



DRAFT REGULATORY GUIDE

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DRAFT REGULATORY GUIDE DG-3035 (Proposed Revision 1 of Regulatory Guide 3.16, dated January 1976)

GENERAL FIRE PROTECTION GUIDE FOR PLUTONIUM PROCESSING AND FUEL FABRICATION PLANTS

INTRODUCTION

This regulatory guide provides the reader the type of information the U.S. Nuclear Regulatory Commission (NRC) staff will use to evaluate the fire protection program proposed by an applicant as part of an application to construct and operate a plutonium processing and mixed oxide (MOX) fuel fabrication facility.

The NRC considers a MOX fuel fabrication facility to be a plutonium processing and fuel fabrication plant as defined in Title 10, Part 70, "Domestic Licensing of Special Nuclear Material," of the *Code of Federal Regulations* (10 CFR Part 70) (Ref. 1). Thus, applications for licensing of plutonium processing or fuel fabrication facilities must satisfy the requirements of 10 CFR 70.23, "Requirements for the Approval of Applications;" 10 CFR 70.61, "Performance Requirements;" and 10 CFR 70.64, "Requirements for New Facilities or New Processes at Existing Facilities."

This regulatory guide endorses the methods and procedures contained in the current revision of NUREG-1718, "Standard Review Plan for the Review of an Application for a Mixed Oxide (MOX) Fuel Fabrication Facility," Chapter 7, "Fire Protection," (Ref. 2) for reviewing the fire protection portion of the licensing application as acceptable for meeting the regulatory requirements as they relate to fire protection and the radiological consequences from fires.

The NRC issues regulatory guides to describe to the public methods that the staff considers acceptable for use in implementing specific parts of the agency's regulations, to explain techniques that the staff uses in evaluating specific problems or postulated accidents, and to provide guidance to

This regulatory guide is being issued in draft form to involve the public in the early stages of the development of a regulatory position in this area. It has not received final staff review or approval and does not represent an official NRC final staff position.

Public comments are being solicited on this draft guide (including any implementation schedule) and its associated regulatory analysis or value/impact statement. Comments should be accompanied by appropriate supporting data. Written comments may be submitted to the Rulemaking, Directives, and Editing Branch, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; emailed to nrcprep_resource@nrc.gov; submitted through the NRC's interactive rulemaking Web page at <http://www.nrc.gov>; faxed to (301) 415-5144; or hand-delivered to Rulemaking, Directives, and Editing Branch, Office of Administration, US NRC, 11555 Rockville Pike, Rockville, MD 20852, between 7:30 a.m. and 4:15 p.m. on Federal workdays. Copies of comments received may be examined at the NRC's Public Document Room, 11555 Rockville Pike, Rockville, MD. Comments will be most helpful if received by November 13, 2008.

Electronic copies of this draft regulatory guide are available through the NRC's interactive rulemaking Web page (see above); the NRC's public Web site under Draft Regulatory Guides in the Regulatory Guides document collection of the NRC's Electronic Reading Room at <http://www.nrc.gov/reading-rm/doc-collections/>; and the NRC's Agencywide Documents Access and Management System (ADAMS) at <http://www.nrc.gov/reading-rm/adams.html>, under Accession No. ML081910261.

applicants. Regulatory guides are not substitutes for regulations and compliance with them is not required.

This regulatory guide contains information collection requirements covered by 10 CFR Part 70 that the Office of Management and Budget (OMB) approved under OMB control number 3150-0009. The NRC may neither conduct nor sponsor, and a person is not required to respond to, an information collection request or requirement unless the requesting document displays a currently valid OMB control number.

B. DISCUSSION

The NRC developed NUREG-1718 to provide guidance to the NRC staff for the review of a license application for a plutonium processing and fuel fabrication plant. The regulations in 10 CFR Part 70 establish procedures and criteria for the issuance of licenses to receive title to own, acquire, deliver, receive, possess, use, and transfer special nuclear material (SNM). Subpart D, "License Applications" of 10 CFR Part 70, identifies the contents of the application as well as the requirements for approval of the application. Part of the approval process includes an evaluation that verifies the applicant's proposed equipment, facilities, and procedures are adequate to protect public health and safety, and minimize danger to life and property.

One principal risk to health and safety at plutonium processing and fuel fabrication plants is a fire or an explosion that results in the release and dispersal of radioactive materials. Fire protection programs for these plants should prevent, detect, extinguish, limit, or control fires and explosions, and their concomitant hazards and damaging effects on people and property. Chapter 7 of NUREG-1718 identifies the specific fire protection program information an applicant should include in the application for a license to possess and use SNM in a MOX fuel fabrication facility.

C. REGULATORY POSITION

10 CFR 70.65, "Additional Content of Applications," requires that the applicant submit a description of the safety program, established as per 10 CFR 70.62, "Safety Program and Integrated Safety Analysis," with sufficient detail to enable the NRC staff to evaluate and conclude that the design was completed and the facility constructed with the approved design bases, and to obtain reasonable assurance that the facility will be operated without undue risk to the health and safety of the workers and the public (i.e., will meet the performance requirements of 10 CFR 70.61, "Performance Requirements").

Chapter 7 of NUREG-1718 provides the applicant and NRC reviewer guidance to assure that the facility is designed to provide adequate protection against fires and explosions (10 CFR 70.64(a)(3)) and defense-in-depth practices (10 CFR 70.64(b)). Chapter 7 also addresses the review of radiological consequences from fires in determining how a facility will meet the performance requirements of 10 CFR 70.61.

The fire protection program must establish the fire protection policy for the protection of structures, systems, and items relied on for safety at the plant, and the procedures, equipment, and personnel to implement the program at the site. Chapter 7 of NUREG-1718 describes the acceptance criteria for the NRC's review of the fire protection program for a MOX fuel fabrication facility on organization and conduct of operations, fire protection features and systems, manual fire fighting capability, and fire hazards analysis. Appendix D, "Fire Hazards Analysis Procedures" of NUREG-1718

describes specific fire hazards, identifies fire protection features proposed to control those hazards, and discusses the overall adequacy of facility fire protection programs.

D. IMPLEMENTATION

The purpose of this section is to provide information to applicants and licensees regarding the NRC's plans for using this regulatory guide. The NRC intends to use the information in this regulatory guide and NUREG-1718 during its review of the application to construct and operate a MOX fuel fabrication facility at the U.S. Department of Energy's Savannah River Site. NUREG-1718 provides guidance on the review for a license to possess and use of SNM. This regulatory guide and NUREG-1718 are also applicable to any proposed amendments and license renewal applications for the MOX facility. The NRC does not intend or approve any imposition or backfit in connection with the issuance of this revised regulatory guide.

In some cases, applicants or licensees may propose or use a previously established acceptable alternative method for complying with specified portions of the NRC's regulations. Otherwise, the methods described in this guide will be used in evaluating compliance with the applicable regulations for license applications, license amendment applications, and amendment requests.

REGULATORY ANALYSIS

1. Statement of the Problem

The NRC published Regulatory Guide 3.16, "General Fire Protection Guide for Plutonium Processing and Fuel Fabrication Plants," in January 1974, to provide applicants guidance for complying with the then-existing regulations for plutonium processing and fuel fabrication contained in 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material." Since the initial publication of the regulatory guide, fire protection requirements for uranium fuel cycle facilities, including MOX fuel fabrication facilities, have been expanded. The current 10 CFR Part 70 identifies a risk-informed, performance-based approach, which has outdated the existing regulatory guide.

2. Objective

The NRC developed NUREG-1718 to support 10 CFR Part 70 rulemaking. NUREG 1718 is specific for a MOX facility and provides guidance on the information to be included in a license application. The objective of this action is to provide clear and up-to-date guidance for the preparation of an application for licensing the MOX fuel fabrication facility.

3. Alternative Approaches

The NRC staff considered the following alternative approaches:

- Do not revise Regulatory Guide 3.16.
- Withdraw Regulatory Guide 3.16.
- Revise Regulatory Guide 3.16 to match or replace NUREG 1718.
- Revise Regulatory Guide 3.16 to endorse NUREG 1718.

3.1 Alternative 1: Do Not Revise Regulatory Guide 3.16

Under this alternative, the NRC would not revise (or issue additional) guidance and the current version of this regulatory guide would be retained as the most recent staff guidance on the subject matter. However, this alternative would leave conflicting guidance in place and could cause unnecessary confusion. This alternative is considered the baseline or “no action” alternative and, as such, involves no value/impact considerations.

3.2 Alternative 2: Withdraw Regulatory Guide 3.16

Withdrawing this regulatory guide would eliminate duplicate and occasionally contradictory information appearing in NUREG 1718 and this guide. However, this action would leave a void in the regulatory guide system, and would not provide efficient and effective means for interested parties to identify the standard format and content of a license application for a MOX fuel fabrication facility, which would be acceptable to the NRC. Although this alternative could involve relatively marginal cost, it could impede the public’s access to the most current information.

3.3 Alternative 3: Revise Regulatory Guide 3.16 To Match or Replace NUREG-1718

The NRC published NUREG-1718 in August 2000 to provide guidance on the safety, safeguards, and environmental reviews for a MOX fuel fabrication facility license application. Regulatory Guide 3.16 contains specific guidance covered in NUREG-1718. Revising the regulatory guide to match the information in NUREG-1718 would create duplicate sources of information and would require considerable expenditure of staff resources to ensure that duplicate information in the separate documents continued to be consistent. Revising this regulatory guide to replace NUREG-1718 at this time would require an expansion in scope of the current guide and an expenditure of staff resources without a noticeable enhancement in performance or efficiency for the NRC or its licensees. This alternative is rejected as it would inefficiently use staff resources.

3.4 Alternative 4: Revise Regulatory Guide 3.16 To Endorse NUREG-1718

The January 1974 version of the regulatory guide was based on the regulatory requirements in effect at that time, while NUREG-1718 reflects the most current regulatory requirements for fuel cycle facilities. A decision not to revise the regulatory guide will result in conflicting guidance documents and the possible confusion for interested parties. Therefore, a revision of the regulatory guide to endorse the provisions in NUREG-1718, and to direct any interested parties to the most current guidance provided in NUREG 1718 is preferable.

4. Conclusion

Based on this regulatory analysis, the staff recommends that the NRC revise Regulatory Guide 3.16 to endorse the format and content of the guidance for fire protection requirements, which are documented in the current revision of NUREG 1718. The staff concludes that the proposed action will reduce unnecessary burden on both the NRC and its licensees, and will result in an improved and more consistent process for licensee application and staff review. The staff foresees no adverse effects associated with issuing this regulatory guide.

REFERENCES

1. 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material," U.S. Nuclear Regulatory Commission, Washington, DC.¹
2. NUREG-1718, "Standard Review Plan for the Review of an Application for a Mixed Oxide (MOX) Fuel Fabrication Facility," U.S. Nuclear Regulatory Commission, Washington, DC, August 2000.²

¹ All NRC regulations listed herein are available electronically through the Electronic Reading Room on the NRC's public Web site, at <http://www.nrc.gov/reading-rm/doc-collections/>. Copies are also available for inspection or copying for a fee from the NRC's Public Document Room (PDR) at 11555 Rockville Pike, Rockville, MD; the mailing address is USNRC PDR, Washington, DC 20555; telephone (301) 415-4737 or (800) 397-4209; fax (301) 415-3548; and email PDR@nrc.gov.

² NUREG-1718 is available electronically through the Electronic Reading Room on the NRC's public Web site, at <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1718/>. Copies are also available for inspection or copying for a fee from the NRC's Public Document Room (PDR) at 11555 Rockville Pike, Rockville, MD. The mailing address for the PDR is USNRC PDR, Washington, DC 20555; telephone (301) 415-4737 or (800) 397-4209; fax (301) 415-3548; and email PDR@nrc.gov. In addition, copies are available at current rates from the U.S. Government Printing Office, P.O. Box 37082, Washington, DC 20402-9328, telephone (202) 512-1800; or from the National Technical Information Service (NTIS), at 5285 Port Royal Road, Springfield, VA 22161, online at <http://www.ntis.gov>, by telephone at (800) 553-NTIS (6847) or (703) 605-6000, or by fax to (703) 605 6900.