



RA18-018

March 20, 2018

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001

RIS 2015-06  
EGM 15-002  
DSS-ISG-2016-01

LaSalle County Station, Units 1 and 2  
Renewed Facility Operating License Nos. NPF-11 and NPF-18  
NRC Docket Nos. 50-373 and 50-374

Subject: Request to Extend Enforcement Discretion Provided in Enforcement Guidance Memorandum 15-002 for Tornado-Generated Missile Protection Non-Conformances Identified in Response to Regulatory Issue Summary 2015-06, "Tornado Missile Protection"

- References:
1. NRC Regulatory Issue Summary 2015-06, *Tornado Missile Protection*, dated June 10, 2015 (ADAMS Accession Number ML15020A419)
  2. NRC memorandum, *Enforcement Guidance Memorandum 15-002, Enforcement Discretion for Tornado-Generated Missile Protection Noncompliance*, dated June 10, 2015 (ADAMS Accession Number ML15111A269)
  3. NRC memorandum, *Enforcement Guidance Memorandum 15-002, Revision 1: Enforcement Discretion for Tornado-Generated Missile Protection Non-Compliance*, dated February 7, 2017 (ADAMS Accession Number ML16355A286)
  4. NRC Interim Staff Guidance 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,"* Revision 1, dated November 2017 (ADAMS Accession Number ML17128A344)

In Reference 1, the NRC issued Regulatory Issue Summary (RIS) 2015-06, "Tornado Missile Protection," to, in part, remind licensees of the need to conform with a plant's current, site-specific licensing basis for tornado-generated missile protection. In Reference 2, the NRC provided in Enforcement Guidance Memorandum (EGM) 2015-002 guidance to exercise enforcement discretion when an operating power reactor licensee does not comply with a plant's current site-specific licensing basis for tornado-generated missile protection. The NRC would exercise this enforcement discretion only when a licensee implements initial compensatory measures to provide additional protection, followed by more comprehensive, long-term compensatory measures implemented within 60 days of issue discovery.

The enforcement discretion would expire three years after issuance of RIS 2015-06, dated June 10, 2015, for plants of a higher tornado missile risk (Group A Plants) and five years after RIS issuance for plants of a lower tornado missile risk (Group B Plants). The EGM categorized LaSalle County Station (LSCS) as a Group A plant.

In Reference 3, the NRC issued Revision 1 of EGM 2015-002 to state that licensees may request an extension to their enforcement discretion expiration date if proper justification is provided. This extension would be granted on a case-by-case basis and should remain in place until compliance is achieved.

In accordance with the revised EGM 2015-002, Revision 1, Exelon Generation Company, LLC (EGC) hereby requests that the NRC extend the expiration date for the period of enforcement discretion for LSCS from June 10, 2018 to June 10, 2020.

EGC has completed a comprehensive assessment for LSCS and has identified non-conforming conditions (NCCs) regarding tornado missile protection requirements that affect the operability of structures, systems or components addressed in the LSCS Technical Specifications. A summary of the assessment methodology, scope and results is provided in the attachment. The non-conforming conditions have been documented in the EGC corrective action program in accordance with EGC procedures and all required notifications have been completed, as discussed in the attachment.

Consistent with the guidance provided in NRC Interim Staff Guidance DSS-ISG-2016-01 (Reference 4), initial and comprehensive compensatory measures have been implemented for the LSCS NCCs, as described in the attachment. Additionally, a collective review of the comprehensive compensatory measures currently in place, including expected operator actions in response to severe weather and a subsequent loss of offsite power, has been performed to confirm that the site can perform these compensatory measures and operator actions in an effective manner.

These comprehensive compensatory measures will remain in-place until the non-conformances are resolved.

The requested enforcement discretion due date extension would provide EGC sufficient time to address the non-conforming conditions and achieve compliance. EGC has concluded that there is no undue risk associated with the requested extension.

EGC requests NRC approval of this enforcement discretion date extension before June 10, 2018.

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There are no regulatory commitments contained in this submittal.

Should you have any questions concerning this submittal, please contact Mr. Christian Williams, Senior Regulatory Engineer at (610) 765-5729 or Ms. Shakeeta Lickert, Senior Regulatory Engineer at (815) 415-2816.

Respectfully,



Guy V. Ford Jr.  
Regulatory Assurance Manager  
LaSalle County Station  
Exelon Generation Company, LLC

Attachment: Justification for Request to Extend the Expiration Date for Enforcement Discretion  
Regarding Tornado Missile Protection Requirements for LaSalle County Station

cc: Regional Administrator - NRC Region III  
NRC Project Manager – LaSalle County Station  
NRC Senior Resident Inspector - LaSalle County Station

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17 pages follow

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### JUSTIFICATION FOR REQUEST TO EXTEND THE EXPIRATION DATE FOR ENFORCEMENT DISCRETION REGARDING TORNADO MISSILE PROTECTION REQUIREMENTS FOR LASALLE COUNTY STATION

#### 1. Introduction

This attachment provides the justification for the Exelon Generation Company, LLC (EGC) request to extend the expiration date for enforcement discretion regarding tornado missile protection requirements for the LaSalle County Station (LSCS).

In Reference 1, the NRC issued Regulatory Issue Summary (RIS) 2015-06, "Tornado Missile Protection," was initiated to remind licensees of the need to conform with a plant's current, site-specific licensing basis for tornado-generated missile protection.

In Reference 2, the NRC provided in Enforcement Guidance Memorandum (EGM) 2015-002 guidance to exercise enforcement discretion when a licensee does not comply with a plant's current site-specific licensing basis for tornado-generated missile protection. EGM 2015-002 identified LSCS as a higher tornado missile risk site (Group A), resulting in an enforcement discretion expiration date of June 10, 2018.

EGC has completed a comprehensive tornado missile protection assessment for LSCS and has identified non-conforming conditions regarding tornado missile protection requirements. Compensatory measures were implemented to address the non-conforming conditions in accordance with regulatory guidance.

EGC is requesting an extension to the enforcement discretion expiration date to allow sufficient time to address the non-conforming conditions.

EGC plans to submit a license amendment request (LAR) to request approval for the use of the Tornado Missile Risk Evaluator (TMRE) methodology, currently under development by the industry, for evaluating the identified non-conformances.

This request to extend enforcement discretion was prepared in accordance with guidance provided in Appendix B of Revision 1 of Interim Staff Guidance DSS-ISG-2016-01 (Reference 3).

The six (6) elements of the ISG are addressed as follows:

**a. description of the non-conformances where the EGM was applied**

- *Section 4. RIS 2015-06 Assessment Scope and Results*

**b. description of the prompt compensatory actions**

- *Section 5. Initial Actions*

**c. description of the long-term compensatory actions**

- *Section 6. Long Term Compensatory Measures*

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**d. assessment of all compensatory measures**

- *Section 7. Assessment of Long-Term Compensatory Measures Coincident with Other Operator Actions*

**e. basis for the need for additional enforcement discretion time**

- *Section 9. Basis and Reason for Extension Request*

**f. timeline for restoring compliance with the licensing basis**

- *Section 8. Plans for Permanent Resolution*

## **2. RIS 2015-06 Assessment Methodology**

The methodology followed by EGC which was developed in response to RIS 2015-06 includes 3 objectives:

- (1) Document the current facility licensing basis (CLB) for tornados and tornado missile protection (TMP)
- (2) Evaluate the site's conformance with the TMP licensing basis through a design review and plant walk-downs and document any TMP nonconforming conditions (NCCs)
- (3) Resolve TMP NCCs within the Corrective Action Program (CAP)

## **3. Summary of CLB for Tornado and Tornado Missile Protection Design**

The LSCS CLB for tornados and tornado missiles pertinent to RIS 2015-06 are described in Updated Final Safety Analysis Report (UFSAR) Revision 23. The original plant licensing documents were reviewed to determine licensing requirements that are not specifically detailed in the LSCS UFSAR. The additional documents which were reviewed include the original Standard Review Plan, Safety Evaluation Report, FSAR, FSAR Questions and Answers applicable to tornados and tornado missile protection, and the General Design Criteria (GDC).

### CLB for Tornado Protection Design

As discussed in UFSAR Section 3.3.2, "Tornado Loadings," the design basis tornado has a maximum rotational velocity of 300 miles per hour (mph), a translational velocity of 60 mph, causes a pressure drop of 3 pounds per square inch (psi) at the vortex in 3 seconds, and a radius of maximum wind speed of 227 feet.

### CLB for Tornado Missile Protection Design

Section 3.5.1.4, "Missiles Generated by Natural Phenomena," of the LSCS UFSAR describes the two types of missiles which have been considered. They are a wood plank

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of a 4 in. x 12 in. x 12 ft. dimension with an impact velocity of 225 mph; and a 4,000lbs automobile with a 20 sq. ft. front area and a 50 mph impact velocity.

#### CLB for Safe Shutdown Equipment

Per LSCS UFSAR Section 3.5, "Missile Protection," for externally generated missiles (tornado missiles), protection is provided by locating safety-related systems and components within reinforced concrete, Seismic Category I structures, with the following exceptions:

Some safety-related piping is buried and hence is not vulnerable to tornado missiles (e.g., Core Standby Cooling System – Equipment Cooling Water (CSCS-ECW) between the Lake Screen House and main power block).

- (1) A portion of the fill and vent lines associated with diesel fuel oil tanks are located above ground. As discussed in UFSAR Section 9.5.4.3, this has been evaluated and demonstrated to be acceptable.
- (2) The diesel generator (DG) in line exhaust piping as stated in Section 9.5.8.3, "Safety Evaluation," is protected against missiles from all directions except in line with the exhaust pipe discharge. In FSAR Question 40.41 and Safety Evaluation Report (SER) Section 9.6.3.5, this exception is discussed.
- (3) There are some safety-related instruments located in the Turbine Building, which is not a Seismic Category I structure. The reinforced concrete walls of the Turbine Building provide protection from tornado missiles. The safety related instrumentation includes the main condenser low vacuum pressure switches and main steam line low pressure switches.
- (4) As discussed in UFSAR Section 3.5.2.2, "Structures Designed to Withstand Missile Effects," the metal siding and roof deck of the Reactor building superstructure is designed to blow off during a tornado, exposing the refuel floor (elev. 843'-6" of the Reactor building). Safety-related items located on the Refuel floor have been addressed and determined to be acceptable based upon their design function and redundancy. These safety-related items consist of:
  - CSCS-ECW Fuel Pool Emergency Make-up hose stations. There are four such hose stations on the refuel floor (2 per unit, 2 units). Each is associated with a separate redundant train of the Fuel Pool Emergency Make-up portion of the CSCS-ECW system. Each hose station rises approximately 5 ft. above the floor and they are located on opposite sides of the refuel floor. The Fuel Pool Emergency Make-up portion of the CSCS-ECW system serves as a back-up to the Fuel Pool Cooling & Demineralizing (FC) system, which is missile protected.

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- Spent fuel handling equipment such as the Refuel Bridge and grapples. This equipment is not required for safe shut down.
- (5) The Division 1 emergency diesel generator intake has an extension. This extension which is not missile protected is a metal sided steel structure (rectangular box 13'-7" wide x 13'-8.5" deep) that extends above the Diesel Generator building parapet. The metal siding is the same as that used on the Reactor building superstructure and hence is designed to blow off in the event of a tornado.

#### CLB References

- LSCS Final Safety Analysis Report (FSAR), Revision 0, 1984, Sections 3.3 and 3.5
- LSCS Updated Final Safety Analysis Report (UFSAR), Revision 23, 2018, Sections 3.3 and 3.5
- LSCS FSAR, Amendment 24, September 1977, Questions and Answers (Q&A)
- NUREG 0800, Revision 2, July 1981, Standard Review Plan (SRP)
- NUREG 0519, March 1981, Safety Evaluation Report (SER)

#### **4. RIS 2015-06 Assessment Scope and Results**

The assessment completed reviews and walk downs for LSCS Class 1 structures, which were designed to withstand the tornado and tornado generated missiles specified in the CLB as well as non-Class 1 structures which house components important to the safe shut down of the plant. The non-conforming conditions identified during the design reviews and walkdowns were documented in the following condition report within the corrective action program:

IR 4104391

"This IR identifies a non-conforming condition with the "A" VC train with respect to tornado missile protection. The "A" VC train is located on elevation 802' in the Unit 1 Auxiliary Building. Since the VC system is required for Tornado Safe Shutdown (TSS) and is not protected against tornado missiles, the design does not meet the licensing basis and a non-conforming condition exists."

IR 4104393

"This IR identifies a non-conforming condition with the "A" VE train with respect to tornado missile protection. The "A" VE train is located on elevation 802' in the Unit 1 Auxiliary Building. Since the VE system is required for Tornado Safe Shutdown (TSS) and is not protected against tornado missiles, the design does not meet the licensing basis and a non-conforming condition exists."



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IR 4104396

"This IR identifies a non-conforming condition with the "B" VC train with respect to tornado missile protection. The "B" VC train is located on elevation 802' in the Unit 2 Auxiliary Building. Since the VC system is required for Tornado Safe Shutdown (TSS) and is not protected against tornado missiles, the design does not meet the licensing basis and a non-conforming condition exists."

IR 4104397

"This IR identifies a non-conforming condition with the "B" VE train with respect to tornado missile protection. The "B" VE train is located on elevation 802' in the Unit 2 Auxiliary Building. Since the VE system is required for Tornado Safe Shutdown (TSS) and is not protected against tornado missiles, the design does not meet the licensing basis and a non-conforming condition exists."

IR 4104401

"This IR identifies a non-conforming condition with 2AP78E (DIV II 480V MCC 236X-1) with respect to tornado missile protection. 2AP78E is located on elevation 820' of the Unit 2 Reactor Building. Since the MCC is required for Tornado Safe Shutdown (TSS) and is not protected against tornado missiles, the design does not meet the licensing basis and a non-conforming condition exists."

#### 5. Initial Actions

The following initial actions were taken in response to the identified non-conforming conditions in accordance with EGM 15-002 and DSS-ISG-2016-01:

- a. The non-conforming conditions were reported by LSCS as an eight-hour notification on February 15, 2018 (ENS# 53213) under the following regulations:
  - 10 CFR 50.72(b)(3)(ii)(B), "The nuclear power plant being in an unanalyzed condition that significantly degrades plant safety."
  - 10 CFR 50.72(b)(3)(v)(D), "Mitigate the consequences of an accident."

The NRC resident inspector was also notified.

- b. Operability determinations were completed and documented in the corrective action program. The non-conforming equipment was initially declared inoperable. Guidance in Revision 1 of EGM 15-002 (Reference 4) was used to declare the equipment operable but non-conforming and to implement enforcement discretion.
- c. Licensee Event Report (LER) 373-2018-001-00 will be submitted in accordance with 10 CFR 50.73 due to Technical Specification-required

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equipment that did not meet CLB requirements for protection against tornado missiles. The LSCS LER is due to the NRC on April 16, 2018.

- d. The following Initial Compensatory Measures have been verified to be in place in accordance with NRC EGM 15-002 and DSS-ISG-2016-01, Appendix A.
- 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.

LSCS procedure currently implemented to address this is:

- LOA-TORN-001, Revision 22, "HIGH WINDS / TORNADO"

Training for LOA-TORN-001, Revision 22, is current and complete.

- 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.

LSCS procedures currently implemented to address this are:

- CC-AA-118, Revision 2, "Diverse and Flexible Coping Strategy (FLEX) and Spent Fuel Pool Instrumentation Program Document"
- CC-LA-118-1001, Revision 5, "Site Implementation of Diverse and Flexible Coping Strategies (FLEX) and Spent Fuel Pool Implementation Program"

Training for CC-AA-118, Revision 2, and CC-LA-118-1001, Revision 5, is current and complete.

- 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.

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LSCS procedure LOA-TORN-001, Revision 22, "High Winds / Tornado" directs the following:

"Areas to inspect are unsecured transformer panel doors, unsecured equipment, and possible wind generated missiles."

OP-AA-108-111-1001, Revision 16, Step 4.3.1 directs the following:

"If high winds, hurricane, or tornado activity is forecasted for the site or likely to occur, then walk downs of the site should be performed to identify items and take action to reduce potential threat that could become projectiles in high wind situations."

- b. From a work management/configuration control perspective, protect equipment important to maintaining safe shutdown conditions.

WC-AA-101, Revision 27, "On-Line Work Control Process," provides direction to the following: "If emergent condition results in an orange or red configuration risk color, the following compensatory measures must be enacted in all cases to mitigate the risk until such time as risk is reduced to an acceptable level.

1. IDENTIFY and PROTECT SSCs in accordance with OP-AA-108-117, Revision 5, "Protected Equipment Program".

OP-AA-108-117, Revision 5, "Protected Equipment Programs" states "Protected Equipment is any SSC which has been identified as being essential to ensure that either defense-in-depth of a Key Safety Function is maintained, unit generation is maintained or overall risk levels are maintained."

Identified Key Safety Functions are "Decay Heat Removal, Spent Fuel Pool Cooling, Inventory Control, Electrical Power (includes both onsite & offsite power), Reactivity Control, and Primary Containment Integrity."

LSCS procedure OP-AA-108-111-1001, Revision 16, "Severe Weather and Natural Disaster Guidelines," provides direction to the following:

"Walkdown and Inspect accessible areas of the plant including the following areas: emergency core cooling systems, diesel generators, station batteries, fire protection system."

- c. Promptly complete or restore equipment from maintenance activities in progress on equipment important to maintaining safe shutdown conditions.

LSCS procedures require operators to evaluate equipment out of service to identify critical equipment to return to service during severe winds and/or tornado events. In addition, the work scheduling process requires that the risk of maintenance activities be continually assessed.

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WC-AA-101-1006, Revision 2, states "The Operating Shift shall continuously evaluate the risk of on-line maintenance activity based upon conditions, such as the power grid stability, the weather forecast, and the current plant and SSC status. This includes information obtained from day ahead forecasts. If severe weather (high wind, severe thunderstorm warning, and tornado watch/warning) or conditions that are potential HREs for loss of offsite power are expected, then planned unavailability of AC power sources shall be deferred. Risk shall be reassessed if emergent condition results in a plant configuration that has not been previously assessed."

LaSalle procedure OP-AA-108-106, Revision 5, "Equipment Return to Service," provides direction on how to properly return equipment to service after maintenance activities.

- d. Restore equipment important to maintaining safe shutdown conditions if undergoing maintenance or testing, if possible.

LSCS procedure OP-AA-108-111-1001, Revision 16, "Severe Weather and Natural Disaster Guidelines," provides direction to "Review operability of ECCS equipment. Restore inoperable ECCS equipment, D/Gs, and other systems required to cope with the severe weather as needed."

- e. Verify equipment is ready to use by visual inspection, surveillances and preventive maintenance are current, and review pending equipment maintenance requests.

All Safety equipment deficiencies are tracked in the degraded equipment log (DEL), and reviewed by all Licensed Operators on shift. Equipment is verified ready for use by Operator rounds. Work control schedules surveillances appropriately to ensure no past due surveillances exceed Technical Specification timeclocks.

LSCS procedures implemented and trained upon to address this are:

OP-AA-108-111-1001, "Severe Weather and Natural Disaster Guidelines"  
WC-AA-101, "On-Line Work Control Process"  
WC-AA-107, "Seasonal Readiness"  
WC-AA-101-1006, "On-Line Risk Management and Assessment"  
WC-AA-111, "Surveillance Program Requirements"  
OP-AA-112-101, "Shift Turnover and Relief"  
OP-AA-102-102, "General Area Checks and Operator Field Rounds"

Training for LOA-TORN-001, Revision 22, OP-AA-108-106, Revision 5, OP-AA-108-111-1001, Revision 16, with OP-AA-108-117, Revision 5, WC-AA-101-1006, Revision 2, and WC-AA-101, Revision 27, is current and complete.

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- 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.

LSCS LOA-TORN-001, Revision 22, "High Winds / Tornado" directs the station to "ANNOUNCE on PA and repeat twice: "LaSalle Station is under a tornado warning. All Turbine Building personnel evacuate to the Turbine Building 710' elevation center area near the elevator. Other, areas take shelter inside posted Tornado Shelter locations in accordance with LAP-900-48, Revision 5, "Building Emergency Egress / Shelter Plan," "PA announcements may not contact all personnel due to their locations. Other means, such as email, pagers, and megaphones may be necessary to ensure that all persons are aware of the immediate danger."

OP-AA-108-111-1001 Step 4.3.5 directs "In the event of a tornado condition that may require assembly of personnel to ensure their safety, facilities are utilized based on their ability to shelter personnel from the hazard being faced. The specific locations can be chosen ahead of time for certain types of incidents, but will likely be in response to an assessment of the present conditions and a knowledge of the features of the buildings on-site."

- 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).

LSCS procedure LOA-TORN-001, Revision 22, "High Winds / Tornado" directs equipment operators to "CHECK all Hi-Storm Fuel Casks free from any damage or blocked vents." "If needed, the Field Supervisor should request Engineering to perform inspections of the reactor and turbine buildings metal walls for panel damage, missing bolts and for explosion bolts in blow out panels."

OP-AA-108-111-1001 directs "When wind speeds have abated and personnel safety can be assured:

1. ASSESS damage and FOCUS attention on restoring vital plant systems and components to service, as applicable."

Training for LOA-TORN-001, Revision 22, and OP-AA-108-111-1001, is current and complete.

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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.

LaSalle currently implements this through Shift Manager Turnovers.

- b. Discussing these actions during shift turnover briefings.

LaSalle currently implements Standing Order S18-02, "EGM 15-002 Enforcement Discretion for Tornado Generated Missile Protection Non-Compliance."

- c. Including the compensatory actions in the operability determination documentation maintained in the control room.

Compensatory actions are maintained in the Main Control Room (MCR).

#### **6. Long-Term Compensatory Measures**

As a long-term comprehensive compensatory measure, the following documents were revised as described:

- a. LOA-TORN-001, Revision 22, "High Winds / Tornado" was revised to implement the following actions associated with missile damage to VC/VE and/or 236X-1.

#### VC/VE

- Enter T.S. 3.7.4 and/or 3.7.5 as appropriate.
- Stop/Suspend Core Alterations, Movement of Irradiated Fuel, and Operations with the Potential to Drain the Vessel
- Perform mitigating actions per LOA-VC-001 if the Control Room Envelope is breached and inoperable
- Restore the CRE boundary
- If only 1 train is lost:
  - Conduct Just in Time Training for:
    - LOA-AP-101(201), "Unit 1(2) AC Power System Abnormal," attachment K steps 4 and 11
    - LOA-FSG-005 to provide ventilation to the AEER and/or the MCR.
  - Review and walk down the implementation of LOA-FSG-005 attachments B and C.
  - Restore any inoperable trains

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- Place protected paths for unaffected train.
- If both trains lost:
  - Implement LOA-AP-101(201), attachment K steps 4 and 11 to open panel doors in the MCR and AEER.
  - Shutdown both Unit 1 and Unit 2.
  - Stage equipment to execute LOA-FSG-005 attachments B and C to provide ventilation to the AEER and/or the MCR.
  - When in MODE 4 and If required, implement LOA-FSG-005 attachments B and C to provide ventilation to the MCR and AEER.
  - Take actions to implement PBI for impacted doors.

#### 236X-1

- If Unit 2 SBTG is lost:
  - Enter T.S. 3.6.4.3 as appropriate.
  - Restore Unit 1 SBTG if inoperable
  - Establish protected paths barriers for Unit 1 SBTG
- If Unit 2 Division 2 Post LOCA is lost:
  - Review T.S. 3.3.3.1 for entry conditions and enter if appropriate
  - Restore Division 1 Post LOCA if inoperable.
  - Establish protected paths barriers for Division 1 Post LOCA
- If B VC supply and exhaust fans are lost:
  - Enter T.S. 3.7.4 or 3.7.5 as appropriate.
  - Conduct Just in Time Training for:
    - LOA-AP-101(201) attachment K steps 4 and 11
    - LOA-FSG-005 to provide ventilation to the AEER and/or the MCR.
  - Review and walk down the implementation of LOA-FSG-005 attachments B and C.
  - Restore any inoperable trains
  - Place protected paths for unaffected train.
- If Unit 2 Division 2 Battery room exhaust fan is lost:
  - Perform actions of LOP-VX-02, Revision 19, "Switchgear Heat Removal System Shutdown," to establish temporary ventilation and monitor fan operation.
- If Unit 2 RPS MG set battery room exhaust fans are lost:
  - Perform actions of LOP-VX-02 to establish temporary ventilation and monitor fan operation.
- If VR isolation logic and limit switches for 2VR05YA and 2VR04YB are lost:
  - Enter T.S. 3.3.6.2
  - Monitor secondary containment D/P for LGA-002 entry.
- If 2VQ037 is lost:
  - Enter T.S. 3.6.4.2

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These long-term comprehensive compensatory measures are in accordance with EGM 15-002 and Interim Staff Guidance DSS-ISG-2016-01, and will remain in-place until the non-conformances are resolved.

#### 7. **Assessment of Long-Term Compensatory Measure Coincident with Other Operator Actions**

The above long-term compensatory measures established to address the non-conforming conditions and other expected operator actions in response to severe weather and a subsequent loss of off-site power (LOOP) were collectively assessed. This assessment considered the timing and duration of the operator actions specified within the compensatory measures coincident with the other actions the operators may need to perform in response to a severe weather LOOP event.

The compensatory measure incorporated into LOA-TORN-001, Revision 22, addresses completing additional inspections and restoration actions on equipment vulnerable to tornado missile damage. The procedure directs operators to inspect VC/VE and 236X-1 for damage after high wind conditions are clear. If VC/VE and/or 236X-1 experience damage during the high wind event, operators are directed to perform LOA-TORN-001, Attachment C and D, respectively. These actions are not time-critical actions and can easily be performed in conjunction with other actions.

The operator actions credited as long-term compensatory measures in the operating procedure revision are limited and were determined to have minimal impact on other operator actions that may be needed.

The assessment concluded that the implemented long-term compensatory measures along with other beneficial actions in a severe weather LOOP event can be completed without putting unnecessary burden on the operators.

An assessment of time-critical actions/time-sensitive actions (TCAs/TSAs) was also performed. Time-critical/time-sensitive actions that occur outside of the control room and that are plausibly necessary concurrent with a high winds/tornado event include:

- station battery load stripping for station blackout events,
- establish control of ADS valves within 20 minutes of a SBO from the Auxiliary Electric Equipment Room,
- replace nitrogen bottles for ADS,
- cross tie Div 1 and/or Div 2 power to the opposite unit
- starting RHR in pool cooling in less than 15 minutes following restoration of power following a station black out.

These actions are not specifically required following a LOOP or tornado event; however, they were reviewed to provide additional assurance that the added compensatory measures will not hinder ex-control room operator actions for any plausible scenarios.



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This TCA/TSA assessment confirmed the ability of site operators to complete the long term compensatory measures, along with TCAs and TSAs, in response to severe weather and a subsequent LOOP.

#### **8. Site procedural guidance for the equipment non-conformances listed in Section 4 is described below:**

##### **Control Room Ventilation (VC) Non-Conformance**

The "A" and "B" VC trains are not protected against tornado missiles, and missile impacts could render both trains inoperable, preventing the Control Room Area Ventilation Air Condition Systems from functioning as designed.

##### **Procedural Guidance:**

In accordance with procedure LOA-TORN-001, Revision 22, if VC is damaged during a high wind event, operators are directed to "Enter TS 3.7.4 and/or 3.7.5 as appropriate," "Stop/Suspend Core Alts, MIFs, and OPDRVs" activities, and "Staff the OCC and commence a callout to implement repairs for the damaged equipment". In the event the Control Room Envelope (CRE) is breached and inoperable, the following actions are to be performed: Perform LOA-VC-001, "VC Abnormal/Mitigating Actions for An Inoperable Control Room Envelope Boundary," Section B.1, and restore the CRE boundary. If one VC train is lost, LOA-TORN-001 directs operators to "place protected paths on the operable VC train," "conduct JITT for LOA-AP-101(201) and LOA-FSG-005," review and walkdown the implementation of LOA-FSG-005 Attachment C," and "restore the inoperable VC train to operable". If both VC trains are lost, the procedure directs the operators to open panel doors in the MCR per LOA-AP-101(201) Attachment K steps 11, shutdown both Unit 1 and 2, and stage equipment for the execution LOA-FSG-005 Attachment C actions to provide ventilation to the MCR. When Mode 4 is entered, additional actions can be performed per LOA-FSG-005 to provide MCR cooling, if needed. Then, operators are directed to "Initiate PBI for the affected doors" and "restore a VC train to operable". These steps would be post event walk downs that are already required by the procedure when weather conditions allow.

##### **Auxiliary Electrical Equipment Room Ventilation (VE) Non-Conformance**

The "A" and "B" VE trains are not protected against tornado missiles, and missile impacts could render both trains inoperable, preventing the Auxiliary Electric Room HVAC System from functioning as designed.

##### **Procedural Guidance:**

In accordance with procedure LOA-TORN-001, Revision 22, if VE is damaged during a high wind event, operators are directed to "Enter TS 3.7.4 and/or 3.7.5 as appropriate," "Stop/Suspend Core Alts, MIFs, and OPDRVs" activities, and "Staff the OCC and commence a callout to implement repairs for the damaged equipment". With one VE train lost, LOA-TORN-001 directs operators to "place protected paths on the operable VE train," "conduct JITT for LOA-AP-101(201) and LOA-FSG-005," review and walkdown the implementation of LOA-FSG-005 Attachment B," and "restore the

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inoperable VE train to operable". If both VE trains are lost, the procedure directs the operators to open panel doors in the AEER per LOA-AP-101(201) Attachment K step 4, shutdown both Unit 1 and 2, and stage equipment for the execution LOA-FSG-005 Attachment B actions to provide ventilation to the AEER. When Mode 4 is entered, additional actions can be performed per LOA-FSG-005 to provide AEER cooling, if needed. Then, operators are directed to "Initiate PBI for the affected doors" and "restore a VE train to operable". These steps would be post event walk downs that are already required by the procedure when weather conditions allow.

#### **2AP78E (Division II 480V Motor Control Center 236X-1) Non-Conformance**

The Division II 480V Motor Control Center 236X-1 is not protected against tornado missiles, and a missile impact could render the motor control center inoperable, preventing the Unit 2 SBT, Division II Post LOCA, "B" VC supply and exhaust fan, Division II Battery room exhaust fan, RPS MG set battery room exhaust fans, 2VR05YA and 2VR04YB isolation logic and limit switches, and 2VQ037 from functioning as designed.

#### **Procedural Guidance:**

In accordance with procedure LOA-TORN-001, Revision 22, if 236X-1 is damaged during a high wind event, operators are directed to visually inspect the 236X-1 MCC to assess the damage after high wind conditions are cleared. In the unlikely event that the MCC is lost, LOA-TORN-001, Revision 22, instructs operators to "review LOP-AP-242Y Attachment G for potential system impact," "implement actions for de-energizing the bus (as appropriate), and "evaluate systems powered from 236X-1 for operability". If Unit 2 SBT is lost, instructions are provided to "enter TS 3.6.4.3 as appropriate," "restore Unit 1 SBT to operable, if inoperable," and "place protected path barriers for Unit 1 SBT". If Unit 2 Division 2 Post LOCA is lost, the following actions are to be performed: "enter TS 3.3.3.1 as appropriate," "restore Division 1 Post LOCA, if inoperable," and "place protected path barriers for Division 1 Post LOCA". If B VC supply and exhaust fans are lost, perform Attachment C as stated above. For an inoperable Unit 2 Division II battery room exhaust fan and/or RPS MG set battery room exhaust fans, "perform LOP-VX-02 to establish temporary ventilation and monitor fan operation". Conclusively, if power to VR isolation logic and limit switches for 2VR05YA and 2VR04YB are lost, "enter TS 3.3.6.2, "monitor secondary containment d/p for LGA-002 entry," and "enter TS 3.6.4.2 as appropriate," if 2VQ037 power is lost.

#### **Additional Discussion**

The operators maintain cognizance of the tornado-generated missile protection non-conformances by reviewing a report of plant non-conformances every shift, as required by site procedures.

Operator actions to address plant conditions resulting from the tornado-generated missile protection non-conformances are contained within plant operating procedures, as discussed above. Operator cognizance of these procedural actions is ensured via initial and continuing operator training, which includes reviews of procedural guidance for acts of nature.

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LSCS is compliant with NRC Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events. This Order directed licensees to develop and implement (FLEX) strategies and guidance to maintain or restore core cooling, containment cooling, and spent fuel pool cooling capabilities in the event of a beyond-design-basis external event in which AC power and normal access to the ultimate heat sink are lost. LSCS has implemented procedures which use equipment staged within a tornado missile protected building to respond to such an event. The FLEX procedures and equipment would be available to address plant conditions resulting from the tornado missile protection non-conformances, in addition to the operator actions described in the procedural guidance above.

#### **9. Plans for Permanent Resolution**

EGC plans to submit a License Amendment Request to incorporate the results of the TMRE analysis once the TMRE methodology is approved and finalized.

If the TMRE analysis methodology or results for LSCS are determined to be unacceptable, permanent resolution will be reevaluated to consider either the previously approved TORMIS methodology, Plant Design Changes, or a combination of plant design changes and TORMIS or TMRE.

#### **10. Basis and Reason for Extension Request**

In EGM 2015-002 (Reference 2), the NRC provided guidance to exercise enforcement discretion when an operating power reactor licensee does not comply with a plant's current site-specific licensing basis for tornado-generated missile protection. The NRC would exercise this enforcement discretion only when a licensee implements initial compensatory measures to provide additional protection, followed by more comprehensive, long-term compensatory measures implemented within 60 days of issue discovery. The enforcement discretion would expire three years after issuance of RIS 2015-06, dated June 10, 2015, for plants of a higher tornado missile risk (Group A Plants), and five years after RIS issuance for plants of a lower tornado missile risk (Group B Plants). EGM 2015-002 identified LSCS as a plant of a higher tornado missile risk; therefore, its enforcement discretion would expire on June 10, 2018.

In Reference 4, the NRC issued Revision 1 of EGM 2015-002, which stated that licensees may request an extension to their enforcement discretion expiration date if proper justification is provided. This extension would be granted on a case-by-case basis.

In accordance with the revised EGM 15-002, EGC is requesting an extension of the expiration date for enforcement discretion at LSCS from June 10, 2018 to June 10, 2020.

There is no undue risk associated with this requested extension of the enforcement

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discretion due date. The identified non-conformances involve limited exposure of equipment to tornado missiles, and, in many of the non-conformances, the equipment is partially protected. In addition, tornado missile scenarios generally do not represent a significant safety concern because their risk is bounded by the initiating event frequency.

A comprehensive assessment of the site regarding tornado missile protection against the current licensing basis has been completed, revealing the non-conformances discussed above. The compensatory actions implemented for the non-conformances are consistent with the guidance in EGM 15-002 and Interim Staff Guidance DSS-ISG-2016-01, and provide assurance that the consequences of the identified non-conformances are minimized until permanently resolved. Additionally, a collective review was performed to confirm that the site operators can perform the long-term compensatory measures coincident with other actions they may need to perform in a severe weather LOOP event without putting unnecessary burden on the operators. These compensatory measures would remain in-place throughout the period of extended enforcement discretion, until the non-conformances are resolved.

The TMRE methodology is being developed by the industry to evaluate tornado missile protection non-conforming conditions. LARs for implementation of the TMRE methodology at several pilot sites are being submitted, with NRC approval of the pilot site LARs not expected until 2018. Once the pilot site LARs have been approved, then other licensees with identified tornado missile protection non-conformances would submit LARs, based on the approved pilot LARs, for implementation of the TMRE methodology to address the non-conformances at their sites.

To address the tornado missile protection non-conformances identified at LSCS, EGC would need to perform a TMRE analysis for the non-conformances, and prepare and submit a LAR for use of the TMRE methodology to evaluate the non-conformances. The LSCS LAR would be submitted after the LARs for the pilot sites have been approved. If the TMRE methodology did not resolve all of the non-conformances at LSCS, then the use of the TORMIS methodology and/or the installation of plant modifications would need to be pursued. This would all need to be completed by the current enforcement discretion expiration date of June 10, 2018. Since NRC approvals of the pilot site LARs are not expected until sometime in 2018, EGC actions to resolve the non-conformances at LSCS cannot be reasonably implemented in an orderly and cost-effective manner in the time remaining under the existing enforcement discretion.

The requested enforcement discretion expiration date of June 10, 2020 would allow EGC sufficient time to resolve the tornado missile protection non-conformances and restore the site to compliance. EGC expects that the TMRE analysis will resolve all of the identified non-conformances at LSCS. The requested enforcement discretion expiration date of June 10, 2020 would provide sufficient time for EGC to perform a TMRE analysis for the non-conformances, and to submit a LAR for implementation of the TMRE methodology at LSCS. EGC has begun performing walkdowns in support of the TMRE analysis, and plans to submit the TMRE LAR in 2019, pending approval of the pilot plant TMRE LARs. If, while performing the TMRE analysis, EGC unexpectedly

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determines that not all of the non-conformances will be resolved by the TMRE analysis, EGC would have sufficient time before the requested enforcement discretion expiration date of June 10, 2020 to pursue the use of the TORMIS methodology and/or install plant modifications, as discussed above, to resolve the non-conformances.

If conditions arise such that achieving tornado missile protection compliance at LSCS within the requested extended period of enforcement discretion is not possible, the NRC would be promptly notified.

#### **11. References**

1. NRC Regulatory Issue Summary 2015-06, Tornado Missile Protection, dated June 10, 2015 (ADAMS Accession Number ML 15020A419)
2. NRC memorandum, Enforcement Guidance Memorandum 15-002, Enforcement Discretion for Tornado Generated Missile Protection Non-Compliance, dated June 10, 2015 (ADAMS Accession Number ML 15111A269)
3. NRC Interim Staff Guidance, 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," Revision 1, dated November 2017 (ADAMS Accession Number ML 17128A344)
4. NRC memorandum, Enforcement Guidance Memorandum 15-002, Revision 1: Enforcement Discretion for Tornado-Generated Missile Protection Noncompliance, dated February 7, 2017 (ADAMS Accession Number ML 16355A286)