

Use of Standard Review Plans and Interim Staff Guidance Memoranda in Reviewing Radioactive Material / Spent Reactor Fuel Applications

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Abstract

The U.S. Nuclear Regulatory Commission (NRC) has developed Standard Review Plans (SRPs) to guide the NRC staff in performing consistent regulatory reviews. The SRPs serve an additional benefit in that it provides industry insights into what the staff will be looking for in an application. From time to time, the staff in the NRC's Spent Fuel Project Office (SFPO) have found it necessary to augment the SRPs with an interim staff guidance (ISG) memoranda to address emerging technical issues. This paper highlights the process by which an SRP is revised to incorporate ISGs for dry cask storage systems, spent fuel dry storage facilities, transportation packages for radioactive material and transportation packages for spent nuclear fuel. The SRPs and ISGs are intended to ensure the quality and uniformity of the staffs' reviews, present a basis for the review scope, and identify the regulatory bases for the scope of the review. It should be note that the SRPs are not regulatory requirements. They may identify acceptable methods for meeting NRC's requirements. Alternative methods can be proposed for meeting NRC's requirements.

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Introduction

One of the primary functions of the Spent Fuel Project Office (SFPO) is to conduct technical reviews for the design, analysis, fabrication, and operation of radioactive material shipping containers under Title 10 of the Code of Federal Regulations (10 CFR) Part 71, and spent fuel storage cask designs and interim spent fuel and high-level waste storage facilities under 10 CFR Part 72. The reviews are conducted by technical reviewers who encompass the following engineering/scientific disciplines: structural, materials, nuclear, mechanical, and health physics.

To help facilitate and guide the technical reviewers in evaluating a Safety Analysis Report (SAR) for a Part 71 transportation package, Part 72 Dry Cask Storage System (DCSS) or a Part 72 Independent Spent Fuel Storage Installation (ISFSI), Standard Review Plans (SRPs) and Interim Staff Guidances (ISGs) are used during the review process.

SFPO currently uses four SRPs, augmented with 16 ISGs for DCSS and transportation package packages. The four SRPs are as follow: NUREG-1536, "Standard Review Plan for Dry Cask Storage Systems" (January 1997), NUREG-1567, "Standard Review Plan for Spent Fuel Dry Storage Facilities" (March 2000), NUREG-1609, "Standard Review Plan for Transportation Packages for Radioactive Material" (May 1999), and NUREG-1617, "Standard Review Plan for Transportation Packages for Spent Nuclear Fuel" (March 2000). ISGs and SRPs are posted on the NRC's website at <http://www.nrc.gov> for public comments.

List of Acronyms Used

DCSS	- Dry Cask Storage System
ISFSI	- Independent Spent Fuel Storage Installation
ISG	- Interim Staff Guidance
NRC	- United States Nuclear Regulatory Commission
RG	- Regulatory Guide
SAR	- Safety Analysis Report
SER	- Safety Evaluation Report
SFPO	- Spent Fuel Project Office
SRP	- Standard Review Plan

SRP

What is an SRP

SRPs are guidance documents that have been developed by NRC to guide the NRC staff in performing consistent regulatory reviews. The SRPs serve an additional benefit in that it provides industry insights into what the staff will be looking for in an application. Further, they are intended to ensure the quality and uniformity of reviews performed by new or current SFPO staff members, present a basis for the review scope, and provide interpretation of the regulatory requirements. The documents are divided into several sections which reflect the standard application format for a SAR. Each SRP section presents the complete review procedure and current acceptance criteria for all pertinent areas of review. Additionally, the SRP discusses regulatory requirements, staff positions, NRC bulletins, industry codes and standards, ISGs, NUREGs (e.g., NUREG/CR 5502, "Engineering Drawings for 10 CFR Part 71 Package Approvals") and other information that the staff has deemed necessary to evaluate a DCSS or transportation package. The individual SRP sections (structural, thermal, criticality, containment, shielding, operating procedures, acceptance tests, etc.) address the characteristics that are reviewed, the basis for the review, how the review is accomplished, and the conclusions that are sought. Each SRP section is organized into seven sections, as follows: Review Objective, Areas of Review, Regulatory Requirements, Acceptance Criteria, Review Procedures, Evaluation Findings, and References.

The SRP for Transportation Packages for Radioactive Material

The SRP for Transportation Packages for Radioactive Material provides guidance for reviewing applications for packages used to transport radioactive material (other than irradiated nuclear fuel) under 10 CFR Part 71.

This document is intended for use by NRC staff. Its objectives are to (1) summarize 10 CFR Part 71 requirements for package approval, (2) describe the procedures by which the NRC staff determines that these requirements have been satisfied, and (3) document the practices developed by the staff in previous reviews of package applications.

The review plan complements RG 7.9, Revisions 1 and 2, which provide guidance to applicants on the standard format and content of applications for package approval¹.

The SRP for Transportation Packages for Spent Nuclear Fuel

The SRP for Transportation Packages for Spent Nuclear Fuel provides guidance for reviewing and applications for packages used to transport spent nuclear fuel under 10 CFR Part 71².

Revising SRPs

SRPs are revised to reflect lessons learned and current policies of SFPO with regard to application reviews and NRC safety evaluations. Likewise, SRPs are revised to clarify content and correct errors. NUREG-1447, "Standard Review Plan Update and Development Program," will be used as reference document to ensure consistent methodology in revising SRPs. Most work performed in updating SRPs will be accomplished on a chapter-by-chapter basis.

Comments, suggestions for improvement, and notices of error or omissions will be considered by, and should be sent to, the Director of SFPO.

ISG

What is an ISG

From time to time, the staff has found it necessary to augment the SRPs with ISGs to address emerging issues. Seventeen ISGs have been issued by SFPO with several more currently being drafted. The staff uses the ISGs in conjunction with the SRP to perform their reviews of DCSSs and transportation packages. The format presented in Appendix A represents a standardized format that is recommended for all ISGs. However, its use is not mandatory. If the applicant's information can be presented more clearly or effectively by alternative means, the applicant should use that format. Non-relevant headings/sections may be deleted. The ISGs are available on the NRC's website. Attached in Appendix B is a list of ISGs issued, in development or under revision as of August 10, 2001.

SFPO uses ISGs to provide guidance to applicants and staff concerning issues not currently addressed in an SRP, or issues where clarification of SRP text is necessary. An SRP will be updated periodically (about every three years) to incorporate outstanding ISGs, if required. While the process is controlled by SFPO, any individual identifying an issue with a particular SRP may bring it to the attention of the SFPO management and staff, and is encouraged to do so.

Ultimately, each ISG will be incorporated into one or more SRPs. If practical, the use of SRP format will be used in the ISG to make the SRP revision process easier. The ISG could be an entire chapter being incorporated into a NUREG (e.g., ISG-15, "Materials Evaluation" in NUREG-1536) or a subsection of a chapter (e.g., ISG-12, "Buckling of Irradiated Fuel Under Bottom End Drop Conditions" in NUREG-1536, Chapter 3, Section V.1.d.ii(4)(b)).

ISG Revisions/Retirement

Revised ISG should clearly state whether it supercedes the previous revision or only provides additional information/guidance such that the previous revision remains in effect. Once an ISG has been incorporated into the SRP(s), it will be considered "retired," but it may be re-issued should additional guidance in that area be desired. In such a case, a revision to the appropriate ISG will be drafted. If an ISG affects multiple SRPs, and has not been incorporated into all of them, the ISG will be revised to indicate the SRPs to which the ISG applies.

Conclusions

Even upon final approval, it is anticipated that the SRPs will be continually updated due to emerging transportation and storage technologies, improvements in current technologies, and approved evolutionary changes in regulatory positions. If a new staff position has been

developed and it is being utilized in the context of the technical review but it is not in the approved version of the SRP, the reviewer will state the use of the new position in the SER. Additionally, where the technical approach of the applicant is deemed sufficient, but differs from the SRP, the reviewer should will state so in the SER and clearly explain the rationale for accepting the applicant's position.

APPENDIX A

INTERIM STAFF GUIDANCE MEMORANDUM FORMAT

The format presented below represents a standardized format that is recommended for all ISGs. However, its use is not mandatory. If your information can be presented more clearly or effectively in some other way, use that format. Non-relevant headings/sections may be deleted.

The ISG author should put the draft ISG on the Local Area Network computer drive and include the file name and pathway on the draft and cover sheet.

Spent Fuel Project Office Interim Staff Guidance-XX

Issue: A one sentence summary or description of the issue. [Key word searches in ADAMS could be generated from here, so be specific.]

Introduction:

Provide a clear and concise statement of the purpose of this ISG. Describe what the issue is in a broad outline. Details will be provided in the next section. State which standard review plan(s) is(are) affected (to the section and paragraph level, if possible) by the issue, and why.

Discussion:

Provide a discussion of the issue in sufficient detail that an informed reader can understand the issue, its basis, significance, and ramifications.

Discuss how this issue will be addressed by this ISG (i.e., what does this ISG "do?").

Regulatory Basis:

If applicable, state the regulation(s) affected by or related to the issue.

Technical Review Guidance:

In checklist or bullet format, provide the user with the attributes to be reviewed and the relevant acceptance criteria. Previously identified deficiencies in an attribute may be mentioned. Use key terms (for Agency Electronic Documents Access System searches) and clear action requirements (verify, determine, review).

Recommendation:

State what action(s) should be taken with regard to SRP changes (additions, deletions). If possible, note the specific sections or paragraphs which will be changed. It may be appropriate to include both the original and revised texts. If these are lengthy, include them as an appendix to this ISG.

References:

Only reference those mentioned in the ISG text. These could include the ASME and ANSI Codes, NUREGS, other ISGs, and Regulatory Guides.

Approved: _____ Date: _____
DIRECTOR - SFPO

APPENDIX B

ISSUED ISGs (As of August 10, 2001)

- ISG-1 DAMAGED FUEL (Incorporated in NUREGs 1567 and 1617)
- ISG-2 FUEL RETRIEVABILITY (Incorporated in NUREG 1567)
- ISG-3 POST ACCIDENT RECOVERY AND COMPLIANCE WITH 10 CFR 72.122(l)
(Incorporated in NUREG 1567)
- ISG-4, R1 CASK CLOSURE WELD INSPECTIONS
- ISG-5, R1 CONFINEMENT EVALUATION (R0 & R1 incorporated in NUREGs 1567 and 1617)
- ISG-6 ESTABLISHING MINIMUM INITIAL ENRICHMENT FOR THE BOUNDING DESIGN BASIS FUEL ASSEMBLY(IES) (Incorporated in NUREG 1567)
- ISG-7 POTENTIAL GENERIC ISSUE CONCERNING CASK HEAT TRANSFER IN A TRANSPORTATION ACCIDENT (Incorporated in NUREGs 1567 and 1617)
- ISG-8, R1 LIMITED BURNUP CREDIT IN THE CRITICALITY SAFETY ANALYSES OF PWR SPENT FUEL IN TRANSPORT AND STORAGE CASKS (R0 & R1 incorporated in NUREGs 1567 and 1617)
- ISG-9 STORAGE OF PRESSURIZED WATER REACTOR (PWR) FUEL ASSEMBLY INTEGRAL COMPONENTS (Incorporated in NUREG 1567)
- ISG-10, R1 ASME CODE EXCEPTIONS (R0 incorporated in NUREG 1567)
- ISG-11, R1 STORAGE OF SPENT FUEL HAVING BURNUPS IN EXCESS OF 45,000 MWD/MTU (R0 incorporated in NUREG 1567)
- ISG-12, R1 BUCKLING OF IRRADIATED FUEL UNDER BOTTOM END DROP CONDITIONS (R0 & R1 incorporated in NUREG 1567)
- ISG-13 REAL INDIVIDUAL
- ISG-14 SUPPLEMENTAL SHIELDING
- ISG-15 MATERIALS EVALUATION
- ISG-16 EMERGENCY PLANNING
- ISG-17 INTERIM STORAGE OF GREATER THAN CLASS C WASTE

REFERENCES

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1. NUREG-1609, "Standard Review Plan for Transportation Packages for Radioactive Material," May 1999.
 2. NUREG-1617, "Standard Review Plan for Transportation Packages for Spent Nuclear Fuel," March 2000.