

**BEING PROVIDED TO SUPPORT THE MEETING WITH
ACRS FUKUSHIMA SUBCOMMITTEE MEETING AND
NOT TO SOLICIT EXTERNAL STAKEHOLDER FEEDBACK**

The following is draft preliminary final rule language that is only intended to facilitate discussion with the ACRS Fukushima subcommittee.

The draft language is not provided to invite public comment, as the public comment period for the MBDBE rule closed on February 11, 2016.

It is important to recognize that this is only draft language, it has not received NRC management review, and most importantly this draft preliminary final rule language does not constitute an official NRC position at this time. This draft language may be revised as the rulemaking process proceeds.

§ 50.8 Information collection requirements: OMB approval.

(b) The approved information collection requirements contained in this part appear in §§ 50.30, 50.33, 50.34, 50.34a, 50.35, 50.36, 50.36a, 50.36b, 50.44, 50.46, 50.47, 50.48, 50.49, 50.54, 50.55, 50.55a, 50.59, 50.60, 50.61, 50.61a, 50.62, 50.63, 50.64, 50.65, 50.66, 50.68, 50.69, 50.70, 50.71, 50.72, 50.74, 50.75, 50.80, 50.82, 50.90, 50.91, 50.120, 50.150, 50.155, and appendices A, B, E, G, H, I, J, K, M, N, O, Q, R, and S to this part.

Commented [A1]: No Change from proposed rule.

§ 50.34 Contents of applications; technical information.

(a) * * *

(13) On or after July 13, 2009, power reactor applicants who apply for a construction permit shall submit the information required by 10 CFR 50.150(b) as a part of their preliminary safety analysis report.

(b) * * *

(12) On or after July 13, 2009, power reactor applicants who apply for an operating license which is subject to 10 CFR 50.150(a) shall submit the information required by 10 CFR 50.150(b) as a part of their final safety analysis report.

Commented [A2]: No Change from proposed MBDBE rule:

These sections are here to remove the word "stationary" prior to "power reactor applicants" in order to correct an administrative error in the Aircraft Impact Assessment rulemaking that came to light during the MBDBE rulemaking. § 50.150(a)(3) provides the applicability for § 50.150 and is not limited to stationary power reactors; the usage was a carryover from §§ 50.34(a)(12) and 50.34(b)(11) related to seismic issues.

(i) *Mitigation of beyond-design-basis events.* Each application for a power reactor operating license under this part must include the applicant's plans for implementing the requirements of § 50.155 and 10 CFR part 50, appendix E, section VII, including a schedule for achieving full compliance with these requirements. The application must also include a description of:

- (1) The integrated response capability required by § 50.155(b); and

Commented [A3]: This change results from relocation of staffing and communications requirements from proposed Section VII to 10 CFR Part 50 Appendix E to 50.155

**BEING PROVIDED TO SUPPORT THE MEETING WITH
ACRS FUKUSHIMA SUBCOMMITTEE MEETING AND
NOT TO SOLICIT EXTERNAL STAKEHOLDER FEEDBACK**

**BEING PROVIDED TO SUPPORT THE MEETING WITH
ACRS FUKUSHIMA SUBCOMMITTEE MEETING AND
NOT TO SOLICIT EXTERNAL STAKEHOLDER FEEDBACK**

(2) The equipment upon which the strategies and guidelines required by § 50.155(b)(1) rely, including the planned locations of the equipment and how the equipment and SSCs meet the design requirements of § 50.155(c); and

~~(3) The strategies and guidelines required by § 50.155(b)(2).~~

§ 50.54 Conditions of licenses.

* * * * *

(hh) * * *

(2) This section does not apply to a licensee that has submitted the certifications required under § 50.82(a)(1) or § 52.110(a) of this chapter once the NRC has docketed those certifications.

* * * * *

§ 50.155 Mitigation of Beyond-Design-Basis Events.

(a) Applicability.

(1) Each holder of an operating license for a nuclear power reactor under this part and each holder of a combined license under part 52 of this chapter after the Commission has made the finding under § 52.103(g), ~~before the NRC's docketing of the license holder's certifications described in § 50.82(a)(1) or § 52.110(a) of this chapter,~~ shall comply with the requirements of this section ~~and section VII of appendix E to 10 CFR part 50~~ until the NRC's docketing of the license holder's certifications described in § 50.82(a)(1) or § 52.110(a) of this chapter.

(2) Each applicant for an operating license for a nuclear power reactor under this part and each holder of a combined license under part 52 of this chapter before the Commission has made the finding under § 52.103(g) shall comply with the requirements of this section and section VII of appendix E to 10 CFR part 50 no later than the date on which the Commission issues the operating license under § 50.57 or makes the finding under § 52.103(g), respectively.

(3)(i) ~~Once~~ When the NRC has docketed the certifications described in § 50.82(a)(1) or § 52.110(a) of this chapter, submitted by a licensee subject to the requirements of this section ~~and section VII of appendix E to 10 CFR part 50,~~ then that licensee shall ~~need only~~ comply with the following provisions until all irradiated fuel has been permanently removed from the spent fuel pool(s):

Commented [A4]: 50.34(i)(3) is deleted to simplify the text and avoid confusion because it is redundant to the provisions of 50.34(i)(1) with respect to the 50.155(b)(3) [(b)(2) in the proposed rule] strategies and could leave the impression that it is unnecessary to describe the 50.155(b)(1) strategies.

Commented [A5]: No Change from proposed rule.

Commented [A6]: No Change from proposed rule.

Commented [A7]: This change results from relocation of staffing and communications requirements from proposed 10 CFR Part 50, Appendix E, Section VII, which has been eliminated, into 10 CFR 50.155.

Other changes are to clarify the application requirements.

Commented [A8]: The revisions to (a)(3) are shown in red and are to implement comments on the proposed rule that result in a clarification of the decommissioning provisions built-into this regulation.

We agreed, in part, with the proposed comments.

**BEING PROVIDED TO SUPPORT THE MEETING WITH
ACRS FUKUSHIMA SUBCOMMITTEE MEETING AND
NOT TO SOLICIT EXTERNAL STAKEHOLDER FEEDBACK**

**BEING PROVIDED TO SUPPORT THE MEETING WITH
ACRS FUKUSHIMA SUBCOMMITTEE MEETING AND
NOT TO SOLICIT EXTERNAL STAKEHOLDER FEEDBACK**

(A) If the reactor design employs secondary containment as a fission product barrier for the spent fuel pool source term, then the licensee shall comply with the requirements of § 50.155(b) through (e) associated with maintaining or restoring secondary containment and spent fuel pool cooling capabilities; or

(B) If the reactor design does not employ secondary containment as a fission product barrier for the spent fuel pool source term, then the licensee shall comply with the requirements of §50.155(b) through (e) associated with spent fuel pool cooling capabilities.

~~requirements of § 50.155(b) through (e) associated with maintaining or restoring secondary containment capabilities, if applicable, and spent fuel pool cooling capabilities, but need not comply with § 50.155(c)(4) and section VII of appendix E to 10 CFR part 50, for the unit described in the § 50.82(a)(1) or § 52.110(a) certifications until the spent fuel pool(s) is empty of all irradiated fuel.~~

(ii) Holders of operating licenses or combined licenses for which the NRC has docketed the certifications described in § 50.82(a)(1) or § 52.110(a) of this chapter need not meet the requirements of this section except for paragraph (b)(3) of this section once the decay heat of the fuel in the spent fuel pool can be removed solely by heating and boiling of water within the spent fuel pool and the boil-off period provides sufficient time for the licensee to obtain off-site resources to sustain the spent fuel pool cooling function indefinitely, as demonstrated by an analysis performed and retained by the licensee.

(iii) Dominion Nuclear Connecticut, Inc. (Millstone Power Station Unit 1) is not subject to the requirements of this section.

~~(iv) Holders of operating licenses or combined licenses for which the NRC has docketed the certifications described in § 50.82(a)(1) or § 52.110(a) are not subject to the requirements of this section once all irradiated fuel has been permanently removed from the spent fuel pool(s).~~

(b) *Integrated response capability.* Each applicant or licensee shall develop, implement, and maintain an integrated response capability that includes:

(1) *Mitigation Strategies for Beyond-Design-Basis External Events.* Strategies and guidelines to mitigate beyond-design-basis external events from natural phenomena that ~~are developed assuming~~ result in an extended loss of all ac power concurrent with either a loss of normal access to the ultimate heat sink or, for passive reactor designs, a loss of

**BEING PROVIDED TO SUPPORT THE MEETING WITH
ACRS FUKUSHIMA SUBCOMMITTEE MEETING AND
NOT TO SOLICIT EXTERNAL STAKEHOLDER FEEDBACK**

Commented [A9]: Renumbered due to insertion of reevaluated hazard treatment at (b)(2).

Commented [A10]: Additional clarifications to decommissioning provisions stemming from public comments.

Commented [A11]: These words are added to clarify the final rule to more clearly reflect that the damage state is "assumed" as a practical means to develop the additional capability, which is then used/adapted to any beyond-design-basis events that might occur. These strategies are developed as a baseline capability and not to address a specific beyond design basis event.

Commented [A12]: The rule language remains unchanged:

The final MBDBE rule supporting statement of considerations (SOC) will be revised to more explicitly address the meaning and intent of "loss of all ac." It will clearly state that this consists of two parts:

1) An assumed extended loss of ac power (ELAP) and loss of normal access to the ultimate heat sink (LUHS) damage state to establish a sequence of events that then defines mitigation actions and required times for the baseline capability. This is supported with thermal/hydraulic analyses which are key for defining when actions to maintain/restore capabilities need to be taken.

2) Contingency actions if the event initially, or at some point, becomes worse than an ELAP and mitigation (for core cooling) requires local/manual control of non-ac powered pumps supported with use of instruments (multi-meter) or other means (not dependent on the functioning of ac system), to support the actions.

**BEING PROVIDED TO SUPPORT THE MEETING WITH
ACRS FUKUSHIMA SUBCOMMITTEE MEETING AND
NOT TO SOLICIT EXTERNAL STAKEHOLDER FEEDBACK**

normal access to the normal heat sink. These strategies and guidelines must be capable of being implemented site-wide and must include:

- (i) Maintaining or restoring core cooling, containment, and spent fuel pool cooling capabilities; and
- (ii) The acquisition and use of offsite assistance and resources to support the functions required by paragraph (b)(1)(i) of this section indefinitely, or until sufficient site functional capabilities can be maintained without the need for the mitigation strategies.

(2) *Reevaluated Seismic and Flooding Hazards Mitigation.* Each licensee that received the March 12, 2012 NRC letter issued under 10 CFR 50.54(f) shall consider the effects of the reevaluated hazards information developed in response to that request if the magnitude of those hazards exceeds the external design basis of the facility.

(i) For licensees that need additional time to achieve compliance with paragraph (b)(2) to address a reevaluated seismic hazard, the NRC will consider an alternative compliance date if the licensee submits to the Director, Office of Nuclear Reactor Regulation, under 10 CFR 50.4, no later than [INSERT DATE 90 DAYS AFTER THE EFFECTIVE DATE OF THE FINAL RULE], an extension request that provides good cause for exceeding the 2-year compliance date. Factors that may be considered as supporting a finding of good cause include: supporting justification that the schedule extension does not introduce a significant safety concern; limited key resources, models, and guidance for considering the effects of seismic reevaluated hazards; additional time to make revisions to existing guidance, strategies, and procedures to address the effects of the reevaluated hazards; and additional time to support implementation of modifications to the facility to address the effects that can include additional time for engineering, procurement, and the need to install the modifications during refueling outages. The compliance date extension request will be regarded as approved by the Commission 120 days after submission to the Commission.

(ii) Licensees subject to paragraph 50.155(b)(2) shall use one or both of the following approaches:

(A) Demonstrate that the mitigation strategies and guidelines required by paragraph (b)(1) of this section, as implemented or as modified, are capable of mitigating the effects of the reevaluated hazards;

(B) Develop event-specific approaches that address the reevaluated hazard information to include demonstration that the effects of the reevaluated hazards can be mitigated through the use of available equipment and SSCs in the facility.

**BEING PROVIDED TO SUPPORT THE MEETING WITH
ACRS FUKUSHIMA SUBCOMMITTEE MEETING AND
NOT TO SOLICIT EXTERNAL STAKEHOLDER FEEDBACK**

Commented [A13]: This portion of the final MBDBE rule implements the Commission's SRM on COMSECY-14-0037.

Fundamentally it requires addressment of the reevaluated hazard information.

It provides flexibility to licensees, in addressing that hazard information, to either use their mitigations ... [1]

Commented [A14]: This change to the final MBDBE rule reflects an improved treatment of the reevaluated hazard information.

The final MBDBE rule would contain language "each licensee that received ...if the magnitude of those ... [2]

Commented [A15]: "Developed in response to" provides licensees with flexibility to adjust the hazard they originally determined/calculated per the 10 CFR 50.54(f) request and sent to NRC, should licensees decide that they need to remove excess conservatism. This flexibility recognizes that the calculated hazard ... [3]

Commented [A16]: This portion of new 50.155(b)(2) provides the schedule flexibility for addressing the reevaluated hazard information. Although located here – the NRC may locate this provision in paragraph (h)

Commented [A17]: This portion would represent flooding path 1 or path 2 and seismic paths 1, 2, and 4

Commented [A18]: The language uses "approaches" rather than "strategies and guidelines," since licensees have flexibility to use any available procedures and strategies to demonstrate that the reevaluated hazard effects can be mitigated. ... [4]

Commented [A19]: The supporting SOC would make it clear that these approaches are not required to maintain containment functional capability – and the rule is structured accordingly since this provisions is NOT linked to (b)(1). This aspect of the rule must align with the reasonable protection requirement in ... [5]

Commented [A20]: This portion would represent the alternate mitigating strategies approach in flooding path 3 and seismic paths 3 and 5, as well as, the targeted hazard mitigating strategies approach of flooding path 4. See next note for path 5 ... [6]

BEING PROVIDED TO SUPPORT THE MEETING WITH
ACRS FUKUSHIMA SUBCOMMITTEE MEETING AND
NOT TO SOLICIT EXTERNAL STAKEHOLDER FEEDBACK

(23) *Extensive Damage Mitigation Guidelines (EDMGs)*. Strategies and guidelines to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities under the circumstances associated with loss of large areas of the plant **that is impacted by the event** due to explosions or fire, to include strategies and guidelines in the following areas:

- (i) Firefighting;
- (ii) Operations to mitigate fuel damage; and
- (iii) Actions to minimize radiological release.

(34) Integration of strategies and guidelines in paragraphs (b)(1) **and through** (b)(23) of this section with the Emergency Operating Procedures (EOPs).

(45) Sufficient staffing to support implementation of the strategies and guidelines **in paragraphs (b)(1) and (b)(2)** of this section in conjunction with the EOPs to respond to events.

(56) A supporting organizational structure with defined roles, responsibilities, and authorities for directing and performing the strategies and guidelines in paragraphs (b)(1) **and through** (b)(23) of this section.

(c) *Equipment*.

(1) The **capacity and capability of the** equipment relied on for the mitigation strategies required by paragraph (b)(1) of this section must **have** be sufficient **capacity and capability** to simultaneously maintain or restore core cooling, containment, and spent fuel pool cooling capabilities for all the power reactor units within the site boundary.

(2) The equipment relied on for the mitigation strategies required by paragraph (b)(1) of this section must be reasonably protected from the effects of natural phenomena that are equivalent **in magnitude to the phenomena assumed for developing** to the design basis of the facility.

(3) The **equipment** relied on for paragraph (b)(2) of this section must be reasonably protected from the effects of **the reevaluated hazards determined in response to the March 12, 2012 NRC letter issued under 10 CFR 50.54(f)**.

(i) Each licensee that received the March 12, 2012, NRC letter issued under § 50.54(f) concerning reevaluations of seismic and flooding hazard levels, shall provide

BEING PROVIDED TO SUPPORT THE MEETING WITH
ACRS FUKUSHIMA SUBCOMMITTEE MEETING AND
NOT TO SOLICIT EXTERNAL STAKEHOLDER FEEDBACK

Commented [A21]: Clarification: These provisions apply on a unit-specific basis only. This clarification is to distinguish them from 50.155(b)(1) which are required to implemented site-wide.

This change addresses a public comment.

Commented [A22]: Staffing was in the proposed rule – the staff received comments that it should be limited to (b)(1)

The final MBDBE rule would apply it to all of 50.155(b) as a high level performance-based requirement to have sufficient staff to enable implementation, on a continuing basis, of the strategies and guidelines of this section.

Importantly – this would not require that current operating licensees re-submit staffing analyses, which have been completed in all cases (including for EDMGs)

... [7]

Commented [A23]: Revision made in response to public comments intended to improve clarity

Commented [A24]: "in magnitude to the phenomena for developing" is intended to clarify the final rule. It is the magnitude of the hazard that is equivalent. The "treatment," in terms of design, quality assurance, maintenance, and other applicable requirements is less than would be applied under the special treatment requirements for the beyond-design-basis function...

... [8]

Commented [A25]: "Equipment" will need to be clarified in the supporting SOC.

Equipment means "FLEX" equipment as it is termed by industry, and plant equipment (installed SSCs), noting that both terms are used in the endorsed supporting guidance. The treatment in terms of design that th...

... [9]

Commented [A26]: With the move of reevaluated hazards to 50.155(b)(2), reasonable protection can now be aligned with the applicable provision in 50.155(b)

Commented [A27]: No matter how the licensee elects to address the reevaluated hazard information should it exceed the design basis levels, there will be a need to "reasonably protected equipment.

... [10]

**BEING PROVIDED TO SUPPORT THE MEETING WITH
ACRS FUKUSHIMA SUBCOMMITTEE MEETING AND
NOT TO SOLICIT EXTERNAL STAKEHOLDER FEEDBACK**

reasonable protection against that reevaluated seismic or flooding hazard(s) if it exceeds the design basis of its facility.

(3) The equipment relied on for the mitigation strategies in paragraph (b)(1) of this section must receive adequate maintenance such that the equipment is capable of fulfilling its intended function.

(4) Each licensee shall provide sufficient communications capability, both onsite and offsite, to support implementation of the mitigation strategies and guidelines of paragraph (b)(1) of this section.

(d) *Training requirements.* Each licensee shall provide for the training and qualification of personnel that perform activities in accordance with the strategies and guidelines identified in paragraphs (b)(1) and through (b)(23) of this section. The training and qualification on these activities must be developed using the systems approach to training as defined in § 55.4 of this chapter except for elements already covered under other NRC regulations.

(e) *Drills and Exercises.*

(1) An applicant for an operating license issued under this part shall conduct an initial drill or exercise that demonstrates the capability to transition to and use one or more of the strategies and guidelines in paragraphs (b)(1) and (b)(23) of this section to include and use the communications capability equipment required in paragraph (c)(4) of this section 10 CFR part 50, appendix E, section VII, no more than 12 months before issuance of an operating license for the unit described in the license application.

(2) A holder of a combined license issued under 10 CFR part 52 before the Commission has made the finding under § 52.103(g), shall conduct an initial drill or exercise that demonstrates the capability to transition to and use one or more of the strategies and guidelines in paragraphs (b)(1) and (b)(2-3) of this section to include and use the communications capability equipment required in paragraph (c)(4) of this section 10 CFR part 50, appendix E, section VII, no more than 12 months before the date specified for completion of the last inspections, tests, and analyses in the inspections, tests, analyses, and acceptance criteria (ITAAC) completion schedule required by § 52.99(a) for the unit described in the combined license.

(3) Once the Commission issues an operating license to an entity described in paragraph (e)(1) of this section or makes the finding under § 52.103(g) of this chapter for

**BEING PROVIDED TO SUPPORT THE MEETING WITH
ACRS FUKUSHIMA SUBCOMMITTEE MEETING AND
NOT TO SOLICIT EXTERNAL STAKEHOLDER FEEDBACK**

Commented [A28]: This maintenance requirement would be removed since it is redundant to "develop, implement, and maintain" in 50.155(b) and its incorporation could create confusion with regard to the meaning and intent of "maintain" in 50.155(b).

Improves alignment with EA-12-049 is the difference.

Commented [A29]: Relocated communication requirements for final MBDDBE rule. This is a performance-based requirement linked to the (b)(1) strategies consistent with implementation of Order EA-12-049.

The supporting SOC would identify the need to do an initial communication capability analysis and provide that as part of the application under 50.34 or 52.80. It would also note that this capability must be maintained, so that changes to the facility with regard to the implementation of the requirements of this section must maintain this capability since it is an integral part of the mitigation strategy

Commented [A30]: This change to the final MBDDBE rule reflects that the minimum requirement in all cases is a drill – so the rule and the SOC throughout needs to reflect the minimum requirement.

We allow the option for licensees to include the 50.155 drills as part of exercises if they so choose.

Commented [A31]: (b)(2) is not referenced in this requirement because applicants for new operating licenses would not have been subject to the request for information issued on March 12, 2012. Rather, they would be designed and sited using the latest methods. So only (b)(1) and (b)(3) apply.

Commented [A32]: Communications capability would now be in 50.155(c)(4). Additionally - this change aligns the requirement in paragraph (e) with (c)(4) which requires a "communication capability." This occurs multiple times in this paragraph.

Commented [A33]: (b)(2) is not referenced in this requirement because applicants for COLs would not have been subject to the RFI, they would be designed and sited using the latest methods.

**BEING PROVIDED TO SUPPORT THE MEETING WITH
ACRS FUKUSHIMA SUBCOMMITTEE MEETING AND
NOT TO SOLICIT EXTERNAL STAKEHOLDER FEEDBACK**

an entity described in paragraph (e)(2) of this section, the licensee shall conduct subsequent drills, exercises, or both that collectively demonstrate a capability to use at least one of the strategies and guidelines in each of paragraphs (b)(1) and (b)(23) of this section in succeeding 8-year intervals. The drills and or exercises performed to demonstrate this capability must include transitions from other procedures and guidelines as applicable, to include and the use of communications capability equipment required in paragraph (c)(4) of this section 40 CFR part 50, appendix E, section VII. Each licensee shall not exceed 8 years between any consecutive drills or exercises.

(4) A holder of an operating license issued under this part or a combined license under 10 CFR part 52 for which the Commission has made the finding specified in § 52.103(g) as of [EFFECTIVE DATE OF THE FINAL RULE], shall conduct an initial drill or exercise that demonstrates the capability to transition to and use one or more of the strategies and guidelines in paragraphs (b)(1) and through (b)(23) of this section and use to include the communications capability equipment required in paragraph (c)(4) of this section 40 CFR part 50, appendix E, section VII, by [DATE 4 YEARS AFTER EFFECTIVE DATE OF THE FINAL RULE]. Following this initial drill or exercise, the licensee shall conduct subsequent drills, exercises, or both that collectively demonstrate a capability to use at least one of the strategies and guidelines in each of paragraphs (b)(1) and through (b)(23) of this section in succeeding 8-year intervals. The drills and or exercises performed to demonstrate this capability must include transitions from other procedures and guidelines as applicable, to include and the use of communications capability equipment required in paragraph (c)(4) of this section 40 CFR part 50, appendix E, section VII. Each licensee shall not exceed 8 years between any consecutive drills or exercises.

(f) In order to support effective prioritization of event mitigation and recovery actions, each licensee shall provide reliable means to remotely monitor wide-range water level for each spent fuel pool at its site until five years have elapsed since all of the fuel within that spent fuel pool was last used in a reactor vessel for power generation.

(gf) Documentation of Changes Change Control.

(1) A licensee may make changes in the implementation of the requirements in this section and 40 CFR part 50, appendix E, section VII, without NRC approval, provided that before implementing each such change, the licensee performs an evaluation demonstrating demonstrates that the provisions of this section and 40 CFR part 50, appendix E, section VII, continue to be met and maintains documentation of all changes until the requirements of this section no longer apply.

**BEING PROVIDED TO SUPPORT THE MEETING WITH
ACRS FUKUSHIMA SUBCOMMITTEE MEETING AND
NOT TO SOLICIT EXTERNAL STAKEHOLDER FEEDBACK**

Commented [A34]: (b)(2) is not referenced in this requirement because new licensees whether under part 50 or part 52, would have been designed and sited using the latest methods.

Commented [A35]: For licensees with mitigation strategies for reevaluated hazards, these strategies would be similar (and probably the same) to the FLEX strategies (i.e., there is likely to be only one set).

For licensees who address the reevaluated hazards through a "protection" approach, and as a result do not use a "strategy" then this would reduce to (b)(1) and (b)(3), since they would be using normal shutdown processes (with enhanced protection), and there may be no transition to, or use of any strategies.

It is likely that a licensee will take either of these two approaches 1) adjust the protection and use normal SSCs and procedures or 2) adjust FLEX such th... [11]

Commented [A36]: For licensees with mitigation strategies for reevaluated hazards, these strategies would be similar (and probably the same) to the FLEX strategies (i.e., there is likely to be only one set).

For licensees who address the reevaluated hazards through a "protection" approach, and as a result ... [12]

Commented [A37]: Relocated SFPI requirement is now decoupled from 50.155(b)(1). The SFPI requirement (EA-12-051) is independent of the mitigation strategies requirement (EA-12-049), although licensee can (and have) elect to use the SFPI for mitigation strategies, in which the mitigation strategies requirements are then applied. ... [13]

Commented [A38]: The final MBDBE rule would be revised to more accurately reflect that it requires documentation of changes (to support inspection/enforcement), rather than containing a "prior review and approval" criterion (or criteria)

Commented [A39]: Editorial suggestion from public comments.

Commented [A40]: The basic approach for change control would remain unchanged for the final MBDBE rule.

The SOC would discuss what it means to "demonstrate" that the 50.155 requirements continue to be met. It would include a discussion that focus... [14]

**BEING PROVIDED TO SUPPORT THE MEETING WITH
ACRS FUKUSHIMA SUBCOMMITTEE MEETING AND
NOT TO SOLICIT EXTERNAL STAKEHOLDER FEEDBACK**

(2) Documentation of all changes, including the evaluation required by paragraph (f)(1) of this section, shall be maintained until the requirements of this section and section VII of appendix E to 10 CFR part 50 no longer apply.

(3) Changes in the implementation of requirements in this chapter section subject to other change control processes other than this paragraph (f) of this section and resulting from changes in the implementation of the requirements in this section and 10 CFR part 50, appendix E, section VII, must be processed via their respective change control processes, unless the changes being evaluated impact only the implementation of the requirements of this section.

(hg) *Implementation.* Unless otherwise specified in this section or 10 CFR part 50, appendix E, section VII:

(1) Each holder of an operating license under this part on [EFFECTIVE DATE OF THE FINAL RULE] shall comply with all the provisions of this section no later than 2 years following [EFFECTIVE DATE OF THE FINAL RULE].

(2) Each holder of a combined license under 10 CFR part 52 for which the Commission made the finding specified in § 52.103(g) as of [EFFECTIVE DATE OF THE FINAL RULE] shall comply with all the provisions of this section no later than 2 years following [EFFECTIVE DATE OF THE FINAL RULE].

Appendix E to Part 50—Emergency Planning and Preparedness for Production and Utilization Facilities

* * * * *

I. * * * *

2. This appendix establishes minimum requirements for emergency plans for use in attaining an acceptable state of emergency preparedness. These plans shall be described generally in the preliminary safety analysis report for a construction permit and submitted as part of the final safety analysis report for an operating license. These plans, or major features thereof, may be submitted as part of the site safety analysis report for an early site permit. Section VII of this appendix also provides for “Communications and Staffing Requirements for the Mitigation of Beyond Design-Basis Events” that do not need to be contained within a licensee’s emergency plan.

* * * * *

IV. * * * *

**BEING PROVIDED TO SUPPORT THE MEETING WITH
ACRS FUKUSHIMA SUBCOMMITTEE MEETING AND
NOT TO SOLICIT EXTERNAL STAKEHOLDER FEEDBACK**

Commented [A41]: Clarification to final MBDBE rule

In the supporting SOC, we need to provide clarification that a change that only impacts mitigation strategies for beyond-design-basis events would be acceptable under fire protection, security, and EP change control requirements, even when the mitigation makes use of personnel or equipment from those programs to mitigate the actual event. This is because 1) it impacts only this rule’s implementation and as such cannot result in permanent changes to those other programs otherwise those applicable change control requirements WOULD apply, and 2) design basis events, design basis fire, design basis security and design basis EP events are not postulated to occur simultaneously with the BDB event, so use of those personnel or features during the actual BDBE event mitigation is acceptable (again – no permanent changes that impact any of those programs/requirements).

Commented [A42]: Note that schedule flexibility for addressing the provisions of 10 CFR 50.155(b)(2) is provided in that provision, rather than here.

Commented [A43]: The NRC did not receive feedback indicating a problem for new reactors with regard to the “2 years.”

If the NRC issues a 52.103 (g) finding before the effective date of this rule – then this could become more of an issue.

Would only apply to Vogtle and Summer.

... [15]

Commented [A44]: NOTE – That all of the language is “struck out” – because it is not necessary in the final rule to amend it. But only the last sentence in this paragraph was proposed to be added (the rest currently exists in Appendix E and would remain).

Similar situation below.

Commented [A45]: This change results from relocation of staffing and communications requirements from proposed Section VII to 10 CFR Part 50 Appendix E to 50.155.

**BEING PROVIDED TO SUPPORT THE MEETING WITH
ACRS FUKUSHIMA SUBCOMMITTEE MEETING AND
NOT TO SOLICIT EXTERNAL STAKEHOLDER FEEDBACK**

~~B. * * *~~

~~1. The means to be used for determining the magnitude of, and for continually assessing the impact of, the release of radioactive materials, including from all reactor core and spent fuel pool sources, shall be described, including emergency action levels that are to be used as criteria for determining the need for notification and participation of local and State agencies, the Commission, and other Federal agencies, and the emergency action levels that are to be used for determining when and what type of protective measures should be considered within and outside the site boundary to protect health and safety. The emergency action levels shall be based on in-plant conditions and instrumentation in addition to onsite and offsite monitoring. By June 20, 2012, for nuclear power reactor licensees, these action levels must include hostile action that may adversely affect the nuclear power plant. The initial emergency action levels shall be discussed and agreed on by the applicant or licensee and state and local governmental authorities, and approved by the NRC. Thereafter, emergency action levels shall be reviewed with the State and local governmental authorities on an annual basis.~~

~~* * * * *~~

~~E. * * *~~

~~2. Equipment for determining the magnitude of and for continuously assessing the impact of the release of radioactive materials, including from all reactor core and spent fuel pool sources, to the environment;~~

~~* * * * *~~

~~F. * * *~~

~~2. * * *~~

j. The exercises conducted under paragraph 2 of this section by nuclear power reactor licensees must provide the opportunity for the ERO to demonstrate proficiency in the key skills necessary to implement the principal functional areas of emergency response identified in paragraph 2.b of this section. Each exercise must provide the opportunity for the ERO to demonstrate key skills specific to emergency response duties in the control room, TSC, OSC, EOF, and joint information center. Additionally, in each eight calendar year exercise cycle, nuclear power reactor licensees shall vary the content of scenarios during exercises conducted under paragraph 2 of this section to provide the opportunity for the ERO to demonstrate proficiency in the key skills necessary to respond to the following scenario elements: hostile action directed at the plant site, no radiological release or an unplanned minimal radiological release that does not require public protective actions, an initial classification of or rapid escalation to a Site Area Emergency or General Emergency, and integration of offsite resources with onsite response. The licensee shall maintain a record of exercises conducted during each eight year exercise cycle that documents the content of scenarios used to comply with the requirements of this

**BEING PROVIDED TO SUPPORT THE MEETING WITH
ACRS FUKUSHIMA SUBCOMMITTEE MEETING AND
NOT TO SOLICIT EXTERNAL STAKEHOLDER FEEDBACK**

Commented [A46]: The multiple source term dose assessment requirement cannot be imposed as a requirement under 50.109 and will remain a voluntary program. So the proposed rule words "including from all reactor core and spent fuel pool sources" are no longer in the final rule.

The rest of the struck out language is currently in Appendix E and remains.

Commented [A47]: The multiple source term dose assessment requirement cannot be imposed as a requirement under 50.109 and will remain a voluntary program. So the proposed rule words "including from all reactor core and spent fuel pool sources" are no longer in the final rule.

The rest of the struck out language is currently in Appendix E and remains.

Commented [A48]: No Change from proposed MBDBE rule

This language needs to stay in the final MBDBE rule since it is here where we delete the exercise requirement for 10 CFR 50.54(hh)(2) and move it as a drill requirement into 10 CFR 50.155(e)

**BEING PROVIDED TO SUPPORT THE MEETING WITH
ACRS FUKUSHIMA SUBCOMMITTEE MEETING AND
NOT TO SOLICIT EXTERNAL STAKEHOLDER FEEDBACK**

paragraph. Each licensee shall conduct a hostile action exercise for each of its sites no later than December 31, 2015. The first 8-year exercise cycle for a site will begin in the calendar year in which the first hostile action exercise is conducted. For a site licensed under 10 CFR part 52, the first 8-year exercise cycle begins in the calendar year of the initial exercise required by section IV.F.2.a of this appendix.

* * * * *

VI. * * *
3. * * *

c. In the event of a failure of NRC-supplied equipment, a replacement will be furnished by the NRC for licensee installation.

* * * * *

VII. COMMUNICATIONS AND STAFFING REQUIREMENTS FOR THE MITIGATION OF BEYOND DESIGN BASIS EVENTS

~~All changes associated with implementation of the requirements in this section are subject to § 50.155(f). The change control provisions of § 50.54(q) do not apply to proposed changes associated with implementation of the requirements in this section, unless the requirements in this section are implemented within the licensee's emergency plan.~~

~~1. Each nuclear power reactor applicant or licensee shall perform a detailed analysis demonstrating that sufficient staff is available to implement the guidelines and strategies to respond to a beyond design basis external event resulting in impeded access to the nuclear power plant, an extended loss of ac power sources concurrent with either a loss of normal access to the ultimate heat sink or, for passive reactor designs, a loss of normal access to the normal heat sink, and affecting all units on site.~~

~~a. An applicant for a power reactor operating license under this part shall perform this analysis and submit it to the NRC under § 50.4 at least 2 years before the issuance of the first operating license for full power (one authorizing operation above 5 percent of rated thermal power).~~

~~b. A holder of a combined license issued under 10 CFR part 52 before the Commission has made the finding under § 52.103(g) of this chapter shall perform this analysis and submit it to the NRC under § 52.3 of this chapter at least 2 years before the date specified for completion of the last inspections, tests, and analyses in the inspections, tests, analyses, and acceptance criteria (ITAAC) completion schedule required by § 52.99(a) of this chapter for the plant.~~

~~c. Each holder of a power reactor operating license or combined license for which the Commission has made the finding specified in § 52.103(g) of this chapter as of **[EFFECTIVE DATE OF THE FINAL RULE]**, before the NRC's docketing of the license holder's certifications described in § 50.82(a)(1) or § 52.110(a) of this chapter, shall perform this analysis and submit~~

**BEING PROVIDED TO SUPPORT THE MEETING WITH
ACRS FUKUSHIMA SUBCOMMITTEE MEETING AND
NOT TO SOLICIT EXTERNAL STAKEHOLDER FEEDBACK**

Commented [A49]: No Change from proposed MBDBE rule

Similar to the above change, it is here, where we remove the reference to "modem."

Commented [A50]: All of section VII was proposed as new to Appendix E, and all of it goes away.

This change results from relocation of staffing and communications requirements from proposed Section VII to 10 CFR Part 50 Appendix E to 50.155

Staffing and communication analyses are now part of the set of information that must be provided to implement 50.155. Staffing requirements were already in 50.155(b) and a communications capability (i.e., equipment) requirement would be added into 50.155(c). Relocating these requirements removed the need for the explicit scheduler requirement. The staffing and communication requirements are now linked directly into 50.155 and must be maintained as part of the implementation of mitigation strategies.

The portion of the requirement specifying the detailed analysis – will be moved to the associated section-by-section for each relocated requirement. Also, these analyses will need to be part of the application requirements under 50.34 and 52.80

**BEING PROVIDED TO SUPPORT THE MEETING WITH
ACRS FUKUSHIMA SUBCOMMITTEE MEETING AND
NOT TO SOLICIT EXTERNAL STAKEHOLDER FEEDBACK**

it to the NRC under § 50.4 no later than ~~[DATE 365 DAYS AFTER EFFECTIVE DATE OF THE FINAL RULE].~~

~~2. Each nuclear power reactor applicant or licensee shall make and describe adequate provisions for at least one onsite and one offsite communications system capable of remaining functional during an extended loss of alternating current power including the effects of the loss of the local communications infrastructure.~~

~~a. An applicant for a power reactor operating license under this part shall make these provisions no later than the issuance of the first operating license for full power (one authorizing operation above 5 percent of rated thermal power).~~

~~b. A holder of a combined license issued under 10 CFR part 52 before the Commission has made the finding under § 52.103(g) of this chapter shall make these provisions no later than the date specified for completion of the last inspections, tests, and analyses in the ITAAC completion schedule required by § 52.99(a) of this chapter for the plant.~~

~~c. Each holder of a power reactor operating license under this part or a combined license issued under 10 CFR part 52 for which the Commission has made the finding specified in § 52.103(g) of this chapter as of [EFFECTIVE DATE OF THE FINAL RULE], before the NRC's docketing of the license holder's certifications described in § 50.82(a)(1) or § 52.110(a) of this chapter, shall make these provisions no later than [DATE 365 DAYS AFTER EFFECTIVE DATE OF THE FINAL RULE].~~

§ 52.80 Contents of applications; additional technical information.

* * * * *

~~(d)The applicant's plans for implementing the requirements of § 50.155 of this chapter and 10 CFR part 50, appendix E, section VII, including a schedule for achieving full compliance with these requirements, and a description of:~~

~~(1) The integrated response capability required by § 50.155(b) of this chapter; and~~

~~(2) The equipment upon which the strategies and guidelines required by § 50.155(b)(1) of this chapter rely, including the planned locations of the equipment and how the equipment and SSCs meet the design requirements of § 50.155(c) of this chapter; and~~

~~(3) The strategies and guidelines required by § 50.155(b)(2) of this chapter.~~

Commented [A51]: 52.80(d)(3) is deleted to simplify the text and avoid confusion because it is redundant to the provisions of 52.80(d)(1) with respect to the 50.155(b)(3) [(b)(2) in the proposed rule] strategies and could leave the impression that it is unnecessary to describe the 50.155(b)(1) strategies.

**BEING PROVIDED TO SUPPORT THE MEETING WITH
ACRS FUKUSHIMA SUBCOMMITTEE MEETING AND
NOT TO SOLICIT EXTERNAL STAKEHOLDER FEEDBACK**

This portion of the final MBDBE rule implements the Commission's SRM on COMSECY-14-0037.

Fundamentally it requires addressment of the reevaluated hazard information.

It provides flexibility to licensees, in addressing that hazard information, to either use their mitigations strategies equipment, or to use any available equipment/SSCs on the site.

It differs in a fundamental way from the provisions in 50.155(b)(1) and (3). It is addressing specific external hazard scenarios, which then enable defined potential damage states to be determined, and thereby defines what equipment and SSCs are available to mitigate the effects of the hazard scenarios. Note that the other provisions in (b)(1) and (b)(3) are addressing undefined events, notwithstanding the fact that a deterministic damage state was assumed (ELAP/LUHS) for the purposes of developing the strategies and putting in place the additional capability.

It uses "reevaluated hazard information" to denote that these are calculated hazards using methods intended to be bounding and conservative for the purposes of original plant design per GDC-2 and as a result, hazards calculated using modern methods are not "real" in terms of a real external event for specific nuclear facilities, based on knowledge of the historical events for that facility/region. They are bounding to ensure GDC-2 is complied with.

As constructed, this requirement is only intended to require that licensee address the information, and not to impose a specific approach or otherwise impose a requirement. Any new requirements beyond 50.155(b)(2), would be plant-specific decisions and require a plant-specific backfit. (Discussed further in following comment)

This change to the final MBDBE rule reflects an improved treatment of the reevaluated hazard information.

The final MBDBE rule would contain language "each licensee that received ...if the magnitude of those hazards exceeds the external design basis of the facility" which excludes 1) new applicants from this provision (who are designed to these limits), and 2) limit it to the applicable set of current operating licensees.

"Developed in response to" provides licensees with flexibility to adjust the hazard they originally determined/calculated per the 10 CFR 50.54(f) request and sent to NRC, should licensees decide that they need to remove excess conservatism. This flexibility recognizes that the calculated hazards were not design basis hazards for these licensees, and that the calculated hazards are bounding and conservative.

The SRM on COMSECY-15-0019 directed the staff to look for ways to remove over conservatism, and this feature of the final MBDBE rule would align with that direction (recognizing that it was directed to the staff), and provide the flexibility to licensees.

In terms of these calculated hazards and scenarios, the most practical way to remove conservatism is for the licensee to identify where their specific facility warrants a different approach or assumption based on its as-built configuration and any other information.

The supporting statement of consideration will clearly indicate that NRC acknowledges the current methods produce bounding hazards consistent with the intended purpose of the regulatory guidance (original design and siting). Licensees can remove excess conservatism for their facility, its siting, and its history, and enable more cost-effective means for addressing the information.

Page 4: [4] Commented [A18]

Author

The language uses “approaches” rather than “strategies and guidelines,” since licensees have flexibility to use any available procedures and strategies to demonstrate that the reevaluated hazard effects can be mitigated.

For example, a more extreme approach might be to shut down the facility and allow an extreme postulated flood to enter containment (preserving containment, such that it can be reestablished later), as part of the overall approach.

This provision is intended to provide sufficient flexibility for licensees to use either deterministic or probabilistic/risk-informed approaches.

It would allow for a screening approach parallel to the screening approach used in the initial development of the (b)(1) strategies and guidelines. (See NEI 12-06, Revision 0, Appendix B.) It could support NEI’s thoughts on the use of seismic probabilistic risk analysis (SPRA) for the justification.

Page 4: [5] Commented [A19]

Author

The supporting SOC would make it clear that these approaches are not required to maintain containment functional capability – and the rule is structured accordingly since this provision is NOT linked to (b)(1). This aspect of the rule must align with the reasonable protection requirement in 50.155(c)(3) – in other words “reasonable protection for 50.155(b)(2)(ii)(B) must allow that the containment function may be intentionally disabled, to maintain the structural integrity of the containment and so that it can then be re-established at the appropriate time following the event.

Page 5: [6] Commented [A20]

Author

This portion would represent the alternate mitigating strategies approach in flooding path 3 and seismic paths 3 and 5, as well as, the targeted hazard mitigating strategies approach of flooding path 4. See next note for path 5

Page 5: [7] Commented [A22]

Author

Staffing was in the proposed rule – the staff received comments that it should be limited to (b)(1)

The final MBDBE rule would apply it to all of 50.155(b) as a high level performance-based requirement to have sufficient staff to enable implementation, on a continuing basis, of the strategies and guidelines of this section.

Importantly – this would not require that current operating licensees re-submit staffing analyses, which have been completed in all cases (including for EDMGs)

This requirement would be inspected and enforced through the NRC’s observation of drills, and should such drills reveal deficiencies associated with staffing, then this requirement enables the NRC to require that the staffing be adjusted to provide assurance that the mitigation strategies of this section can continue to be implemented effectively.

Finally, as licensees make adjustments and changes to the implementation of the requirements of this section, as part of the change control requirements in subparagraph (g), licensees are to demonstrate

compliance with the provisions, including the need to have sufficient staffing to support the revised implementation.

Page 5: [8] Commented [A24]

Author

“in magnitude to the phenomena for developing” is intended to clarify the final rule. It is the magnitude of the hazard that is equivalent. The “treatment,” in terms of design, quality assurance, maintenance, and other applicable requirements is less than would be applied under the special treatment requirements for the beyond-design-basis functions. The treatment is specified in 50.155. For information, “special treatment” provisions applied to safety-related SSCs are identified in 50.69(b).

Page 5: [9] Commented [A25]

Author

“Equipping” will need to be clarified in the supporting SOC.

Equipment means “FLEX” equipment as it is termed by industry, and plant equipment (installed SSCs), noting that both terms are used in the endorsed supporting guidance. The treatment in terms of design that the “equipment” must receive is directly related to the functions performed during or after the beyond-design-basis external event.

If the equipment needs only to be capable of functioning during or after beyond-design-basis (BDB) external event for plants that do not have a reevaluated seismic or flooding hazards that exceed the magnitude of their current external design basis, then the design for this equipment is to the current external design bases. For equipment that is installed (and safety-related) the “treatment for the BDB function is less than the safety-related function. For example, a turbine driven pump is safety-related and one aspect of its special treatment is that it meets 10 CFR 50.49 equipment qualification requirements. This same turbine driven pump is used for BDB functions (core cooling following a BDB external event), for which temperatures in the room it is located may be higher than design basis. To address the higher temperatures, the licensee would only need a design calculation that shows the pump can function at those temperatures (not 50.49 EQ). This reduced treatment is “reasonable protection.”

Again, treatment is applied by function and reasonable protection to the external design basis for any FLEX equipment or SSCs for BDB functions, is at a reduced level. This is 50.155(c)(2).

If, the reevaluated hazard exceeds the external event design basis, then both the installed and FLEX equipment must have “reasonable protection” for the magnitude of the reevaluated hazard if that equipment is needed to mitigate the effects of the reevaluated hazard information per 50.155(b)(2). This is reasonable protection under 50.155(c)(3).

Page 5: [10] Commented [A27]

Author

No matter how the licensee elects to address the reevaluated hazard information should it exceed the design basis levels, there will be a need to “reasonably protected equipment.

(b)(2) only applies if the reevaluated hazard exceeds in magnitude the external design basis for either seismic or flooding:

Reasonable protection for (b)(2)(ii)(A): To support the mitigation strategies that can be shown to be successful either as is or with modification

Reasonable protection for (b)(2)(ii)(B) An event specific approach is needed to address the hazard information. This can use any and all equipment and SSCs on the facility. It can use deterministic or risk-informed approaches.

For licensees with mitigation strategies for reevaluated hazards, these strategies would be similar (and probably the same) to the FLEX strategies (i.e., there is likely to be only one set).

For licensees who address the reevaluated hazards through a “protection” approach, and as a result do not use a “strategy” then this would reduce to (b)(1) and (b)(3), since they would be using normal shutdown processes (with enhanced protection), and there may be no transition to, or use of any strategies.

It is likely that a licensee will take either of these two approaches 1) adjust the protection and use normal SSCs and procedures or 2) adjust FLEX such that it can do both the original MBDBE (per design basis) and the reevaluated hazards. In other words, there would be just one set of “FLEX” strategies that address both situations.

For Part 52, 50.155(b)(2) does not apply. In that case this reduces to (b)(1) and (b)(3).

For licensees with mitigation strategies for reevaluated hazards, these strategies would be similar (and probably the same) to the FLEX strategies (i.e., there is likely to be only one set).

For licensees who address the reevaluated hazards through a “protection” approach, and as a result do not use a “strategy,” then this would reduce to (b)(1) and (b)(3), since they would be using normal shutdown processes (with enhanced protection), and there may be no transition to, or use of, any strategies.

It is likely that a licensee will do either of two approaches 1) adjust the protection and use of normal structures, systems, and components (SSCs) and procedures or 2) adjust FLEX such that it can do both the original MBDBE (per design basis) and the reevaluated hazards. In other words, there would be just one set of “FLEX” strategies that address both situations.

For Part 52, 50.155(b)(2) does not apply.
In that case this reduces to (b)(1) and (b)(3).

Relocated SFPI requirement is now decoupled from 50.155(b)(1). The SFPI requirement (EA-12-051) is independent of the mitigation strategies requirement (EA-12-049), although licensee can (and have) elect to use the SFPI for mitigation strategies, in which the mitigation strategies requirements are then applied.

This provision was also revised to denote when the requirement would no longer apply.

The basic approach for change control would remain unchanged for the final MBDBE rule.

The SOC would discuss what it means to “demonstrate” that the 50.155 requirements continue to be met. It would include a discussion that focuses on the changes that are outside endorsed guidance (following NRC-endorsed guidance would be one way to demonstrate compliance), and outside an approved alternative that is demonstrated to apply to the facility (following an NRC-approved alternative to endorsed guidance would be another way to demonstrate compliance), and describe what would NOT be “demonstrated compliance.”

Significant reductions in the functional capabilities of section 50.155 would not constitute demonstrated compliance.

Significant changes to the fundamental attributes of the MBDBE strategies that enable those strategies to be adapted and applied to the real events that exceed the external design basis – e.g., reducing flexibility, adaptability, multiple sets of equipment, multiple connection points etc., would not be demonstrated compliance.

Page 8: [15] Commented [A43]

Author

The NRC did not receive feedback indicating a problem for new reactors with regard to the “2 years.”

If the NRC issues a 52.103 (g) finding before the effective date of this rule – then this could become more of an issue.

Would only apply to Vogtle and Summer.

It is not likely to be a problem. New reactors are not challenged by reevaluated hazards since they meet all of that guidance when sited and designed.