

RULEMAKING ISSUE NOTATION VOTE

March 13, 2002

SECY-02-0043

FOR: The Commissioners

FROM: William D. Travers
Executive Director for Operations

SUBJECT: PROPOSED RULE: GEOLOGICAL AND SEISMOLOGICAL
CHARACTERISTICS FOR THE SITING AND DESIGN OF DRY
CASK INDEPENDENT SPENT FUEL STORAGE
INSTALLATIONS AND MONITORED RETRIEVABLE STORAGE
INSTALLATIONS - 10 CFR PART 72

PURPOSE:

To request Commission approval to publish a proposed rule, in the Federal Register, that would amend 10 CFR Part 72, "Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater Than Class C Waste." The proposed amendments would make the Part 72 regulations compatible with the 1996 revision to 10 CFR Part 100 that addressed uncertainties in seismic hazard analysis, and commensurate with the risk associated with a dry cask independent spent fuel storage installation (ISFSI) or U.S. Department of Energy (DOE) monitored retrievable storage installation (MRS). The proposed amendments would also specify that general licensees evaluate dynamic loads, as well as static loads, in the design of cask storage pads and areas. These proposed amendments would make the Part 72 requirements more effective and efficient and reduce the burden on licensees and on the U.S. Nuclear Regulatory Commission (NRC), without an adverse effect on public health and safety, or on the environment.

BACKGROUND:

In 1998, in response to SECY-98-126, the Commission approved the staff's plan to amend Part 72. The amendments would have required a new specific license applicant for an ISFSI

CONTACTS: Keith McDaniel, NMSS/IMNS
(301) 415-5252

Mahendra Shah, NMSS/SFPO
(301) 415-8537

or MRS to use a probabilistic seismic hazard analysis (PSHA) or suitable sensitivity analyses instead of the current deterministic approach in selecting the design earthquake ground motion. The amendments would also have allowed for a graded approach of using two levels of design earthquake for ISFSI or MRS systems, structures, and components (SSCs). The design level used would have depended on the SSCs' importance to safety. Lastly, the amendments would have required that general licensees design cask storage pads and areas to adequately account for dynamic loads, in addition to static loads.

After further consideration of the use of the graded approach for the design earthquake, the staff prepared a Modified Rulemaking Plan (SECY-01-0178) that provided an additional alternative method for the seismic design of dry cask ISFSI or MRS SSCs. In the modified plan, the staff proposed maintaining the present Part 72 requirement of using a single earthquake ground motion in design, but with a lower value than that required for a nuclear power plant (NPP), that is commensurate with the level of risk associated with an ISFSI or MRS.

In a Staff Requirements Memorandum dated November 19, 2001 (Attachment 1), in response to SECY-01-0178, the Commission did not object to the staff's plan to revise the approved rulemaking plan, provided that the proposed rule solicit comment on a range of probability of exceedance values from 5.0E-04 through 1.0E-4. The Commission also directed the staff to undertake further analysis to support a specific value.

DISCUSSION:

The geological and seismological siting and design requirements for an ISFSI or MRS are contained in 10 CFR 72.102. This regulation requires that, for any ISFSI or MRS located in the western U.S. or in other areas of known potential seismic activity in the eastern U.S., seismicity be evaluated by the "deterministic" techniques of Appendix A to Part 100. For sites evaluated under Part 100, Appendix A criteria, 10 CFR 72.102(f)(1) requires that the design earthquake be equivalent to the safe shutdown earthquake for a NPP. However, Part 100 was amended in 1996 and incorporated a new 10 CFR 100.23 section in the regulations to require NPP applicants, after January 10, 1997, to account for uncertainties in the seismic hazard evaluation by using a "probabilistic" PSHA approach or suitable sensitivity analyses, instead of the "deterministic" Appendix A to Part 100 approach, as part of the geologic and seismic siting criteria for NPPs.

NRC received two requests for exemptions from the ISFSI industry, to allow the application of the PSHA approach instead of the deterministic approach. DOE requested an exemption from 10 CFR 72.102(f)(1) for an ISFSI at the Idaho National Engineering and Environmental Laboratory (INEEL), to store spent fuel from the Three Mile Island-Unit 2 NPP. The Commission approved this exemption in the Staff Requirements Memorandum dated May 20, 1998, to SECY-98-071, "Exemption to 10 CFR 72.102(f)(1) Seismic Design Requirement for Three Mile Island Unit 2 Independent Spent Fuel Storage Installation." A similar request for an exemption from Private Fuel Storage L.L.C. is currently the subject of an adjudicatory proceeding, referred to in CLI-01-12, 53 NRC 459 (2001). Based on discussions with industry representatives, the staff believes that any future license applicant for an ISFSI will seek the same exemption.

The staff is seeking a conforming change to Part 72, which would allow new dry cask ISFSI or MRS licensees to take advantage of the 1996 Part 100 amendments, specifically 10 CFR 100.23. These changes would result in alleviating the need for applicants to request exemptions from 10 CFR 72.102(f)(1). The staff also believes that a major seismic event at an ISFSI or MRS storing spent fuel in dry casks or canisters would most likely have minor radiological consequences, compared with a similar event at a NPP. Therefore, the staff proposes to lower the design earthquake to be commensurate with the level of risk associated with an ISFSI or MRS.

The proposed changes would require a new specific license applicant for a dry cask storage facility located in either the western U.S. or in areas of known seismic activity in the eastern U.S., and not co-located with a nuclear power plant, to address uncertainties in seismic hazard analysis by using appropriate analyses, such as a PSHA or other suitable sensitivity analyses, for determining the design earthquake ground motion. All other new specific license applicants for dry cask storage facilities would have the option of complying with the proposed requirement to use a PSHA or other suitable sensitivity analyses to address uncertainties in seismic hazard analysis, or other options compatible with the existing regulation. The proposed changes are risk-informed in that they would allow an ISFSI or MRS applicant to use a design earthquake ground motion based on the lower level of risk associated with an ISFSI or MRS, relative to a nuclear power plant.

The staff has developed, as part of the proposed rule, Draft Regulatory Guide DG-3021, "Site Evaluations and Determination of Design Earthquake Ground Motion for Seismic Design of Independent Spent Fuel Storage Installations and Monitored Retrievable Storage Installations." This draft guide provides procedures acceptable to the staff for determining an appropriate design earthquake and recommends an appropriate mean annual probability of exceedance value of $5.0E-04$. This rulemaking would necessitate a revision to NUREG-1536, "Standard Review Plan for Dry Cask Storage Systems," and NUREG-1567, "Standard Review Plan for Spent Fuel Dry Storage Facilities," to reflect the updated rule requirements.

In response to the Staff Requirements Memorandum dated November 19, 2001, the proposed rule includes a question to the public, in both the Federal Register notice and DG-3021, that solicits comment on an appropriate mean annual probability of exceedance value, within the range of $5.0E-04$ through $1.0E-4$, for the seismic design of an ISFSI or MRS. The staff is currently performing confirmatory analyses in support of a specific mean annual probability of exceedance value to be recommended in the final regulatory guide.

The staff is also proposing to modify 10 CFR 72.212(b)(2)(i)(B) to require that general licensees evaluate dynamic loads, in addition to static loads, in the design of cask storage pads and areas for ISFSIs, to ensure that casks are not placed in unanalyzed conditions. Accounting for dynamic loads in the analysis of ISFSI pads and areas would ensure that pads continue to support the casks during seismic events. General licensees currently evaluate dynamic loads for evaluating the casks, pads and areas, to meet the cask design bases in the Certificate of Compliance, as required by 10 CFR 72.212(b)(2)(i)(A). Therefore, the proposed changes would not actually require any general licensees operating an ISFSI to re-perform any written evaluations previously undertaken. Specific licensees are currently required, under 10 CFR 72.122(b)(2), to design ISFSIs to withstand the effects of dynamic loads, such as earthquakes and tornados.

The staff considered the merits of the rulemaking within the context of the performance goals listed in NRC's strategic plan. The rulemaking effort would increase NRC's effectiveness and efficiency by reducing the number of exemption requests that might be submitted and reviewed. This rule would also reduce unnecessary regulatory burden by allowing the applicant or licensee to select a design earthquake level commensurate with the risk associated with an ISFSI or MRS facility. This rule would maintain safety by selecting the design earthquake level to be commensurate with the risk associated with an ISFSI or MRS. The changes to the design earthquake level are considered risk-informed, consistent with NRC policy to develop risk-informed regulations. This rule would increase realism by enabling an ISFSI or MRS applicant to use state-of-the-art approaches, such as a PSHA or other suitable sensitivity analyses, to more accurately characterize the seismicity of a site.

RISK-INFORMING NMSS REGULATORY ACTIVITIES:

The Office of Nuclear Material Safety and Safeguards (NMSS) has developed a set of screening criteria to identify NMSS regulatory activities amenable to increased use of risk information. The staff applied the criteria to the proposed changes in the Modified Rulemaking Plan to determine if the risk-informed approach of lowering the design earthquake to a level that is commensurate with the lower risk associated with an ISFSI or MRS should be implemented. The proposed changes satisfy the screening criteria because they: (1) improve effectiveness and efficiency of the NRC regulatory process by eliminating the need for applicants to request exemptions from 10 CFR 72.102(a), 72.102(b), and 72.102(f)(1) (similar to DOE's request for the ISFSI at INEEL), and the need for NRC to review the exemption requests; (2) reduce unnecessary regulatory burden by allowing the license applicant to select a design earthquake level commensurate with the risk associated with an ISFSI or MRS facility; (3) can be supported by analytical models that evaluate the seismic behavior of a cask; (4) would not result in significant start-up or implementation costs to NRC and applicants, other than technical training in the use of the PSHA method and further development of analytical models; and (5) do not involve other factors, with the exception of potential adverse stakeholder reaction, as can be the case when using risk-informed approaches. Satisfying these criteria supports the implementation of the proposed risk-informed approach.

AGREEMENT STATE ISSUES:

This rule is classified as compatibility category "NRC" and addresses only areas of exclusive NRC regulatory authority.

COORDINATION:

The Office of the General Counsel has no legal objection to the proposed rulemaking. The Office of the Chief Financial Officer has reviewed this Commission Paper for resource implications and has no objections. The rule suggests changes in information collection requirements that must be submitted to the Office of Management and Budget (OMB) no later than the date the proposed rule is forwarded to the Federal Register for publication. Staff has coordinated with the Committee to Review Generic Requirements (CRGR) on the backfit section, and will determine if further CRGR review is needed after public comments are received on the proposed rule.

RECOMMENDATIONS:

That the Commission:

1. Approve, for publication in the Federal Register, the proposed amendments to the seismic requirements in Part 72 (Attachment 2).
2. Note:
 - a. That the proposed amendments will be published in the Federal Register, allowing 75 days for public comment;
 - b. That the Chief Counsel for Advocacy of the Small Business Administration will be informed of the certification and the reasons for it, as required by the Regulatory Flexibility Act, 5 U.S.C. 605(b);
 - c. That a draft Regulatory Analysis has been prepared for this rulemaking (Attachment 3);
 - d. That a draft Environmental Assessment has been prepared for this rulemaking (Attachment 4);
 - e. That a draft Regulatory Guide has been prepared for this rulemaking and will be issued for a 75-day public comment period (Attachment 5);
 - f. That appropriate Congressional committees will be informed of this action;
 - g. That a press release will be issued by the Office of Public Affairs when the proposed rulemaking is filed with the Office of the Federal Register;
 - h. That OMB review is required, for information collection burden, and a clearance package will be forwarded to OMB no later than the date the proposed rule is submitted to the Office of the Federal Register for publication; and

- i. That resources to complete and implement this rulemaking are included in the current budget.

/RA/

William D. Travers
Executive Director
for Operations

Attachments:

1. Staff Requirements Memorandum dated November 19, 2001
2. Federal Register Notice
3. Draft Regulatory Analysis
4. Draft Environmental Assessment
5. Draft Regulatory Guide DG-3021

- i. That resources to complete and implement this rulemaking are included in the current budget.

/RA/

William D. Travers
 Executive Director
 for Operations

Attachments:

- 1. Staff Requirements Memorandum dated November 19, 2001
- 2. Federal Register Notice
- 3. Draft Regulatory Analysis
- 4. Draft Environmental Assessment
- 5. Draft Regulatory Guide DG-3021

ADAMS Package Accession Number: ML020440010

OFFICE:	RGB/IMNS		RGB/IMNS		D/SFPO		D/DWM	
NAME:	KmcDaniel		PHolahan AH for		WBrach		JGreeves	
DATE:	2 / 8 /2002		2 / 11 /2002		12 / 21 /2001		1/15/2002	
OFFICE:	D/IMNS		Tech Editor		ADM		CIO	
NAME:	DCool SMF for		EKraus by fax		MLesar		BShelton	
DATE:	2 / 12 /2002		2 / 11 /2002		1/14/2002 by memo		1/18/2002bymemo	
OFFICE:	D/NRR		D/OE		OGC		RES	
NAME:	SCollins bymemo		FCongel		STreby		AThadani	
DATE:	1 / 17 /2002		1 /11/2002 email		2/7/2002		1/15/2002bymemo	
OFFICE:	CFO		D:NMSS		DEDMRS		EDO	
NAME:	JFunches		MVirgilio		CPaperiello		WTravers	
DATE:	1/11/2002 email		02/27/02		03/13/02		03/13/02	

OFFICIAL RECORD COPY