

present, but is of a character that in principle is reducible through further research; and (2) aleatory uncertainty which is due to the randomness of seismic events and, in principle, cannot be reduced. As stated in the SSHAC report, "The division between the two different types of uncertainty, epistemic and aleatory, is somewhat arbitrary, especially at the border between the two. This is because, conceptually, some of the processes and parameters whose uncertainties the NRC will characterize here as aleatory ("random") may be partially reducible through more elaborate models and/or further study". As stated further in the SSHAC report, "the PSHA that does not deal appropriately with both the epistemic and the aleatory uncertainties must be considered inadequate." Based on this, the term "uncertainty" included in the proposed rule is appropriate.

Revise the Design Earthquake Ground Motion

Comment 17: A commenter stated that performance standards are not clearly articulated in the proposed rule. The commenter also stated that before the design standard is lowered, the performance standards or goals by which the proposed changes were evaluated should first be identified.

Response: The current regulations in § 72.122(b)(2)(i) require that the structures, systems, and components of an ISFSI or MRS must be designed to withstand the effects of natural phenomena, such as earthquakes, without impairing their capability to perform their intended design functions. For earthquakes, these requirements are then supplemented by the §§ 72.102 and 72.103 requirements for the detailed site investigations and consideration of uncertainties in the prediction of earthquakes. This approach is consistent with the Commission's philosophy of using risk-informed, performance-based regulations. In a risk-informed, performance-based approach, the design of the facility is based on considering the risk (potential for adverse consequences) due to an earthquake.

Comment 18: One commenter is concerned that lowering the existing DE may result in a concomitant lowering of the design basis for locally-sourced tsunamis. The commenter is concerned because the most likely scenario for release of radiation in a coastal setting would be damage to an ISFSI or MRS during a major earthquake, followed by inundation of the facility by a tsunami.

Response: Section 72.103(f)(1) requires consideration of actual or potential geologic and seismic effects at the proposed site, including locally-

sourced tsunamis. Potential inundation of the facility by a tsunami is required to be addressed in the design of the facility under § 72.122(b)(2). Under the amended rule, the tsunami magnitudes corresponding to the DE would be lower than for a nuclear power plant. However, an earthquake similar in magnitude to the SSE for an NPP would not damage an ISFSI or MRS facility, thus no release of radioactivity would occur even if the facility were inundated by a resulting locally-sourced tsunami.

Comment 19: A commenter stated that in order to issue a coastal development permit in California the State or a local government must make a finding that the proposed ISFSI will minimize risks to life and property in areas of high geologic hazard, and assure stability and structural integrity of the proposed coastal development. The commenter noted that, for the San Onofre Nuclear Generating Station (SONGS) ISFSI, the required finding was able to be made by the State only because the applicant proposed a seismic design standard far in excess of the SSE for the co-located NPP. The commenter indicated that such a finding may not be possible at future ISFSI sites if the applicant submits a design standard lower than those required for an NPP. The commenter stated that the proposed rule change makes approval of coastal development permits in California for future ISFSIs difficult at best.

Response: The NRC sees no reason why the rule would make this finding difficult. The rule ensures adequate protection of public health and safety in all environs. The close proximity of faults or populations are considered in the regulations (for example, the dose requirements contained in §§ 72.104(a) and 72.106(b)). Applying a risk-informed approach to seismic design of ISFSIs takes these factors into account and the analyses indicate that protection of public health and safety are adequately addressed.

Proposed Change to 10 CFR 72.212(b)(2)(i)(B)

Comment 20: Two commenters noted that although the proposed change to 10 CFR 72.212(b)(2)(i)(B) to require that the cask storage pads and areas be designed to adequately support dynamic loads, as well as static loads, of the stored casks, may require more analytical effort than the static load evaluations that some licensees had attempted to utilize in the past, they find the new requirements to be technically correct and support the concept that the seismic evaluation should be conducted using state-of-the-art structural dynamics principles, including consideration of dynamic

loads. One commenter had no objection to the portion of the proposed rule that would require design of cask storage pads and areas to adequately account for dynamic loads. Another commenter stated that requiring this evaluation for storage pads and areas clearly improves the assurance of safety.

Response: The commenters support the NRC's decision to require evaluation of dynamic loads for storage cask pads and areas. Further, general licensees currently consider 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 rule change will not actually impose a new burden on the general licensees.

Related Regulatory Guide

Comment 21: A commenter stated that Draft Regulatory Guide DG-3021 "is short on firm standards" because, although it recommends a DE at a MAPE of 5E-4, it also allows an applicant to demonstrate that the use of a higher probability of exceedance value would not impose any undue radiological risk to public health and safety. Thus, the draft guidance, in the commenter's view, "leaves open the possibility of an even lower standard for seismic sites." Another commenter defends the guidance that an applicant could propose a higher probability of exceedance value as being an exemption to what the commenter sees as the norm being established in DG-3021.

Response: Section 72.103(f)(2)(i) of the rule requires that an applicant include a determination of the DE for the site, considering the results of the investigations required by paragraph (f)(1) and addressing uncertainties through an appropriate analysis, such as a PSHA or suitable sensitivity analyses. Regulatory Guide 3.73 (formerly DG-3021) states that a mean annual probability of exceeding the DE of 5E-4 is recommended to be used in conjunction with the PSHA for determining the DE. As the commenter notes, the draft guidance also indicated that "[t]he use of a higher reference probability will be reviewed and accepted on a case-by-case basis." This statement was made in recognition of the fact that a regulatory guide does not establish legally-binding requirements. An alternative reference probability would not be an exemption from a requirement, but would be an alternative proposal which would need to be demonstrated to be acceptable. Thus, it is conceivable that an applicant could propose a higher MAPE value that the NRC staff would then have to consider. Although this is necessarily