



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
SUPPORTING AMENDMENT NO. 9 TO FACILITY LICENSE NO. R-76

WASHINGTON STATE UNIVERSITY

DOCKET NO. 50-27

Introduction

By letter dated August 15, 1978, supplemented by letter dated February 13, 1979, Washington State University (the licensee) requested License No. R-76 be amended to allow possession and use of 25 kilograms (kg) of contained Uranium-235 (U-235). Currently, this license allows the possession of 13 kg of U-235.

The request defines the proposed maximum total authorized special nuclear material (SNM) exempt and non exempt categorized according to the type of fuel and percent enrichment.

The request also would change the Technical Specification (TS) in the area of reactivity limitations.

Discussion

The current TS authorizes the operation of the reactor with a core configuration composed of standard TRIGA fuel, FLIP TRIGA fuel or combination thereof (mixed core). The present configuration is with a mixed core. The licensee has proposed to add in the near future 5.6 kg of U-235 FLIP fuel (enriched at 70%), 5.5 kg of U-235 enriched below 20% at a later date, and 5 kg of U-235 enriched to 20% or greater at a later date. The present possession limits are inadequate to permit receipt of the proposed additional fuel and to retain the fuel to be replaced until it can be disposed of.

The licensee's proposed change to the TS in the area of reactivity limitations would specify the shutdown margin be 0.50 dollars or greater with the highest worth control element and the regulatory element (if not scrammable) fully withdrawn. The current TS specify the shutdown margin be 0.50 dollars or greater with the transient control element and the regulating element (if not scrammable) fully withdrawn.

Evaluation

The reactor pool at Washington State University is 31 feet long by 15 feet wide and 25 feet deep. The pool is divided into two sections by a concrete dam with an integral aluminum gate. The rear section of the pool is used for fuel element storage. The storage racks are designed with sufficient space available

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in the pool to accommodate both the proposed FLIP fuel and any irradiated fuel removed from the core. Storage space is provided in racks constructed in such a way as to assure the stored array will not exceed a k effective value of .8 and in the case of irradiated fuel to assure that the required convective cooling is also available. Requirements to assure that these conditions are met are contained in the TS.

The proposed increase in total amount of U-235 at this facility would not involve any change in core reactivity since excess core reactivity is limited by the TS.

The receipt, storage and use of the proposed additional U-235 would not involve a safety consideration not previously addressed and does not reduce the margin of safety previously established in the TS for the use of this fuel and for the k effective of 0.8.

After reviewing the factors involved in this request we conclude that the proposed additional SNM would not increase the safeguard risk associated with the facility and therefore, is acceptable. We conclude that the proposed authorized SNM is within the level of protection afforded by the licensee's approved security plan.

We conclude that the proposed change, modified by discussions with the licensee, relating to the specificity of the authorized SNM appropriately defines the maximum total authorized SNM, the maximum SNM exempt and the maximum SNM non exempt. We conclude that this is acceptable to accommodate the proposed regulation 10 CFR Part 73.47 and the objectives of the Nonproliferation Act of March 10, 1978.

The proposed change to the TS in the area of reactivity limitations is more conservative and changes the wording to be consistent with actual practice. We conclude this would not reduce the margin of safety and therefore is acceptable.

In summary, the proposed amendment (1) does not involve any reduction in the level of safety of the facility, (2) does not increase the safeguard risks associated with the facility, and (3) provides the specificity on maximum SNM authorized to accommodate the proposed regulation 10 CFR Part 73.47 and the Nonproliferation Act of March 10, 1978, and, therefore, is acceptable.

Environmental Consideration

We have determined that this amendment will not result in any significant environmental impact and that it does not constitute a major Commission action significantly affecting the quality of the human environment. We have also determined that this action is not one of those covered by 10 CFR §51.5(a) or (b). Having made these determinations, we have further concluded that, pursuant to 10 CFR §51.5(d)(4), an environmental impact statement or environmental impact appraisal and negative declaration need not be prepared in connection with issuance of this amendment.

Conclusion

We have 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 considered and does not involve a significant decrease in a safety margin, 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 operation in the proposed manner, 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.

Dated: July 2, 1979

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