UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 13 TO

FACILITY LICENSE NO. R-88

KANSAS STATE UNIVERSITY

DOCKET NO. 50-188

1.0 INTRODUCTION

By letter dated January 15, 1999, as supplemented on February 19, 1999, Kansas State University (the licensee) requested an amendment to their Technical Specifications (TSs) for the Kansas State TRIGA Research Reactor. The amendment would change the TSs to require the use of an exhaust fan to be operating when the reactor is in any condition, except secured. The reason the licensee wants to change its TSs is to ensure a negative pressure differential between the reactor bay and the rest of the building under normal operating conditions. The change was necessitated because of a change in the facility ventilation system.

2.0 EVALUATION

The licensee, in the letter dated January 15, 1999, has provided a discussion of the factors that have resulted in the need for a TS change. This relates to a modification to the reactor building Heating Ventilation and Air Conditioning (HVAC) system, which services the reactor bay and the rest of the building. The previous system used 100 percent outside air for recirculation flow through the building. The logic of the previous system was that if radioactive gases entered the building from the reactor bay, they would be quickly dispersed. Unlike many other facilities, the facility did not maintain a negative pressure inside the reactor bay. Instead, the building was held under high positive pressure by the 100 percent outside air system. Additionally, the licensee notes that under the old system the reactor bay was also held at a positive pressure with respect to atmospheric, but at a pressure less than the remainder of the building.

Good radiation protection methodology requires that air flow be from the lowest potentially radioactive area to the potentially higher area, and monitored prior to release to the atmosphere. In order to ensure that the air flow (with the reactor not secured) is always in the proper direction, the licensee has reactivated an existing exhaust fan in the top of the reactor bay which, when in operation, provides a negative pressure differential between the reactor bay and the adjoining building. The fan is at the highest point in the facility and exhausts well above the remainder of the building. The fan has been coupled to a new air monitor system (Eberline AMS-4 particulate/iodine/noble gas monitor). When the reactor is not secured the fan will be operating to create a negative pressure in the reactor bay, thus preventing radioactive effluents from going into the remainder of the building under normal operating conditions. The new monitor will shut the fan off in the event that a high level of airborne activity is detected or the monitor fails one of

its self-diagnostic routines. A manual shutoff switch is also present in the control room. The licensee confirmed that a negative pressure differential was created by the exhaust fan, and by the present configuration of the reactor bay, by opening the doors to the reactor bay.

The TSs have been revised to require that "The reactor bay exhaust fan shall be operating whenever the reactor is not secured." Reactor secured is defined in the TSs in Section A.1.

The staff finds that the new ventilation arrangement in the reactor bay and the revision to the TSs acceptable.

3.0 ENVIRONMENTAL CONSIDERATION

This amendment involves a change in a requirement with respect to the installation or use of facility components located within the restricted areas defined in 10 CFR Part 20. The staff has determined that this amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and there is no significant increase in individual or cumulative occupational radiation exposure. Accordingly, this amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.

4.0 CONCLUSION

The staff has concluded, based on the considerations discussed above, that (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously evaluated, or create the possibility of a new or different kind of accident from any accident previously evaluated, or involve a reduction in the margin of safety and does not involve a significant hazards consideration (2) there is a reasonable assurance that the health and safety of the public will not be endangered by the proposed changes, and (3) such activities will be conducted in compliance with the Commission's regulations, and the issuance of this amendment will not be inimical to the common defense and security or the health and safety of the public.

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Date November 16, 1999