

*Section 72.102 Geological and seismological characteristics (Current Heading)*

*Section 72.102 Geological and seismological characteristics for applications before October 16, 2003 and applications for other than dry cask modes of storage (New Heading)*

The heading of § 72.102 is revised because § 72.103 is added for ISFSI or MRS applications after the effective date of the rule. Section 72.103 will only apply to dry cask modes of storage. Therefore, the heading of § 72.102 is being modified to show the revised applicability of this section. The requirements of § 72.102 will continue to apply for an ISFSI or MRS using wet modes of storage or dry modes of storage that do not use casks.

The NRC does not intend for existing part 72 licensees to re-evaluate the geological and seismological characteristics for siting and design using the revised criteria in the changes to the regulations. These existing facilities are considered safe because the criteria used in their evaluation have been determined to be safe for NPP licensing, and the seismically induced risk of an ISFSI or MRS is significantly lower than that of an NPP. The change leaves the current § 72.102 in place to preserve the licensing bases of present ISFSIs.

*Section 72.103 Geological and seismological characteristics for applications for dry cask modes of storage on or after October 16, 2003*

The trend towards dry cask storage has resulted in the need for applicants for new licenses to request exemptions from § 72.102(f)(1), which requires that for sites evaluated under the criteria of Appendix A to Part 100, the DE must be equivalent to the SSE for an NPP. By making § 72.102 applicable only to existing ISFSIs and by providing a new § 72.103, the revised rule is intended to preclude the need for exemption requests from new specific-license applicants.

The new requirements in § 72.103 parallel the requirements in § 72.102. However, new specific-license applicants for sites located in either the western U.S. or in the eastern U.S. in areas of known seismic activity, and not co-located with an NPP, for dry cask storage applications, on or after the effective date of this rule, will be required to address the uncertainties in seismic hazard analysis by using a PSHA or sensitivity analyses instead of using the deterministic methods of Appendix A to Part 100 without sensitivity analyses. Applicants located

in either the western U.S. or in areas of known seismic activity in the eastern U.S., and co-located with an NPP, have the option of using the PSHA methodology or suitable sensitivity analyses for determining the DE, or using the existing design criteria for the NPP. This change to require an understanding of the uncertainties in the determination of the DE will make the regulations compatible with 10 CFR 100.23 for NPPs and will allow the geological and seismological criteria for ISFSI or MRS dry cask storage facilities to be risk-informed.

New § 72.103(a)(1) provides that sites located in eastern U.S. and not in areas of known seismic activity, will be acceptable if the results from onsite foundation and geological investigation, literature review, and regional geological reconnaissance show no unstable geological characteristics, soil stability problems, or potential for vibratory ground motion at the site in excess of an appropriate response spectrum anchored at 0.2 g. Section 72.103(a)(1) will parallel the requirements currently included in § 72.102(a)(1).

New § 72.103(a)(2) provides that applicants conducting evaluations in accordance with § 72.103(a)(1) may use a standardized DE described by an appropriate response spectrum anchored at 0.25 g. These requirements parallel the requirements currently included in § 72.102(a)(2). Section 72.102(a)(2) provides an alternative to determine a site-specific DE using the criteria and level of investigations required by Appendix A to Part 100. New § 72.103(a)(2) also provides, as an alternative, that a site-specific DE may be determined by using the criteria and level of investigations in new § 72.103(f). Section 72.103(f) is a new provision that requires certain new ISFSI or MRS license applicants to address uncertainties in seismic hazard analysis by using appropriate analyses, such as a PSHA or suitable sensitivity analyses, in determining the DE instead of the current deterministic approach in Appendix A to Part 100.

New § 72.103(a)(2) also provides that if an ISFSI or MRS is located at an NPP site, the existing geological and seismological design criteria for the NPP may be used instead of PSHA techniques or suitable sensitivity analyses because the risk due to a seismic event at an ISFSI or MRS is less than that of an NPP. If the existing design criteria for the NPP is used and the site has multiple NPPs, then the criteria for the most recent NPP must be used to ensure that the seismic design

criteria used is based on the latest seismic hazard information at the site.

New § 72.103(b) provides that applicants for licenses for sites located in either the western U.S. or in the eastern U.S. in areas of known seismic activity, must investigate the geological, seismological, and engineering characteristics of the site using the PSHA techniques or suitable sensitivity analyses of new § 72.103(f). If an ISFSI or MRS is located at an NPP site, the existing geological and seismological design criteria for the NPP may be used instead of PSHA techniques or suitable sensitivity analyses because the risk due to a seismic event at an ISFSI or MRS is less than that of an NPP. If the existing design criteria for the NPP is used and the site has multiple NPPs, then the criteria for the most recent NPP must be used to ensure that the seismic design criteria used is based on the latest seismic hazard information at the site.

New § 72.103(c) is identical to § 72.102(c). Section 72.103(c) requires that sites, other than bedrock sites, must be evaluated for the liquefaction potential or other soil instability due to vibratory ground motion. This is to ensure that an ISFSI or MRS will be adequately supported on a stable foundation during a seismic event.

New § 72.103(d) is identical to § 72.102(d). Section 72.103(d) requires that site specific investigation and laboratory analysis must show that soil conditions are adequate for the proposed foundation loading. This is to ensure that an ISFSI or MRS will be adequately supported on a stable foundation during a seismic event.

New § 72.103(e) is identical to § 72.102(e). Section 72.103(e) requires that in an evaluation of alternative sites, those which require a minimum of engineered provisions to correct site deficiencies are preferred, and that sites with unstable geologic characteristics should be avoided. This is to ensure that sites with minimum deficiencies are selected and that an ISFSI or MRS will be adequately supported on a stable foundation during a seismic event.

New § 72.103(f) describes the steps required for seismic hazard analysis to determine the DE for use in the design of structures, systems, and components of an ISFSI or MRS. The scope of site investigations to determine the geological, seismological, and engineering characteristics of a site and its environs is similar to § 100.23 requirements. Unlike § 72.102(f), which requires the use of the deterministic method of Appendix A to Part 100, new § 72.103(f) requires evaluating uncertainty in seismic hazard analysis