



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
WASHINGTON, D.C. 20555-0001

March 28, 2016

Mr. Jon A. Franke  
Site Vice President  
Susquehanna Nuclear, LLC  
769 Salem Boulevard  
NUCSB3  
Berwick, PA 18603-0467

**SUBJECT: SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2 - ISSUANCE  
OF AMENDMENTS RE: THE EMERGENCY ACTION LEVEL SCHEME  
CHANGE LICENSE AMENDMENT REQUEST FOR SUSQUEHANNA STEAM  
ELECTRIC STATION, UNITS 1 AND 2 (CAC NOS. MF6057 AND MF6058)**

Dear Mr. Franke:

The U.S. Nuclear Regulatory Commission (NRC) has issued the enclosed Amendment No. 265 to Renewed Facility Operating License No. NPF-14 and Amendment No. 246 to Renewed Facility Operating License No. NPF-22 for the Susquehanna Steam Electric Station, Units 1 and 2. These amendments consist of changes to the Emergency Plan emergency action level (EAL) scheme for both units in response to your application dated March 19, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15091A657), as supplemented by letters dated October 15, 2015, October 16, 2015, and January 8, 2016 (ADAMS Accession Nos. ML15296A048, ML15296A057, and ML16011A103, respectively).

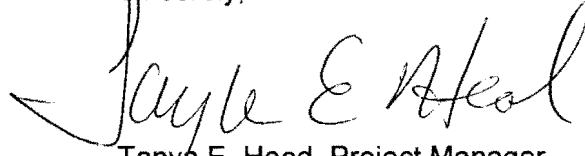
The amendments revise the EAL schemes for both units based on the Nuclear Energy Institute (NEI) document NEI 99-01, Revision 6, "Development of Emergency Action Levels for Non-Passive Reactors," dated November 2012 (ADAMS Accession No. ML12326A805). NEI 99-01, Revision 6, was endorsed by the NRC by letter dated March 28, 2013 (ADAMS Accession No. ML13091A209).

J. Franke

- 2 -

A copy of our safety evaluation is also enclosed. Notice of Issuance will be included in the Commission's Biweekly *Federal Register* Notice.

Sincerely,

A handwritten signature in black ink, appearing to read "Tanya E. Hood". The signature is fluid and cursive, with a large initial "T" and "H".

Tanya E. Hood, Project Manager  
Plant Licensing Branch I-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-387 and 50-388

Enclosures:

1. Amendment No. 265 to License No. NPF-14
2. Amendment No. 246 to License No. NPF-22
3. Safety Evaluation

cc w/enclosures: Distribution via Listserv



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

SUSQUEHANNA NUCLEAR, LLC

ALLEGHENY ELECTRIC COOPERATIVE, INC.

DOCKET NO. 50-387

SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 265  
Renewed License No. NPF-14

1. The Nuclear Regulatory Commission (the Commission or the NRC) having found that:
  - A. The application for the amendment filed by Susquehanna Nuclear, LLC, dated March 19, 2015, as supplemented by letters dated October 15, 2015; October 16, 2015; and January 8, 2016, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the regulations of the Commission;
  - C. There is reasonable assurance: (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

Enclosure 1

2. Accordingly, by Amendment No. 265, Renewed Facility Operating License No. NPF-14 is hereby amended to authorize revision to the Emergency Plan as set forth in licensee's application dated March 19, 2015, as supplemented by letters dated October 15, 2015; October 16, 2015; and January 8, 2016, and evaluated in the NRC staff's safety evaluation for this amendment.
3. This license amendment is effective as of its date of issuance and shall be implemented on or before December 31, 2016.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in black ink, appearing to read 'W M Dean', with a long horizontal flourish extending to the right.

William M. Dean, Director  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Facility Operating License

Date of Issuance: March 28, 2016

ATTACHMENT TO LICENSE AMENDMENT NO. 265

RENEWED FACILITY OPERATING LICENSE NO. NPF-14

DOCKET NO. 50-387

Replace the following page of the Facility Operating License with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

REMOVE

Page 3

INSERT

Page 3

- (3) Susquehanna Nuclear, LLC, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed neutron sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
  - (4) Susquehanna Nuclear, LLC, pursuant to the Act and 10 CFR Parts 30, 40, and 70 to receive, possess, and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and
  - (5) Susquehanna Nuclear, LLC, pursuant to the Act and 10 CFR Parts 30, 40, and 70 to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.
- C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:
- (1) Maximum Power Level

Susquehanna Nuclear, LLC is authorized to operate the facility at reactor core power levels not in excess of 3952 megawatts thermal in accordance with the conditions specified herein. The preoperational tests, startup tests and other items identified in License Conditions 2.C.(36), 2.C.(37), 2.C.(38), and 2.C.(39) to this license shall be completed as specified.
  - (2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 265 and the Environmental Protection Plan contained in Appendix B are hereby incorporated in the license. Susquehanna Nuclear, LLC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

For Surveillance Requirements (SRs) that are new in Amendment 178 to Facility Operating License No. NPF-14, the first performance is due at the end of the first surveillance interval that begins at implementation of Amendment 178. For SRs that existed prior to Amendment 178, including SRs with modified acceptance criteria and SRs whose frequency of performance is being extended, the first performance is due at the end of the first surveillance interval that begins on the date the Surveillance was last performed prior to implementation of Amendment 178.



**UNITED STATES  
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WASHINGTON, D.C. 20555-0001

SUSQUEHANNA NUCLEAR, LLC

ALLEGHENY ELECTRIC COOPERATIVE, INC.

DOCKET NO. 50-388

SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 2

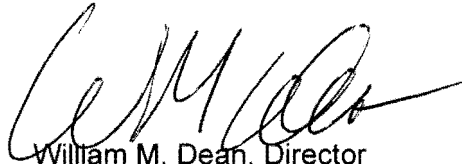
AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 246  
Renewed License No. NPF-22

1. The Nuclear Regulatory Commission (the Commission or the NRC) having found that:
  - A. The application for the amendment filed by Susquehanna Nuclear, LLC, dated March 19, 2015, as supplemented by letters dated October 15, 2015; October 16, 2015; and January 8, 2016, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the regulations of the Commission;
  - C. There is reasonable assurance: (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, by Amendment No. 246, Renewed Facility Operating License No. NPF-22 is hereby amended to authorize revision to the Emergency Plan as set forth in licensee's application dated March 19, 2015, as supplemented by letters dated October 15, 2015; October 16, 2015; and January 8, 2016, and evaluated in the NRC staff's safety evaluation for this amendment.
3. This license amendment is effective as of its date of issuance and shall be implemented on or before December 31, 2016.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in black ink, appearing to read 'W. M. Dean', is written over the printed name.

William M. Dean, Director  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Facility Operating License

Date of Issuance: March 28, 2016



ATTACHMENT TO LICENSE AMENDMENT NO. 246

RENEWED FACILITY OPERATING LICENSE NO. NPF-22

DOCKET NO. 50-388

Replace the following page of the Facility Operating License with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

REMOVE

Page 3

INSERT

Page 3

- (3) Susquehanna Nuclear, LLC, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed neutron sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
  - (4) Susquehanna Nuclear, LLC, pursuant to the Act and 10 CFR Parts 30, 40, and 70 to receive, possess, and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and
  - (5) Susquehanna Nuclear, LLC, pursuant to the Act and 10 CFR Parts 30, 40, and 70 to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.
- C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(3) Maximum Power Level

Susquehanna Nuclear, LLC is authorized to operate the facility at reactor core power levels not in excess of 3952 megawatts thermal in accordance with the conditions specified herein. The preoperational tests, startup tests and other items identified in License Conditions 2.C.(20), 2.C.(21), 2.C.(22), and 2.C.(23) to this license shall be completed as specified.

(4) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 246, and the Environmental Protection Plan contained in Appendix B are hereby incorporated in the license. Susquehanna Nuclear, LLC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

For Surveillance Requirements (SRs) that are new in Amendment 151 to Facility Operating License No. NPF-22, the first performance is due at the end of the first surveillance interval that begins at implementation of Amendment 151. For SRs that existed prior to Amendment 151, including SRs with modified acceptance criteria and SRs whose frequency of performance is being extended, the first performance is due at the end of the first surveillance interval that begins on the date the Surveillance was last performed prior to implementation of Amendment 151.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 265 TO  
RENEWED FACILITY OPERATING LICENSE NO. NPF-14  
AND AMENDMENT NO. 246 TO  
RENEWED FACILITY OPERATING LICENSE NO. NPF-22  
SUSQUEHANNA NUCLEAR, LLC  
ALLEGHENY ELECTRIC COOPERATIVE, INC.  
SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2  
DOCKET NOS. 50-387 AND 388

1.0 INTRODUCTION

By application dated March 19, 2015, as supplemented by letters dated October 15, 2015, October 16, 2015, and January 8, 2016 (References 1, 2, 3, and 4, respectively), Susquehanna Nuclear, LLC (the licensee), requested changes to the Emergency Plan for the Susquehanna Steam Electric Station (SSES), Units 1 and 2.

The proposed change is to revise the emergency action level (EAL) scheme for each unit based on the Nuclear Energy Institute (NEI) document, NEI 99-01, Revision 6, "Development of Emergency Action Levels for Non Passive Reactors," dated November 2012 (Reference 5). NEI 99-01, Revision 6, was endorsed by the U.S. Nuclear Regulatory Commission (NRC or the Commission) by letter dated March 28, 2013 (Reference 6).

The supplemental letters dated October 15, 2015; October 16, 2015; and January 8, 2016, provided additional information that clarified the application and expanded the scope of the application as originally noticed, and changed the staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on July 7, 2015 (80 FR 38762).

The supplemental changes in these amendments were discussed in a September 23, 2015, public meeting held with the licensee. The additional information, and the changes discussed at the public meeting, are included in the public meeting summary, which was issued October 9, 2015 (Reference 7). The revised Emergency Plan includes the appropriate plant-specific changes as a result of an emergency operating procedure upgrade project and corrective action in response to an NRC Emergency Preparedness White Finding, documented in NRC

Inspection Report Nos. 05000387/2015504 and 05000388/2015504, dated June 22, 2015, and June 30, 2015 (References 8 and 9). As such, the NRC staff published a subsequent notice in the *Federal Register* on February 2, 2016 (81 FR 5500).

This request was originally submitted by PPL Susquehanna, LLC; however, on June 1, 2015, the NRC staff issued an amendment (Reference 10) changing the name on the SSES license from PPL Susquehanna, LLC to Susquehanna Nuclear, LLC. This amendment was issued subsequent to an order issued to SSES on April 10, 2015 (Reference 11), approving an indirect license transfer of the SSES license to Talen Energy Corporation.

## 2.0 REGULATORY EVALUATION

The applicable regulations and guidance for the Emergency Plans are as follows:

### 2.1 Regulations

Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, "Domestic Licensing of Production and Utilization Facilities," Section 50.47, "Emergency plans," sets forth Emergency Plan requirements for nuclear power plant facilities. The regulations in 10 CFR 50.47(a)(1)(i) require, in part, that:

[. . .] no initial operating license for a nuclear power reactor will be issued unless a finding is made by the NRC that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency.

Section 50.47(b) to 10 CFR Part 50 also establishes the planning standards that the onsite and offsite emergency response plans must meet for the NRC staff to make a positive finding that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency.

Planning standard (4) of Section 50.47(b) to 10 CFR Part 50 requires that onsite and offsite emergency response plans meet the following:

A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.

Section 50.47(b)(4) to 10 CFR Part 50 emphasizes the use of a standard emergency classification and action level scheme, assuring that implementation methods are relatively consistent throughout the industry for a given reactor and containment design, while simultaneously providing an opportunity for a licensee to modify its EAL scheme as necessary to address plant-specific design considerations or preferences.

Section IV.B.1 of Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," to 10 CFR Part 50, requires, in part:

The means to be used for determining the magnitude of, and for continually assessing the impact of, the release of radioactive materials shall be described, including emergency action levels that are to be used as criteria for determining the need for notification and participation of local and State agencies, the Commission, and other Federal agencies, and the emergency action levels that are to be used for determining when and what type of protective measures should be considered within and outside the site boundary to protect health and safety. The emergency action levels shall be based on in-plant conditions and instrumentation in addition to onsite and offsite monitoring. By June 20, 2012, for nuclear power reactor licensees, these action levels must include hostile action that may adversely affect the nuclear power plant.

Section IV.B(2) of Appendix E to 10 CFR Part 50 requires that a revision to an EAL scheme be approved by the NRC before implementation, if the licensee is changing from one EAL scheme to another EAL scheme.

## 2.2 Guidance

The EAL development guidance was initially established in Generic Letter (GL) 79-50, "Emergency Plans Submittal Dates," dated October 10, 1979 (Reference 12), and was subsequently established in NUREG-0654/FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," dated November 1980 (Reference 13). This was endorsed as an approach for the development of an EAL scheme by NRC Regulatory Guide (RG) 1.101, Revision 2, "Emergency Planning and Preparedness for Nuclear Power Reactors" (Reference 14).

As industry and regulatory experience was gained with the implementation and use of EAL schemes, the industry issued revised EAL scheme development guidance to reflect lessons learned. To date, NUMARC/NESP-007, "Methodology for Development of Emergency Action Levels," dated January 1992 (Reference 15), and NEI 99-01, Revisions 4, 5, and 6 (References 16, 17, and 18, respectively), were provided to the NRC for review and endorsement as generic (non-plant-specific) EAL development guidance. RG 1.101, Revisions 3 and 4, dated August 1992 and July 2003, respectively (Reference 19), endorsed NUMARC/NESP-007 and NEI 99-01, Revision 4, as acceptable alternatives for licensees to consider in the development of their plant-specific EAL schemes and allowed licensees to develop plant-specific EALs based upon an alternative approach not endorsed by the NRC. NEI 99-01, Revision 5, was endorsed by the NRC as generic (non-plant-specific) EAL scheme development guidance by letter dated February 22, 2008 (Reference 20).

The EAL development guidance contained in GL 79-50, NUREG-0654/FEMA-REP-1, (Revision 1); NUMARC/NESP-007 (Revision 2); and NEI 99-01 (Revisions 4, 5, and 6), are all considered generic EAL scheme development guidance, as they are not plant-specific and may not be entirely applicable for some reactor designs. However, the guidance contained in these documents bounds the most typical accident/event scenarios for which emergency response is necessary, in a format that allows for industry standardization and consistent regulatory oversight. Most licensees choose to develop plant-specific EAL schemes using the latest endorsed EAL development guidance with appropriate plant-specific alterations as applicable.

In summary, the NRC staff considers the following methods acceptable for use in developing plant-specific EALs that meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), with the understanding that licensees may want to develop EALs that differ from the applicable guidance document as allowed in RG 1.101 and in the applicable endorsement letters:

- Appendix 1, "Emergency Action Level Guidelines for Nuclear Power Plants," to NUREG-0654/FEMA-REP-1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," dated November 1980;
- NUMARC/NESP-007, Revision 2, "Methodology for Development of Emergency Action Levels," dated January 1992;
- NEI 99-01, Revision 4, "Methodology for Development of Emergency Action Levels," dated January 2003;
- NEI 99-01, Revision 5, "Methodology for Development of Emergency Action Levels," dated February 2008; and
- NEI 99-01, Revision 6, "Development of Emergency Action Levels for Non-Passive Reactors," dated November 2012.

NRC Regulatory Issue Summary (RIS) 2003-18, "Use of NEI 99-01, Methodology for Development of Emergency Action Levels," with Supplements 1 and 2 (Reference 21), also provides guidance for developing or changing a standard emergency classification and action level scheme. In addition, RIS 2003-18 and its supplements provide recommendations to assist licensees, consistent with Section IV.B of Appendix E to Part 50, in determining whether to seek prior NRC approval of deviations from the guidance.

Regardless of the generic EAL scheme development guidance document used by a licensee to develop its EAL scheme, or if a licensee chose to develop its EAL scheme using an alternative approach not endorsed by the NRC, or a combination of the two (most typical), the NRC staff reviews the EAL scheme to assure it meets the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4).

### 3.0 TECHNICAL EVALUATION

In its application, the licensee proposes to revise its current EAL scheme based on NEI 99-01, Revision 5, to one based on NEI 99-01, Revision 6. In its application and supplemental letters, the licensee submitted the proposed EAL scheme; the technical basis containing an evaluation and rationale for each proposed EAL change; and a matrix providing a line-by-line comparison of the proposed initiating conditions, mode applicability, and EAL wording to that found in NEI 99-01, Revision 6. The comparison matrix also included a description of global changes applicable to the EAL scheme and a justification for any differences or deviations from NEI 99-01, Revision 6. The application states that the licensee used the terms "difference" and "deviation," as defined in RIS 2003-18, as supplemented, when comparing its proposed plant-specific EALs to the generic EALs in NEI 99-01, Revision 6.

The NRC staff reviewed the proposed plant-specific EAL scheme, technical basis, comparison matrix, and all additional information provided in the licensee's application and supplemental letters. The NRC staff found that both the current and proposed EALs have modifications from NEI 99-01, Revision 6, guidance due to specific plant designs and licensee preference.

Although the EALs must be plant-specific, the NRC staff reviewed the proposed EALs for the following key characteristics of an effective EAL scheme to ensure consistency and regulatory stability:

- Consistency, including standardization of intent, if not in actual wording (i.e., the EALs would lead to similar decisions under similar circumstances at different plants);
- Human factors engineering and user friendliness;
- Potential for emergency classification level upgrade only when there is an increasing threat to public health and safety;
- Ease of upgrading and downgrading the emergency classification level;
- Thoroughness in addressing and disposing of the issues of completeness and accuracy raised regarding Appendix 1 to NUREG-0654 (i.e., the EALs are unambiguous and are based on site-specific indicators);
- Technical completeness for each classification level;
- Logical progression in classification for multiple events; and
- Objective and observable values.

Based on its review, the NRC staff determined that the proposed EAL modifications do not alter the intent of any specific EAL described in NEI 99-01, Revision 6. The licensee chose to modify its proposed EAL scheme from the generic EAL scheme development guidance provided in NEI 99-01, Revision 6, in order to adopt a format that is better aligned with how it currently implements its EALs, as well as with plant-specific writer's guides and preferences.

The NRC staff determined that the proposed EAL scheme uses objective and observable values, is worded in a manner that addresses human factors engineering and user friendliness concerns, follows logical progressions for escalating events, and allows for event downgrading and upgrading based upon the potential risk to the public health and safety. Risk assessments were appropriately used to set the boundaries of the emergency classification levels and ensure that all EALs that trigger an emergency classification are in the same range of relative risk. In addition, the NRC staff determined that the proposed EAL scheme is technically complete and consistent with EAL schemes implemented at similarly designed plants.

Details regarding the NRC staff's review of specific EALs are provided below.

To aid in understanding the nomenclature used in this safety evaluation, the following conventions are used:

- The first letter signifies the EAL category.

- The second letter signifies the emergency classification level:
  - G = General Emergency (GE),
  - S = Site Area Emergency (SAE),
  - A = Alert, and
  - U = Notification of Unusual Event (UE)
- The number denotes the sequential subcategory designation from the plant-specific EAL scheme.

In addition, a set refers to all emergency classification levels (GE, SAE, A, and UE) that share the same EAL category and subcategory. This safety evaluation uses the numbering system from the plant-specific EAL scheme; however, the numbering system from the generic EAL scheme development guidance contained in NEI 99-01, Revision 6, is annotated in [brackets] to aid in cross-referencing the plant-specific EAL numbering convention with that of the guidance.

### 3.1 Category 'R' – Abnormal Radiological Release/Radiological Effluent

#### 3.1.1 EAL Set RG1/RS1/RA1/RU1 [AG1/AS1/AA1/AU1]

This EAL set is based upon plant-specific indications of a release of radioactivity (gaseous and/or liquid). The NRC staff reviewed the licensee's evaluation and justification for plant-specific EAL changes associated with this set and has determined that the progression from UE to GE is appropriate and consistent with EAL scheme development guidance.

The licensee chose to modify this EAL set by using a plant-specific implementation method that uses a modified numbering format and EAL sequence other than that provided in the generic EAL scheme development guidance. The NRC staff has determined that the numbering, sequencing, and format of this EAL set are consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and are, therefore, considered part of a standard EAL scheme.

The instrumentation and set points derived for this EAL set are consistent with the overall EAL scheme development guidance, address the plant-specific implementation strategies provided, and are consistent with a standard EAL scheme, as required by 10 CFR 50.47(b)(4).

The NRC staff concludes that the plant-specific implementation method for this EAL set is in alignment with the key characteristics of an effective EAL scheme. Although the plant-specific implementation method is different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and is, therefore, acceptable for implementation.

#### 3.1.2 EAL Set RG2/RS2/RA2/RU2 [AG2/AS2/AA2/AU2]

This EAL set is based upon plant-specific indications of fuel uncover, including spent fuel stored in the spent fuel pool or refueling pathway. The NRC staff reviewed the licensee's evaluation and justification for plant-specific EAL changes associated with this set and has determined that the progression from UE to GE is appropriate and consistent with EAL scheme development guidance. The SAE and GE classification levels for this specific accident



progression are also bounded by indications available in the fission product barrier matrix, as well as in EALs RS1 and RG1.

The licensee chose to modify this EAL set by using a plant-specific implementation method that uses a modified numbering format and EAL sequence other than that provided in the generic EAL scheme development guidance. The NRC staff has determined that the numbering, sequencing, and format of this EAL set are consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and are, therefore, considered part of a standard EAL scheme.

The instrumentation and set points derived for this EAL set are consistent with the overall EAL scheme development guidance, address the plant-specific implementation strategies provided, and are consistent with a standard EAL scheme, as required by 10 CFR 50.47(b)(4).

The NRC staff concludes that the plant-specific implementation method for this EAL set is in alignment with the key characteristics of an effective EAL scheme. Although the plant-specific implementation method is different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and is, therefore, acceptable for implementation.

### 3.1.3 EAL RA3 [AA3]

This EAL is based upon radiation levels in the plant that limit normal access. This Alert EAL is primarily intended to ensure that the plant emergency response organization is activated to support the control room in removing the impediment to normal access, as well as assisting in quantifying potential damage to the fuel. Indications of increasing radiation levels in the plant are bounded by indication of fission product barrier loss or potential loss, as well as in RS1 and RG1.

The licensee chose to modify this EAL by using a plant-specific implementation method that uses a modified numbering format and EAL sequence other than that provided in the generic EAL scheme development guidance. The NRC staff has determined that the numbering, sequencing, and format of this EAL are consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and are, therefore, considered part of a standard EAL scheme.

The NRC staff concludes that the plant-specific implementation method for this EAL set is in alignment with the key characteristics of an effective EAL scheme. Although the plant-specific implementation method is different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and is, therefore, acceptable for implementation.

## 3.2 Category 'C' – Cold Shutdown/Refueling System Malfunction

### 3.2.1 EAL Set CG1/CS1/CA1/CU1 [CG1/CS1/CA1/CU1]

This EAL set is based upon a loss of reactor pressure vessel inventory and/or reactor coolant system (RCS) leakage. The NRC staff reviewed the licensee's evaluation and justification for plant-specific EAL changes associated with this set and has determined that the progression from UE to GE is appropriate and consistent with EAL scheme development guidance.

The NRC staff has determined that the numbering, sequencing, and format of this EAL set are consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and are, therefore, considered part of a standard EAL scheme.

The instrumentation and set points derived for this EAL set are consistent with the overall EAL scheme development guidance, address the plant-specific implementation strategies provided, and are consistent with a standard EAL scheme, as required by 10 CFR 50.47(b)(4).

The NRC staff concludes that the plant-specific implementation method for this EAL set is in alignment with the key characteristics of an effective EAL scheme, meets the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and is, therefore, acceptable for implementation.

### 3.2.2 EAL CA2/CU2 [CA2/CU2]

This EAL set is based upon a loss of available electrical power to the busses. The NRC staff reviewed the licensee's evaluation and justification for plant-specific EAL changes associated with this set and has determined that the progression from UE to Alert is appropriate and consistent with EAL scheme development guidance. The SAE and GE classification levels for this specific accident progression are bounded by indications available in EALs RS1 and RG1.

The NRC staff has determined that the numbering, sequencing, and format of this EAL set are consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and are, therefore, considered part of a standard EAL scheme.

The instrumentation and set points derived for this EAL set are consistent with the overall EAL scheme development guidance, address the plant-specific implementation strategies provided, and are consistent with a standard EAL scheme, as required by 10 CFR 50.47(b)(4).

The NRC staff concludes that the plant-specific implementation method for this EAL set is in alignment with the key characteristics of an effective EAL scheme, meets the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and is, therefore, acceptable for implementation.

### 3.2.3 EAL Set CA4/CU4 [CA3/CU3]

This EAL set is based upon an inability to maintain control of decay heat removal. The NRC staff reviewed the licensee's evaluation and justification for plant-specific EAL changes associated with this set and has determined that the progression from UE to Alert is appropriate and consistent with EAL scheme development guidance. The SAE and GE classification levels for this specific accident progression are bounded by indications available in EALs RS1 and RG1.

The licensee chose to modify this EAL set by using a plant-specific implementation method that uses a modified numbering format and EAL sequence other than that provided in the generic EAL scheme development guidance. The NRC staff has determined that the numbering, sequencing, and format of this EAL set are consistent with the overall EAL scheme

development guidance and with the plant-specific implementation strategies provided, and are, therefore, considered part of a standard EAL scheme.

The NRC staff concludes that the plant-specific implementation method for this EAL set is in alignment with the key characteristics of an effective EAL scheme. Although the plant-specific implementation method is different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and is, therefore, acceptable for implementation.

#### 3.2.4 EAL CU3 [CU4]

This EAL is not part of an EAL set within the overall EAL scheme. The EAL's intent is to ensure that an EAL is declared when a loss of direct current (DC) power event occurs, as this condition compromises the ability of the licensee to monitor and control the removal of decay heat during cold shutdown or refueling modes of operation. The Alert, SAE, and GE classification levels for this specific accident progression are bounded by indications available in EALs RA1, RS1, and RG1.

The licensee chose to modify this EAL by using a plant-specific implementation method that uses a modified numbering format and EAL sequence other than that provided in the generic EAL scheme development guidance. The NRC staff has determined that the numbering, sequencing, and format of this EAL are consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and are, therefore, considered part of a standard EAL scheme.

The NRC staff concludes that the plant-specific implementation method for this EAL is in alignment with the key characteristics of an effective EAL scheme. Although the plant-specific implementation method is different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and is, therefore, acceptable for implementation.

#### 3.2.5 EAL CU5 [CU5]

This EAL is not part of an EAL set within the overall EAL scheme. The EAL's intent is to highlight the importance of emergency communications by ensuring that an EAL is declared if normal communication methods for onsite and offsite personnel or with offsite response organizations (OROs), including the NRC, are lost.

This stand-alone initiating condition is appropriate and consistent with guidance provided in NUREG-0654/FEMA-REP-1, and does not require an initiating condition set within the overall emergency classification scheme. It is primarily intended to ensure that key emergency response organization members and OROs are aware of the loss of communications capabilities, the resources necessary to restore communications are mobilized, and compensatory measures are promptly implemented. The NRC staff has determined that no escalation path to a higher emergency classification is necessary for this EAL.

The NRC staff has determined that the numbering, sequencing, and format of this EAL are consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and are, therefore, considered part of a standard EAL scheme.

The communication methods derived for this EAL are consistent with the overall EAL scheme development guidance, address the plant-specific implementation strategies provided, and are consistent with a standard EAL scheme, as required by 10 CFR 50.47(b)(4).

The NRC staff concludes that the plant-specific implementation method for this EAL is in alignment with the key characteristics of an effective EAL scheme, meets the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and is, therefore, acceptable for implementation.

### 3.2.6 EAL CA6 [CA6]

This EAL is not part of an EAL set within the overall EAL scheme. The EAL's intent is to ensure that an EAL is declared when hazardous events lead to potential damage to safety systems. The SAE and GE classification levels for this accident progression are bounded by indications available in EALs RS1 and RG1.

The NRC staff has determined that the numbering, sequencing, and format of this EAL are consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and are, therefore, considered part of a standard EAL scheme.

The NRC staff concludes that the plant-specific implementation method for this EAL is in alignment with the key characteristics of an effective EAL scheme, meets the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and is, therefore, acceptable for implementation.

## 3.3 Category 'E' – Independent Spent Fuel Storage Installation (ISFSI)

### 3.3.1 EAL EU1 [E-HU1]

This EAL is not part of an EAL set within the overall EAL scheme. The EAL's intent is limited to radiological events at the ISFSI. The NRC staff reviewed the licensee's evaluation and justification for plant-specific changes associated with this EAL and has determined that while security-related events at the ISFSI are also of concern, they are bounded by the licensee's EAL HA1.

The licensee chose to modify this EAL by using a plant-specific implementation method that uses a modified numbering format and EAL sequence other than that provided in the generic EAL scheme development guidance. The NRC staff has determined that the numbering, sequencing, and format of this EAL are consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and are, therefore, considered part of a standard EAL scheme.

The NRC staff concludes that the plant-specific implementation method for this EAL is in alignment with the key characteristics of an effective EAL scheme. Although the plant-specific implementation method is different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and is, therefore, acceptable for implementation.

### 3.4 Category 'F' – Fission Product Barrier Matrix

This category is unique in the overall EAL scheme, as the thresholds are not intended to be stand-alone indicators of a particular event occurring at the plant. Rather, they are to be used as triggers within the particular logic configuration needed to reflect a loss or potential loss of a fission product barrier. U.S. nuclear power plants have three fission product barriers: fuel cladding, the RCS, and primary containment. Licensees are to develop thresholds that provide EAL decisionmakers' input into making an event declaration based upon degradation of one or more of these fission product barriers.

There are numerous triggers used as logic inputs to decide on the appropriate classification based upon the number of loss and/or potential loss indicators that are triggered for each barrier. By design, these indicators are redundant with other similar indicators in the Category 'R' and Category 'S' EAL sets, due to the importance for licensees to be able to recognize reactor and/or fission product barrier events as timely as possible, using the best available indicators from several different perspectives.

The NRC staff verified that the logic used to determine the appropriate emergency classification is consistent with the generic EAL scheme development guidance.

The NRC also verified that the instrumentation and set points derived for this EAL category are consistent with the overall EAL scheme development guidance, address the plant-specific implementation strategies provided, and are consistent with a standard EAL scheme, as required by 10 CFR 50.47(b)(4).

The licensee chose to modify this EAL category by using a plant-specific implementation method that uses a modified numbering format and EAL sequence other than that provided in the generic EAL scheme development guidance. The NRC staff has determined that the numbering, sequencing, and format of this EAL category are consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and are, therefore, considered part of a standard EAL scheme.

The NRC staff concludes that the plant-specific implementation method for this EAL category is in alignment with the key characteristics of an effective EAL scheme. Although the plant-specific implementation method is different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and is, therefore, acceptable for implementation.

### 3.5 Category 'H' – Hazards

#### 3.5.1 EAL Set HG1/HS1/HA1/HU1 [HG1/HS1/HA1/HU1]

This EAL set is based upon security-related events originally developed in accordance with the guidance from NRC Bulletin 2005-02, "Emergency Preparedness and Response Actions for Security Based Events," dated July 18, 2005 (Reference 22), and RIS 2006-12, "Endorsement of Nuclear Energy Institute Guidance 'Enhancements to Emergency Preparedness Programs for Hostile Action'," dated July 19, 2006 (Reference 23), for licensees to implement, regardless of the specific version of the generic EAL scheme development guidance used, or if the particular licensee developed its EAL scheme using an alternative approach. Based upon lessons learned from the implementation and use of this EAL set, particularly the insights gained from

combined security and emergency preparedness drills, the NRC staff and the industry worked to enhance the language of these EALs so as to eliminate any confusion without changing the intent of the EAL set as set forth in NRC Bulletin 2005-02 and RIS 2006-12.

The NRC staff has determined that the numbering, sequencing, and format of this EAL set are consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and are, therefore, considered part of a standard EAL scheme.

The NRC staff has determined that this EAL set is consistent with the guidance provided in NRC Bulletin 2005-02 and RIS 2006-12, as further enhanced by the lessons learned from implementation and drills, and revised in NEI 99-01, Revision 6.

The NRC staff concludes that the plant-specific implementation method for this EAL set is in alignment with the key characteristics of an effective EAL scheme, meets the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and is, therefore, acceptable for implementation.

### 3.5.2 EAL HU2 [HU2]

This EAL is not part of an EAL set within the overall EAL scheme. This EAL is based upon the effect that a seismic event may have on the facility. The Alert, SAE, and GE classification levels for this specific accident progression are bounded by indications available in the fission product barrier matrix, as well as in EALs RA1, RS1, RG1, CA6, and SA8.

The NRC staff has determined that the numbering, sequencing, and format of this EAL are consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and are, therefore, considered part of a standard EAL scheme.

The NRC staff concludes that the plant-specific implementation method for this EAL is in alignment with the key characteristics of an effective EAL scheme, meets the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and is, therefore, acceptable for implementation.

### 3.5.3 EAL HU3 [HU3]

This EAL is not part of an EAL set within the overall EAL scheme. This EAL is based upon the effect that natural and destructive hazards may have on the facility. The Alert, SAE, and GE classification levels for this specific accident progression are bounded by indications available in the fission product barrier matrix, as well as in EALs RA1, RS1, RG1, CA6, and SA8.

The NRC staff has determined that the numbering, sequencing, and format of this EAL are consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and are, therefore, considered part of a standard EAL scheme.

The instrumentation and set points derived for this EAL are consistent with the overall EAL scheme development guidance, address the plant-specific implementation strategies provided, and are consistent with a standard EAL scheme, as required by 10 CFR 50.47(b)(4).

The NRC staff concludes that the plant-specific implementation method for this EAL is in alignment with the key characteristics of an effective EAL scheme, meets the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and is, therefore, acceptable for implementation.

#### 3.5.4 EAL HU4 [HU4]

This EAL is not part of an EAL set within the overall EAL scheme. This EAL is based upon the effect that fires may have on the facility. The Alert, SAE, and GE classification levels for this specific accident progression are bounded by indications available in the fission product barrier matrix, as well as in EALs RA1, RS1, RG1, CA6, and SA8.

The NRC staff has determined that the numbering, sequencing, and format of this EAL are consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and are, therefore, considered part of a standard EAL scheme.

The NRC staff concludes that the plant-specific implementation method for this EAL is in alignment with the key characteristics of an effective EAL scheme, meets the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and is, therefore, acceptable for implementation.

#### 3.5.5 EAL HA5 [HA5]

This EAL is not part of an EAL set within the overall EAL scheme. This EAL is based upon the effect that toxic, corrosive, asphyxiant, or flammable gases may have on the facility. The SAE and GE classification levels for this specific accident progression are bounded by indications available in the fission product barrier matrix, as well as in EALs RS1 and RG1.

The NRC staff has determined that the numbering, sequencing, and format of this EAL are consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and are, therefore, considered part of a standard EAL scheme.

The NRC staff concludes that the plant-specific implementation method for this EAL is in alignment with the key characteristics of an effective EAL scheme, meets the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and is, therefore, acceptable for implementation.

#### 3.5.6 EAL Set HS6/HA6 [HS6/HA6]

This EAL set is based upon control room evacuation and the inability to control critical plant systems remotely. The NRC staff reviewed the licensee's evaluation and justification for plant-specific changes associated with this EAL set and has determined that the progression from Alert to SAE is appropriate and consistent with EAL scheme development guidance. The

GE classification level for this specific accident progression is bounded by indications available in the fission product barrier matrix, as well as in EAL RG1.

The NRC staff has determined that the numbering, sequencing, and format of this EAL set are consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and are, therefore, considered part of a standard EAL scheme.

The NRC staff concludes that the plant-specific implementation method for this EAL set is in alignment with the key characteristics of an effective EAL scheme, meets the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and is, therefore, acceptable for implementation.

### 3.5.7 EAL Set HG7/HS7/HA7/HU7 [HG7/HS7/HA7/HU7]

This EAL set is based upon providing the decisionmakers with EALs to consider when, in their judgment, an emergency classification is warranted.

The NRC staff has determined that the numbering, sequencing, and format of this EAL set are consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and are, therefore, considered part of a standard EAL scheme.

The NRC staff concludes that the plant-specific implementation method for this EAL set is in alignment with the key characteristics of an effective EAL scheme, meets the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and is, therefore, acceptable for implementation.

## 3.6 Category 'S' – System Malfunction

### 3.6.1 EAL Set SG1/SS1/SA1/SU1 [SG1/SS1/SA1/SU1]

This EAL set is based upon a loss of available alternating current (AC) power sources to the emergency busses. The NRC staff reviewed the licensee's evaluation and justification for plant-specific changes associated with this EAL set and has determined that the progression from UE to GE is appropriate and consistent with EAL scheme development guidance.

The NRC staff has determined that the numbering, sequencing, and format of this EAL set are consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and are, therefore, considered part of a standard EAL scheme.

The instrumentation, values, and listing of applicable power sources derived for this EAL set are consistent with the overall EAL scheme development guidance, address the plant-specific implementation strategies provided, and are consistent with a standard EAL scheme, as required by 10 CFR 50.47(b)(4).

The NRC staff concludes that the plant-specific implementation method for this EAL set is in alignment with the key characteristics of an effective EAL scheme, meets the requirements of



Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and is, therefore, acceptable for implementation.

### 3.6.2 EAL Set SG1.2/SS2 [SG8/SS8]

This EAL set is based upon a loss of site AC and DC power sources. The EAL's intent is to ensure that an EAL is declared when a loss of AC or DC power event occurs, as this condition compromises the ability of the licensee to monitor and control the removal of decay heat.

The licensee chose to modify this EAL set by using a plant-specific implementation method that uses a modified numbering format and EAL sequence other than that provided in the generic EAL scheme development guidance. The NRC staff has determined that the numbering, sequencing, and format of this EAL set are consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and are, therefore, considered part of a standard EAL scheme.

The NRC staff concludes that the plant-specific implementation method for this EAL set is in alignment with the key characteristics of an effective EAL scheme. Although the plant-specific implementation method is different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and is, therefore, acceptable for implementation.

### 3.6.3 EAL Set SA3/SU3 [SA2/SU2]

This EAL set is based upon the effect that a loss of available indicators in the control room has on the facility. The NRC staff has reviewed the licensee's evaluation and justification for plant-specific changes associated with this EAL set and determined that the progression from UE to Alert is appropriate and consistent with EAL scheme development guidance. The SAE and GE classification levels for this specific accident progression are bounded by indications available in the fission product barrier matrix, as well as in EALs RS1 and RG1.

The licensee chose to modify this EAL set by using a plant-specific implementation method that uses a modified numbering format and EAL sequence other than that provided in the generic EAL scheme development guidance. The NRC staff has determined that the numbering, sequencing, and format of this EAL set are consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and are, therefore, considered part of a standard EAL scheme.

The instrumentation and set points derived for this EAL set are consistent with the overall EAL scheme development guidance, address the plant-specific implementation strategies provided, and are consistent with a standard EAL scheme, as required by 10 CFR 50.47(b)(4).

The NRC staff concludes that the plant-specific implementation method for this EAL set is in alignment with the key characteristics of an effective EAL scheme. Although the plant-specific implementation method is different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and is, therefore, acceptable for implementation.

#### 3.6.4 EAL SU5 [SU4]

This EAL is not part of an EAL set within the overall EAL scheme. The EAL's intent is to ensure that an EAL is declared when the plant has indications of RCS leakage. By design, this EAL is redundant with corresponding indicators from a loss or potential loss of fission product barriers, as well as radiation monitoring, to ensure reactor and/or fission product barrier events are recognized, regardless of the particular EAL table a licensee may be referring to. EAL escalation is bounded by indications available in the fission product barrier matrix, as well as in EALs RA1, RS1, and RG1.

The licensee chose to modify this EAL by using a plant-specific implementation method that uses a modified numbering format and EAL sequence other than that provided in the generic EAL scheme development guidance. The NRC staff has determined that the numbering, sequencing, and format of this EAL are consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and are, therefore, considered part of a standard EAL scheme.

The NRC staff concludes that the plant-specific implementation method for this EAL is in alignment with the key characteristics of an effective EAL scheme. Although the plant-specific implementation method is different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and is, therefore, acceptable for implementation.

#### 3.6.5 EAL Set SS6/SA6/SU6 [SS5/SA5/SU5]

This EAL set is based upon the effect that a failure of the reactor protection system may have on the plant. The NRC staff reviewed the licensee's evaluation and justification for plant-specific changes associated with this EAL set and has determined that the progression from UE to SAE is appropriate and consistent with EAL scheme development guidance. The GE classification level for this event is bounded by indications available in the fission product barrier matrix, as well as in EAL RG1.

The licensee chose to modify this EAL set by using a plant-specific implementation method that uses a modified numbering format and EAL sequence other than that provided in the generic EAL scheme development guidance. The NRC staff has determined that the numbering, sequencing, and format of this EAL set are consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and are, therefore, considered part of a standard EAL scheme.

The instrumentation and set points derived for this EAL set are consistent with the overall EAL scheme development guidance, address the plant-specific implementation strategies provided, and are consistent with a standard EAL scheme, as required by 10 CFR 50.47(b)(4).

The NRC staff concludes that the plant-specific implementation method for this EAL set is in alignment with the key characteristics of an effective EAL scheme. Although the plant-specific implementation method is different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and is, therefore, acceptable for implementation.

### 3.6.6 EAL SU7 [SU6]

This EAL is not part of an EAL set within the overall EAL scheme. The EAL's intent is to highlight the importance of emergency communications by ensuring that an EAL is declared if normal communication methods for onsite and offsite personnel or with OROs, including the NRC, are lost.

This stand-alone initiating condition is appropriate and consistent with guidance provided in NUREG-0654/FEMA-REP-1, and does not require an initiating condition set within the overall emergency classification scheme. It is primarily intended to ensure that key emergency response organization members and OROs are aware of the loss of communications capabilities, the resources necessary to restore communications are mobilized, and compensatory measures are promptly implemented. The NRC staff has determined that no escalation path to a higher emergency classification is necessary for this EAL.

The licensee chose to modify this EAL by using a plant-specific implementation method that uses a modified numbering format and EAL sequence other than that provided in the generic EAL scheme development guidance. The NRC staff has determined that the numbering, sequencing, and format of this EAL are consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and are, therefore, considered part of a standard EAL scheme.

The communication methods derived for this EAL are consistent with the overall EAL scheme development guidance, address the plant-specific implementation strategies provided, and are consistent with a standard EAL scheme, as required by 10 CFR 50.47(b)(4).

The NRC staff concludes that the plant-specific implementation method for this EAL is in alignment with the key characteristics of an effective EAL scheme. Although the plant-specific implementation method is different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and is, therefore, acceptable for implementation.

### 3.6.7 EAL SU4 [SU3]

This EAL is not part of an EAL set within the overall EAL scheme. The EAL's intent is to ensure that an EAL is declared when RCS activity is greater than technical specification allowable limits. The Alert, SAE, and GE classification levels for this specific accident progression are bounded by indications available in the fission product barrier matrix, as well as in EALs RA1, RS1, and RG1.

The licensee chose to modify this EAL by using a plant-specific implementation method that uses a modified numbering format and EAL sequence other than that provided in the generic EAL scheme development guidance. The NRC staff has determined that the numbering, sequencing, and format of this EAL are consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and are, therefore, considered part of a standard EAL scheme.

The NRC staff concludes that the plant-specific implementation method for this EAL is in alignment with the key characteristics of an effective EAL scheme. Although the plant-specific implementation method is different than that provided in the generic EAL development

guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and is, therefore, acceptable for implementation.

### 3.6.8 EAL SA8 [SA9]

This EAL is not part of an EAL set within the overall EAL. The EAL's intent is to ensure that an EAL is declared when hazardous events lead to potential damage to safety systems. The SAE and GE classification levels for this accident progression are bounded by indications available in the fission product barrier matrix, as well as in EALs RS1 and RG1.

The licensee chose to modify this EAL by using a plant-specific implementation method that uses a modified numbering format and EAL sequence other than that provided in the generic EAL scheme development guidance. The NRC staff has determined that the numbering, sequencing, and format of this EAL are consistent with the overall EAL scheme development guidance and with the plant-specific implementation strategies provided, and are, therefore, considered part of a standard EAL scheme.

The NRC staff concludes that the plant-specific implementation method for this EAL is in alignment with the key characteristics of an effective EAL scheme. Although the plant-specific implementation method is different than that provided in the generic EAL development guidance, it continues to meet the requirements of Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4), and is, therefore, acceptable for implementation.

### 3.7 Review Result Summary

The NRC staff has reviewed the technical bases for the proposed EAL scheme, the modifications from NEI 99-01, Revision 6, and the licensee's evaluation of the proposed changes. The licensee chose to modify its proposed EAL scheme from the generic EAL scheme development guidance provided in NEI 99-01, Revision 6, in order to adopt a format that is better aligned with how it currently implements its EALs, as well as with plant-specific writer's guides and preferences. The NRC staff determined that these modifications do not alter the intent of any specific EAL within a set, category, or within the entire EAL scheme described in NEI 99-01, Revision 6. Thus, the proposed changes meet the requirements in Appendix E to 10 CFR Part 50 and the planning standards of 10 CFR 50.47(b).

Therefore, the NRC staff concludes that the licensee's proposed EAL scheme is acceptable and provides reasonable assurance that the licensee can and will take adequate protective measures in the event of a radiological emergency. Specifically, the staff concludes that the licensee's plant-specific EAL basis document provided by Enclosure 4 of Reference 2, is acceptable for implementation.

### 4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Pennsylvania State official was notified of the proposed issuance of the amendments. The State official had no comments.

### 5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has

determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. Following its receipt of the licensee's supplemental submittal, the Commission issued a proposed finding that the amendments involve no significant hazards consideration (81 FR 5500, February 2, 2016), and there has been no public comment on such finding. Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

## 6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) there is reasonable assurance that such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

## 7.0 REFERENCES

1. Letter from Susquehanna Nuclear, LLC to U.S. Nuclear Regulatory Commission, "Susquehanna, Units 1 and 2 - Proposed License Amendment to Adopt Emergency Action Level Scheme Pursuant to NEI 99-01, Revision 6, "Development of Emergency Action Levels for Non-Passive Reactors," dated March 19, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15091A657).
2. Letter from Susquehanna Nuclear, LLC to U.S. Nuclear Regulatory Commission, "Susquehanna Steam Electric Station Proposed Additional Changes to the SSES Emergency Plan Basis Document Since Submitted in Response to NRC Request for Additional Information PLA-7399," dated October 15, 2015 (ADAMS Accession No. ML15296A048).
3. Letter from Susquehanna Nuclear, LLC to U.S. Nuclear Regulatory Commission, "Susquehanna Steam Electric Station Response to NRC Request for Additional Information Regarding License Amendment Request to Adopt NEI 99-01, Revision 6, Emergency Action Level Scheme Change," dated October 16, 2015 (ADAMS Accession No. ML15296A057).
4. Letter from Susquehanna Nuclear, LLC to U.S. Nuclear Regulatory Commission, "Susquehanna, Units 1 and 2 - Supplemental Information to License Amendment Request to Adopt Emergency Action Level Scheme Pursuant to NEI 99-01, Revision 6," dated January 8, 2016 (ADAMS Accession No. ML16011A103).
5. Nuclear Energy Institute, NEI 99 01, Revision 6, "Development of Emergency Action Levels for Non Passive Reactors," dated November 2012 (ADAMS Accession No. ML12326A805).

6. Thaggard, M., U.S. Nuclear Regulatory Commission, Letter to Ms. Perkins-Grew, Nuclear Energy Institute, "U.S. Nuclear Regulatory Commission Review and Endorsement of NEI-99-01, Revision 6, dated November 2012," dated March 28, 2013 (ADAMS Accession No. ML12346A463).
7. U.S. Nuclear Regulatory Commission, "Summary of September 23, 2015, Meeting with Susquehanna Nuclear, LLC on the Emergency Action Level Scheme Change License Amendment Request for Susquehanna Steam Electric Station, Units 1 and 2 (CAC Nos. MF6057 and MF6058)," dated October 9, 2015 (ADAMS Accession No. ML15278A492).
8. Dorman, D., U.S. Nuclear Regulatory Commission, Letter to Mr. Rausch, Susquehanna Nuclear, LLC, "Final Significance Determination for a White Finding with Assessment Follow-up and Notice of Violation [Inspection Report No. 05000387/2015504 and 05000388/2015504] – Susquehanna Steam Electric Station Units 1 and 2," dated June 22, 2015 (ADAMS Accession No. ML15173A297).
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Principal Contributor: D. Johnson, NSIR

Date: March 28, 2016

J. Franke

- 2 -

A copy of our safety evaluation is also enclosed. Notice of Issuance will be included in the Commission's Biweekly *Federal Register* Notice.

Sincerely,

**/RA/**

Tanya E. Hood, Project Manager  
Plant Licensing Branch I-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-387 and 50-388

Enclosures:

1. Amendment No. 265 to License No. NPF-14
2. Amendment No. 246 to License No. NPF-22
3. Safety Evaluation

cc w/enclosures: Distribution via Listserv

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