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Optimization for Nonsafety-Related ITAAC

June 13, 2019



Southern Nuclear



Georgia Power

Background Information

- As a result of experience associated with construction of Vogtle Units 3&4, NRC issued SECY-19-0034 which refines the general principles for Tier 1 content to focus on safety significance
- SECY-19-0034 states the Staff is taking steps to improve Tier 1 content so that NRC approval is not required for design changes of minimal safety significance
 - Fundamentally, the Staff's new approach promotes safety by focusing licensee and Staff attention on those matters most important to safety
 - Also, resources will not be diverted to regulatory approvals for changes of minimal safety significance
 - Avoiding such inefficiencies is particularly important during the last year of facility construction when substantial resources will be devoted to closure of a large number of ITAAC



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Background Information (cont.)

- SECY-19-0034 indicates that the general principles for Tier 1 content in NUREG-0800 (SRP) Section 14.3 do not adequately emphasize the importance of avoiding unnecessary detail in Tier 1
- Tier 1 should include the top-level design features and performance characteristics that are the most significant to safety
- To address this, the Staff is refining two general principles for Tier 1 content:
 1. Tier 1 should typically be described at a qualitative and functional level of detail; and,
 2. Tier 1 should not include detail that could necessitate NRC approval for departures from the certified design that have minimal safety significance
- SECY-19-0034 indicates that the Staff will entertain proposals to apply the new approach on either a wide-ranging or more limited basis
 - Such proposals may come in the form of a plant-specific departure from Tier 1



Proposed Change

- SNC is evaluating a potential LAR and Exemption Request to reduce ITAAC with minimal safety significance in accordance with guidance in SECY-19-0034
 - Preliminary scoping has identified approximately 65 nonsafety-related ITAAC as potential candidates for elimination based on safety significance
- 10 CFR 52.63(b)(1) requires a COL holder referencing a standard design certification to obtain an exemption to depart from the certification information
 - An exemption may be granted only if the exemption will comply with the requirements of §50.12 (as required by §52.7)
- Considering the requirements of §50.12, the requested exemption would be authorized by law, will not present an undue risk to the public health and safety, and are consistent with the common defense and security
- Special circumstances are present consistent with §50.12(a)(2)(iii)



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Proposed Change (cont.)

- Tier 1 will continue to include the most safety-significant information
- Tier 2 contains detailed design and/or testing requirements for the nonsafety significant ITAAC functions
 - Any change to nonsafety-significant functions will continue to be screened under 10 CFR 52 App D Section VIII to determine if prior NRC approval is required.
 - Changes to UFSAR Chapter 14 test requirements require notification to the NRC
- This maintains reasonable assurance that the facility has been constructed and will be operated in conformity with the combined license, the provisions of the Atomic Energy Act, and applicable regulations, commensurate with the safety-significance of the SSC function as described in SECY-19-0034
- ITAAC are reviewed against screening criteria to determine if it is a candidate for inclusion in the LAR
 - Is ITAAC directly derived from regulation? If yes, screens out of LAR
 - What is the AP1000 Equipment Classification of the SSC? Focus on ITAAC SSCs Equipment Class D and lower



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Proposed Change (cont.)

Regulatory Requirements

- ITAAC are reviewed to determine if they are directly derived from regulatory requirements
- Includes review of system design basis documentation for applicable regulations
- Review of regulation is to determine if the Acceptance Criteria of the ITAAC is needed to satisfy a specific requirement (e.g. numerical value) described in a regulation



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Proposed Change (cont.)

AP1000 Nonsafety Equipment Class Descriptions (UFSAR Subsection 3.2.2)

- **Equipment Class D SSCs**
 - Class D is nonsafety-related with some additional requirements on procurement, inspection or monitoring
 - 10CFR50 Appendix B and 10CFR21 apply to Class D SSCs that are SC-I
 - Pertinent portions of 10CFR50 Appendix B apply to Class D SSCs that are SC-II
 - SSCs are Class D when it directly acts to prevent unnecessary actuation of passive safety systems
 - Defense-in-depth
 - Some Class D SSCs are considered risk significant as defined by DRAP
- **Equipment Class E and lower SSCs**
 - Class E and lower are nonsafety-related; no safety-related function to perform
 - No quality assurance requirements
 - 10CFR50 Appendix B and 10CFR21 do not apply
 - No other regulatory guidance requiring SSC inclusion in Equipment Class D or higher



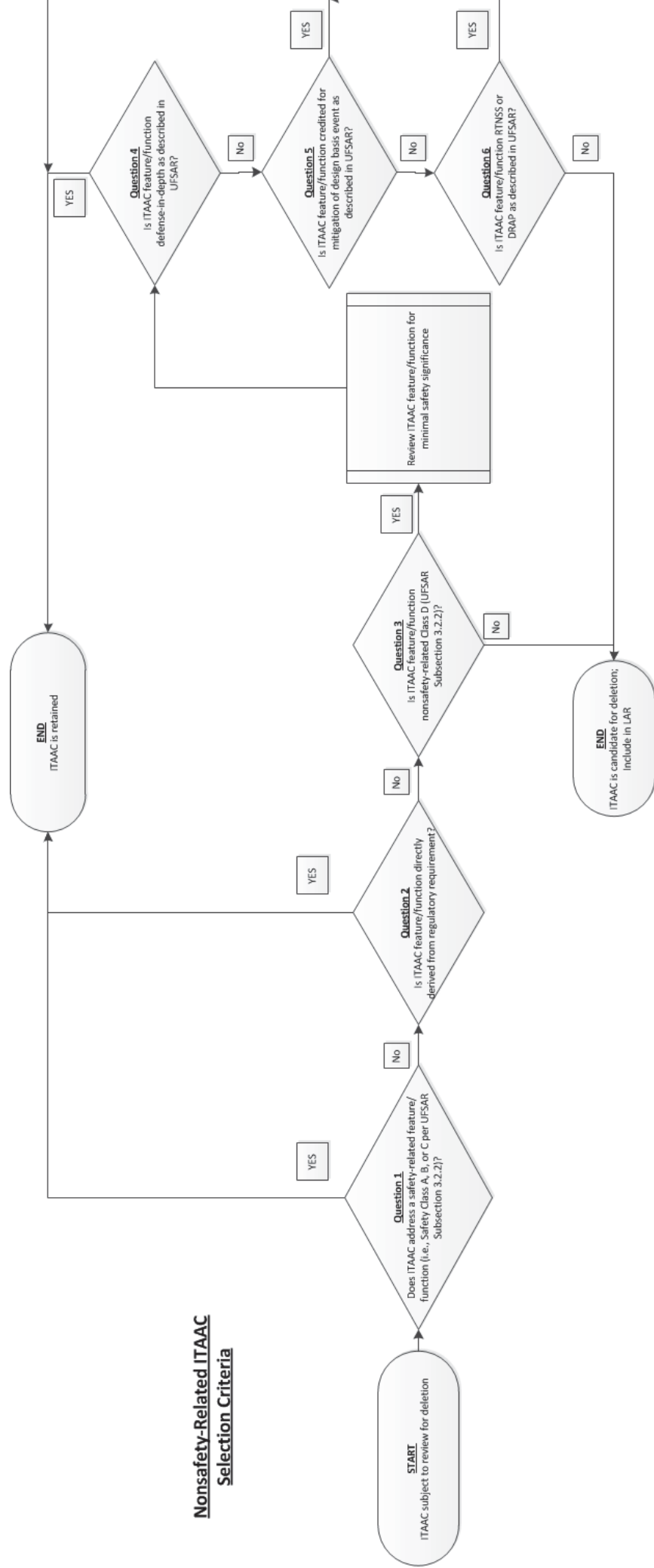
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Proposed Change (cont.)

Nonsafety-Related ITAAC Selection Criteria



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Example 1 - Security ITAAC

- Security ITAAC 860 inspects the illumination in the isolation zones and external areas of the Protected Area
- Security System is Equipment Class E
- Acceptance Criteria for ITAAC 860 states:
 - The illumination in isolation zones and exterior areas within the protected area is **0.2 foot candles** measured horizontally at ground level or, alternatively, sufficient to permit observation.
- ITAAC requirements are directly derived from 10 CFR 73.55:
 - The licensee shall provide a minimum illumination level of **0.2 foot-candles**, measured horizontally at ground level, in the isolation zones and appropriate exterior areas within the protected area.
- ITAAC 860 screens out of scope of the LAR because Acceptance Criteria is directly derived from regulation
 - Specific numerical value of 0.2 foot candles



Proposed Change (cont.) **Example 2 – Communication Systems (EFS) ITAAC**

2.3.19 Communication System

Design Description

The communication system (EFS) provides intraplant communications during normal, maintenance, transient, fire, and accident conditions, including loss of offsite power.

1. a) The EFS has handsets, amplifiers, loudspeakers, and siren tone generators connected as a telephone/page system.



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Proposed Change (cont.)

Example 2 (cont.) – Communication Systems (EFS) ITAAC:

| System | NRC Index # | ITAAC # | Design Commitment | Inspections, Tests, or Analyses (ITA) | Acceptance Criteria |
|--------|-------------|------------|--|--|--|
| EFS | 486 | 2.3.19.02a | 1.a) The EFS has handsets, amplifiers, loudspeakers, and siren tone generators connected as a telephone/page system. | Inspection of the as-built system will be performed. | The as-built EFS has handsets, amplifiers, loudspeakers, and siren tone generators connected as a telephone/page system. |



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Proposed Change (cont.)

Example 2 (cont.) – Communication Systems (EFS) ITAAC:

- EFS is Equipment Class E (nonsafety-related)
- Review of regulation (10 CFR 73.45) found ITAAC requirements NOT directly derived from regulation
- Regulation has general requirement for communication systems but no specific design detail the ITAAC would directly satisfy
- ITAAC is not defense-in-depth, credited for mitigation of a design basis event or RTNSS/DRAP component
- **ITAAC 486 screens into the scope of the LAR**

| LAR Screening Criteria Assessment | |
|---|--------|
| Question | Answer |
| 1 - Is ITAAC feature/function safety-related (i.e., Safety Class A, B, or C)? | No |
| 2 - Is ITAAC feature/function directly derived from regulatory requirement? | No |
| 3 - Is ITAAC feature/function nonsafety-related Class D? | No |
| 4 - Is ITAAC feature/function defense-in-depth? | N/A |
| 5 - Is ITAAC feature/function credited for mitigation of design basis event? | N/A |
| 6 - Is ITAAC feature/function RTNSS or DRAP? | N/A |



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Proposed Change (cont.)

Example 2 (cont.) – Communication Systems (EFS) ITAAC:

- **Technical Justification Aspects Include:**
 - As described in UFSAR Subsection 9.5.2, EFS serves no safety-related function and therefore has no nuclear safety design basis
 - As described in UFSAR Subsection 9.5.2.4, EFS comprises conventional types of communication systems which have a history of reliable operation
 - Most of these systems are in routine use, and this routine use will demonstrate their availability
 - Those systems not frequently used, but required during emergency situations, are tested at periodic intervals to demonstrate operability when required
 - As described in UFSAR Subsection 9.5.2.5.1, Interfaces to required offsite locations and emergency offsite communications is addressed in the Emergency Plan
 - System is tested as part of ITP per UFSAR Subsection 14.2.9.4.13



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Proposed Change (cont.) Example 3 – Gaseous Radwaste System (WGS) ITAAC:

2.3.11 Gaseous Radwaste System

Design Description

The gaseous radwaste system (WGS) receives, processes, and discharges the radioactive waste gases received within acceptable off-site release limits during normal modes of plant operation including power generation, shutdown and refueling.

The WGS is as shown in Figure 2.3.11-1 and the component locations of the WGS are as shown in Table 2.3.11-3.

1. The functional arrangement of the WGS is as described in the Design Description of this Section 2.3.11.
2. The equipment identified in Table 2.3.11-1 can withstand the appropriate seismic design basis loads without loss of its structural integrity function.
3. The WGS provides the nonsafety-related functions of:
 - a. Processing radioactive gases prior to discharge.
 - b. Controlling the releases of radioactive materials in gaseous effluents.
 - c. The WGS is purged with nitrogen on indication of high oxygen levels in the system.



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Proposed Change (cont.)

Example 3 (cont.) – Gaseous Radwaste System (WGS) ITAAC:

| System | NRC Index # | ITAAC # | Design Commitment | ITA | Acceptance Criteria |
|--------|-------------|------------|---|---|--|
| WGS | 454 | 2.3.11.03b | 3.b) The WGS provides the nonsafety-related function of controlling the releases of radioactive materials in gaseous effluents. | Tests will be performed to confirm that the presence of a simulated high radiation signal from the discharge radiation monitor, WGS-017, causes the discharge control isolation valve WGS-PL-V051 to close. | A simulated high radiation signal causes the discharge control isolation valve WGS-PL-V051 to close. |



Proposed Change (cont.)

- **Example 3 (cont.) – Gaseous Radwaste System (WGS) ITAAC:**
- WGS V051 is Equipment Class D (nonsafety-related)
- ITAAC is not directly derived from regulatory requirements
 - Reviewed against 10 CFR 20.1406
 - No direct requirements for the V051 function, description of the component or numerical values
- WGS V051 is not a defense-in-depth component, not credited for mitigation of design basis event, and is not a RTNSS/DRAP component
- **WGS ITAAC 454 screens in to the scope of the LAR**

| LAR Screening Criteria Assessment | |
|---|--------|
| Question | Answer |
| 1 - Is ITAAC feature/function safety-related (i.e., Safety Class A, B, or C)? | No |
| 2 - Is ITAAC feature/function directly derived from regulatory requirement? | No |
| 3 - Is ITAAC feature/function nonsafety-related Class D? | Yes |
| 4 - Is ITAAC feature/function defense-in-depth? | No |
| 5 - Is ITAAC feature/function credited for mitigation of design basis event? | No |
| 6 - Is ITAAC feature/function RTNSS or DRAP? | No |



Proposed Change (cont.) **Example 3 (cont.) – Gaseous Radwaste System (WGS) ITAAC:**

- **Technical Justification Aspects Include:**
 - As described in UFSAR Subsection 11.3.1.1, WGS serves no safety-related function and therefore has no nuclear safety design basis
 - WGS is not a safety significant system
 - Per UFSAR Section 11.3.4.1, the preoperational tests include automatic closure of the discharge control/isolation valve, WGS-PL-V051, upon receipt of a simulated high radiation signal
 - WGS V051 is tested as part of the ITP as described in UFSAR Subsection 14.2.9.3.2



Schedule

- Next Steps:
 - July 11—Draft LAR to NRC
 - July 25—Pre-submittal meeting
 - July 31—Submit LAR



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Questions?



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