

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
WASHINGTON, DC 20555-0001

May 11, 2011

NRC BULLETIN 2011-01: MITIGATING STRATEGIES

ADDRESSEES

All holders of operating licenses for nuclear power reactors, except those who have permanently ceased operation and have certified that fuel has been removed from the reactor vessel.

PURPOSE

The U.S. Nuclear Regulatory Commission (NRC) is issuing this bulletin to achieve the following objectives:

1. To require that addressees provide a comprehensive verification of their compliance with the regulatory requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.54(hh)(2),
2. To notify addressees about the NRC staff's need for information associated with licensee mitigating strategies under 10 CFR 50.54(hh)(2) in light of the recent events at Japan's Fukushima Daiichi facility in order to determine if 1) additional assessment of program implementation is needed, 2) the current inspection program should be enhanced, or 3) further regulatory action is warranted, and
3. To require that addressees provide a written response to the NRC in accordance with 10 CFR 50.54(f).

BACKGROUND

Following the terrorist events of September 11, 2001, the readiness of NRC-regulated facilities to manage challenges to core cooling, containment and spent fuel pool cooling (SFP) following large explosions or fires was enhanced through a series of orders and imposition of license conditions. These requirements were formalized in the rulemaking of March 27, 2009, resulting in 10 CFR 50.54(hh)(2).

The NRC conducted a comprehensive inspection of the implementation of the mitigating strategies developed by licensees in 2008. Subsequently the NRC incorporated this inspectable area into the baseline reactor oversight process on a sample basis as part of the triennial fire protection inspection.

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Events at the Fukushima - Daiichi Nuclear Power Station following the March 11, 2011, earthquake and tsunami highlight the potential importance of B.5.b mitigating strategies in responding to beyond design basis events.

The Commission has established a task force to consider the need for agency actions following the events in Japan and is considering further actions that could improve operational safety.

DISCUSSION

The events in Japan highlight the importance and potential versatility of B.5.b mitigating strategies. Therefore, the NRC seeks comprehensive confirmation that licensees are maintaining equipment and strategies to satisfy 10 CFR 50.54(hh)(2).

In addition, the existing guidance on the implementation of the strategies, which was adopted by all licensees to meet the regulatory requirements for mitigating strategies, does not describe in detail the practices necessary for maintenance and testing of the equipment, training requirements, and validation of feasibility of the strategies. Based upon the information submitted by licensees in response to this bulletin, the NRC will determine if additional efforts are needed to ensure compliance with existing regulatory requirements and/or whether enhancement to the existing regulations and guidance are necessary.

APPLICABLE REGULATORY REQUIREMENTS

As a result of the terrorist events of September 11, 2001, the NRC issued EA-02-026, "Order for Interim Safeguards and Security Compensatory Measures" (the ICM Order) dated February 25, 2002. The ICM Order, which is designated as Safeguards Information (SGI), modified then-operating licenses for commercial power reactor facilities to require compliance with specified interim safeguards and security compensatory measures. Section B.5.b of the ICM Order requires licensees to adopt mitigation strategies using readily available resources to maintain or restore core cooling, containment, and SFP cooling capabilities to cope with the loss of large areas of the facility due to large fires and explosions from any cause, including beyond-design-basis aircraft impacts.

By letter dated February 25, 2005, the NRC staff provided guidance for implementing Section B.5.b of the ICM Order. This Phase 1 Guidance, designated as SGI, included best practices for mitigating losses of large areas of the plant and measures to mitigate fuel damage and minimize releases. Following issuance of the B.5.b Phase 1 Guidance, the NRC staff conducted inspections at operating reactor sites using TI 2515/164 (SGI) and subsequently TI 2515/168 (SGI) to ensure compliance with Section B.5.b of the ICM Order.

In December 2006, the Nuclear Energy Institute (NEI) issued NEI 06-12, Revision 2, "B.5.b Phase 2 & 3 Submittal Guideline," formerly designated for Official Use Only – Security Related Information (OUO-SRI), Agencywide Documents Access and Management System (ADAMS) Accession No. ML070090060. The NRC endorsed NEI 06-12, Revision 2, by letter dated December 22, 2006, as an acceptable means for developing and implementing the mitigation strategies requirement in Section B.5.b of the ICM Order. NEI 06-12, Revision 2, provides guidance for implementing a set of strategies intended to maintain or restore core cooling,

containment, and SFP cooling capabilities under the circumstances associated with the loss of a large area of the plant due to explosions or fire. NEI 06-12 provides guidance in the following areas:

- Adding make-up water to the SFP,
- Spraying water on the spent fuel,
- Enhanced initial command and control activities for challenges to core cooling and containment, and
- Enhanced response strategies for challenges to core cooling and containment.

The specific strategies covered in NEI 06-12, Revision 2, were developed based on the results of assessments conducted at currently licensed power reactor facilities for the purpose of enhancing plant specific mitigation capability for damage conditions caused by a large explosion or fire. These assessments identified a wide spectrum of potential plant specific strategies. NEI 06-12, Revision 2, specifies one set of strategies applicable to all pressurized-water reactors and another set applicable to all boiling-water reactors. Both sets are derived from the results of the plant specific assessments.

The B.5.b Phase 1 Guidance and NEI 06-12, Revision 2, were used by each licensee in preparing information submitted to the NRC that describes a plant specific approach to implementing mitigating strategies and supports each plant specific license condition. The NRC staff completed its review of the information submitted by each licensee, as well as information obtained during prior NRC inspections, and issued an OUO-SRI safety evaluation (SE) that documents the bases for its approval of the license condition for each facility. The SE issued for each licensee includes regulatory guidance in Section 3.0 of Appendix A, "Phase 1 Assessment," that recites the generic B.5.b Phase 1 Guidance, as clarified in TI 2515/168, in an OUO-SRI form rather than SGI.

By publishing new requirements in the Federal Register dated March 27, 2009 (74 FR 13926), the NRC amended 10 CFR Part 50, 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," and 10 CFR Part 73, "Physical Protection of Plants and Materials." This rulemaking added paragraph (i) to 10 CFR 50.34, "Contents of Applications; Technical Information," and paragraph (d) to 10 CFR 52.80 "Contents of Applications; Additional Technical Information," to require submittal of a "description and plans for implementation of the guidance and strategies intended to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities under the circumstances associated with the loss of large areas of the plant due to explosions or fire as required by § 50.54(hh)(2) of this chapter." This rulemaking also added 10 CFR 50.54(hh)(2) to impose mitigating strategies requirements similar to those imposed by the ICM Order and associated license conditions on all reactor applicants and licensees.

REQUESTED ACTION

In order to confirm continued compliance with 10 CFR 50.54(hh)(2), within 30 days of the date of this bulletin, the NRC requests that licensees provide the following information on their mitigating strategies programs.

1. Is the equipment necessary to execute the mitigating strategies, as described in your submittals to the NRC, available and capable of performing its intended function?
2. Are the guidance and strategies implemented capable of being executed considering the current configuration of your facility and current staffing and skill levels of the staff?

Within 60 days of the date of this bulletin, the NRC requests that licensees provide information regarding their mitigation strategies programs for 10 CFR 50.54(hh)(2).

In responding to the following questions, licensees should provide information that addresses measures that are currently in place, noting any additional planned actions with expected completion dates.

1. Describe in detail the maintenance of equipment procured to support the strategies and guidance required by 10 CFR 50.54(hh)(2) in order to ensure that it is functional when needed.

Examples of the types of information to include when providing your response to Question (1) are:

- a. Measures implemented to maintain the equipment, including periodicity.
- b. Basis for establishing each maintenance item (e.g., manufacturer's recommendation, code or standard applicable to the craft). This should include consideration of storage environment impact on the maintenance necessary.

These examples are not meant to limit your response if you use other methods to address the issues described above.

2. Describe in detail the testing of equipment procured to support the strategies and guidance required by 10 CFR 50.54(hh)(2) in order to ensure that it will function when needed.

Examples of the types of information to include when providing your response to Question (2) are:

- a. A description of any testing accomplished to ensure the strategies were initially feasible.
- b. A description of any periodic testing instituted for the equipment, along with the basis for establishing that test requirement.

- c. A description of the corrective action process used when the equipment fails to adequately perform its test.

These examples are not meant to limit your response if you use other methods to address the issues described above.

- 3. Describe in detail the controls for assuring that the equipment is available when needed.

Examples of the types of information to include when providing your response to Question (3) are:

- a. A description of any inventory requirements established for the equipment.
- b. A listing of deficiencies noted in inventories for the equipment and corrective actions taken to prevent loss.

These examples are not meant to limit your response if you use other methods to address the issues described above.

- 4. Describe in detail how configuration and guidance management is assured so that strategies remain feasible.

Examples of the types of information to include when providing your response to Question (4) are:

- a. Measures taken to evaluate any plant configuration changes for their effect on feasibility of the mitigating strategies.
- b. Measures taken to validate that the procedures or guidelines developed to support the strategies can be executed. These measures could include drills, exercises, or walk through of the procedures by personnel that would be expected to accomplish the strategies.
- c. Measures taken to ensure procedures remain up-to-date and consistent with the current configuration of the plant.
- d. A description of the training program implemented in support of the mitigating strategies and the manner in which you evaluate its effectiveness.

These examples are not meant to limit your response if you use other methods to address the issues described above.

5. Describe in detail how you assure availability of off-site support.

Examples of the types of information to include when providing your response to Question (5) are:

- a. A listing of off-site organizations you rely on for emergency response.
- b. Measures taken to ensure the continuity of memoranda of agreement or understanding or other applicable contractual arrangements. This should include a listing of periods of lapsed contractual arrangements.
- c. A listing of any training or site familiarization provided to off-site responders. This should include any measures taken to ensure continued familiarity of personnel of the off-site responders in light of turnover and the passage of time.

These examples are not meant to limit your response if you use other methods to address the issues described above.

REQUIRED RESPONSE

Licensees should address the required written response to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, 11555 Rockville Pike, Rockville, MD 20852, pursuant to the provisions of 10 CFR 50.54(f). In addition, submit a copy of the response to the appropriate Regional Administrator. Before submitting responses to the NRC, licensees must evaluate them for proprietary, sensitive, safeguards, or classified information and mark such information appropriately. The addressees have two options for submitting responses:

1. Addressees may choose to submit written responses providing the information requested above within the requested time periods.
2. Addressees, who cannot meet the requested completion date must submit written responses within 15 days of the date of this bulletin that address any alternative course of action proposed, including the basis for the acceptability of the proposed alternate course of action.

REASONS FOR INFORMATION REQUEST

The NRC is requesting information to confirm compliance with Order EA-02-026, the subsequently imposed license conditions, and 10 CFR 50.54(hh)(2) and on the status of licensee mitigating strategies programs. The staff will use the information received to inform the Commission and to determine if further regulatory action is warranted.

RELATED DOCUMENTATION

- Information Notice No. 11-05 "Tohoku-Taiheiyou-Okai Earthquake Effects on Japanese Nuclear Power Plants," March 18, 2011

BACKFIT DISCUSSION

Under the provisions of Section 182a of the Atomic Energy Act of 1954, as amended, and 10 CFR 50.54(f), this bulletin transmits an information request for the purpose of verifying compliance with existing applicable regulatory requirements (see the Applicable Regulatory Requirements section of this bulletin) and gathering information to determine the need for additional regulatory action. No backfit is either intended or approved by the issuance of this bulletin, and the staff has not performed a backfit analysis. If, as a result of information received in response to this bulletin, the NRC determines that new guidance, orders or regulations are needed, the NRC will prepare the necessary documentation to comply with the requirements of the Backfit Rule and/or any applicable finality provisions in 10 CFR Part 52 as part of the development of the new guidance, orders or regulations.

FEDERAL REGISTER NOTIFICATION

The NRC did not publish a notice of opportunity for public comment on a draft of this bulletin in the *Federal Register* because the agency is requesting information from affected licensees on an expedited basis to assess the adequacy and consistency of regulatory programs. There is no legal requirement that the NRC publish for public comment such information requests.

CONGRESSIONAL REVIEW ACT

The NRC determined that this bulletin is not a rule under the Congressional Review Act.

PAPERWORK REDUCTION ACT STATEMENT

This bulletin contains information collections that are covered by the Office of Management and Budget clearance number 3150-0012, which expires January 31, 2013. This collection of information is mandatory under the provisions of Section 182a of the Atomic Energy Act of 1954, as amended, and 10 CFR 50.54(f). The burden to the public for these information collections is estimated to average 200 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the information collection.

Send comments regarding this burden estimate or any other aspect of these information collections, including suggestions for reducing the burden, to the Information Services Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by Internet electronic mail to Infocollects.Resource@NRC.GOV; and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0012), Office of Management and Budget (OMB), Washington, DC 20503.

PUBLIC PROTECTION NOTIFICATION

The NRC may not conduct or sponsor, and a person is not required to respond to, a request for information or an information collection requirement unless the requesting document displays a currently valid OMB control number.

CONTACT

Please direct any questions about this matter to the technical contact listed below.

/RA/

Timothy J. McGinty, Director
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Office of Nuclear Reactor Regulation

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301-415-2963
Eric.Bowman@nrc.gov

Note: NRC Generic Communications may be found on the NRC public Web site,
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