

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
OFFICE OF NUCLEAR REACTOR REGULATION  
WASHINGTON, D.C. 20555-0001

June 25, 2008

**NRC REGULATORY ISSUE SUMMARY 2008-15 NRC STAFF POSITION  
ON CREDITING MITIGATING STRATEGIES IMPLEMENTED IN  
RESPONSE TO SECURITY ORDERS IN RISK-INFORMED LICENSING  
ACTIONS AND IN THE SIGNIFICANCE DETERMINATION PROCESS**

**ADDRESSEES**

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

**INTENT**

The U.S. Nuclear Regulatory Commission (NRC) is issuing this regulatory issue summary (RIS) to inform addressees of the NRC staff position on crediting mitigating strategies implemented in response to security Orders in the risk assessments associated with risk-informed licensing actions and the significance determination process (SDP) used in the Reactor Oversight Process. This RIS does not transmit any new requirements and does not require any specific action or written response.

**BACKGROUND INFORMATION**

On February 25, 2002, the NRC sent immediately effective Orders to domestic nuclear power plant licensees regarding implementation of interim safeguards and security compensatory measures. The Orders were the result of the September 11, 2001, terrorist attacks. As a result of the Order, domestic nuclear power plants have taken certain steps or plan to take steps to enhance safety and security. Some of the steps taken pursuant to the Orders have resulted in mitigating strategies that may improve safety by reducing risk from plant events whether related to security or not.

Risk-informed regulatory activities rely on realistic assessments of the change in risk. These risk-informed assessments balance the traditional engineering approach embodied in the NRC regulations. The NRC often uses probabilistic risk assessment models (PRAs) to support license amendment requests and to assess the safety significance of plant events or performance deficiencies. PRA models are expected to model the "as-built, as-operated plant" to the extent necessary to provide useful and valid risk insights.

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The NRC intends for this RIS to clarify when mitigating strategies implemented in response to security orders may be “credited” in risk assessments supporting licensing actions and SDP evaluations.

## **SUMMARY OF ISSUE**

Changes made to a nuclear power plant to enhance security and safety as a result of the February 25, 2002, Order may include procedural changes, plant modifications, compensatory measures, or other measures. Some of these changes may provide a risk benefit in mitigating non-security events at a plant. These include internal events while the plant is at power, external events while the plant is at power (e.g., internal fires and floods, seismic events, external fires and floods), events while the unit is shutdown, or events while the plant is transitioning between operating and shutdown modes.

The Commission, in its policy statement of 1995 on the use of PRA methods in nuclear regulatory activities, stated that PRA evaluations in support of regulatory decisions should be as realistic as practicable. Consistent with this policy, mitigating strategies (e.g., plant features and procedures) implemented in response to security orders may be credited in risk assessments. However, if a licensee seeks to obtain such credit, the crediting of these strategies in risk assessments must be consistent with current, extant guidance on PRA quality such as found in Regulatory Guide (RG) 1.200, “An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities.” Because of the high degree of variability in mitigating strategies at nuclear power plants, this RIS clarifies some of the salient points of the existing guidance.

Mitigating strategies often involve use of non-safety, portable, manual control, offsite, or non-standard system alignments to provide enhanced mitigation capability. Capabilities such as these are generally reflected in PRA analyses rather than traditional design-basis accident analysis, such as those found in the accident analysis section of the plant Safety Analysis Report (SAR). Therefore, the staff believes that the best focus for crediting such capabilities rests in risk-informed actions. However, there may also be a few instances where such enhanced capabilities offer benefits to licensing-basis events (beyond design basis) where the staff has imposed performance requirements, (e.g., station blackout (SBO) and anticipated transient without scram (ATWS) mitigation). While not part of the SAR accident analysis (e.g. Chapter 15 for a typical plant), the NRC requires plants to have the capability to respond to these events and in some cases related actions may even be incorporated into the plant's Emergency Operating Procedures (EOPs). While the primary area of credit for mitigating strategies will remain risk-informed actions, the staff may allow credit for these few licensing-basis issues in assessing such topics as compliance with the SBO and ATWS rule requirements. This will be determined on a case-by-case assessment of the licensee's associated justification basis.

This RIS considers two specific applications of risk assessments. These are risk-informed licensing actions and SDP evaluations. These are the main areas where NRC anticipates licensees may wish to credit mitigating strategies in risk assessments.

### Risk-Informed Licensing Actions

Currently, licensees may submit risk-informed license amendment requests using the guidance of RG 1.174, “An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis,” and/or one of the application-specific risk-

informed guides, RG 1.175, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Inservice Testing," RG 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications," or RG 1.178, "An Approach for Plant-Specific Risk-Informed Decisionmaking for Inservice Inspection of Piping." If a PRA model is used to support a risk-informed application, that model must be of sufficient scope, technical adequacy, and level of detail for the application. Risk-informed submittals should include not only the results of the risk assessment, but also demonstrate that the PRA is of sufficient quality to support the application. RG 1.200 provides guidance on PRA quality by endorsing, with exceptions and modifications, the American Society of Mechanical Engineers (ASME) PRA standard<sup>1</sup>.

In the event licensees wish to credit mitigating strategies put in place as a result of the February 25, 2002, order, licensees should confirm that the incorporation of such measures into the model meets the ASME PRA standard as endorsed by RG 1.200. Credit for these mitigating strategies should have been incorporated into the plant's base-line risk assessment and should be confirmed to be applicable to the license amendment being requested. In other words, the base risk assessment and the risk assessment associated with an application should both consider the effects of crediting the mitigating strategies as appropriate, to avoid an artificially reduced estimate of the change in risk by not considering any risk reduction in the baseline PRA. As is the practice for incorporation into PRA models, manual actions must be proceduralized, trained upon<sup>2</sup>, and able to be successfully performed in order to receive realistic credit in a risk assessment. The associated procedures should be adequate to support confidence in successful completion of the manual action, but not necessarily incorporated into the plant's formal EOPs. However, they do need to be incorporated and maintained in other appropriate administratively controlled processes. In a similar manner, any credit proposed for utilization of offsite resources, should include a demonstration that those resources will be accessible with an appropriate level of availability and reliability. Additionally, mitigating strategies credited as part of the risk-informed licensing action should be incorporated into a monitoring program.<sup>3</sup>

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<sup>1</sup> RG 1.200 provides the NRC's position on PRA consensus standards and industry PRA program documents. The latest revision of RG 1.200 at a given point in time will reference those versions of the PRA standards endorsed by NRC. For example, RG 1.200 Revision 1 (January 2007) references, for the internal events PRA, ASME RA-Sb-2005, "Standard for Probabilistic Risk Assessment for Nuclear Power Plant Applications," Addendum B to ASME RA-S-2002, December 30, 2005. Therefore, a specific version of the ASME PRA standard is not provided in this Regulatory Issue Summary.

<sup>2</sup> While the ASME standard would allow a licensee to justify not having a procedure or training for these actions, it is unlikely that meaningful credit could be justified in a risk assessment for the types of actions being considered in this RIS absent both a procedure and training.

<sup>3</sup> Implementation of performance measurement strategies is the fifth key principle of risk-informed decision making as set forth in RG 1.174. The monitoring referred to here comports with this key principle. There is no implied linkage to Title 10 of the Code of Federal Regulations, paragraph 50.65, commonly referred to as the "maintenance rule." Guidance on maintenance rule scope and implementation is provided in other NRC guidance documents (e.g., RG 1.160). This RIS provides no position one way or the other regarding whether crediting a mitigating strategy in a licensee's risk assessment has implications for the related equipment with respect to the maintenance rule.

## SDP Evaluations

NRC evaluates plant events and performance deficiencies under the SDP part of the Reactor Oversight Process. NRC staff assesses the safety significance of inspection findings based on risk insights.

Licensees occasionally question the NRC SDP risk assessment when they believe that plant-specific features have not been appropriately credited. It is possible that a licensee may point to an implemented mitigating strategy as a potential mitigation strategy for reducing the significance of a performance deficiency. The NRC believes credit for such mitigating strategies is appropriate when certain conditions are satisfied. Therefore, the NRC will consider such measures in the same manner as any other prevention or mitigation features, whether or not they resulted from the security Orders. However, licensees must consider the following:

- Incorporation of manual actions, special equipment operation, or other non-standard actions into the risk assessment needs to meet current consensus PRA standards, as endorsed by RG 1.200 guidance. For example, manual actions must be included in plant procedures and staff be trained<sup>4</sup> to perform the actions in order for the licensee to receive realistic credit in a risk assessment.
- Credit for mitigating strategies must be included in both the baseline risk assessment and the assessment of the performance deficiency, unless the action would only apply for the latter event. For example, if equipment is available that could reduce the risk associated with an application, the licensee should consider whether the equipment could also be used for scenarios in the base PRA model. Otherwise, crediting the equipment in the application but not the base model would result in a smaller estimate of the risk increase than is realistic.

Licensees should also note that the NRC intends to incorporate mitigating strategies into its plant-specific Standardized Plant Analysis Risk models. This will allow the agency to independently assess the impact of these mitigating strategies on non-security related initiators and accident sequences.

## **BACKFIT DISCUSSION**

This RIS requires no action or written response. Any action on the part of addressees to credit mitigating strategies implemented in response to the security orders in risk assessments supporting licensing actions and SDP evaluations is strictly voluntary. This RIS provides clarification of existing NRC policies and practices regarding use of PRA models in risk-informed activities. Therefore, this is not a backfit under Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.109, "Backfitting," and the staff did not perform a backfit analysis.

## **FEDERAL REGISTER NOTIFICATION**

A notice of opportunity for public comment on this RIS was not published in the *Federal Register* because it is informational. The topic of this RIS was discussed at a public meeting held on

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<sup>4</sup> Same comment as footnote number 2.

January 25, 2008<sup>5</sup>. Stakeholder response to issuing a RIS on this topic was favorable. A second public meeting was held on June 3, 2008, to discuss the draft RIS. Overall stakeholder response to the RIS was favorable. Several changes were made to the RIS to clarify areas discussed at the public meeting. The NRC decided that this RIS would not benefit from additional public comment because it has been discussed with interested stakeholders at two public meetings. In addition, it is not a new policy, but a clarification of existing NRC policies and practices regarding use of PRA models in risk-informed activities.

#### **CONGRESSIONAL REVIEW ACT STATEMENT**

The NRC has determined that this RIS is not a rule as designated by the Congressional Review Act (5 U.S.C. §§ 801-808) and, therefore, is not subject to the Act.

#### **PAPERWORK REDUCTION ACT STATEMENT**

This RIS does not contain any information collections and, therefore, is not subject to the requirements of the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.).

#### **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 Office of Management and Budget control number.

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<sup>5</sup> The meeting summaries for the two public meetings may be found in the Agencywide Documents Access and Management System (ADAMS) under Accession Nos. ML080300331 and ML081560552.

## CONTACT

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

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