



REGULATORY GUIDE

OFFICE OF NUCLEAR REGULATORY RESEARCH

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GENERAL FIRE PROTECTION GUIDE FOR PLUTONIUM PROCESSING AND FUEL FABRICATION PLANTS

A. INTRODUCTION

This guide directs the reader to the type of information acceptable to the U.S. Nuclear Regulatory Commission (NRC) staff for the review of fire protection programs included 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.

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

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This guide was issued after consideration of comments received from the public.

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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 organization and conduct of operations, fire protection features and systems, manual fire fighting capability, and fire hazards analysis described in the applicant's fire protection program for a MOX fuel fabrication. 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.

REFERENCES

1. 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material," U.S. Nuclear Regulatory Commission, Washington, DC.
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.