



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

SAFETY EVALUATION BY THE  
OFFICE OF NUCLEAR REACTOR REGULATION  
SUPPORTING AMENDMENT NO. 9 TO  
FACILITY OPERATING LICENSE NO. R-94  
MANHATTAN COLLEGE  
DOCKET NO. 50-199

1.0 INTRODUCTION

By letter dated January 29, 1991, Manhattan College (licensee) requested that their possession limits for low-enriched uranium fuel be increased from 3.8 to 3.9 kilograms. The basis for this request is that the total quantity of U-235 in the one partial fuel element was not considered in their original request to convert from high to low-enriched uranium (HEU) (LEU).

2.0 EVALUATION

In the order to convert from high to low-enriched uranium issued to the licensee on March 12, 1990, license condition 2.B.(2) was revised to allow possession of 3.8 kilograms of contained uranium 235 at enrichments equal to or less than 20 percent. This quantity was based on the assumption that the core would consist of 15 full fuel elements containing 235 grams each of U-235, one spare fuel element containing 235 grams of U-235 and one partial fuel element containing 27.4 grams of U-235.

Each full fuel element is composed of six concentric cylinders which contain fuel. A partial fuel element is also composed of six concentric cylinders but some cylinders are not fueled and contain secured aluminum dummy plates in the cylinders. A partial fuel element is used to provide flexibility for fine adjustment of the actual excess reactivity when the LEU core is started up. In the old HEU core only one cylinder was used in the partial fuel element to provide this fine adjustment but in the LEU core, three cylinders are used to provide this adjustment. The staff reviewed the acceptability of the three fueled cylinders in the partial element in the Safety Evaluation Report for the HEU to LEU conversion order and found it acceptable in Section 2.2, paragraph 3.

The total inventory of fuel that was put into license condition 2.B.(2) for the conversion order was 3.8 kilograms and was inadvertently based on only one fueled cylinder in the partial fuel element, as was the case in the HEU core. Since there are three fueled cylinders in the partial fuel element the amount of fuel that the licensee should possess needs to be increased to 3.9 kilograms. The staff finds this request acceptable.

As a separate matter, the staff is also modifying license condition 2.B.(3) to add that the licensee can possess but not separate material classified as special nuclear material (SNM) produced in the reactor. This condition presently exists implicitly since SNM is developed in the reactor in the normal course of operating the reactor. However, the licensee does not explicitly have the authority to possess this material. The present license condition, 2.B.(3), provides the authority to possess but not separate byproduct material but not SNM. This revision will allow possession but not separation of both byproduct and SNM.

### 3.0 ENVIRONMENTAL CONSIDERATION

This amendment involves changes in the installation or use of facility components located within the restricted area as defined in 10 CFR Part 20. The staff has determined that the 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, and does not involve a significant reduction in a margin of safety, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by the proposed activities, 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 to the health and safety of the public.

Principal Contributor: Theodore S. Michaels

Dated: March 5, 1991