

INTRODUCTION

The *Standard Review Plan for the Review of an Application for a Mixed Oxide (MOX) Fuel Fabrication Facility* provides the U.S. Nuclear Regulatory Commission (NRC) facility specific guidance for the review and evaluation of health, safety, and environmental protection for applications to construct and operate a facility to fabricate MOX fuel. The MOX fuel fabrication facility is considered a plutonium processing and fuel fabrication plant as defined in 10 CFR 70.4. Since 10 CFR Part 70 requires construction approval for plutonium processing facilities, this SRP provides guidance to reviewers on construction approval in addition to the approval for a license to possess and use special nuclear material (SNM). This SRP is further applicable to the review and evaluation of proposed amendments and license renewal applications. Specific filing requirements for construction approval, the possession license, and for issuance of such approvals, are in 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material." This SRP is guidance and, as such, is not binding on applicants for NRC licenses.

Purpose

The principal purpose of the Standard Review Plan (SRP) is to ensure the quality and uniformity of staff reviews and to present a well-defined base from which to evaluate proposed changes in the scope, level of detail, and acceptance criteria of reviews. The SRP should be used as the basis for the review for the application for construction approval and the license application. Moreover, although the SRP uses the term "applicant," this SRP is also intended to apply to license renewals and amendments.

Another important purpose of the SRP is to make information about regulatory reviews related to the MOX fuel fabrication facility widely available to improve communication and understanding of the staff review process. Because the SRP describes the scope, level of detail, and acceptance criteria for reviewers, it can serve as regulatory guidance for applicants who need to determine what information should be presented in an application for construction approval or a license application for a MOX fuel fabrication facility.

The responsibility of the staff in the review of an application for construction approval, new or renewal license application, or license amendment for a MOX fuel fabrication facility is to determine that there is reasonable assurance that the facility can and will be constructed to operate in a manner that will not be inimical to the common defense and security and will provide reasonable protection of the health and safety of workers and the public and the environment. To carry out this responsibility, the staff evaluates information provided by an applicant and through independent assessments determines that the applicant has demonstrated a reasonable design basis (for construction approval) and a reasonable safety program (for license approval) that is in accordance with regulatory requirements. To facilitate carrying out this responsibility, the SRP clearly states and identifies those standards, criteria, and bases that the staff should use in reaching regulatory decisions.

This SRP provides information to assist the staff (and applicant) in understanding the underlying objective of the regulatory requirements, the relationships among NRC requirements, the licensing process, the major guidance documents NRC staff has prepared for licensing facilities under 10 CFR Part 70, and the details of the staff review process set out in

individual SRP sections. Analyses by the staff are intended to provide regulatory confirmation of reasonable assurance of safe design and operation. A staff determination of reasonable assurance leads to a decision to provide construction approval, issue or renew a license, or approve an amendment. In the case of a staff determination of inadequate description or commitments, the staff should inform the applicant of what is needed and the basis upon which the determination was made.

Application for Construction Approval

To possess and use SNM in a plutonium processing and fuel fabrication facility, applicants must submit a description of the facility site; a description and safety assessment of the design bases of the principal structure, systems, and components of the facility, including provisions for protection against natural phenomena; and a description of the quality assurance program to be applied to the design, fabrication, construction, testing and operation of the structures, systems, and components of the facility. For the purposes of this guidance, the NRC is defining the design basis as the information which identifies the specific functions to be performed by a structure, system, or component of a facility, and the specific values or ranges of values chosen for controlling parameters as reference bounds for design. These values may be (1) restraints derived from generally accepted "state of the art" practices for achieving functional goals or (2) requirements derived from analysis (based on calculation and/or experiments) of the effects of a postulated accident for which a structure, system, or component must meet its functional goals.

The safety assessment of the design basis should explain why the applicant selected particular functions or values and demonstrate how the applicant determined that the design basis will provide reasonable assurance of protection against natural phenomena and the consequences of potential accidents. Accident consequences are defined in the performance requirements of Subpart H to the proposed 10 CFR Part 70. In addition, the safety assessment should demonstrate how the requirements for new facilities identified in the proposed 10 CFR 70.64 are satisfied by the design basis. In effect, the safety assessment of the design basis should show that the design basis bounds, or at least meets, the acceptance criteria outlined in this SRP.

Prior to applying for a construction approval, the applicant should have designed and analyzed the facility in sufficient detail to allow the NRC to make a determination in accordance with 10 CFR 70.23(b). To allow this determination, the material submitted in the application for construction approval should contain the information described in § 70.22(f) in sufficient detail for the staff to review the safety assessment of the design bases.

Approval for a license to possess and use SNM

Part 70.65 requires that an applicant submit a Safety Program Description with the license application to possess and use SNM. The Safety Program Description must be sufficiently detailed to permit the staff to conclude that the design was completed in accordance with the approved design basis and to obtain reasonable assurance that the facility will be operated without undue risk to the health and safety of workers or the public, e.g., meet the performance requirements of 10 CFR 70.61. To be acceptable, the license application, and therefore Safety Program Description, should meet the acceptance criteria of this SRP.

The Safety Program Description is the principal document with which the applicant provides the information needed by staff to make a determination on the license application. When reviewed and approved by the staff, and incorporated in the NRC license by reference, the Safety Program Description, in its entirety and in its parts, is considered a binding commitment of the applicant regarding the design and operation of the licensed facility. The Safety Program Description is the safety basis on which the license is issued and may not be changed except under circumstances defined in 10 CFR Part 70.72.

Using the SRP

The requirements in 10 CFR Part 70 specify, in general terms, the information to be supplied in either the application for construction approval or the license application. The specific information that should be submitted by an applicant and evaluated by staff is identified in this SRP. Prospective applicants should study the topic areas treated in this document (generally, chapter headings) and the subsections within each topic area, specifically the subsections headed "Areas of Review," "Acceptance Criteria," and "Review Procedures." The license application should contain a Safety Program Description that addresses all topics in the Table of Contents in the SRP. Staff should refer to each SRP chapter for specific guidance on how that topic should be addressed in the application for construction approval. In each case, the material should be structured in the same order as presented in this document.

The major topics addressed within the design basis in the application for construction approval or the Safety Program Description of a facility license application are addressed in separate SRP sections; each of those sections, or chapters, includes subsections described below.

Section 1. PURPOSE OF REVIEW

This section is a brief statement of the purpose for and objectives of reviewing the subject areas. It emphasizes the staff's evaluation of the ways the applicant can achieve identified performance objectives and ensures through the review that the applicant has used a multi-disciplinary, risk-informed, systems-oriented approach to establishing designs, controls, and procedures within individual technical areas.

Section 2. RESPONSIBILITY FOR REVIEW

This section identifies the organization and individuals by function, within NRC, responsible for evaluating the subject or functional area covered by the SRP. If reviewers with expertise in other areas are to participate in the evaluation, they are identified by function. In general, the Project Manager has responsibility for the total review product, a safety evaluation report including safeguards and supporting environmental evaluations for an application. However, an identified technical specialist should have primary responsibility for a particular review topic, usually an SRP chapter. One or more specialists may have supporting responsibility. In some areas, the review is performed by a team of specialist reviewers including the lead reviewer for the ISA and the project manager. Although they individually perform their review tasks, the reviews are coordinated and integrated to ensure consistency in approach and risk-informed reviews. The project manager oversees and directs the coordination of the reviewers. The reviewers' immediate line management has the responsibility to ensure that an adequate review is performed by qualified reviewers.

Section 3. AREAS OF REVIEW

This section describes the topics, functions, systems, structures, equipment, and components, analyses, data, or other information that should be reviewed as part of that particular subject area of the application for construction approval or license application. Because the section identifies information to be reviewed in evaluating the adequacy of the application for construction approval or the license application, it identifies the acceptable content of the respective applications in the areas discussed. If there is a distinction between the areas of review for the application for construction approval or the license application, it is explicitly noted in each subject area. The areas of review identified in this section obviate the need for a separate Standard Format and Content Guide.

The topics identified in this section also set the content of the next two sections of the SRP. Both Section 4, "Acceptance Criteria," and Section 5, "Review Procedures," should address, in the same order, the topics set forth in Section 3 as areas to be reviewed. Section 3 also identifies the information needed or the review expected from other NRC individuals to permit the individual charged with primary review responsibility to complete the review.

Section 4. ACCEPTANCE CRITERIA

This section contains a statement of the applicable NRC criteria based on regulatory requirements, and the bases for determining the acceptability of the applicant's commitments relative to the design, programs, or functions within the scope of the particular SRP section. Technical bases consist of specific criteria such as NRC regulations, regulatory guides, NUREG reports, industry codes and standards, and branch technical positions. To the extent practicable, the acceptance criteria identify, as objectively or quantitatively as is feasible, specific criteria, and other technical bases must be bounded by the design basis or met by the Safety Program Description. The acceptance criteria (including branch technical positions or other information) present positions and approaches that are acceptable to the staff.

It is NRC's intent that the SRP present acceptance criteria for each technical function area (e.g., nuclear criticality safety, fire safety, radiation safety), and for the management measures (e.g., quality assurance, maintenance, audits and assessments), that allow an applicant to provide a level of protection commensurate with the accident risk inherent in the process activities proposed. For example, at process stations (or for an entire process or sub-process) for which the inherent risk to workers, the public, or the environment is demonstrably small, the applicant needs to provide only those design and operating controls which assure that small risk. The key element in the regulatory transaction involving presentation by an applicant, and review and approval by the NRC, is an adequate demonstration of acceptable control of risk by the applicant, which then supports a competent and informed review by NRC staff. The starting point for the applicant's demonstration of acceptable control of risk is the integrated safety analysis (ISA) for the license application and the safety assessment of the design basis for the application for construction approval.

The applicant's ISA Summary (described in and reviewed under Chapter 5 of this SRP) is the primary supporting rationale for the safety level of design and operational features. There are, however, design and operational features and management measures that may be required independent of the ISA results presented by an applicant. This is to meet the requirements of 10 CFR 70.64, for new facilities or new processes at existing facilities, or, for all facilities, other

NRC requirements such as 10 CFR Parts 20 and 51. The level of detail presented in the ISA Summary and in other parts of the application represents the safety basis committed to by the applicant, and it is that basis which is subject to the provisions of 10 CFR Part 70, as revised, regarding changes that a licensee may make to the facility without prior NRC approval.

An applicant for license renewal or an amendment for an existing facility responding to the requirements of 10 CFR Part 70 may propose items relied on for safety or supporting management measures that meet less stringent acceptance criteria than described in the SRP based on supporting analyses from the applicant's ISA. The ISA may be used to justify a reduced level of assurance for particular items relied on for safety, that are associated with lesser risk accident sequences, as defined by the applicant's analysis of likelihood and consequences pursuant to 10 CFR Part 70, as revised. The SRP criteria shown in this SRP apply to those items relied on for safety and associated management measures that are involved in the higher risk accident sequences as defined in 10 CFR 70.61.

For construction approval of the MOX fuel fabrication facility, the acceptance criteria described in the SRP should be bounded by the applicant's safety assessment design basis. There is an additional requirement to comply with the baseline design criteria (BDC) of 10 CFR 70.64. The BDC are consistent with risk-informed regulation, in that, for new processes or new facilities, NRC recognizes that good engineering practice dictates certain minimum requirements be applied as design and safety considerations, generally independent of the risk-based information ultimately obtained through the ISA. However, the applicant may later use the license application to justify reduced criteria for some items relied on for safety consistent with the ISA summary for the final facility design. Proposed reductions in the level of assurance should be considered by the NRC staff and, if accepted, should also constitute compliance with the BDC.

The "Acceptance Criteria" are intended to communicate the underlying objectives but not to represent the only means of satisfying that objective. An applicant should tailor its safety program to the features of its particular facility. If approaches different from the SRP are chosen, the applicant should identify the portions of its application that differ from the design approaches and acceptance criteria of the SRP and evaluate how the proposed alternatives provide an acceptable method of complying with the Commission's regulations. The staff retains the responsibility to make an independent determination of the adequacy of what is proposed.

Applicants should recognize that substantial time and effort on the part of the staff have gone into the development of the acceptance criteria and that a significant amount of time and effort may be required to review and accept proposals that depart from the standard applications described in the SRP. Thus, applicants resolving safety issues or safety-related design areas in ways other than those described in the SRP should plan for longer review times and more extensive questioning in these areas.

Section 5. REVIEW PROCEDURES

This section describes how the review should be performed and delineates differences between the review of the application for construction approval and the license application. It describes procedures that the reviewer should follow to achieve an acceptable scope and depth of review and to obtain reasonable assurance that the applicant has provided appropriate commitments

to ensure that it will construct or operate the facility safely and securely. This includes identifying commitments the reviewer should verify and could include directing the reviewer to coordinate with others having review responsibilities for other portions of the application than that assigned to the reviewer. This section should provide whatever procedural guidance is necessary to evaluate the applicant's level of achievement of the acceptance criteria for the construction approval, the license, and license amendments.

Section 6. EVALUATION FINDINGS

This section presents the type of positive conclusion that is sought for the particular review area to support a decision to grant the construction approval or license. The review must be adequate to permit the reviewer to support this conclusion. For each section, a conclusion of this type should be included in the staff's Safety Evaluation Report (SER) in which the staff publishes the results of its review. The SER should also contain a description of the review, including aspects of the review that received special emphasis; matters that were modified by the applicant during the review; matters that require additional information or will be resolved in the future; aspects where the facility's design or the applicant's proposals deviate from the criteria in the SRP; and the bases for any deviations from the SRP or proposed exemptions from the regulations. Staff reviews may be documented in the form of draft SERs that identify open issues requiring resolution before the staff can make a positive finding in favor of the license issuance or amendment.

Section 7. REFERENCES

This section lists references that should be consulted in the review process. However, the references may not always be relevant to the review, depending on the action and approaches proposed by the applicant.