



**DSS-ISG-2016-01, Revision 1**

**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  
Revision 1**

**November 2017**

**DSS-ISG-2016-01, Revision 1**  
**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**  
**Revision 1**

**ADAMS Accession No.: ML17128A344: \*concurrence via e-mail**

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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, Revision 1

#### PURPOSE

The U.S. Nuclear Regulatory Commission (NRC or Commission) is providing this interim staff guidance (ISG) to facilitate the staff's 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" (Reference 1).

During implementation of EGM 15-002, additional refinements were determined to be needed to address reportability, enforcement of longstanding design issues, and the duration of the enforcement discretion resulting from all the non-conforming conditions being assessed together. As a result, the staff issued EGM 15-002, Revision 1, dated February 7, 2017.

This revised ISG provides an acceptable approach to extending the discretion period; describes Title 10 of the *Code of Federal Regulations* (10 CFR) 50.72, "Immediate notification requirements for operating nuclear power reactors," reportability requirements specific to tornado missile issues; and describes rationale for enforcement discretion for long-term design nonconformances. The ISG also reinforces the need for licensees to follow the corrective action program when dispositioning the impact of identified tornado missile non-conformances on operability.

#### 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 in General Design Criterion (GDC) 2, "Design Bases for Protection Against Natural Phenomena," and GDC 4, "Environmental and Dynamic Effects Design Bases," in Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities." The NRC describes acceptable methods for complying with the regulations in Regulatory Guide (RG) 1.76, "Design-Basis Tornado and Tornado Missiles for Nuclear Power Plants," Revision 1, issued March 2007 (Reference 2); RG 1.117, "Protection Against Extreme Wind Events and Missiles for Nuclear Power Plants," Revision 2, issued July 2016 (Reference 3); and NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," Section 3.5.1.4, "Missiles Generated by Tornadoes and Extreme Winds," Revision 3, issued March 2007 (Reference 4).

Typically, a licensee's final safety analysis report or updated final safety analysis report for a facility will describe 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 the regulations. However, some licensees utilized an alternative

approach by using the license amendment process to incorporate the TORMIS methodology developed by the Electric Power Research Institute and approved by the NRC (or another NRC-approved probabilistic risk assessment methodology). The staff issued Regulatory Issue Summary (RIS) 2008-14, "Use of TORMIS Computer Code for Assessment of Tornado Missile Protection," dated June 16, 2008 (Reference 5), to inform licensees of the acceptability of 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 equipment required under the technical specifications (TS) (e.g., emergency diesel generator exhaust header/ductwork, pipe risers, fan motors), which required an operability determination. If the licensee concluded that the TS-required SSC was inoperable, the licensee was required to complete the actions specified by the TS until the limiting condition for operation (LCO) was met. The staff issued RIS 2015-06, "Tornado Missile Protection," dated June 10, 2015 (Reference 6), 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 and individual plant examination of external events results do not constitute regulatory requirements and are not part of the plant-specific, tornado-generated missile licensing basis, unless the NRC or the licensee took specific action to 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 mandated 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 to 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 NRC Office of Nuclear Reactor Regulation (NRR), Division of Risk Analysis, completed a generic bounding risk analysis (Reference 7) that concluded that the nonconformance with the tornado missile protection issue does not rise to the level of adequate protection, or require immediate plant shutdown because the risk is bounded by the initiating event frequency of  $4 \times 10^{-4}$  per year even in the most severe tornado region. This is well below the  $1 \times 10^{-3}$  per year threshold given in NRR Office Instruction LIC-504, "Integrated Risk-Informed Decision-Making Process for Emergent Issues," Revision 4, dated May 30, 2014 (Reference 8). Based on the conclusions of the NRR Division of Risk Analysis, the staff issued EGM 15-002 (Reference 1) on June 10, 2015.

After the issuance of the original EGM 15-002 in 2015, the staff received comments from internal and external stakeholders requesting clarification on complying with NRC expectations for invoking enforcement discretion in accordance with the EGM. Questions covered the following topics:

- What examples of compensatory measures would be acceptable as initial compensatory measures (to be carried out before implementing enforcement discretion) and comprehensive compensatory measures (to be implemented within 60 days)?

- 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 ISG. For situations that arise under EGM 15-002, this guidance is intended 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:
  - NRC Regulatory Guide 1.76, "Design-Basis Tornado and Tornado Missiles for Nuclear Power Plants," Revision 1, March 2007 (Reference 2)
  - NRC Regulatory Guide 1.117, "Protection Against Extreme Wind Events and Missiles for Nuclear Power Plants," Revision 2, July 2016 (Reference 3)
  - NRC NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," Section 3.5.1.4, "Missiles Generated by Tornadoes and Extreme Winds," Revision 3, March 2007 (Reference 4)
  - NRC Information Notice 1996-06, "Design and Testing Deficiencies of Tornado Dampers at Nuclear Power Plants," January 25, 1996 (Reference 9)
  - NRC Regulatory Issue Summary 2006-23, "Post-Tornado Operability of Ventilating and Air-Conditioning Systems Housed in Emergency Diesel Generator Rooms," December 6, 2006 (Reference 10)
  - NRC Regulatory Issue Summary 2008-14, "Use of TORMIS Computer Code for Assessment of Tornado Missile Protection," June 16, 2008 (Reference 5)
2. The NRC has previously provided regulatory guidance for determination of operability of SSCs important to safety, including the following:
  - NRC Regulatory Issue Summary 2013-05, "NRC Position on the Relationship Between General Design Criteria and Technical Specification Operability," May 9, 2013 (Reference 11)
  - NRC Inspection Manual Part 9900 Technical Guidance, "Operability Determinations & Functionality Assessments for Resolution of Degraded or Nonconforming Conditions Adverse to Quality or Safety," April 16, 2008 (Reference 12)
  - NRC Inspection Manual Chapter 0326, "Operability Determinations and Functionality Assessments for Conditions Adverse to Quality or Safety," December 3, 2015 (Reference 13)

- Memorandum from Thomas E. Murley, NRR, to all NRR employees, "Relationship Between the General Design Criteria (GDC) and Technical Specifications," January 24, 1994 (Reference 14)

## **APPLICABILITY**

The guidance applies to all holders of an operating license or construction permit for a nuclear power reactor under 10 CFR Part 50, including those that have permanently ceased operations and have spent fuel in spent fuel pools.

The guidance applies to 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" and to 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 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. Appendix B provides clarification on (1) requesting an extension to the discretion period, (2) reporting requirements under 10 CFR 50.72, "Immediate notification requirements for operating nuclear power reactors" and 10 CFR 50.73, "Licensee event report system," (3) enforcement discretion for design non conformances, and (4) timely assessment of non-conforming conditions.

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
- whether licensees requesting an extension of enforcement discretion have provided sufficient justification to grant discretion beyond the limits in EGM 15-002
- whether licensees are appropriately reporting the identification of non-conformances to the NRC specifically regarding tornado missile protection-related SSC issues
- whether licensees are appropriately following their site-specific corrective action programs in documenting and resolving potentially non-conforming conditions regarding tornado missile protection-related SSC issues

**BACKFITTING DISCUSSION**

Issuance of this ISG in final form would not constitute backfitting as defined in 10 CFR 50.109 (the Backfit Rule). This ISG contains guidance for NRC staff for implementing EGM-15-002. This ISG does not constitute backfitting as defined in the Backfit Rule and is not otherwise inconsistent with the issue finality provisions in 10 CFR Part 52, and the NRC staff did not prepare a backfit analysis. This is because this ISG requires no response by licensees, and concerns only NRC staff implementation of enforcement discretion pursuant to EGM-15-0002.

**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.

**APPENDICES**

Clarification of Actions in EGM 15-002 (dated June 10, 2015)

Clarification of Actions in EGM 15-002, Revision 1 (dated February 7, 2017)

Resolution of Public Comments for Revision 1

**REFERENCES**

1. Enforcement Guidance Memorandum 15-002, "Enforcement Discretion for Tornado-Generated Missile Protection Noncompliance," June 10, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15111A269)
2. Enforcement Guidance Memorandum 15-002, "Enforcement Discretion for Tornado-Generated Missile Protection Noncompliance," Revision 1 February 7, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16355A286)
3. NRC Regulatory Guide 1.76, "Design-Basis Tornado and Tornado Missiles for Nuclear Power Plants," Revision 1, March 2007 (ADAMS Accession No. ML070360253)
4. NRC Regulatory Guide 1.117, "Protection Against Extreme Wind Events and Missiles for Nuclear Power Plants," Revision 2, July 2016 (ADAMS Accession No. ML15356A213)
5. NRC NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," Section 3.5.1.4, "Missiles Generated by Tornadoes and Extreme Winds," Revision 3, March 2007 (ADAMS Accession No. ML070380174)
6. NRC Regulatory Issue Summary 2008-14, "Use of TORMIS Computer Code for Assessment of Tornado Missile Protection," June 16, 2008 (ADAMS Accession No. ML080230578)
7. NRC Regulatory Issue Summary 2015-06, "Tornado Missile Protection," (ADAMS Accession No. ML15020A419)
8. Bounding Generic Risk Assessment for Selected Plant Systems, Portions of Which are Not Protected From Tornado-Generated Missiles (ADAMS Accession No. ML14114A556)
9. NRR Office Instruction LIC-504, Revision 4, "Integrated Risk-Informed Decision-Making Process for Emergent Issues," May 30, 2014 (ADAMS Accession No. ML14035A143)
10. NRC Information Notice 1996-06, "Design and Testing Deficiencies of Tornado Dampers at Nuclear Power Plants," January 25, 1996 (ADAMS Accession No. ML031060290)
11. NRC Regulatory Issue Summary 2006-23, "Post-Tornado Operability of Ventilating and Air-Conditioning Systems Housed in Emergency Diesel Generator Rooms," December 6, 2006 (ADAMS Accession No. ML061720371)
12. NRC Regulatory Issue Summary 2013-05, "NRC Position on the Relationship Between General Design Criteria and Technical Specification Operability," May 9, 2013 (ADAMS Accession No. ML13056A077)
13. NRC Inspection Manual Part 9900 Technical Guidance, "Operability Determinations & Functionality Assessments for Resolution of Degraded or Nonconforming Conditions Adverse to Quality or Safety," April 16, 2008 (ADAMS Accession No. ML073531346)



14. NRC Inspection Manual Chapter 0326, "Operability Determinations and Functionality Assessments for Conditions Adverse to Quality or Safety," December 3, 2015 (ADAMS Accession No. ML15328A099)
15. Memorandum from Thomas E. Murley, NRR, to all NRR employees, "Relationship Between the General Design Criteria (GDC) and Technical Specifications," January 24, 1994 (ADAMS Accession No. ML12115A279)

Public Meetings: September 10, 2015; October 27, 2015; November 15, 2016

## Appendix A

### Clarification of Actions in EGM 15-002

#### 1.1 Acceptable Initial and Comprehensive Compensatory Measures

Enforcement Guidance Memorandum 15-002, "Enforcement Discretion for Tornado-Generated Missile Protection Noncompliance," Revision 1 February 7, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16355A286) provides the following direction to the U.S. Nuclear Regulatory Commission (NRC) staff about the enforcement discretion:

The staff will exercise this enforcement discretion only when a licensee implements, prior to the expiration of the time mandated by the LCO, initial compensatory measures that provide additional protection such that the likelihood of tornado missile effects are lessened. Licensees are expected to follow these initial compensatory measures with more comprehensive compensatory measures within approximately 60 days of issue discovery. The comprehensive measures should 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. 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,
- 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. A discussion of these actions during shift turnover briefings.

- c. A description of 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.

## **2.1 Consideration for Operable but Nonconforming Structures, Systems, and Components**

As described in Appendix C, "Specific Operability Issues," to Inspection Manual Chapter 0326, "Operability Determinations and Functionality Assessments for Conditions Adverse to Quality or Safety," December 3, 2015 (ADAMS Accession No. ML15328A099):

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

### Clarification of Actions in EGM 15-002, Revision 1

#### 1. Acceptable Methodology To Extend Enforcement Discretion

Enforcement Guidance Memorandum (EGM) 15-002, "Enforcement Discretion for Tornado-Generated Missile Protection Noncompliance," Revision 1, dated February 7, 2017 (Agencywide Documents Access and Management (ADAMS) Accession No. ML16355A286), provides the following direction to the U.S. Nuclear Regulatory Commission (NRC) staff on the duration of the discretion period:

For plants with a higher tornado missile risk (Group A Plants, see enclosure), the staff determined that an enforcement discretion period of three years was appropriate. Plants with a lower tornado missile risk (Group B Plants, see enclosure) were allowed up to five years.

The industry is currently working on a new initiative to demonstrate that the risk associated with tornado missiles on specific identified components is sufficiently small. This new methodology is called the Tornado Missile Risk Evaluator. Licensees would be able to submit these data in a license amendment request and could come into compliance if the NRC approves the submitted request. However, the development of this methodology has taken longer than anticipated. Because these issues are believed to be of low risk and low probability and because a generic analysis used to establish the 3- and 5-year timeframes did not take into account the compensatory actions, redundancy of components, and the site-specific footprint, the NRC is extending enforcement discretion on a case-by-case basis. As discussed at the public meeting on November 15, 2016, to request an enforcement discretion extension, the licensee should assess and document the following six items in an extension request letter:

- a. description of the nonconformances where the EGM was applied
- b. description of the prompt compensatory actions
- c. description of the long-term compensatory actions
- d. assessment of all compensatory measures
- e. basis for the need for additional enforcement discretion time
- f. timeline for restoring compliance with the licensing basis

The licensee should send the request letter to the NRC project manager for the affected plant. The project manager will coordinate the NRC staff's review of the extension request. The Director of the Division of Risk Assessment will have final decision authority over the granting of the extension request and will coordinate a formal response letter documenting the decision.

#### 2. Enforcement Discretion for Multiple 10 CFR 50.72 Notifications

The NRC provides its immediate reporting requirements in Title 10 of the *Code of Federal Regulations* (10 CFR) 50.72, "Immediate notification requirements for operating nuclear power reactors." The staff has determined that multiple immediate notifications for those nonconformances associated with tornado missile protection do not advance reactor safety in a meaningful way and may distract resources for both the licensee and the NRC from higher priority issues. As a result, after the initial tornado missile notification under 10 CFR 50.72, the staff will exercise enforcement discretion for any subsequent tornado missile notifications as

long as the initial compensatory measures are in place. However, compliance with 10 CFR 50.73, "Licensee event report system," is required. A licensee has the option to supplement a single licensee event report with additional tornado missile nonconformances as described in Section 2.3 of NUREG-1022, "Event Report Guidelines: 10 CFR 50.72 and 50.73," Revision 3, issued January 2013 (ADAMS Accession No. 13032A220), if applicable.

### **3. Enforcement Discretion for Tornado Missile Nonconformances**

The NRC expects that the majority of identified issues will represent longstanding design nonconformances. The generic bounding risk analysis determined that tornado missile protection is not an immediate safety concern in accordance with the risk acceptance guidelines in NRC Office of Nuclear Reactor Regulation Office Instruction LIC-504, "Integrated Risk-Informed Decision-Making Process for Emergent Issues," Revision 4, dated May 30, 2014 (ADAMS Accession No. ML14035A143). Therefore, in addition to the enforcement discretion offered for noncompliance with technical specifications under Revision 0 of this interim staff guidance, the staff has concluded that enforcement discretion for all known nonconformances deriving from the same design issue causing the tornado missile protection nonconformances is also appropriate.

### **4. Timely Assessment of Nonconforming Conditions**

Licensees must follow the requirements of their corrective action programs for the safety assessment of tornado missile nonconforming conditions. The NRC expects licensees to complete such assessments in a timely manner on an issue-by-issue basis.

## Appendix C

### Resolution of Public Comments for Revision 1

The U.S. Nuclear Regulatory Commission (NRC) published a 30-day notice of opportunity for public comment on the draft version of this interim staff guidance (ISG) in the *Federal Register*, (82 FR 11483), on February 23, 2017. Two submissions were received, one from an anonymous source (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17089A383) and the other from the Nuclear Energy Institute (ADAMS Accession No. ML17083A247). Both submissions were considered before issuing this ISG in final form.

Submissions received in response to this ISG are available electronically at the NRC's electronic Reading Room at <http://www.nrc.gov/reading-rm/adams.html>. From this page, the public can gain entry into ADAMS, which includes text and image files of the NRC's public documents. Table C-1 identifies the comments received.

**Table C-1 Public Comments**

Letter No.	ADAMS Accession No.	Commenter Affiliation	Commenter Name
A	ML17089A383	N/A	Anonymous
B	ML17083A247	Nuclear Energy Institute	Bruce S. Montgomery

The NRC assigned each of the two submissions a letter. Each submission contains comments. The NRC summarizes the comment below, followed by the NRC's response. Each comment is referred to by its associated letter number and its own sequential number.

**Comment No. A-1:** The commenter stated that tornado missile protection was an old design issue (greater than 5 years) with indicated low risk and low probability, and stated that it did not seem appropriate to integrate a new methodology to correct a licensing basis non-conformity. Further, the commenter questioned how the use of FLEX equipment would be an appropriate long term compensatory measure, given no established reliability or performance data for that equipment. Requiring licensees to change the licensing basis to incorporate new methodologies did not seem appropriate, because it would not correct the nonconformance. Instead, the NRC should have a licensee develop a program, implement mitigating strategies, and verify those measures through inspection.

**NRC Response:** The NRC staff agrees with this comment. Licensees are required to conform to the requirements that apply to their specific facility. This is commonly referred to as the licensing basis. If a licensee has a licensing basis requirement to protect certain systems, structures, or components (SSCs) from the potential damaging effects of tornado-generated missile impacts, but some SSCs are not protected, a nonconforming condition exists. To restore compliance with the licensing basis, the licensee must establish tornado missile protection or modify its licensing basis in a manner that the NRC finds acceptable in order to maintain adequate protection. The licensee may be able to show through analysis (using a methodology acceptable to the NRC) that the increase in risk associated with not protecting the nonconforming SSCs is consistent with the NRC's risk-informed regulatory framework; the licensee should use the applicable change management process (e.g., 10 CFR 50.59) to determine whether the change may be made without prior NRC approval. This revised licensing



basis considers the as-built configuration as acceptable, and the nonconforming condition no longer exists. Changes to licensing bases are subject to inspections. The use of temporary equipment such as FLEX or commercially available rental components to provide defense in depth compensation for non-conforming or degraded conditions has been routinely accepted by the NRC. The NRC made no change to the final ISG as a result of this comment.

Comment No. A-2: The commenter suggested that the old design issue does not need correction given the NRC's completed risk-informed review.

NRC Response: The NRC staff disagrees with this comment. To assess the possible risk significance of these nonconforming conditions, the staff performed a generic risk analysis using the guidance in NRC Office of Nuclear Reactor Regulation Office Instruction LIC-504, "Integrated Risk-Informed Decision-Making Process for Emergent Issues," Revision 4, dated May 30, 2014 (ADAMS Accession No. ML15020A419). The generic and bounding results in Enforcement Guidance Memorandum (EGM) 15-002, "Enforcement Discretion for Tornado-Generated Missile Protection Noncompliance," Revision 1, dated February 7, 2017 (ADAMS Accession No. ML15111A269), conclude that an immediate safety concern did not exist. Nevertheless, the risk associated with nonconformances for each plant is not known until plant-specific evaluations are performed. Furthermore, the risk acceptance guidelines for allowing a permanent change to a plant's licensing basis are more restrictive than the threshold for an immediate safety concern in LIC-504. Each licensee will have unique circumstances that depend on the facility's location, the actual layout of the safety systems at the facility, the particular nonconforming conditions, and the number and size of objects that could become tornado-generated missiles. These variables are the reason each licensee must evaluate the nonconformances under its specific circumstances to determine whether the nonconforming condition affects the operability of the potentially affected SSC. After review and evaluation, the licensee may be able to show that it can modify the original licensing basis to accept the as-built configuration while maintaining adequate protection. The NRC routinely uses risk-informed methodologies to change the licensing basis as compared to applying deterministic solutions. As our knowledge grows, new evaluation techniques and methodologies develop. As a result, more options are available to meet a particular regulatory requirement. The NRC made no change to the final ISG as a result of this comment.

Comment No. A-3: The commenter suggested that even if the old design issue needs correction, prior NRC approval should not be required.

NRC Response: The NRC staff disagrees with this comment. Unless the licensee decides to correct the nonconforming condition by installing protection already specified in the licensing basis, the licensee should use the applicable change management process (e.g., 10 CFR 50.59) to determine whether the change may be made without prior NRC approval. The NRC made no change to the final ISG as a result of this comment.

Comment No. A-4: The commenter suggested that if prior NRC approval is needed to correct a nonconformance, some type of acceptance criteria is necessary to judge the amendments against NRC requirements, guidance, or industry standards.

NRC Response: The NRC staff agrees with this comment. In general, the NRC requires nuclear power plants to be designed to withstand the effects of tornado- and high-wind-generated missiles so that they do not adversely impact public health and safety in accordance with General Design Criterion (GDC) 2, "Design Bases for Protection against

Natural Phenomena,” and GDC 4, “Environmental and Dynamic Effects Design Bases,” of Appendix A, “General Design Criteria for Nuclear Power Plants,” to Title 10 of the *Code of Federal Regulations* Part 50, “Domestic Licensing of Production and Utilization Facilities,” and as approved by the NRC in the site-specific license.

Section 3.5.1.4, “Missiles Generated by Tornadoes and Extreme Winds,” and Section 3.5.2, “Structures, Systems, and Components to be Protected from Externally-Generated Missiles,” of NUREG-0800, “Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition” (SRP), contain the acceptance criteria that govern tornado missile protection. These criteria generally specify that SSCs that are important to safety must be provided with sufficient, positive tornado missile protection (i.e., barriers) to withstand the maximum credible tornado threat. Appendix A, “Structures, Systems, and Components To Be Protected against Extreme Wind Events (Tornado and Hurricane),” to Regulatory Guide (RG) 1.117, “Protection against Extreme Wind Events and Missiles for Nuclear Power Plants,” lists the types of SSCs that should be protected from design-basis tornadoes. However, SRP Section 3.5.1.4 permits an alternative to the above deterministic criteria if the licensee can demonstrate that the probability of damage to unprotected components that require tornado missile protection is sufficiently small. To use this probabilistic approach, the Electric Power Research Institute (EPRI) developed a tornado missile probabilistic methodology described in topical reports EPRI NP-768 and NP-769, “Tornado Missile Risk Analysis and Appendices,” issued May 1978, and EPRI NP-2005, “Tornado Missile Risk Evaluation Methodology,” Volumes I and II, issued August 1981. In a safety evaluation report (SER), the NRC staff concluded that the EPRI TORMIS computer code methodology developed by EPRI (with specific concerns identified in the SER and later clarified by Regulatory Issue Summary 2008-14, “Use of TORMIS Computer Code for Assessment of Tornado Missile Protection,” dated June 16, 2008) can be used in lieu of the deterministic methodology when assessing the need for positive tornado missile protection.

Additionally, if the Tornado Missile Risk Evaluator (TMRE), which is currently under development by the Nuclear Energy Institute and industry is found acceptable, another option would be a risk-informed license amendment using the TMRE process in a license amendment request in accordance with RG 1.174, “An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis.”

The NRC made no change to the final ISG as a result of this comment.

Comment No. B: The commenter concluded that the content of the ISG was responsive to industry concerns presented in previous public meetings and contained guidance that would provide clear direction to the NRC staff during implementation of EGM 15-002.

NRC Response: The NRC staff agrees with this comment. The NRC made no change to the final ISG as a result of this comment.