



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 3 TO LICENSE NUMBER R-87

PURDUE UNIVERSITY

DOCKET NO. 50-182

Introduction

The operating license for the Purdue University Reactor was originally issued in 1962. As required by 10 CFR Part 50, Section 50.36(d)(1), in the absence of a specific document designating Technical Specifications, the entire Safety Analysis Report, including all amendments, shall constitute the Technical Specifications. In the case of the Purdue University Reactor, the Hazards Analysis Report serves as the Safety Analysis Report, and therefore, the Technical Specifications. Since the Hazards Analysis Report represents a large volume of extraneous material, review of this material in Technical Specification change submittals complicates the licensing process. As a result, the NRC Staff requested Purdue University, by letter dated August 16, 1971, to propose Technical Specifications for the Purdue Reactor in the format described in Section 50.36(c) of 10 CFR Part 50.

On May 30, 1975, the licensee submitted proposed Technical Specifications. Based upon our review and discussions with the licensee, a revised set of proposed Technical Specifications was submitted by letter dated March 15, 1977.

By letter dated September 16, 1974, we approved the Purdue Reactor Security Plan. In keeping with current Commission practice, this amendment incorporates the Security Plan as a license condition.

Evaluation

A. Technical Specifications

The revised Technical Specifications set forth the requirements for safe reactor operation in the current format for research reactors and in conformance with Section 50.36(c) of 10 CFR Part 50. This format includes:

1. definitions of key terms used in the specifications,

2. delineation of safety limits and limiting safety system settings for those process variables important to reactor safety,
3. delineation of the limiting conditions for operation which define the lowest acceptable performance level for equipment, and the technical conditions necessary for continued operation,
4. requirements for surveillance of equipment which is essential to reactor safety,
5. description of those facility features which are important to reactor safety, and
6. administrative controls required for safe facility operation.

Presentation of the Purdue Reactor Technical Specifications in the above format provides a more concise and definitive statement of the limits on reactor operational parameters. In addition, these specifications establish surveillance requirements which ensure that the operability and accuracy of required safety related instrumentation and equipment is determined at intervals acceptable to the NRC Staff.

The new Technical Specifications generally include the design features, characteristics, and operating conditions described in the original Operating License and in the Hazards Summary Report. Nonconservative deviations from the Operating License and the Hazards Summary Report are discussed below. The Technical Specifications also incorporate additional surveillance requirements and administrative controls which will enhance the performance of safety related equipment and the review and reporting of operations. Consolidation of all information in the revised, more standardized format will provide an increased level of assurance that the health and safety of the public will not be endangered. The revised format of the Technical Specifications reflects current Commission guidance for research reactor Technical Specifications and will facilitate future licensing reviews of the Purdue Reactor Operating License.

The original Operating License required that the shim-safety rod drop times be measured at least once every three months. The revised Technical Specifications require that the drop times be measured annually, but at intervals not to exceed 14 months. The

revised testing interval reflects Section 4.3.1.1 of ANSI N378-1974, "Standard for the Development of Technical Specifications for Research Reactors". This standard is presently under review by the Commission and Section 4.3.1.1 of ANSI N378 has been tentatively ruled acceptable. The measured drop times of the shim safety rods for the Purdue Research Reactor have been consistent for 14 years indicating that the drop mechanisms incorporated in the scram systems are reliable and perform within their design conditions. Based on our review and the above considerations, we have concluded that there is reasonable assurance that measuring of rod drop times as set forth in the new Technical Specifications will not endanger the health and safety of the public and is therefore acceptable.

#### B. Security Plan

By letters dated January 2, 1974 and August 22, 1974, Purdue University submitted the Security Plan for the Purdue Reactor. The Commission reviewed the plan against the requirements of 10 CFR Part 50, Section 50.34(c) and 10 CFR Part 73, Section 73.40, and by letter dated September 16, 1974, approved the Security Plan. This amendment, in keeping with the current Commission practice, adds a paragraph to the license which identifies the Security Plan and incorporates the plan as a condition of the license.

#### 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 negative declaration and environmental impact appraisal need not be prepared in connection with the 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.

ated: November 28, 1978