



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

December 15, 2016

Dr. Dennis C. Bley, Chairman  
Advisory Committee on Reactor Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

SUBJECT: DRAFT FINAL RULE ON MITIGATION OF BEYOND-DESIGN-BASIS EVENTS  
AND ASSOCIATED REGULATORY GUIDANCE

Dear Dr. Bley:

I am responding to your letter dated December 6, 2016 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16341B371), in which the Advisory Committee on Reactor Safeguards (ACRS or the Committee) provided its recommendations concerning the draft final Mitigation of Beyond-Design-Basis Events (MBDBE) rule and the associated regulatory guidance. In your letter, you indicated that the Committee recommends that the MBDBE rule be published, subject to one change discussed below. The Committee also provided recommendations related to the rule's guidance and the U.S. Nuclear Regulatory Commission (NRC) staff's review of licensees' contingency actions. The results of the NRC staff's evaluation of each of these recommendations follows.

ACRS Recommendation 1

To ensure the rule consolidates and integrates requirements for equipment and strategies that licensees will use to mitigate the effects from a wide range of severe hazards, the equipment capability requirements in paragraph (c)(1), and the communications requirements in paragraph (c)(4) should apply for all of the strategies in paragraphs (b)(1) through (b)(3).

Staff Response to ACRS Recommendation 1

The requirements in Title 10 of the *Code of Federal Regulations* (10 CFR), paragraph 50.155(b)(3) are associated with the loss of large areas of the plant due to explosions and fires, which would be relocated from 10 CFR 50.54(hh)(2). The equipment capability requirements in paragraph (c)(1) and the communications requirements in paragraph (c)(4) do not apply to those strategies, but rather only to the strategies in paragraphs (b)(1) and (b)(2). After consideration, the NRC staff concludes that the MBDBE rule should not be revised as recommended for the following reasons.

1. The draft final MBDBE rule was developed so as not to increase the previously imposed requirements in 10 CFR 50.54(hh)(2). Instead, the NRC intended only to relocate those requirements to the MBDBE rule, recognizing the similarity of the 10 CFR 50.54(hh)(2) strategies and guidelines to the new strategies and guidelines for beyond-design-basis external events, and that integration of the new strategies and guidelines would involve consideration of the existing 10 CFR 50.54(hh)(2) strategies and guidelines.

2. Equipment performance and supporting communication needs are addressed in the guidance supporting 10 CFR 50.54(hh)(2). Extending the equipment and communications requirements in the MBDBE rule to apply to the strategies in 10 CFR 50.155(b)(3) would not enhance safety, because the underlying intent of the recommendation is achieved through the guidance.
3. Because this recommendation would elevate equipment and communications guidance to the level of an explicit requirement, this recommendation would need to be justified under the Commission's backfitting regulations. The safety benefit of such a requirement has already been achieved through implementation of approved guidance; as such, the NRC staff concludes that such a backfit could not be justified.

For these reasons, the staff did not modify the rule as a result of ACRS Recommendation 1.

#### ACRS Recommendation 2

Draft final Regulatory Guide 1.226 should be revised to omit the overall seismic risk screening criteria that are recommended in Section H.4.5.3 of Nuclear Energy Institute (NEI) guidance document NEI 12-06, Revision 3.

#### Staff Response to ACRS Recommendation 2

The NRC staff agrees with the Committee's discussion that the regulatory intent of the paragraph 10 CFR 50.155(b)(2) in the draft final MBDBE rule is "that structures and equipment [that] are used to implement the mitigating strategies should be relatively robust with respect to the reevaluated hazard (i.e., they should have sufficient capacities to withstand the reevaluated hazard with a relatively low likelihood of failure) or that their failure during a seismic event would have a minimal effect on plant risk." However, the NRC staff believes that the screening criteria proposed in NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide," Revision 3, Section H.4.5.3, provide an acceptable approach for a licensee to assess whether the failure of the mitigating strategies during a seismic event would have minimal effect on plant risk. The NRC staff concludes that the ongoing activities related to Near-Term Task Force Recommendation 2.1, along with the approaches discussed in Section H of NEI 12-06, including the overall screening approach in Section H.4.5.3, ensure that seismic risk has been appropriately addressed for these plants.

The NRC staff's position is based, in part, on the maturity of seismic probabilistic risk assessments (SPRAs), coupled with the inherent seismic robustness of nuclear power plants. This seismic robustness continues to be demonstrated in recent operating experience, including post-earthquake reviews of plant capacity to withstand beyond-design-basis earthquake conditions in Japan and the United States. The NRC staff concludes that including the screening criteria in the guidance as one acceptable means for addressing reevaluated seismic hazard information in a risk-informed manner would also result in more efficient reviews of compliance with the requirements in paragraph 10 CFR 50.155(b)(2) of the draft final MBDBE rule, while achieving the regulatory objective of appropriately addressing the reevaluated seismic hazard information effects.

With respect to the screening value provided in NEI 12-06, Revision 3, Section H.4.5.3, the staff believes that the chosen screening level appropriately addresses the requirements in

paragraph 10 CFR 50.155(b)(2) of the draft final MBDBE rule, which are imposed under the adequate protection exception to the backfit rule (10 CFR 50.109(a)(4)(ii)). In particular, the chosen level of  $5 \times 10^{-5}$  per year is conservative relative to core damage frequency estimates that would typically be considered to support potential adequate protection backfits, when weighed with other case-specific considerations using existing NRC guidance (see ADAMS Accession No. ML16295A104, which documents the staff's resolution of a non-concurrence related to the use of risk-informed approaches in Appendix H of NEI 12-06, for further discussion). Finally, the staff notes that while the guidance would still provide a means for compliance with the rule even with the criteria in Section H.4.5.3 removed, such a change would result in additional resource expenditure on the part of both licensees and NRC staff (e.g., in applying and reviewing the iterative evaluation approach discussed in Section H.4.5.5). The NRC staff concludes that review under the iterative process of Section H.4.5.5 for facilities meeting the screening criteria in Section H.4.5.3 would be inefficient because such facilities do not pose sufficient seismic risk to justify the imposition of adequate protection-based backfits. Facilities meeting the screening criteria would be more appropriately considered for the imposition of cost-justified substantial safety improvements, as described below.

The NRC staff also notes that the results of licensees' SPRAs will be reviewed for potential substantial safety enhancements, beyond those associated with the MBDBE rule, as part of Near-Term Task Force Recommendation 2.1. Specifically, as part of Recommendation 2.1, the NRC staff will assess the results of the SPRAs to determine if additional safety enhancements are warranted to further improve seismic safety. This effort is described in the staff's Phase 2 decision-making guidance document, "Regulatory Decision-Making for Reevaluated Flooding and Seismic Hazards for Operating Nuclear Power Plants" (ADAMS Accession No. ML16237A103). This guidance document discusses that in evaluating the need for additional backfits, the staff will adhere to the NRC's implementing guidance for backfit decision-making regarding cost-justified substantial improvements to safety. Taken together, these two regulatory efforts—the MBDBE rule and Recommendation 2.1—will sufficiently address seismic safety issues that might exist for these plants.

For the reasons discussed above, the NRC staff does not intend to revise the guidance for the MBDBE rule to remove the overall risk screening criteria in Section H.4.5.3 of NEI 12-06, Revision 3.

### ACRS Recommendation 3

It is important that Interim Staff Guidance JLD-ISG-2012-01, Revision 2, and Regulatory Guide 1.226 contain guidance that is functionally equivalent and applied consistently for all licensees. Draft final Regulatory Guide 1.226 should not be issued until it is reconciled with the final guidance in JLD-ISG-2012-01, Revision 2.

### Staff Response to ACRS Recommendation 3

The NRC staff agrees with this recommendation. The substantive guidance in JLD-ISG-2012-01, "Compliance with Order EA-12-049, 'Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events,'" Revision 2, is the same as that found in draft final Regulatory Guide 1.226, "Flexible Mitigation Strategies for Beyond-Design-Basis Events." The two will be reconciled in the final guidance.

ACRS Recommendation 4

Draft final Regulatory Guides 1.227 and 1.228 should be issued.

Staff Response to ACRS Recommendation 4

The NRC staff agrees with this recommendation.

ACRS Recommendation 5

The staff should review the mitigating strategies and the baseline FLEX Support Guidelines to ensure that they appropriately integrate contingency actions for loss of direct current power supplies, associated instrumentation requirements, and equipment operating practices.

Staff Response to ACRS Recommendation 5

The NRC staff clarified the rule language and supporting notice to more clearly align it with the manner in which Order EA-12-049 has been implemented. Accordingly, key mitigation strategies equipment must be reasonably protected from either the design basis external events, or the reevaluated seismic and/or flooding hazards, as applicable. This protection is intended, in part, to support the underlying assumptions for the assumed initial damage state. Nonetheless, contingency measures are included to support implementation of the MBDBE rule. Accordingly, the NRC staff agrees with this recommendation, noting that it has been following the approach recommended by ACRS for the review and inspection of the implementation of Order EA-12-049.

D. Bley

- 5 -

The NRC staff recognizes the ACRS's extensive involvement in this rulemaking over the last several years and would like to convey its appreciation to the ACRS for its review of, and feedback on, this important rulemaking.

Sincerely,

/RA by Michael Johnson for/

Victor M. McCree  
Executive Director  
for Operations

cc: Chairman Burns  
Commissioner Svinicki  
Commissioner Baran  
SECY

D. Bley

- 5 -

The NRC staff recognizes the ACRS's extensive involvement in this rulemaking over the last several years and would like to convey its appreciation to the ACRS for its review of, and feedback on, this important rulemaking.

Sincerely,

/RA by Michael Johnson for/

Victor M. McCree  
Executive Director  
for Operations

cc: Chairman Burns  
Commissioner Svinicki  
Commissioner Baran  
SECY

**DISTRIBUTION:** LTR-16-0581-1

PUBLIC	RidsNroMailCenter	TReed
RidsACRS_MailCTR	RidsNmssOd	EBowman
RidsNrrDpr	RidsEdoMailCenter	MKhanna
RidsNsirOd	RidsNrrOd	GLappert
RidsNrrMailCenter	RidsOcaMailCenter	TClark, OEDO

**ADAMS Accession Numbers:** Package: ML16343A131 \*via e-mail EDO-002  
Response: ML16343A146; Incoming: ML16341B371

OFFICE	NRR/DPR/PRMB	NRR/JLD	NRR/DPR/PRMB	Tech Editor*	NRR/DPR/PRMB/BC
NAME	TReed	EBowman	GLappert	JDougherty	MKhanna
DATE	12/12/2016	12/13/2016	12/12/2016	12/13/2016	12/12/2016
OFFICE	NRR/DPR	NRR/JLD	NRR	EDO	
NAME	LLund	MFranovich	WDean	VMcCree (MJohnson for)	
DATE	12/14/2016	12/14/2016	12/14/2016	12/15/2016	

D. Bley

- 6 -

**OFFICIAL RECORD COPY**