

# NRC INSPECTION MANUAL

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INSPECTION MANUAL CHAPTER 0609, APPENDIX O

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SIGNIFICANCE DETERMINATION PROCESS FOR MITIGATING STRATEGIES AND SPENT  
FUEL POOL INSTRUMENTATION (ORDERS EA-12-049 and EA-12-051)

Effective Date: 10/07/2016

## 0609O-01 PURPOSE

The purpose of this appendix is to determine whether inspection findings associated with Mitigating Strategies and Spent Fuel Pool Instrumentation required by Orders EA-12-049 and EA-12-051, respectively are of very low safety significance (i.e., Green). If the inspection finding does not screen to Green using this risk-informed procedure, the appendix directs the use of Inspection Manual Chapter (IMC) 0609, Appendix M, Significance Determination Process Using Qualitative Criteria, for further assessment and review to determine significance. Entering into this appendix presumes that the performance deficiency is of more than minor significance using procedures IMC 0612, Appendix B - Issue Screening and IMC 0609 Appendix E – Examples of Minor Issues. Appendix E will be revised in the future to include more than minor examples specific to Mitigating Strategies. This appendix is entered after the inspection finding is initially characterized using procedure IMC 0609 Attachment 04, Initial Characterization of Findings.

## 0609O-02 BACKGROUND

Following the earthquake and tsunami at the Fukushima Dai-ichi nuclear power plant in March 2011, the Nuclear Regulatory Commission (NRC) established a senior-level task force referred to as the Near-Term Task Force (NTTF). The NTTF conducted a systematic and methodical review of the NRC regulations and processes to determine if the agency should make safety improvements in light of the events in Japan. As a result of this review, the NTTF issued SECY-11-0093, Near-Term Report and Recommendations for Agency Actions Following the Events in Japan. Additionally, NRC staff issued SECY-11-0124, Recommended Actions to be Taken Without Delay from the Near-Term Task Force Report, and SECY-11-0137, Prioritization of Recommended Actions to be Taken in Response to Fukushima Lessons Learned to establish prioritization of the recommendations. Recommendation 4.2, concerning Mitigation Strategies, and Recommendation 7.1, concerning Spent Fuel Pool Instrumentation, were determined to be high-priority actions.

The NRC staff issued interim staff guidance (ISG) JLD-ISG-2012-01, Revision 0, Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events. The ISG endorses, with clarifications, the methodologies described in the industry guidance document, Nuclear Energy Institute (NEI) 12-06, Diverse and Flexible Coping Strategies (FLEX) Implementation Guide, Revision 0. This industry document outlines one possible approach that can be used by licensees, construction permit holders, and combined license holders to address the requirements of the order.

The NRC staff issued ISG JLD-ISG-2012-03, Revision 0, Compliance with Order EA-12-051, Reliable Spent Fuel Pool Instrumentation. The ISG endorses, with certain clarifications and exceptions, the methodologies described in the industry guidance document, NEI 12-02, Industry Guidance for Compliance with NRC Order EA-12-051, To Modify Licenses With Regard to Reliable Spent Fuel Pool Instrumentation, Revision 1. This industry document outlines one possible approach that can be used by licensees, construction permit holders, and combined license holders to address the requirements of the order.

## 0609O-03      APPLICABILITY

This appendix is designed to provide inspectors with a simplified screening framework and associated instructions for use in assessing Mitigating Strategies and Spent Fuel Pool Instrumentation inspection findings. Order EA-12-049 requires a three-phase approach for mitigating beyond-design-basis external events. The initial phase requires the use of installed equipment and resources to maintain or restore core cooling, containment pressure control/heat removal and spent fuel pool cooling capabilities. The transition phase requires providing sufficient, portable, onsite equipment and consumables to maintain or restore these functions until they can be accomplished with resources brought from off site. The final phase requires obtaining sufficient offsite resources to sustain those functions indefinitely.

This appendix is used to screen inspection findings related to the initial and transition phases. For the final phase of the order, this Significance Determination Process (SDP) only applies to that portion of the licensee's mitigating strategy that occurs after the licensee accepts the delivered equipment at the site from the National Safer Response Centers. Oversight of the National Safer Response Centers is performed in accordance with the NRC's Vendor Inspection Program in the Office of New Reactors.

This procedure only applies to performance deficiencies that are associated with equipment (i.e., FLEX), procedures, training and programmatic aspects that are used specifically for Mitigating Strategies as defined by Order EA-12-049. In the event that equipment serves a function(s) for other purposes, a different and more limiting SDP tool will be used. For example, if the performance deficiency concerns installed plant equipment that is used for Mitigating Strategies (e.g., Phase 1 equipment), but is also used to mitigate other transients or accidents, the more limiting SDP (e.g., IMC 0609 Appendices A, G, and H) would be used to assess significance. This would also apply to Phase 2 equipment that is not dedicated for the purpose of Mitigating Strategies.

Order EA-12-051, requires that operating power reactor licensees and construction permit holders and combined license holders install reliable spent fuel pool level instrumentation. This appendix is used to screen inspection findings used by licensees to meet the requirements of this order.

Alternate Mitigating Strategies and Targeted Hazard Mitigating Strategies are associated with flooding and seismic re-evaluated hazards and are not associated with Order EA-12-049. These strategies are not addressed by this procedure.

## 0609O-04      GUIDANCE

The questions below will either screen the inspection finding to be of very low safety significance (Green) or redirect the inspection finding to be assessed using IMC 0609 Appendix M.

All inspection findings addressed by this procedure shall be submitted to the Cross-Regional Panel established to provide consistency for inspection findings associated with Mitigating Strategies and Spent Fuel Pool Instrumentation. The panel will review the findings presented

and make a recommendation to the Issue Sponsor for further disposition. Once the panel is disbanded, this requirement will no longer be required.

Question 1.

Is the finding associated with spent fuel pool level instrumentation required by Order EA-12-051?

If YES, screen the inspection finding to Green.

If NO, continue.

Question 2.

Does the inspection finding involve an exposure period of 72 hours or more and a failure or unavailability of plant equipment used for Mitigating Strategies (i.e., FLEX) that would result in a complete loss of one or more functions to maintain or restore core cooling, containment pressure control/heat removal and/or spent fuel pooling cooling capabilities?

Note: In situations where multiple means exist (e.g., multiple trains of equipment) to meet the function to maintain or restore core cooling, containment pressure/heat removal or spent fuel pool cooling, all means must be lost for the YES response.

If YES, exit this procedure and enter IMC 0609, Appendix M for further evaluation.

If NO, continue.

Question 3.

Does the inspection finding involve deficient procedure(s) and/or training for Mitigating Strategies that would result in a complete loss of one or more functions needed to maintain or restore core cooling, containment pressure control/heat removal and/or spent fuel pooling cooling capabilities?

If YES, exit this procedure and enter IMC 0609, Appendix M for further evaluation.

If NO, continue.

Question 4.

Is the product of the inspection finding's exposure time and external event initiating event frequency greater than 1E-6? The external event initiating event frequency must be currently available and documented (e.g., FSAR, IPEEE or other existing licensee external hazard analysis) to avoid protracted analyses to determine the frequency.

Note - the external event initiating event frequencies are those beyond the design basis of the facility as prescribed by the Order to include:

- Seismic events
- External flooding
- Storms such as hurricanes, high winds and tornadoes
- Extreme snow, ice and cold, and
- Extreme heat

If YES, exit this procedure and enter IMC 0609, Appendix M for further evaluation.

If NO, continue.

Question 5.

Does the inspection finding involve significant programmatic issues in two or more of the following areas such that the effectiveness of the Mitigating Strategies program is reduced:

- (1) Quality Attributes
- (2) Equipment Design
- (3) Equipment Storage
- (4) Procedure Guidance
- (5) Maintenance and Testing
- (6) Training
- (7) Staffing
- (8) Configuration Control

Note: Potential examples of significant programmatic issues might include, but are not limited to: (1) failure to maintain multiple equipment availabilities and/or reliabilities outside documented licensee expectations, (2) failure to adequately train plant personnel to provide a planned, prioritized and coordinated response as observed during licensee drills and/or table top exercises, (3) failure to maintain current and functional multiple plant procedures, (4) failure to properly store multiple pieces of equipment such that their availability would be compromised.

If YES, exit this procedure and enter IMC 0609, Appendix M for further evaluation.

If NO, screen to Green.

#### 0609O-05 REFERENCES

SECY-11-0093, "Near-Term Report and Recommendations for Agency Actions Following the Events in Japan" (ADAMS Accession No. ML11186A950)

SECY-11-0124, "Recommended Actions to be Taken Without Delay from the Near-Term Task Force Report" (ADAMS Accession No. ML112911571)

SECY-11-0137, "Prioritization of Recommended Actions to be Taken in Response to Fukushima Lessons Learned" (ADAMS Accession No. ML11272A111)

Interim staff guidance (ISG) JLD-ISG-2012-01, Revision 0, "Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events" (ADAMS Accession No. ML12229A174)

Interim Staff Guidance JLD-ISG-2012-03, Revision 0, Compliance with Order EA-12-051, Reliable Spent Fuel Pool Instrumentation (ADAMS Accession No. ML12144A323)

Nuclear Energy Institute (NEI) 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide," Revision 0 (ADAMS Accession No. ML12242A378)

NEI 12-02, Industry Guidance for Compliance with NRC Order EA-12-051, To Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation, Revision 1 (ADAMS Accession No. ML12240A307)

Cross-Regional Panel Charter for Temporary Instruction (TI) 2515/191  
"Inspection of the Implementation of Mitigation Strategies and Spent Fuel Pool Instrumentation Orders and Emergency Preparedness Communication/Staffing/Multi-Unit Dose Assessment Plans" (ADAMS Accession No. ML15093A339)

NRC Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (ADAMS Accession No. ML12056A045)

NRC Order EA-12-051, Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation (ADAMS Accession No. ML12056A044)

IMC 0609 Appendix M, Significance Determination Process Using Qualitative Criteria

Temporary Instruction 2515/191 Revision 1, Inspection of the Implementation of Mitigation Strategies and Spent Fuel Pool Orders and Emergency Preparedness Communication/Staffing/Multi-Unit Dose Assessment Plans

Attachment 1 – Revision History for IMC 0609 Appendix O

Commitment Tracking Number	Accession Number Issue Date Change Notice	Description of Change	Description of Training Required and Completion Date	Comment and Feedback Resolution Accession Number (Pre-Decisional, Non-Public)
	ML16277A415 10/07/16 CN 16-026	New inspection manual chapter developed to assess significance of inspection findings associated with Mitigating Strategies and Spent Fuel Pool Instrumentation (Orders EA-12-049 and EA-12-051). Researched commitments for the last four years and found none.	Users trained as part of the draft use of IMC 0609 Appendix O.	ML16060A279