



WHITE PAPER

IMPLEMENTING A 24-MONTH FREQUENCY FOR EMERGENCY PREPAREDNESS PROGRAM REVIEWS

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Implementing a 24-Month Frequency for Emergency Preparedness Program Reviews

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¹ The Nuclear Energy Institute (NEI) is the organization responsible for establishing unified industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include entities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel cycle facilities, nuclear materials licensees, and other organizations and entities involved in the nuclear energy industry.

Implementing a 24-Month Frequency for Emergency Preparedness Program Reviews

Purpose

This white paper provides guidance that may be used by a licensee to adopt the voluntary option of conducting periodic emergency preparedness (EP) program reviews at a 24-month frequency as allowed by 10 CFR 50.54(t)(1)(ii). The guidance addresses only the criteria and monitoring necessary to meet the regulatory requirements permitting a 24-month review period; it is not intended to provide methods or instructions for conducting an EP program review.

The use of the guidance in this white paper is voluntary, and other approaches to meeting the 24-month review requirements of 10 CFR 50.54(t) may also be acceptable.

Background

Section 50.54(t) of Title 10 of the Code of Federal Regulations (CFR) requires that each nuclear power reactor licensee provide for a periodic independent review of their EP program. The entire section is presented below.

(t)(1) The licensee shall provide for the development, revision, implementation, and maintenance of its emergency preparedness program. The licensee shall ensure that all program elements are reviewed by persons who have no direct responsibility for the implementation of the emergency preparedness program either:

(i) At intervals not to exceed 12 months or,

(ii) As necessary, based on an assessment by the licensee against performance indicators, and as soon as reasonably practicable after a change occurs in personnel, procedures, equipment, or facilities that potentially could adversely affect emergency preparedness, but no longer than 12 months after the change. In any case, all elements of the emergency preparedness program must be reviewed at least once every 24 months.

(2) The review must include an evaluation for adequacy of interfaces with State and local governments and of licensee drills, exercises, capabilities, and procedures. The results of the review, along with recommendations for improvements, must be documented, reported to the licensee's corporate and plant management, and retained for a period of 5 years. The part of the review involving the evaluation for adequacy of interface with State and local governments must be available to the appropriate State and local governments.

This section was revised into its current form by Final Rule RIN 3150-AF63, "Frequency of Reviews and Audits for Emergency Preparedness Programs, Safeguards Contingency Plans, and Security Programs for Nuclear Power Reactors."² The rule amended U.S.

² Refer to 64 Fed. Reg. 14,814 (March 29, 1999) and a subsequently revised Final Rule in 64 Fed. Reg. 17,947 (April 13, 1999) that corrected erroneous citations. Additional background information is available in the Proposed Rule, 62 Fed. Reg. 40,978 (July 31, 1997).

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Nuclear Regulatory Commission (NRC) regulations to give licensees the option to change the frequency of independent reviews and audits of their EP programs, safeguards contingency plans, and security programs. The amendment allows licensees to elect to conduct program reviews and audits either at intervals not to exceed 12 months, or as necessary, based on an assessment by the licensee against performance indicators, and as soon as reasonably practicable after a change occurs in personnel, procedures, equipment, or facilities that potentially could adversely affect the EP program, the safeguards contingency plan, and security program, but no longer than 12 months after the change. In all cases, each element of the EP program, the safeguards contingency plan, and the security program must be reviewed at least every 24 months.

The guidance in this paper was developed to support a licensee decision to implement the 24-month review period option allowed by 10 CFR 50.54(t) and is thus applicable to EP programs only.

General Approach

Implementation of the following activities will achieve compliance with the requirements of 10 CFR 50.54(t)(1)(ii).

1. Monitoring of performance indicators, and
2. Assessing the adequacy of interfaces with State and local governments, and
3. Identifying a change in personnel, procedures, equipment, or facilities that potentially could adversely affect emergency preparedness.

Each activity is described below, including criteria that specify when an early review (i.e., less than 24 months) of a program area is required. With respect to the performance indicators, the stated review trigger thresholds do not represent boundaries between adequate and inadequate levels of program performance; that is not the purpose of the indicators. Rather, the threshold criteria were selected to identify levels of performance that are degraded sufficiently to warrant an accelerated independent review of the affected area.

Performance Indicators

As stated in the “Comment Resolution” section of Final Rule RIN 3150-AF63, performance indicators are “numerical parameters generally derived from quantitative data to monitor the performance and gain insight to the effectiveness of the emergency preparedness and security programs” and provide a “measurement of success in a summary fashion.” If indicated performance falls below a prescribed level, then a review of the affected EP program area would be required. The Final Rule also states:

“Because of the licensees’ experience in implementing and performing self-assessments of their programs, the NRC has decided that at this time it will be the responsibility of the individual utilities to define their own performance indicators. Industry development of performance indicators is to be encouraged.”

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For historical context, it should be noted that Final Rule RIN 3150-AF63 was published approximately one year prior to the implementation of the three EP performance indicators found in the NRC's Reactor Oversight Process (ROP). This means that subsequent to the NRC's decision cited above, the industry and the NRC collaboratively developed performance indicators that use objective data to monitor performance within the EP "cornerstone" area. Each EP performance indicator is measured against established thresholds which are related to their effect on safety. In line with the NRC position that the industry should develop performance indicators to meet the requirements of 10 CFR 50.54(t)(1)(ii), the following three indicators should be used:

1. The ROP Drill/Exercise Performance (DEP) indicator,
2. The ROP Emergency Response Organization (ERO) performance indicator, and
3. The Emergency Response Facility and Equipment Readiness (ERFER) performance indicator defined in this document.

Collectively, these three indicators provide an effective periodic evaluation of licensee performance in drills and exercises, and the effectiveness of emergency response capabilities and procedures. The DEP indicator measures the ability of key emergency response decision-makers to assess off-normal plant conditions, determine the appropriate emergency classification level and protective action recommendation, and direct communication of this information to an Offsite Response Organization (ORO). It therefore reflects the status of EP program elements that underpin performance of risk-significant response actions, including training, qualifications, equipment, procedures, and the correction of weaknesses. The ERO performance indicator measures the ability to provide performance enhancing opportunities to personnel staffing key ERO positions. It therefore reflects on ERO readiness through experience gained by participation in drills, exercises and other performance enhancing experiences. Broad participation also supports the identification and correction of weaknesses in important EP program elements, including damage control, worker protection, accident assessment, procedure quality, training program, and facility readiness. Finally, the ERFER indicator measures licensee performance in maintaining the emergency response facilities and equipment of greater importance to the protection of public health and safety. It reflects the ability of the licensee to perform the surveillance, testing, inventory, and preventative and corrective maintenance activities that contribute to the availability of emergency response facilities and equipment necessary to implement Risk Significant Planning Standard (RSPS) functions and response actions.

To ensure consistent implementation and promote inspection predictability, each performance indicator is described in Attachment 1. Should the actual level of an indicator meet or exceed a specified "EP Review Trigger Threshold," then a review of the affected EP program area is required. This review should be completed within 6 months, either as a stand-alone review or as part of a scheduled program review.

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Review of State and Local Interface

The use of a performance indicator for evaluating the adequacy of interfaces with State and local governments was assessed and determined to not be the optimum approach. A quantitative measure is not the most effective way to evaluate a qualitative property like interface adequacy. In lieu of a performance indicator, interim monitoring should be performed by assessing the adequacy of interfaces with State and local governments in a manner similar to that used during the 24-month review of this area. This review should be conducted within 11 months to 13 months after completion of the previous 24-month program review (or, for initial implementation, the last 12-month review).

Change Adversely Affecting the EP Program

The following criterion should be used when determining whether a change has occurred in personnel, procedures, equipment, or facilities that potentially could adversely affect emergency preparedness.

A change was implemented that resulted in a “reduction in effectiveness,”³ associated with one or more of the following planning standards, without prior NRC approval.

- 10 CFR 50.47(b)(2) - Responsibilities, staffing and interfaces
- 10 CFR 50.47(b)(4) - Emergency classification system
- 10 CFR 50.47(b)(5) - Emergency notifications
- 10 CFR 50.47(b)(8) - Facilities and equipment
- 10 CFR 50.47(b)(9) - Emergency assessment capability
- 10 CFR 50.47(b)(10) - Emergency protective actions for the public⁴

The assessment of the effect from a change should also consider the sections of Appendix E to 10 CFR Part 50 that support the planning standards listed above.⁵ The scope and depth of a subsequent review, if required, is expected to vary with the nature of the change (i.e., judgment will need to be exercised in making the decisions). Also, “reasonably practical” is a function of the significance of the change and needs to be factored into the scope and depth of review. The assessment should be documented and the documentation retained for inspection (e.g., in the corrective action program, a stand-alone report, etc.).

³ The term “Reduction in effectiveness” is defined in 10 CFR 50.54(q)(1).

⁴ For the purposes of this white paper, the functions implementing protective actions for licensee emergency workers are not treated as risk-significant.

⁵ It is recommended that a change impact assessment also be informed by the guidance in Regulatory Guide 1.219, “Guidance on Making Changes to Emergency Plans for Nuclear Power Reactors,” and the examples in NRC Manual Chapter 609, Appendix B, “Emergency Preparedness Significance Determination Process.”

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Implementation

The site-specific implementation of the guidance in this white paper should be described in, and controlled by, a procedure. The procedure should address the three provisions permitting the 24-month review frequency – 1) monitoring of performance indicators, 2) assessment of the adequacy of interfaces with State and local governments, and 3) identifying a change in personnel, procedures, equipment, or facilities that potentially could adversely affect emergency preparedness.

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Attachment 1

EP Program Performance Indicator #1

**INDICATOR NAME: ROP DRILL/EXERCISE PERFORMANCE (DEP)
INDICATOR**

PURPOSE:	This indicator measures the ability of key emergency response decision-makers to assess off-normal plant conditions, determine the appropriate emergency classification level and protective action recommendation, and direct communication of this information to an Offsite Response Organization (ORO). It therefore reflects the status of EP program elements that underpin risk-significant response actions, including training, qualifications, equipment, procedures, and the correction of weaknesses.
ASSESSMENT FREQUENCY:	Quarterly
INDICATOR DEFINITION:	Per current NRC-endorsed revision of NEI 99-02, "Regulatory Assessment Performance Indicator Guideline."
DATA REPORTING ELEMENTS:	Per current NRC-endorsed revision of NEI 99-02, "Regulatory Assessment Performance Indicator Guideline."
CALCULATION:	Per current NRC-endorsed revision of NEI 99-02, "Regulatory Assessment Performance Indicator Guideline."
EP REVIEW TRIGGER THRESHOLD:	<94%
CLARIFYING NOTES:	<p>Per current NRC-endorsed revision of NEI 99-02, "Regulatory Assessment Performance Indicator Guideline."</p> <p>The EP Review Trigger Threshold was set at the value for the DEP indicator's White Threshold (< 90%) plus 40% of the difference to 100%, i.e., $90\% + (0.4 \times 10\%) = 94\%$. This value provides a reasonable margin to the White Threshold of 90% where performance is outside of the nominal, expected range.</p>

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Attachment 1

EP Program Performance Indicator #2

INDICATOR NAME: ROP EMERGENCY RESPONSE ORGANIZATION (ERO) PERFORMANCE INDICATOR

PURPOSE:	This indicator measures the ability to provide performance enhancing opportunities to personnel staffing key Emergency Response Organization (ERO) positions. It therefore reflects on ERO readiness through experience gained by participation in drills, exercises and other performance enhancing experiences. Broad participation also supports the identification and correction of weaknesses in important EP program elements, including damage control, worker protection, accident assessment, procedure quality, training program, and facility readiness.
ASSESSMENT FREQUENCY:	Quarterly
INDICATOR DEFINITION:	Per current NRC-endorsed revision of NEI 99-02, "Regulatory Assessment Performance Indicator Guideline."
DATA REPORTING ELEMENTS:	Per current NRC-endorsed revision of NEI 99-02, "Regulatory Assessment Performance Indicator Guideline."
CALCULATION:	Per current NRC-endorsed revision of NEI 99-02, "Regulatory Assessment Performance Indicator Guideline."
EP REVIEW TRIGGER THRESHOLD:	<90%
CLARIFYING NOTES:	<p>Per current NRC-endorsed revision of NEI 99-02, "Regulatory Assessment Performance Indicator Guideline."</p> <p>The EP Review Trigger Threshold was set at the value for the ERO indicator's White Threshold (< 80%) plus 50% of the difference to 100%, i.e., $80\% + (0.5 \times 20\%) = 90\%$. This value provides a reasonable margin to the White Threshold of 80% where performance is outside of the nominal, expected range.</p>

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Attachment 1

EP Program Performance Indicator #3

INDICATOR NAME: EMERGENCY RESPONSE FACILITY AND EQUIPMENT READINESS (ERFER) INDICATOR

PURPOSE:	This indicator measures licensee performance in maintaining the emergency response facilities and equipment of greater importance to the protection of public health and safety. It reflects the ability of the licensee to perform the surveillance, testing, inventory, and preventative and corrective maintenance activities that contribute to the availability of emergency response facilities and equipment necessary to implement Risk Significant Planning Standard (RSPS) functions and response actions.
ASSESSMENT FREQUENCY:	Quarterly
INDICATOR DEFINITION:	The Technical Support Center (TSC), Operational Support Center (OSC), or Emergency Operations Facility (EOF) is nonfunctional, or equipment necessary to implement the emergency plan is not available or functional, such that an RSPS function or response action could not be performed for greater than 24 hours from the Time of Discovery and no Compensatory Measure(s) was implemented.
DATA REPORTING ELEMENTS:	<p>The following data are required to calculate this indicator:</p> <ul style="list-style-type: none">• The number of instances that the TSC, OSC, or EOF is nonfunctional, or equipment necessary to implement the emergency plan is not available or functional, such that an RSPS function or response action could not be performed for greater than 24 hours from the Time of Discovery and no Compensatory Measure(s) was implemented.
CALCULATION:	Count the number of instances that the TSC, OSC, or EOF is nonfunctional, or equipment necessary to implement the emergency plan is not available or functional, such that an RSPS function or response action could not be performed for greater than 24 hours from the Time of Discovery and no Compensatory Measure(s) was implemented.
EP REVIEW TRIGGER THRESHOLD:	≥ 1 per quarter
CLARIFYING	To promote consistency in the implementation and inspection of

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Attachment 1

NOTES:

this indicator, the definition of the terms “Risk Significant Planning Standard,” “Time of Discovery,” and “Compensatory Measure” are those provided in NRC Inspection Manual Chapter 609, Appendix B, “Emergency Preparedness Significance Determination Process.”

The EP Review Trigger Threshold was set at ≥ 1 per quarter based on professional judgment that a facility or equipment condition involving a prolonged loss of a RSPS function or response action with no Compensatory Measure(s) implemented warrants an early review of this area.