



REGULATORY GUIDE

OFFICE OF NUCLEAR REGULATORY RESEARCH

REGULATORY GUIDE 3.50

(Task FP 907-4)

GUIDANCE ON PREPARING A LICENSE APPLICATION TO STORE SPENT FUEL IN AN INDEPENDENT SPENT FUEL STORAGE INSTALLATION

INTRODUCTION

Subpart B, "License Application, Form, and Contents," of 10 CFR Part 72, "Licensing Requirements for the Storage of Spent Fuel in an Independent Spent Fuel Storage Installation," specifies the information to be covered in an application for a license to store spent fuel in an independent spent fuel storage installation (ISFSI). However, Part 72 does not specify the format to be followed in the license application. This regulatory guide suggests a format acceptable to the NRC staff for submitting the information specified in Part 72 for a license application to store spent fuel in an ISFSI.

Other regulations applicable to the licensing of spent fuel storage in an ISFSI are in the following parts of Title 10, "Energy," of the Code of Federal Regulations:

- 2 - Rules of Practice for Domestic Licensing Proceedings
- 8 - Interpretations
- 9 - Public Records
- 11 - Criteria and Procedures for Determining Eligibility for Access to or Control over Special Nuclear Material
- 19 - Notices, Instructions and Reports to Workers; Inspections
- 20 - Standards for Protection against Radiation
- 21 - Reporting of Defects and Noncompliance
- 25 - Access Authorization for Licensee Personnel
- 51 - Licensing and Regulatory Policy and Procedures for Environmental Protection
- 73 - Physical Protection of Plants and Materials
- 75 - Safeguards on Nuclear Material—Implementation of US/IAEA Agreement
- 95 - Security Facility Approval and Safeguarding of National Security Information and Restricted Data
- 150 - Exemptions and Continued Regulatory Authority in Agreement States and in Offshore Waters under Section 274

- 170 - Fees for Facilities and Materials Licenses and other Regulatory Services under the Atomic Energy Act of 1954, as Amended.

Part 72 provides for a single licensing procedure. The smooth functioning of this one-step licensing procedure requires that the license application be essentially complete in its initial submission. A license under this part will be issued before the start of construction of any physical facilities involved. Under this procedure, the final design details of those ISFSI components, systems, and structures that are important to safety must be available for review and evaluation. Part 72 also requires that a site evaluation be provided to ensure that the natural characteristics of the site and its environs are sufficiently known and have been factored into the engineering design of the installation. The document in which this information is presented is a Safety Analysis Report (SAR).

Although an applicant may plan to contract with another organization for the design, construction, and possibly the operation of the proposed ISFSI, a licensee under Part 72 cannot delegate to a contractor the responsibility for meeting all applicable regulatory requirements. This means that the applicant must make a commitment that, as the licensee, it will have an adequate staff to ensure that regulatory requirements are met at each stage of the proposed project. If the applicant plans to contract with another organization for the operation of the proposed ISFSI, the contractual arrangements must be described in the license application. Any subsequent changes in such contractual arrangements may require an amendment to the license.

This guide represents a standard format that is acceptable to the NRC staff for the license application. Conformance with this guide, however, is not mandatory. License applications with different formats will be acceptable to the staff if they provide an adequate basis for the findings required for the issuance of a license. However, because it may be

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Regulatory Guides are issued to describe and make available to the public methods acceptable to the NRC staff of implementing specific parts of the Commission's regulations, to delineate techniques used by the staff in evaluating specific problems or postulated accidents, or to provide guidance to applicants. Regulatory Guides are not substitutes for regulations, and compliance with them is not required. Methods and solutions different from those set out in the guides will be acceptable if they provide a basis for the findings requisite to the issuance or continuance of a permit or license by the Commission.

This guide was issued after consideration of comments received from the public. Comments and suggestions for improvements in these guides are encouraged at all times, and guides will be revised, as appropriate, to accommodate comments and to reflect new information or experience.

Comments should be sent to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch.

The guides are issued in the following ten broad divisions:

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| 1. Power Reactors | 6. Products |
| 2. Research and Test Reactors | 7. Transportation |
| 3. Fuels and Materials Facilities | 8. Occupational Health |
| 4. Environmental and Siting | 9. Antitrust and Financial Review |
| 5. Materials and Plant Protection | 10. General |

Copies of issued guides may be purchased at the current Government Printing Office price. A subscription service for future guides in specific divisions is available through the Government Printing Office. Information on the subscription service and current GPO prices may be obtained by writing the U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Publications Sales Manager.

more difficult to locate needed information, the staff review time may be longer, and there is a greater likelihood that the staff may regard the license application as incomplete.

As experience is gained in the licensing of spent fuel storage, the Commission's requirements for information needed in its review of applications for licenses to store spent fuel in an ISFSI may change. Revisions of the Commission's needs for information in connection with such licensing actions will be conveyed to the industry and the public by (1) amendments to NRC regulations, (2) revisions to this regulatory guide, (3) issuance of new or revised regulatory guides, and (4) direct communications, as needed, with an applicant by the NRC staff.

Since the preparation of a license application pursuant to Part 72 will be a new experience, prospective applicants are encouraged to meet with representatives of the Division of Fuel Cycle and Material Safety of the Office of Nuclear Material Safety and Safeguards during the development of a license application to resolve any problems that may arise. An early resolution of potential problems is beneficial to all concerned with the licensing process.

Contents of the License Application

The license application is the basic document that must address each of the requirements of Part 72 and must be complete in itself. However, the following subjects should be covered in separate reports that are identified as enclosures to the license application, and the contents of each report should be summarized in a brief statement in the license application:

1. Safety Analysis Report
2. Decommissioning Plan
3. Emergency Plan
4. Environmental Report
5. Quality Assurance Program
6. Physical Security Plan
7. Safeguards Contingency Plan
8. Personnel Training Program
9. Proposed License Conditions, including Technical Specifications
10. Design for Physical Security

Format and Style

The applicant should strive for clear, concise presentation of the information provided in the application. The application should be written in plain English and should be understandable to an educated lay person.

Abbreviations should be consistent throughout the license application and its enclosures. Any abbreviations, symbols, or special terms unique to the proposed activity or not in general use should be defined when they first appear.

A title page identifying key individuals responsible for the preparation of the license application and the oath required under paragraph 72.11(b) should be included. A table of contents should also be included.

Physical Specifications

1. Paper size: 8½ x 11 inches
2. Paper stock and ink: Suitable quality in substance, paper color, and ink density for handling and reproduction by microfilming or image-copying equipment.
3. Paper margins: A margin of no less than 1 inch should be maintained on the top, bottom, and binding side of all pages.
4. Printing:
 - a. Composition: Text should be single or 1½ spaced.
 - b. Type face and style: Suitable for microfilming or image-copying equipment.
 - c. Reproduction: Either mechanical or photographic. Text should be printed on both sides of the paper with the image printed head to head.
5. Binding: Pages should be punched for a standard 3-hole loose-leaf binder.
6. Chapter and page numbering: Each requirement of the regulation addressed should be shown as a separate chapter with the same number as the chapter given in this guide, e.g., Chapter 8, "Operator Training." Pages should be numbered sequentially in each chapter, e.g., 8-1, 8-2, etc. Do not number the entire document sequentially.

Procedures for Updating or Revising Pages

All pages submitted to update, revise, or add to the license application should show the date of change and a change or amendment number. The changed or revised portion of each page should be highlighted by a "change indicator" mark consisting of a bold vertical line drawn in the margin opposite the binding side.

Referenced Materials

Caution should be used in references to information previously filed with the AEC or NRC. Such references must be pertinent to the subject discussed, must contain current information, and must be readily obtainable or extractable from the referenced documents. It may be more efficient in some cases to repeat in a license application previously furnished information.

Chapter 1. GENERAL AND FINANCIAL INFORMATION

The license application should address the requirements of § 72.14 of 10 CFR Part 72 regarding details on the identity of an applicant. If the applicant is other than the owner or planned operator of the proposed ISFSI, details of the working and contractual arrangements between all parties involved should be set forth. Any information on such matters considered as proprietary information by the applicant should be identified and submitted under separate

cover. The procedures in 10 CFR 2.790(b) should be followed.

If the proposed ISFSI is to be built on the site of another licensed activity or facility such as a nuclear power plant, details of the working arrangements and responsibilities of the licensees involved should be stated. Similarly, if unlicensed activities are carried out at the proposed site, any potential interactions between the proposed ISFSI and these other site activities should be explained.

Paragraph 72.14(e) specifically addresses the required financial information that must be submitted with the application. If the applicant is a government agency or a regulated utility, the assumption is made that the applicant is financially qualified for a license under Part 72. If the applicant is a corporation organized for the specific purpose of owning and operating the proposed ISFSI, details of its organizational structure, including the responsibilities of its members to meet the financial requirements of the proposed ISFSI throughout its proposed operating life and ultimate decommissioning, must be stated. This requirement is applicable even if the proposed ISFSI is to be owned and operated by a consortium of utilities.

Chapter 2. TECHNICAL QUALIFICATIONS

Paragraph 72.31(a)(4) and § 72.17 require a finding by the staff that the applicant is qualified by training and experience to construct and operate an ISFSI.

Although spent fuel storage in an ISFSI is generally considered a relatively low-risk operation compared to some other types of nuclear activities, the design, construction, and operation of an ISFSI require certain skills and an understanding of the requirements involved to ensure that the objective of a relatively low-risk operation is achieved in practice. The license application should contain a commitment that the applicant will staff the project with an adequate cadre of personnel possessing the required skills throughout all phases of the project. This element of the license application is in addition to the discussion of the conduct of operations covered in Chapter 9 of the SAR.

The licensee is responsible for the execution of the proposed project as described in the license application. This means that, even though much of the actual work involved during the site selection, design, procurement, construction, and even the operating phases of the project may be performed by a contractor, the licensee must have a staff that is knowledgeable in all aspects of the project. If such a staff does not actually exist, the applicant should describe the staffing plans in sufficient detail to support the finding required by paragraph 72.31(a)(4).

Chapter 3. TECHNICAL INFORMATION; SAFETY ANALYSIS REPORT

As required by § 72.15, the technical information is presented in the SAR, which should be submitted as an enclosure to the license application. A summary statement identifying the type of installation proposed (e.g., a water

basin), its design capacity, any unique features incorporated in its design, and its mode of operation is adequate for the license application document.

The SAR required for an ISFSI differs from the SARs for some other nuclear facilities in that the initial SAR is expected to be complete and comparable in scope and detail to the final SAR for facilities licensed under 10 CFR Part 50. Section 72.15 identifies the minimum information that is required to be included in the SAR. Although § 72.50 provides for the subsequent updating of the SAR, such changes during the design and construction phases of the project are expected to be of minor importance. Any of these changes deemed significant by the staff may cause delay in the granting of the final clearance to receive spent fuel.

Guidance on the preparation of the SAR for an ISFSI of the conventional water-basin type is contained in Regulatory Guide 3.44, "Standard Format and Content for the Safety Analysis Report for an Independent Spent Fuel Storage Installation (Water-Basin Type)." For the dry storage ISFSI, guidance on the preparation of the SAR is contained in Regulatory Guide 3.48, "Standard Format and Content for the Safety Analysis Report for an Independent Spent Fuel Storage Installation (Dry Storage)."

Chapter 4. CONFORMITY TO GENERAL DESIGN CRITERIA

Subpart F of 10 CFR Part 72 contains the general design criteria for an ISFSI. The subject of conformity to the general design criteria is covered in detail in the SAR. It is sufficient that the license application contain a summary discussion of each criterion and reference where more detailed information on a specific subject can be found in the SAR.

Chapter 5. OPERATING PROCEDURES; ADMINISTRATIVE AND MANAGEMENT CONTROLS

Paragraph 72.31(a)(5) requires a finding by the staff that the applicant's proposed operating procedures to protect health and to minimize danger to life or property are adequate. Essential to these operating procedures are the applicant's proposed administrative and management controls. Guidance on this subject is available in ANSI N299-1976, "Administrative and Managerial Control for the Operation of Nuclear Fuel Reprocessing Plants."* Although ANSI N299-1976 is designed for the much more complex operating requirements of a fuel reprocessing plant, the basic principles set forth for administrative and managerial controls are considered applicable to the operation of an ISFSI. Paragraph 72.15(a)(8) identifies the information that is to be included in the SAR.

If the proposed ISFSI is to be operated by the owner, a relatively brief explanation of how the requirements of ANSI N299-1976 will be met may be adequate. However, if

*Copies may be obtained from the American National Standards Institute, Inc., 1430 Broadway, New York, N.Y. 10018.

the proposed ISFSI is to be operated by a contractor, considerable detail will be required on the working arrangements between the parties involved. Particular attention should be placed on the description of the administration of the Independent Review and Audit Program that is identified in ANSI N299-1976.

Chapter 6. QUALITY ASSURANCE PROGRAM

The quality assurance program required by § 72.80 must be submitted as an enclosure to the application and is briefly discussed in Chapter 11 of the SAR. It is sufficient that the license application contain a commitment that the quality assurance program described is (or will be) understood by all involved in its execution and that the program will be implemented, as applicable, for all phases of the project, including any activities important to safety that have been carried out prior to submission of the license application.

This program should cover the engineering aspects of the site investigation, facility design, procurement, shop fabrication, onsite construction, preoperational testing, conduct of operations, and ultimate decommissioning. The emphasis of this program should be on those activities and items that are identified as being important to safety. The planned quality assurance effort should be commensurate with the importance to safety of such identified activities and items.

Chapter 7. OPERATOR TRAINING

ISFSI operators are not required to be licensed. However, they must have a level of qualifications and training in subjects and operating procedures applicable to the operation of an ISFSI comparable to the requirements of 10 CFR Part 55 on spent fuel pool operation for licensed operators of a reprocessing plant or nuclear power plant. Appropriate documentation of training activities and certifications of proficiency should be included in the ISFSI records. Subpart I, "Training and Certification of ISFSI Personnel," of 10 CFR Part 72 requires that a training program be established and that the personnel training program document be included as an enclosure to the license application. A brief summary of the program should be included in the application.

In addition to the specific operating requirements of the planned facility, the training program should also cover the nuclear engineering principles involved in the safe handling and storage of spent fuel and the regulations, regulatory guides, and national standards applicable to ISFSI operations. Guidance on the content of the required training program is available from the Fuel and Spent Fuel Licensing Branch, Division of Fuel Cycle and Material Safety, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

Chapter 8. INVENTORY AND RECORDS REQUIREMENTS

A description of the inventory and records system for the stored fuel should be included in the license application.

Section 72.51 identifies the inventory and record requirements for spent fuel stored at an ISFSI. Because of the uncertainty as to the ultimate disposition of spent fuel stored in an ISFSI, the records on the identity of each fuel assembly should be complete. As a minimum, these records should cover:

- a. Fuel manufacturer,
- b. Date of manufacture,
- c. Reactor exposure history,
- d. Burnup,
- e. Pertinent observations on discharge and during storage at the reactor, transfer to the ISFSI, and storage in the ISFSI.

If storage of consolidated fuel rods is being considered, special requirements concerning inventory and recordkeeping for stored fuel pins should be described.

Chapter 9. PHYSICAL PROTECTION

Subpart H, "Physical Protection," of 10 CFR Part 72 requires that a physical security plan (§ 72.81), a design for physical protection (§ 72.82), and a safeguards contingency plan (§ 72.83) be submitted. Since the details of the provisions for physical protection are withheld from public disclosure, this subject should be covered in separate reports. The license application should contain only a reference to the identity of the reports and when they were submitted.

Interim guidance regarding the proposed design for physical security and the format and content of the physical security plan can be obtained from the Director, Division of Safeguards, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

Guidance for the safeguards contingency plan is contained in Regulatory Guide 5.55, "Standard Format and Content of Safeguards Contingency Plans for Fuel Cycle Facilities."

Chapter 10. DECOMMISSIONING PLAN

Section 72.18 requires the submission of a decommissioning plan as part of the license application. A brief description of the decommissioning plan is included in Section 9.6 of the SAR. The license application need contain only a brief summary statement, enough to identify what will be involved and the basis for the estimated costs of decommissioning.

However, the financial provisions for carrying out the decommissioning plan at the end of useful life of the proposed ISFSI are not necessarily addressed in the SAR and must be covered in either the license application or the decommissioning plan.

Chapter 11. EMERGENCY PLAN

Section 72.19 requires that an emergency plan be provided as part of the license application. The plan must

include the information listed in Section IV, "Content of Emergency Plans," of Appendix E to 10 CFR Part 50.

Chapter 12. ENVIRONMENTAL REPORT

Section 72.20 requires that an environmental report be provided as part of the license application. Guidance on the format and content of an environmental report for an ISFSI may be found in 10 CFR Part 51, "Licensing and Regulatory Policy and Procedures for Environmental Protection."

In the interests of keeping the size of this report within reasonable bounds and its structure and language keyed to the general public, it is recommended that a prospective applicant confer with the NRC staff to obtain definitive guidance on the scope and content of this report.

Chapter 13. PROPOSED LICENSE CONDITIONS

License conditions proposed by an applicant constitute a commitment by the applicant to take the actions specified therein. Because a license issued pursuant to Part 72 is issued prior to the commencement of construction, license conditions cover the entire proposed life of the ISFSI, from site selection through the subsequent phases of design, construction, operation, and ultimate decommissioning.

License conditions can be considered in two broad categories: (1) administrative and management organization and controls and (2) technical specifications. Those addressing administrative and management subjects should be covered in the license application; those addressing technical subjects can be covered very briefly in the license application with appropriate references to Chapter 10 of the SAR. Care

should be taken to ensure that such references are clear and explicit.

Proposed license conditions should address such subjects as:

1. Administrative and management organization; procedures and controls, including review and approval activities; and auditing and reporting requirements. In particular, the subject of interfaces between the licensee and its contractors should be covered.

2. Verification of design features that are important to safety. In particular, those quality assurance activities that confirm that design and construction are being carried out in accordance with plans, e.g., inspection hold points, should be covered.

3. Test procedures throughout the life of the project. Such subjects as conditions applicable to site evaluation, component testing during design and construction, preoperational testing prior to startup, and conditions applicable to tests that may be desirable after the commencement of operations should be covered.

4. Functional and operating limits of monitoring instruments and limiting control settings.

5. Limiting conditions of operation. The functional capabilities or performance levels of equipment and systems that are important to safety should be addressed. The subject includes setpoint limits on monitoring instruments and any controls that may need to be imposed on personnel access to any part of the installation.

6. Surveillance requirements. Such items as the periodic inspection of cranes and, for water pools, water purity and evidence of corrosion should be covered.

VALUE/IMPACT STATEMENT

1. ACTION

1.1 Description

This guide is an updating of the material in Regulatory Guide 3.24 to correct omissions and reflect regulatory developments since Regulatory Guide 3.24 was issued. Regulatory Guide 3.24 was withdrawn on February 27, 1981 (46 FR 14507).

1.2 Need

There is increasing interest in the nuclear community in the licensing requirements for the storage of spent fuel in an ISFSI. The guide is designed to assist prospective applicants by discussing in more detail specific requirements of Part 72 for the license application.

1.3 Value/Impact

1.3.1 NRC

The further explanation of the content of license applications covering the storage of spent fuel in an ISFSI will be helpful to the licensing staff in their contacts with potential licensees and in the review of these applications when received, particularly during the "mini-review" before docketing of such applications.

1.3.2 Other Government Agencies

The Tennessee Valley Authority has expressed interest in the storage of spent fuel in an ISFSI and is now trying to determine the applicable licensing requirements.

1.3.3 Industry

The further explanation of the content of license applications covering the storage of spent fuel in an ISFSI is thought to be particularly useful to the utilities, which deal primarily with the NRC Office of Nuclear Reactor Regulation and which now will be dealing with the NRC Office of Nuclear Material Safety and Safeguards, which handles the licensing of spent fuel storage in an ISFSI and operates somewhat differently.

1.3.4 Public

There is a need to aid the public in becoming better informed on the various aspects of the licensing of spent fuel storage in an ISFSI. The guide will contribute to meeting this need.

2. TECHNICAL APPROACH

The guide is nontechnical in its content.

3. PROCEDURAL APPROACH

3.1 Procedural Alternatives

The following are potential NRC procedures that may be used to disseminate the information contained in the guide:

- Regulation
- Regulatory guide
- Branch position paper
- NUREG-series report

3.2 Value/Impact of Procedural Alternatives

A regulation is not a suitable means of disseminating the explanatory type of information contained in the proposed guide. A NUREG-series report is also not a viable alternative because the proposed guide contains regulatory positions. Only a regulatory guide or branch position paper are considered to be viable alternatives.

Branch positions are sometimes presented for guidance of this sort. However, because of the limited distribution within NRC for concurrence, branch positions should be formalized by the issuance of a regulatory guide. In this case, no branch position has been prepared or is anticipated.

3.3 Decision on Procedural Approach

A regulatory guide should be prepared.

4. STATUTORY CONSIDERATIONS

4.1 NRC Authority

Authority for this guide is derived from the Atomic Energy Act of 1954, as amended, and the Energy Reorganization Act of 1974, as amended, and implemented through the Commission's regulations.

4.2 Need for NEPA Assessment

The action is not a major Federal action as defined by 10 CFR 51(a)(10) and does not require an environmental impact statement.

5. RELATIONSHIP TO OTHER EXISTING OR PROPOSED REGULATIONS OR POLICIES

The guide is one of a series of guides that will replace Regulatory Guide 3.24. Other guides in this series include Regulatory Guide 3.44, "Standard Format and Content for the Safety Analysis Report for an Independent Spent Fuel Storage Installation (Water-Basin Type)"; Regulatory

Guide 3.48, "Standard Format and Content for the Safety Analysis Report for an Independent Spent Fuel Storage Installation (Dry Storage)"; and Regulatory Guide 3.49, "Design of an Independent Spent Fuel Storage Installation (Water-Basin Type)."

6. SUMMARY AND CONCLUSIONS

The regulatory guide should be issued to meet a current need in the written development of the regulatory bases for the licensing of spent fuel storage in an ISFSI.

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