



Susquehanna Steam Electric Station

Pre-Submittal Meeting for License Amendment Request
to Revise the Emergency Plan Emergency Action Level
Scheme to Adopt NEI 99-01, Revision 7

Pre-Application Meeting
October 07, 2026

Agenda

- Introductions
- Meeting Purpose
- Background
- Submittal Contents and Format
- Deviations
- Schedule for Submittal
- Discussion and Feedback

Introductions

- Susquehanna Nuclear, LLC (Susquehanna)
- Nuclear Regulatory Commission (NRC)

Meeting Purpose

- Susquehanna is proposing to submit a license amendment request (LAR) for Susquehanna Stream Electric Station (SSES) to change their Emergency Action Level (EAL) scheme to adopt the guidance provided in Revision 7 of NEI 99-01, "Development of Emergency Action Levels for Non-Passive Reactors," (ML24274A312)
- The purpose of this meeting is to discuss the proposed EAL schemes, format and content of the submittal, and timeline.

Background

- Current SSES EAL scheme is based on NEI 99-01, Revision 6
- On September 22, 2025, the NRC endorsed NEI 99-01, Revision 7 via Regulatory Guide 1.101, Revision 7, “Emergency Response Planning and Preparedness for Nuclear Power Reactors” (ADAMS Accession No. ML25065A240).
- The proposed Susquehanna LAR will seek to adopt the endorsed NEI 99-01 Revision 7 EAL scheme for SSES.
- The proposed EALs will align closely with the NEI 99-01 Revision 7 guidance, and will include previously approved site-specific information, minor differences, and one deviation.

Submittal Contents and Format

- Attachment 1: EAL Technical Basis – Markup
- Attachment 2: EAL Technical Basis – Revised
- Attachment 3: EAL Wall Boards – Revised
- Attachment 4: Differences and Deviations Justification Matrix
- Attachment 5: Letters of Concurrence from Risk Counties and the Commonwealth of Pennsylvania

EAL Technical Basis – Markup

CA2

- The EAL Technical Basis Markup is based off the previous revision of the EALs (NEI 99-01 Rev. 6).
- Site specific changes to align with NEI 99-01 Rev. 7 are identified in red or by text strikeout.
- Basis information added includes: site specific information, definitions, additional information from NEI 99-01 Rev. 7 developer notes.
- SSES changes are described in the Differences and Deviations Justification Matrix.
- EAL Technical Basis – Revised, provides the clean revision of the document with all tracked changes accepted.

ECL: Alert

Category: ~~C – Cold Shutdown / Refueling System Malfunction~~

Subcategory: ~~2 – Loss of Emergency AC Power~~

Initiating Condition: Loss of all offsite and all onsite AC power to essential buses for 15 minutes or longer.

Operating Mode Applicability:

4 - Cold Shutdown, 5 - Refueling, D - Defueled

EAL Emergency Action Level:

Notes-4:

- The ED/RM should declare the event promptly upon determining that ~~time limit~~ the 15 minutes has been exceeded, or will likely be exceeded.
- A bus may be considered repowered if the AC power source can supply the bus loads associated with decay heat removal functions and is subject to a formal maintenance program. The power source may be classed as safety-related or not.

CA2.1 Alert

Loss of ALL offsite AND ALL onsite AC power capability to ALL 4.16 kV ESS buses on EITHER unit for ≥ 15 min. (Note-1)

Definition(s):

None.

Basis:

This IC addresses a total loss of AC power that compromises the performance of all SAFETY SYSTEMS requiring electric power including those necessary for emergency core cooling, containment heat removal/pressure control, spent fuel heat removal and the ultimate heat sink.

When in the cold shutdown, refueling, or defueled mode, this condition is not classified as a Site Area Emergency because of the increased time available to restore an emergency bus to service. Additional time is available due to the reduced core decay heat load, and the lower temperatures and pressures in various plant systems. Thus, when in these modes, this condition represents an actual or potential substantial degradation of the level of safety of the plant.

For EAL assessment purposes, a bus may be considered repowered if the AC power source can supply the bus loads associated with decay heat removal functions and is subject to a formal maintenance program. The power source may be classed as safety-related or not.

Differences and Deviations Justification Matrix

The Differences and Deviations Justification Matrix is based on RIS 2003-18 and provides the existing Emergency Plan Implementing Procedure EALs with the changes to implement NEI 99-01 Rev 7 EAL base scheme in a markup format to annotate changes.

Each EAL is broken into the following sections:

- Initiating Condition
- Threshold Value
- Basis and References

Site specific information is clearly annotated and identified as either a Difference or a Deviation in accordance with the definitions listed in RIS 2003-18.

Differences and Deviations Justification Matrix Example

RG2: INITIATING CONDITIONS	
NEI 99-01 Rev 7	Susquehanna
AG2 ECL: General Emergency Initiating Condition: Spent fuel pool level cannot be restored to at least (site-specific Level 3 description) for 60 minutes or longer. Operating Mode Applicability: All	RG2 Category: R Abnormal Rad Levels / Rad Effluent Category: R Abnormal Rad Levels / Rad Effluent ECL: General Emergency Subcategory: 2 Irradiated Fuel Event Initiating Condition: Spent fuel pool level cannot be restored to at least 0.5 feet above the top of the spent fuel racks for 60 minutes or longer Operating Mode Applicability: All
Note: The Shift Manager/Emergency Director should declare the General Emergency promptly upon determining that 60 minutes has been exceeded or will likely be exceeded.	Note: 4 ÷ The ED/RM should declare the event General Emergency promptly upon determining that time limit 60 minutes has been exceeded, or will likely be exceeded.
Difference / Deviation Justification	
Difference – inserted Susquehanna site-specific value for spent fuel pool level. Difference – (Note) Inserted Susquehanna site-specific position title and formatting. Difference – Changes made to align with NEI 99-01 rev 7 wording and formatting	

Differences and Deviations Justification Matrix Example (cont.)

RG2: THRESHOLDS	
NEI 99-01 Rev 7	Susquehanna
Example Emergency Action Level: (1) Spent fuel pool level cannot be restored to at least (site-specific Level 3 value) for 60 minutes or longer.	EAL Emergency Action Level: RG2.1 General Emergency Spent fuel pool level CANNOT BE RESTORED to at least 0.5 ft. above the top of the spent fuel racks for $\geq$ 60 minutes or longer. (Note-1)
Difference / Deviation Justification	
Difference – Threshold (1), included Susquehanna site-specific formatting and EAL numbering scheme. Difference – Threshold (1), included Susquehanna site-specific value for spent fuel pool level. Difference – Changes made to align with NEI 99-01 Rev 7 wording and formatting.	

Differences and Deviations Justification Matrix Example (cont.)

RG2 – BASIS and References														
Susquehanna Revised Section Basis		Justification of Changes												
Definition(s): <i>CAN/CANNOT BE RESTORED ABOVE/BELOW</i> – The value of an identified parameter is/is not able to be brought within the specified limit. The determination requires an evaluation of system performance and availability in relation to parameter values and trends. An instruction prescribing action when a value CANNOT BE RESTORED AND MAINTAINED above or below a specified limit does not require immediate action simply because the current values is outside the <u>range, but</u> does not permit extended operation beyond the limit; the action must be taken as soon as it is apparent that the specified range cannot be attained. Basis: This IC addresses a significant loss of spent fuel pool inventory control and makeup capability leading to a prolonged <u>uncovery</u> of spent fuel. This condition will lead to fuel damage and a radiological release to the environment. Each fuel storage pool is designed to maintain the water level in the pool above the top of active fuel providing cooling for the fuel rods. Technical Specifications require greater than or equal to 22 ft. of water be maintained over the top of irradiated fuel assemblies <u>seated in the spent fuel storage racks at all times</u> (ref. 1). In the event of loss of fuel pool inventory, Operations will assess multiple indications in accordance with ON-FPC-101(201) and AOP-081-001 (ref. 3, 4). Post-Fukushima order EA-12-051 required the installation of reliable SFP level indication capable of identifying normal SFP level 22.75 feet above the top of the fuel racks (Level 1 or el. 817'-1"), SFP level 10 ft. above the top of the fuel racks (Level 2 or el. 804'-4") and SFP level at the top of the fuel racks (Level 3 or el. 794'-10" which for SSES is 0.5 feet on instrument above the top of the fuel racks).		Applicable definitions have been included for operator aid, no change of intent. Site specific information included and consistent with the previous revision of the EALs (NEI 99-01 Rev 6) and was approved by the NRC via SER dated March 28, 2016 (ML16062A216).												
	<table><tr><th></th><th>Level above top of fuel racks</th><th>Plant Elevation</th></tr><tr><td>Level 1</td><td>22.75'</td><td>817'-1"</td></tr><tr><td>Level 2</td><td>10'</td><td>804' – 4"</td></tr><tr><td>Level 3</td><td>0.5'</td><td>794'-10"</td></tr></table>		Level above top of fuel racks	Plant Elevation	Level 1	22.75'	817'-1"	Level 2	10'	804' – 4"	Level 3	0.5'	794'-10"	
	Level above top of fuel racks	Plant Elevation												
Level 1	22.75'	817'-1"												
Level 2	10'	804' – 4"												
Level 3	0.5'	794'-10"												

Differences and Deviations Justification Matrix Example (cont.)

RG2 – BASIS and References (continued)	
Susquehanna Revised Section Basis	Justification of Changes
Each spent fuel pool is equipped with a guided wave radar probe to measure wide range spent fuel pool level. Since the spent fuel pools are normally interconnected, each unit's SFP level indication provides backup to the other unit's SFP level indication. The range is continuous from the high pool level elevation (23.25 feet on instrument or el. 817'-7") to the top of the spent fuel racks (0.0 feet on instrument or el. 794'-4") (ref. 2). Each new SFP level indication (LI) system provides two alarms to the associated Unit's Control Room Benchboard. The first alarm identifies a low water level condition at 20 ft. (instrument) above the spent fuel rack (elevation 814'-4"). The second alarm identifies a low <u>low</u> water level condition at 10 ft. (instrument) above the spent fuel rack (Level 2 or elevation 804'-4"). These alarms are intended to alert the control room operators of the loss of SFP <u>inventory</u> so actions are taken to provide make-up as soon as possible (ref. 2). It is recognized that this IC would likely not be met until well after another General Emergency IC was met (e.g., RG1, FG1, SG1, or SG6); however, it is included to provide classification diversity Basis Reference(s): 1. Technical Specifications 3.7.7 Spent Fuel Storage Pool Water Level 2. PLA-7321 Completion of Actions Required by NRC Order EA-12-051, Reliable Spent Fuel Pool Instrumentation 3. ON-FPC-101(201) Loss of Fuel Pool Cooling 4. AOP-081-001 Fuel Handling Abnormal Operating Procedure 5. NEI 99-01 Rev 7 AG2	Site specific information included and consistent with the previous revision of the EALs (NEI 99-01 Rev 6) and was approved by the NRC via SER dated March 28, 2016 (ML16062A216). Administrative Change. Defined acronym. No change of intent Administrative Change. Inserted site specific EAL designator. No change of intent. Administrative change. Update revision to align with NEI 99-01 Rev 7.

Deviations

There are 3 proposed EALs, (RG1, RS1 and RA1) which meet the criteria of “Deviation” in the proposed submittal. In all three cases, the deviation is the elimination of the Thyroid Committed Dose Equivalent (CDE) limit for the respective EALs. This deviation is driven by the revised Dose to Curie conversion factors in EPA 400, “PAG Manual: Protective Action Guides and Planning Guidance for Radiological Accidents,” dated January 2017, for the various Iodine isotopes.

Schedule for Submittal

- Submittal
 - Anticipated submittal is November 2026.
- NRC Review
 - Consistent with the NRC's graded estimate method, the proposed changes align with the NRC-endorsed methodology in NEI 99-01 Revision 7; therefore, the submittal is expected to support an efficient, typical NRC review.
- Implementation
 - Susquehanna will implement these changes within 12 months of issuance of the Safety Evaluation.

Discussion / Questions