

efficiency bulletin

March 23, 2017

Efficiency Bulletin: 17-10 Maximizing the Benefit of Portable Equipment

Utilize portable equipment, including equipment procured as a part of the B.5.b and FLEX programs, in risk-informed regulatory programs to increase station safety and reduce operating costs. The guidance contained in this efficiency bulletin supports the identification of opportunities where portable equipment use may be appropriate for compensatory measures and defense-in-depth strategies.

Addressees: Chief nuclear officers, NEI APCs and INPO APCs

Issue: RIO-03, Maximizing the Benefit of Portable
Equipment

Summary of Efficiency Opportunity

- Desired end-state—All sites have evaluated and implemented opportunities to utilize portable equipment, including equipment procured as a part of the B.5.b and FLEX programs, in risk-informed regulatory programs to increase station safety and reduce operating costs.
- Value proposition (vision of excellence)—This process allows sites to realize significant savings and efficiencies in risk-informed regulatory programs including: 10 CFR 50.69 categorization, risk-informed technical specifications, risk-informed surveillance frequency control program, 10 CFR 50.65 maintenance rule, significance determination process (SDP), mitigating system performance index (MSPI) metrics, and risk-informed in-service inspection and testing programs. Savings are achieved by reducing the risk significance of permanently installed plant equipment by crediting portable equipment in evaluations performed in accordance with NEI 16-06,

Color Code: Green

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Washington, DC 20004
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Crediting Mitigating Strategies in Risk-Informed Decision Making, and NEI 16-08, Guidance for Optimizing the Use of Portable Equipment. In addition, the process improves operational flexibility and reduces the risk of maintenance activities online or during outages.

- Why is it important?—Greatly improves economic performance related to implementation of risk-informed regulatory programs and improves safety by increasing critical safety function defense-in-depth.
- Industry benchmark value(s)—Use of portable equipment credited in a risk-informed emergency technical specification change was key to NRC approval and averted a forced unit shutdown of extended duration.
- Measure of effectiveness—
 - Completing evaluation of opportunities to utilize and credit portable equipment in risk-informed regulatory programs using NEI 16-06 and NEI 16-08.
 - Implementing use of portable equipment for risk reduction in station procedures.
 - Reduction in burden associated with ongoing implementation of risk-informed regulatory programs.

Background:

The nuclear industry developed mitigating strategies and procured portable equipment in support of regulations and orders following Sept. 11, 2001 and the beyond-design-basis earthquake and subsequent tsunami that led to the Fukushima accident in March 2011. These strategies and equipment provide additional layers of defense-in-depth to plant safety and represent an opportunity to recognize increased flexibility and diversity provided to permanently installed plant equipment.

The intent of this efficiency bulletin is to support expanded uses of portable equipment to improve site operations and safety. While guidance documents such as NEI 12-06, Diverse and Flexible Coping Strategies Implementation Guide, establish strategies to implement this equipment for specific regulatory purposes, this equipment may also provide additional benefit to plant operations and safety. This guidance seeks to enable licensees to identify expanded uses of this portable equipment. For the development of risk reduction strategies, NEI 16-08 is intended to be used in conjunction with NEI 16-06 to establish regulatory or operational risk reduction credit. Though the guidance in NEI 16-08 outlines important considerations for strategy implementation, NEI 16-06 describes the evaluations that should be performed when crediting portable equipment in a probabilistic risk assessment (PRA) or defense-in-depth evaluation application.

Relevant Standards

- INPO 12-013 Performance Objectives and Criteria:
 - CO.2, Criterion 11: Corporate policy clearly defines unacceptable risk conditions and includes procedures to minimize and manage risk. Integrated risk considerations include, but are not limited to, nuclear, radiological, industrial safety, and environmental safety.
 - EP.2, Criterion 21: Emergency response facilities and supplies are ready to support continuous, long-term response to a wide range of conditions and events. If emergency response facilities are used for

Key to Color Codes:

Red: NSIAC initiative – full participation required for viability

Blue: Action expected at all sites, but is not needed for broad industry viability

Green: Utility discretion to implement, consistent with its business environment

other purposes, such as outage control centers, they remain ready to support emergency response functions.

- OF.2, Criterion 1: The actual and potential effects of removing equipment from service are thoroughly reviewed and understood. This includes the use of both probabilistic safety assessment considering the potential effects on core damage frequency, if applicable; and the qualitative assessment of the operational risk of performing the activity.
- OF.2, Criterion 3: Planned evolutions that remove equipment from service are scheduled in a manner that maintains operational risk and operational burden at acceptable levels. The work schedule is designed and followed to ensure work activities are controlled as planned. Contingency plans are established as necessary where work is particularly complicated or risk significant.

Relevant Regulatory Requirements

- 10 CFR 50.65, Requirements For Monitoring The Effectiveness Of Maintenance At Nuclear Power Plants
- 10 CFR 50.69, Risk-Informed Categorization And Treatment Of Structures, Systems And Components For Nuclear Power Reactors
- Regulatory Guide 1.174, An Approach For Using Probabilistic Risk Assessment In Risk-Informed Decisions On Plant Specific Changes To The Licensing Basis
- Regulatory Guide 1.175, An Approach For Plant-Specific, Risk-Informed Decisionmaking: In-service Testing
- Regulatory Guide 1.177, An Approach For Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications
- Regulatory Guide 1.178, An Approach For Plant-Specific Risk-Informed Decisionmaking For In-service Inspection Of Piping
- Regulatory Guide 1.200, An Approach For Determining The Technical Adequacy Of Probabilistic Risk Assessment Results For Risk-Informed Activities
- NRC Inspection Manual (including Reactor Oversight Process)

Guidance

- NEI 16-06, Crediting Mitigating Strategies in Risk-Informed Decision Making
- NEI 16-08, Guidance for Optimizing the Use of Portable Equipment

Recommended Industry Actions

- Develop program and infrastructure to implement NEI 16-06 and NEI 16-08 including evaluation of potential use, procedure enhancements, PRA modeling and risk-informed program changes.
- Consider cost-effective enhancements to inventory of portable equipment and design of station connections to portable equipment to achieve maximum benefit in cost savings and risk reduction.

Change Management Considerations

Industry Activities

- Industry webinar to provide background for initiative, industry peer discussion, and provide an open forum to clarify expectations and ask questions. Webinar information can be found at <https://web.inpo.org/Pages/Nuclear-Promise-Issues.aspx>
- NEI to develop industry shared website and communicate method to share operating experience.
- NEI to update NEI 16-06 and NEI 16-08 as necessary to reflect industry operating experience.

- EPRI to address equipment reliability data and human reliability analysis gaps for crediting portable equipment in Regulatory Guide 1.200 risk applications.
- EPRI is creating a database for relevant industry reporting of operating history for FLEX equipment. Industry personnel will populate this database as relevant information becomes available (Reference EB 16-17).

Company Actions

- Share relevant operating experience on benefits and lessons learned via NEI website.
- Conduct benchmarking to identify industry best practices.
- Communicate regulatory issues with crediting portable equipment in risk-informed regulatory applications to NEI.
- Potentially adverse unintended consequences should be monitored.

Guidelines

- Prior to the implementation of a strategy, NEI 16-08 should be used to identify and disposition any unintended consequences of using portable equipment.
- The guidance from NEI 16-08 should not be used to justify the use of portable equipment as replacement for design-basis required equipment. However, these strategies can be implemented as mitigating strategies, as defined in NEI 16-06, where they are providing a safety function or implemented as efficiency strategies to provide improvements to plant operations.
- Portable equipment credited in risk-informed regulatory programs must be determined capable of performing its credited functions.
- Compensatory actions should be considered while deploying portable equipment as a mitigation strategy to gain operational flexibility. These compensatory actions should be sufficient to return the equipment to their originally intended configuration for meeting B.5.b or FLEX strategies.
- Analysis or testing should be performed to confirm the suitability of portable equipment to perform credited functions. For example, if three diesels are expected to feed the same bus, their ability to synchronize should be confirmed through analysis or testing.
- Operability of portable equipment should be confirmed through routine preventive maintenance activities as recommended in NEI 16-06.
- Incorporation of training on manual actions, portable equipment operation or other nonstandard actions for a new strategy should be established and must meet training standards.
- Portable equipment must be determined to remain available to support all credited functions (e.g., seismic restraints if credited to operate following a seismic event, sufficient fuel to support both FLEX and other uses credited in the risk assessment).

Report Your Site's Results

Please report your company's implementation of this improvement opportunity, including the date of completion. Send this information along with your company point of contact to EfficiencyBulletin@NEI.org.

Industry Contacts

- Industry champion for this issue: Thomas Hook, 623-393-6971, thomas.hook@aps.com
- EPRI contact: John Weglian, 704-595-2763, jweglian@epri.com
- INPO contact: Sudesh Gambhir, 770-644-8213, gambhirsk@inpo.org
- NEI contact: Thomas Zachariah, 202-739-8058, txz@nei.org
- On the web: www.nei.org/bulletin1710

Industry Approval:

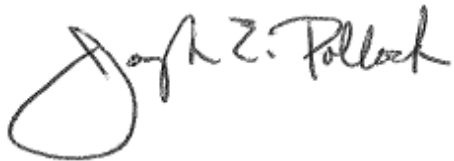
Bob Bement, CNO Lead

Handwritten signature of Bob Bement in cursive script.

David P. Igyarto, Institute of Nuclear Power Operations

Handwritten signature of David P. Igyarto in cursive script.

Joseph E. Pollock, Nuclear Energy Institute

Handwritten signature of Joseph E. Pollock in cursive script.