



**DSS-ISG-2016-01**

**Clarification of Licensee Actions in Receipt of Enforcement  
Discretion Per Enforcement Guidance Memorandum  
EGM 15-002, “Enforcement Discretion for Tornado-Generated  
Missile Protection Noncompliance”**

**Interim Staff Guidance**

**February 2016**

## DSS-ISG-2016-01

# Clarification of Licensee Actions in Receipt of Enforcement Discretion per Enforcement Guidance Memorandum EGM 15-002, "Enforcement Discretion for Tornado-Generated Missile Protection Noncompliance"

### Interim Staff Guidance

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## INTERIM STAFF GUIDANCE

### CLARIFICATION OF LICENSEE ACTIONS IN RECEIPT OF ENFORCEMENT DISCRETION PER ENFORCEMENT GUIDANCE MEMORANDUM EGM 15-002, "ENFORCEMENT DISCRETION FOR TORNADO-GENERATED MISSILE PROTECTION NONCOMPLIANCE"

DSS-ISG-2016-01

#### PURPOSE

The U.S. Nuclear Regulatory Commission (NRC, or Commission) staff is providing this interim staff guidance (ISG) to provide clarifying guidance to facilitate staff understanding of expectations for consistent oversight associated with implementing enforcement discretion for tornado missile protection noncompliance(s) per Enforcement Guidance Memorandum (EGM) 15-002, "Enforcement Discretion for Tornado-Generated Missile Protection Noncompliance" (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15111A269).

#### BACKGROUND

Nuclear power plants are designed to ensure that structures, systems, and components (SSCs) needed to maintain the facility in a safe condition will be available to mitigate the effects of natural phenomena, including tornadoes and tornado-generated missiles. The NRC's regulations requiring protection from tornado missiles are Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants," Criterion 2, "Design Bases for Protection Against Natural Phenomena," and Criterion 4, "Environmental and Dynamic Effects Design Bases." Methods acceptable to the NRC to comply with the regulations are described in Regulatory Guides (RGs) 1.76, "Design-Basis Tornado and Tornado Missiles for Nuclear Power Plants," and 1.117, "Tornado Design Classification," and NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," Section 3.5.1.4, "Missiles Generated by Natural Phenomena," Revision 2, July 1981.

Typically, a licensee will include a description in the facility's Final Safety Analysis Report or Updated Final Safety Analysis Report of how compliance with regulatory requirements is achieved. Facilities have used deterministic methods when evaluating protection from tornado-generated missiles as a basis for complying with these regulations. NUREG-0800, Section 3.5.1.4 includes acceptance criteria permitting the use of an alternative approach, if it can be demonstrated that the probability of damage to unprotected essential safety-related features is sufficiently small. Some licensees utilized this alternative approach by incorporating the NRC-approved, Electric Power Research Institute (EPRI)-developed TORMIS methodology, or other NRC-approved probabilistic risk assessment methodology via the license amendment process. The staff issued Regulatory Issue Summary (RIS) 2008-14, "Use of TORMIS Computer Code for Assessment of Tornado Missile Protection" (ADAMS Accession No. ML080230578), to inform licensees on the acceptability for using probabilistic analysis to exclude certain SSCs from tornado missile protection.

Over the past several years, licensees and the NRC have identified facilities that have not conformed to their licensing basis for tornado-generated missile protection, and are therefore not in compliance with applicable regulations. These noncompliances have been documented in NRC inspection reports and license amendment requests. Some of the noncomplying SSCs included technical specification (TS)-required equipment (e.g., emergency diesel generator exhaust header/ductwork, pipe risers, fan motors, etc.), which required an operability determination. In cases where the licensee concluded that the TS-required SSC was inoperable, the licensee was required to complete any actions specified by the TS until the limiting condition for operation (LCO) was met. The staff issued RIS 2015-06, "Tornado Missile Protection" (ADAMS Accession No. ML15020A419) to: (1) remind licensees of the need to conform facilities to the current, site-specific licensing basis for tornado-generated missile protection; (2) provide examples of failures to conform with a plant's tornado-generated missile licensing basis; and (3) remind licensees that their systematic evaluation program (SEP) and individual plant examination of external events (IPEEE) results do not constitute regulatory requirements, and are not part of the plant-specific tornado-generated missile licensing basis, unless the NRC or licensee took action to specifically amend the licensing basis.

Depending on the details of the site-specific issue, licensees may or may not be able to restore the affected equipment to an operable status within the completion time allowed by the TS. Restoring compliance generally depends on the number of noncomplying SSCs and the extent to which their function is affected. Failure to meet the required TS LCO(s) or restore compliance with the tornado-generated missile protection licensing basis may require a reactor shutdown or mode change. Resumption of reactor operation would not be permitted until the TS LCO is met.

The Office of Nuclear Reactor Regulation (NRR), Division of Risk Analysis (DRA) completed a generic bounding risk analysis (ADAMS Accession No. ML14114A556) that concluded that the issues associated with the inoperability of an SSC due to a tornado-generated missile are likely to be of low risk significance, and do not require immediate plant shutdown. Based on the conclusions of the NRR DRA analysis, the staff issued EGM 15-002, dated June 10, 2015.

After the issuance of EGM 15-002, the staff received internal and external stakeholder comments requesting clarification in complying with NRC expectations for invoking enforcement discretion in accordance with the EGM. Questions were received regarding the following:

1. What examples of compensatory measures would be acceptable initial compensatory measures (to be carried out before implementing enforcement discretion) and comprehensive compensatory measures (to be implemented within 60 days)?
2. How should noncompliant equipment be considered in regard to operability status per TS once enforcement discretion is implemented by satisfying the expectations described in the EGM?

The staff believes that it is in the best interest of both the NRC staff and licensees to provide clarification through this interim guidance. For such situations applicable under EGM 15-002,

the intent of this guidance is to prevent unnecessary plant transients and continue to provide for appropriate surveillance and maintenance in accordance with TS during the discretionary period.

## RATIONALE

1. The NRC has previously provided regulatory guidance and generic communication for tornado missile protection including the following:
  - RG 1.117, "Tornado Design Classification"
  - RG 1.76, "Design-Basis Tornado and Tornado Missiles for Nuclear Power Plants"
  - NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," Section 3.5.1.4, "Missiles Generated by Extreme Winds"
  - NRC Information Notice 1996-06, "Design and Testing Deficiencies of Tornado Dampers at Nuclear Power Plants"
  - NRC RIS 2006-23, "Post-Tornado Operability of Ventilating and Air-Conditioning Systems Housed in Emergency Diesel Generator Rooms"
  - NRC RIS 2008-14, "Use of TORMIS Computer Code for Assessment of Tornado Missile Protection"
  
2. The NRC has previously provided regulatory guidance for determination of operability of SSCs important to safety including the following:
  - NRC RIS 2013-05, "NRC Position on the Relationship between General Design Criteria and Technical Specification Operability"
  - Inspection Manual 9900 Technical Guidance, "Operability Determinations & Functionality Assessments for Resolution of Degraded or Nonconforming Conditions Adverse to Quality or Safety" (ADAMS Accession No. ML073531346)
  - Inspection Manual Chapter 0326, "Operability Determinations and Functionality Assessments for Conditions Adverse to Quality or Safety" [NRC: Inspection Manual Chapters](#)
  - Memorandum from Thomas E. Murley, titled "Relationship Between the General Design Criteria (GDC) and Technical Specifications," dated January 24, 1994.

## APPLICABILITY

All holders of an operating license or construction permit for a nuclear power reactor under 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," including those who have permanently ceased operations and have spent fuel in spent fuel pools.

All holders of and applicants for a power reactor early site permit, combined license, standard design approval, or manufacturing license under 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants." All applicants for a standard design certification, including such applicants after initial issuance of a design certification rule.

## **GUIDANCE**

The NRC staff considers that the information provided in Appendix A to this ISG provides an acceptable approach for compensatory measures implemented by licensees to address nonconforming SSCs, and does not change agency positions in regard to operability determination.

Information provided in this ISG remains consistent with guidance provided in prior generic communications, as referenced.

## **IMPLEMENTATION**

The staff will use the information discussed in this ISG to determine the following:

- whether licensees have implemented appropriate compensatory measures to receive enforcement discretion in accordance with EGM 15-002
- whether licensees can characterize inoperable TS SSCs due to tornado-generated missile issues as “operable but nonconforming” while appropriate compensatory measures remain in place, and be permitted to perform all required maintenance and testing activities as defined in the plant-specific licensing bases

## **BACKFITTING DISCUSSION**

Licensees may use the guidance in this document to demonstrate compliance with EGM 15-002. Accordingly, the NRC staff issuance of this ISG is not considered backfitting as defined in 10 CFR 50.109(a)(1), nor is it deemed to be in conflict with any of the issue finality provisions in 10 CFR Part 52.

## **CONGRESSIONAL REVIEW ACT**

This ISG is a rule as defined in the Congressional Review Act (5 U.S.C. §§ 801-808). However, the Office of Management and Budget has not found it to be a major rule as defined in the Congressional Review Act.

## **FINAL RESOLUTION**

This ISG will expire with the expiration of EGM 15-002.

## **APPENDIX**

- A. Clarification of Actions in EGM 15-002
- B. Resolution of Public Comments

**REFERENCES**

1. U.S. Nuclear Regulatory Commission, RG 1.117, "Tornado Design Classification," Revision 1, April 1978, ADAMS Accession No. ML003739346.
2. U.S. Nuclear Regulatory Commission, RG 1.76, "Design-Basis Tornado and Tornado Missiles for Nuclear Power Plants," Revision 1, March 2007, ADAMS Accession No. ML070360253.
3. NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR [light-water reactor] Edition," Section 3.5.1.4, "Missiles Generated by Tornadoes and Extreme Winds," Revision 3, March 2007, ADAMS Accession No. ML070380174.
4. U.S. Nuclear Regulatory Commission Information Notice 1996-06, "Design and Testing Deficiencies of Tornado Dampers at Nuclear Power Plants," ADAMS Accession No. ML031060290.
5. U.S. Nuclear Regulatory Commission RIS 2006-23, "Post-Tornado Operability of Ventilating and Air-Conditioning Systems Housed In Emergency Diesel Generator Rooms," ADAMS Accession No. ML061720371.
6. U.S. Nuclear Regulatory Commission RIS 2008-14, "Use of TORMIS Computer Code for Assessment of Tornado Missile Protection," ADAMS Accession No. ML080230578.
7. U.S. Nuclear Regulatory Commission RIS 2013-05, "NRC Position on the Relationship Between General Design Criteria and Technical Specification Operability," ADAMS Accession No. ML13056A077.
8. Inspection Manual 9900 Technical Guidance, "Operability Determinations & Functionality Assessments for Resolution of Degraded or Nonconforming Conditions Adverse to Quality or Safety", ADAMS Accession No. ML073531346.
9. Inspection Manual Chapter 0326 "Operability Determinations and Functionality Assessments for Conditions Adverse to Quality or Safety," [NRC: Inspection Manual Chapters](#).
10. Memorandum from Thomas E. Murley, titled, "Relationship Between the General Design Criteria (GDC) and Technical Specifications," dated January 24, 1994, ADAMS Accession No. ML12115A279.

Public Meetings: September 10, 2015; October 27, 2015

## Appendix A

### Clarification of Actions in EGM 15-002

#### 1.0 Acceptable Initial and Comprehensive Compensatory Measures

In Enforcement Guidance Memorandum (EGM) 15-002, "Enforcement Discretion for Tornado-Generated Missile Protection Noncompliance," the following direction is provided to the staff regarding the enforcement discretion:

The staff will exercise this enforcement discretion only when a licensee implements initial compensatory measures prior to the expiration of the time allowed by the LCO [limiting condition for operation] that provide additional protection such that the likelihood of tornado missile effects are lessened. These compensatory measures would be followed by more comprehensive compensatory measures that must be implemented within approximately 60 days of issue discovery and remain in place until permanent repairs are completed, or until the NRC disposes the non-compliance in accordance with a method acceptable to the NRC such that discretion is no longer needed. In addition, the issue would be entered into the licensee's corrective action program. Examples of potential compensatory measures the licensee may consider are the following:

- a) Development and implementation of procedures and conduct of training for plant staff in performing compensatory and mitigating actions related to tornado missile impact effects on identified safety-related SSCs [structures, systems and components],
- b) Actions to be taken if a tornado watch is predicted or issued for the area to secure potential missiles, protect equipment that could affect safety-related SSC operation, cease maintenance activities in progress on equipment that could affect availability of SSCs, repair/restore SSCs if undergoing maintenance, stage equipment necessary for mitigative actions in protected but promptly accessible locations, and
- c) Actions to be taken if a tornado warning is issued for the area (e.g., pre-staging of plant staff at safe, strategic locations to promptly implement mitigative actions, and alerting plant staff necessary for prompt mitigative actions of preparation for response following severe weather conditions).

The following guidance provides acceptable initial and comprehensive compensatory measures for licensee use in implementing the enforcement discretion outlined in EGM 15-002. The licensee should declare (log) the utilization of EGM 15-002, inform the resident inspector, and enter the issue into the corrective action program. For initial compensatory measures, it is expected that the measures listed below are already in place at sites that may be affected by severe weather, such as tornadoes and/or hurricane force winds. The measures listed below should be verified as current and readily deployable within a very short timeframe (the shortest timeframe could, in some scenarios, be dictated by a technical specification (TS) 3.0.3 completion time of one hour.)



The following initial compensatory measures should be completed before the expiration of the TS action statement allowed outage time:

1. Verify that procedures are in place and training is current for performing actions in response to a tornado, such as:
  - a. The affected unit's abnormal and emergency operating procedures addressing tornados/high winds, and the loss of the tornado missile vulnerable equipment.
  - b. The affected unit's Diverse and Flexible Coping Strategies (FLEX) equipment and procedures, if available. If site FLEX equipment and procedures are not available, specific measures should be put in place with equipment staged, procedures written, and training completed for actions to lessen the likelihood of tornado missile effects on the affected SSCs, or for prompt recovery of SSC function from tornado missile effects.
2. Verify that procedures are in place and training is current for the following actions to be taken if a tornado watch is issued for the area, such as:
  - a. Remove, relocate, or secure potential missiles.
  - b. From a work management/configuration control perspective, protect equipment important to maintaining safe shutdown conditions.
  - c. Promptly complete or restore equipment from maintenance activities in progress on equipment important to maintaining safe shutdown conditions.
  - d. Restore equipment important to maintaining safe shutdown conditions if undergoing maintenance or testing, if possible.
  - e. Verify equipment is ready to use by visual inspection, surveillances and preventive maintenance are current, and review pending equipment maintenance requests.
3. Verify that procedures are in place and training is current for actions to be taken if a tornado warning is issued for the area, such as:
  - a. Warning and protection strategies for site personnel.
  - b. Strategies for prompt damage assessment and initiation of restorative actions (e.g., pre-staging of equipment and plant staff at safe, strategic locations to promptly implement any necessary mitigative actions).
4. Establish a heightened level of station awareness and preparedness relative to identified tornado missile vulnerabilities. This can be accomplished by including:
  - a. A description of the nonconforming SSC(s) and the associated compensatory measures in the shift manager turnover notes.

- b. Discussing these actions during shift turnover briefings, and
- c. Including the compensatory actions in the operability determination documentation maintained in the control room.

For longer term comprehensive compensatory measures, the licensee will have extended time to evaluate specific strategies for protection of affected, opposite train, and alternate equipment; restoration plans including consideration for additional equipment to include under FLEX or other onsite inventories; and operational considerations in recognition to the extent of the nonconformance. Comprehensive compensatory measures should be completed as soon as practicable, but no later than 60 days after identification of the affected SSC(s) for enforcement discretion to remain in effect.

The following comprehensive compensatory measures should be completed no later than 60 days following identification of nonconformance(s), such as:

1. Maintain initial compensatory actions, as appropriate.
2. Implement additional detailed actions. Examples may include specific measures with equipment staged, procedures written, and training completed for actions to lessen the likelihood of tornado missile effects on the affected SSCs or for prompt recovery of SSC function from tornado missile effects. Ensure any equipment and procedures necessary for these compensatory actions are staged in areas protected from exposure to tornado events, but will be promptly accessible. In order for enforcement discretion to apply, the licensee's additional actions should demonstrate a discernable change from its pre-discovery actions.

Temporary modifications may be chosen to reduce the likelihood of damage to affected SSCs from tornado missiles, but are not expected for initial compensatory measures nor required for comprehensive compensatory measures.

## **2.0 Consideration for Operable, but Nonconforming SSCs**

As described in Inspection Manual Chapter 0326, Appendix C, "Specific Operability Issues":

Failure to meet GDC [general design criteria], as described in the licensing basis (e.g., nonconformance with the CLB [current licensing basis] for protection against flooding, seismic events, tornadoes) should be treated as a nonconforming condition and is an entry point for an operability determination if the nonconforming condition calls into question the ability of SSCs to perform their specified safety function(s) or necessary and related support function(s). If the licensee determination concludes that the TS SSC is nonconforming but operable or the necessary and related support function is nonconforming but functional, it would be appropriate to address the nonconforming condition through the licensee's corrective action program. However, if the licensee's evaluation concludes that the TS SSC is inoperable, then the licensee must enter its TS and follow the applicable required actions.

Enforcement discretion under EGM 15-002 only applies to SSCs that result in an “inoperable” determination following a licensee’s operability determination assessment. The criteria for application of NRC enforcement discretion for TS inoperability of SSCs due to tornado missile protection (TMP) deficiencies include:

- The nonconforming condition must be entered into the affected unit’s corrective action program.
- The affected unit may continue operation even if the required TS actions cannot be met, provided that both conditions below are performed:
  - Initial compensatory measures are put in place prior to the expiration of the applicable TS action statement completion time that provide additional protection such that the tornado missile effects are lessened.
  - Comprehensive compensatory measures are implemented as soon as reasonable, but within 60 days of the discovery of SSC inoperability due to a TMP deficiency and remain in place until the TMP deficiency is resolved.

Once enforcement discretion due to inoperability of SSC(s) for tornado missile protection considerations is implemented, the SSCs that were determined to be inoperable should be considered “operable but nonconforming.” To document the implementation of the EGM, licensees should declare (log) the inoperability of the SSC(s), establishment of initial compensatory measures, and use of EGM 15-002 to establish justification for transition of SSC(s) from inoperable to operable but nonconforming. Additionally the licensee is expected to inform the resident inspector. The enforcement discretion does not relieve the licensees of any reporting requirements required in Title 10 of the *Code of Federal Regulations* for inoperable TS-required SSCs. The operable but nonconforming condition would be justified by the licensee’s implementation of initial compensatory measures, with the understanding that comprehensive compensatory measures would be implemented within 60 days. Furthermore, the rationale for crediting compensatory measures in this case is consistent with IMC 0326, Section 07.03, which states in part, “Compensatory measures may be used to maintain or enhance an operable but degraded or nonconforming SSC’s capability to perform its specified safety functions, or as the next logical step in support of corrective maintenance or to compensate for the degraded or nonconforming condition....”

Although operability is not restored by implementation of initial compensatory measures under the EGM, as long as the compensatory measures for the tornado missile protection deficiency(s) remain in place, the affected SSC(s) should be considered operable but nonconforming. As such, a licensee may continue to perform maintenance and surveillances for the affected systems and component(s) as required by the licensee’s licensing bases, as well as maintenance and surveillances on other systems and components without constraints that would be incurred by inoperable status being applied to the affected system(s) or component(s).

## Appendix B

### Resolution of Public Comments

A notice of opportunity for public comment on this Interim Staff Guidance (ISG) was published in the *Federal Register* (80 FR 67437) on November 2, 2015 for a 30-day comment period. One organization provided comments which were considered before issuance of this ISG in final form. Comments were received from the Nuclear Energy Institute (NEI) (Agencywide Documents Access and Accession No. ML15341A330). The comments and the staff responses are provided below.

Comment 1: Replace the words “The staff will exercise this enforcement discretion only when...” (Appendix A, page 1, first sentence, first full paragraph) with: “This enforcement discretion only applies when...”

NRC Response: The staff disagrees with this comment. The paragraph that is cited in the comment is quoted from Enforcement Guidance Memorandum 15-002. No change to the ISG was made in response to this comment.

2. Replace the words “...comprehensive compensatory measures for use when the licensee receives enforcement discretion...” (Appendix A, page 1, first sentence, last paragraph) with: “...comprehensive compensatory measures for licensee use in implementing the enforcement discretion...”

NRC Response: The staff agrees with this comment. The ISG was updated as noted in the comment.

3. Delete the word “cold” (Appendix A, Page 2, item 2d). The clarification of item 2d is needed to reflect the fact that the definition of safe shutdown for some plants is not cold shutdown.

NRC Response: The staff agrees with this comment. The ISG was updated as noted in the comment.

4. Replace the words “In order to receive enforcement discretion...” (Appendix A, page 3, last sentence in item 2 of Section 1) with “In order for enforcement discretion to apply...”

NRC Response: The staff agrees with this comment. The ISG was updated as noted in the comment.