##### **RADIATION PROTECTION PROGRAM (RPP) CHANGES**

(Revised RPP attached)

The Radiation Protection Program previously approved by the Reactor Safety Review Committee was issued with a minor change at the request of the Radiation Safety Officer related to changes in shielding form normal configuration,

- 4.4.C.(4) During operations following shielding changes, the operator at the controls should be aware of and attentive to area radiation monitor indications as potential indicators of unanticipated anomalies in shielding effectiveness.

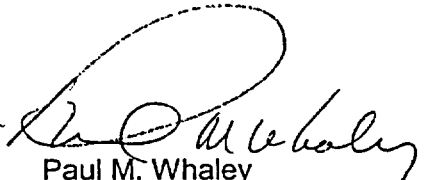
This change is minor in nature, and does not reduce the effectiveness of the Radiation Protection Program as approved

EXPERIMENT AND OPERATING PROCEDURE CHANGES

None.

**C. Changes in Test and Experiments**

None



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