U.S.NRC

UNITED STATES NUCLEAR REGULATORY COMMISSION

Protecting People and the Environment

ITAAC Closure Letter Guidance Development Workshop 2

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Workshop Objectives

- Discuss draft project plan to issue draft Regulatory Guidance on ITAAC closure by December 2008
- Discuss potential Table of Contents for the guidance document
- Discuss the new 10 CFR 52.99 Rule
- Discuss former 2 ITAAC examples, as well as 6 new examples

Draft Guidance Development Schedule

• Public Meeting (Cat. 3) (Determine deliverable, dates, and table of contents)	October 18, 2007
• Public Meeting (Cat. 3) (Define sufficient information)	Early December 2007
• Public Meeting (Cat. 3) (ITAAC close-out letter templates)	Mid February
• Receive 1st draft from NEI	Early March 2008
• Provide NEI with NRC Comments	Late April 2008
• Receive 2nd draft from NEI	Early June 2008
• Public Meeting (Cat. 3)	September 2008
• Issue Final Draft for Public Comment	Mid February 2009
• Hold Public Meeting early in comment period	Early March 2009
• End of 60 day comment period	Mid April 2009
• Issue Final Guidance	End of August 2009

New Rule Language 52.99

- (c)(1) The licensee shall notify the NRC that the prescribed inspections, tests, and analyses have been performed and that the prescribed acceptance criteria have been met. The notification must contain sufficient information to demonstrate that the prescribed inspections, tests, and analyses have been performed and that the prescribed acceptance criteria have been met.

Key Points of 52.99 Statements of Consideration

- It is the licensee's burden to demonstrate compliance with ITAAC
- The NRC expects the notification to be sufficiently complete and detailed for a reasonable person to understand the licensee's bases for the ITAAC closure notification

Key Points of 52.99 Statements of Consideration (cont'd)

- The term "sufficient information" requires, at a minimum, a summary of the description of the bases for the licensee's conclusion that the inspections, tests, or analyses have been performed and that the prescribed acceptance criteria have been met

Key Points of 52.99 Comment Summary Report

- Information disclosure requirements of 52.99(c) based on:
  - Need to provide information to support a timely NRC staff recommendation and Commission finding on an ITAAC
  - Need to provide access to information about the licensee's supporting documentation or bases because the Section 189.a(1)(B) hearing opportunity would be illusory without it if potential interveners had to rely on extrinsic evidence such as a disgruntled employee, ex-contractor, or NRC staff inspection report
  - Need to avoid inappropriately focusing the 52.103(a) hearing on NRC staff's inspection reports and relevant NRC documentation if no licensee documentation were available to the public

Follow-up on the August 31st ITAAC Closure Letter Workshop Examples

- Examples included two ITAAC from AP1000
  - ITAAC 2.3.4 (4) FPS
  - ITAAC 2.3.6 (2b) ASME III Piping
- Both a simple ITAAC and a moderately intricate ITAAC were chosen

AP1000 ITAAC 2.3.4 (4) FPS

Design Commitment

The FPS provides for manual fire fighting capability in plant areas containing safety-related equipment.

Inspections, Tests, Analyses

i) Inspection of the passive containment cooling system (PCS) storage tank will be performed.

ii) Testing will be performed by measuring the water flow rate as it is simultaneously discharged from the two highest fire-hose stations and when the water for the fire is supplied from the PCS storage tank.

Acceptance Criteria

i) The volume of the PCS tank above the standpipe feeding the FPS and below the overflow is at least 18,000 gal.

ii) Water is simultaneously discharged from each of the two highest fire-hose stations and not less than 75 gpm.

AP1000 ITAAC 2.3.6 (2b)
ASME III Piping

Design Commitment

The piping identified in Table 2.3.6-2 as ASME Code Section III is designed and constructed in accordance with ASME Code Section III requirements.

Inspections, Tests, Analyses

Inspection will be conducted of the as-built piping as documented in the ASME design reports.

Acceptance Criteria

The ASME Code Section III design reports exist for the as-built piping identified in Table 2.3.6-2 as ASME Code Section III.

Additional AP1000 ITAAC Examples

Examples include six ITAAC of varying complexity:

- 2.1.1.-1, #4 (FHM gripper)
- 2.1.2-4, #3.b (Pressure boundary welds)
- 2.5.2-8, #10 (Loop accuracy)
- 3.3-6, #7.d (Cable separation)
- 3.3-6, #2.a.i (Seismic Cat1 buildings)
- 3.7-3, #1 (D-RAP risk design assumption)

2.1.1.-1, #4 (Simple, FHM gripper)

Design Commitment

The “Refueling Machine” (RM) and “Fuel Handling and Refueling System” (FHM) gripper assemblies are designed to prevent opening while the weight of the fuel assembly is suspended from the gripper.

Inspections, Tests, and Analyses

The RM and FHM will be tested by operating the open controls of the gripper while suspending a dummy fuel assembly.

Acceptance Criteria

The gripper will not open while suspending a dummy test assembly.

2.1.2-4, #3.b (Semi-complex, Pressure Boundary Welds)

45 pipe lines require non-destructive testing for pressure boundary welds, which involves visual, surface (e.g., magnetic particle), or volumetric (e.g., radiography) exams as specified by the ASME code and weld type.

Design Commitment

Pressure boundary welds in piping identified in Table 2.1.2-2 as ASME Code Section III meet ASME Code Section III requirements.

Inspections, Tests, and Analyses

Inspection of the as-built pressure boundary welds will be performed in accordance with the ASME Code Section III.

Acceptance Criteria

A report exists and concludes that the ASME Code Section III requirements are met for non-destructive examination of pressure boundary welds.

2.5.2-8, #10 (Semi-complex, Protection and Safety Monitoring System)

The protection and safety monitoring system (PMS) initiates reactor trip and actuation of engineered safety features in response to plant conditions monitored by process instrumentation and provides safety-related displays.

- Design Commitment
- Setpoints are determined using a methodology which accounts for loop inaccuracies, response testing, and maintenance or replacement of instrumentation.
- Inspections, Tests, and Analyses
- Inspection will be performed for a document that describes the methodology and input parameters used to determine the PMS setpoints.
- Acceptance Criteria
- A report exists and concludes that the PMS setpoints are determined using a methodology which accounts for loop inaccuracies, response testing, and maintenance or replacement of instrumentation.

3.3-6, #7.d (Complex, Cable Separation)

Design Commitment

Physical Separation is maintained between Class 1E divisions and between Class 1E divisions and non-Class 1E cables.

Inspections, Tests, and Analyses

Inspections of the as-built Class 1E raceways will be performed to confirm that the separation between Class 1E raceways of different divisions and between Class 1E raceways and non-Class 1E raceways is consistent with the following:

- Within the main control room and remote shutdown room, the minimum vertical separation is 3 inches and the minimum horizontal separation is 1 inch.
- Within other plant areas (limited hazard areas), the minimum separation is defined by one of the following:

1. The minimum vertical separation is 5 feet and the minimum horizontal separation is 3 feet.
2. The minimum vertical separation is 12 inches and the minimum horizontal separation is 6 inches for raceways containing only instrumentation and control and low-voltage power cables <2/0 AWG.
3. For configurations that involve exclusively limited energy content cables (instrumentation and control), the minimum vertical separation is 3 inches and the minimum horizontal separation is 1 inch.
4. For configurations involving an enclosed raceway and an open raceway, the minimum vertical separation is 1 inch if the enclosed raceway is below the open raceway.
5. For configuration involving enclosed raceways, the minimum separation is 1 inch in both horizontal and vertical directions.

- Where minimum separation distances are not maintained, the circuits are run in enclosed raceways or barriers are provided.
- Separation distances less than those specified above and not run in enclosed raceways or provided with barriers are based on analysis.

Non-Class 1E wiring that is not separated from Class 1E or associated wiring by the minimum separation distance or by a barrier or analyzed is considered as associated circuits and subject to Class 1E requirements.

3.3-6, #7.d cont'd (Complex, Cable Separation)

Acceptance Criteria

Results of the inspection will confirm that the separation between Class 1E raceways of different divisions and between Class 1E raceways and non-Class 1E raceways is consistent with the followings:

- Within the main control room and remote shutdown room, the vertical separation is 3 inches or more and the horizontal separation is 1 inch or more.
- Within other plant areas (limited hazard areas), the separation meets one of the following:

1. The vertical separation is 5 feet or more and the horizontal separation is 3 feet or more except.
2. The minimum vertical separation is 12 inches and the minimum horizontal separation is 6 inches for raceways containing only instrumentation and control and low-voltage power cables <2/0 AWG.
3. For configurations that involve exclusively limited energy content cables (instrumentation and control), the minimum vertical separation is 3 inches and the minimum horizontal separation is 1 inch.
4. For configurations that involve an enclosed raceway and an open raceway, the minimum vertical separation is 1 inch if the enclosed raceway is below the open raceway.
5. For configurations that involve enclosed raceways, the minimum vertical and horizontal separation is 1 inch.

- Where minimum separation distances are not met, the circuits are run in enclosed raceways or barriers are provided.
- A report exists and concludes that separation distances less than those specified above and not provided with enclosed raceways or barriers have been analyzed.
- Non-Class 1E wiring that is not separated from Class 1E or associated wiring by the minimum separation distance or by a barrier or analyzed is treated as Class 1E wiring.

3.3-6, #2.a.i (Complex, Seismic Cat 1)

Seismic Category 1 structures house safety-related systems, and are designed and built to withstand the highest seismic event for the site.

Design Commitment

The nuclear island structures, including the critical sections listed in Table 3.3-7, are seismic Category I and are designed and constructed to withstand design basis loads as specified in the Design Description, without loss of structural integrity and the safety-related functions.

Inspections, Tests, and Analyses

An inspection of the nuclear island will be performed. Deviations from the design due to as-built conditions will be analyzed for the design basis loads.

Acceptance Criteria

A report exists which reconciles deviations during construction and concludes that the as-built nuclear island structures, including the critical sections, conform to the approved design and will withstand the design basis loads specified in the Design Description without loss of structural integrity or the safety-related functions.

3.7-3, #1 (Complex, D-RAP)

Design-Reliability Assurance Program provides reasonable assurance that 66 risk-significant components are designed to operate as required.

Design Commitment

The D-RAP provides reasonable assurance that the design of risk-significant SSCs is consistent with their risk analysis assumptions.

Inspections, Tests, and Analyses

Inspections will be performed for the existence of a report which establishes the estimated reliability of as-built risk-significant SSCs.

Acceptance Criteria

A report exists and concludes that the estimated reliability of each as-built component identified in Table 3.7-1 is at least equal to the assumed reliability and that industry experience including operations, maintenance, and monitoring activities were assessed in estimating the reliability of these SSCs.

Focus Area for Next Workshop: Uncompleted ITAAC - 52.99(c)(2)

- Per 52.99(c)(2), licensee shall submit notification that acceptance criteria will be met for uncompleted ITAAC 225 days before fuel load
- Key point from the public comment resolution:
  - The NRC expects that information intended to address whether an inspection, test, or analysis will occur and acceptance criteria will be met, will be different as compared with information showing that such an ITAAC has been met (possibly different in the kind of information as well as level of detail).

New Rule Language 52.99

- (c)(2) If the licensee has not provided, by the date 225 days before the scheduled date for initial loading of fuel, the notification required by paragraph (c)(1) of this section for all ITAAC, then the licensee shall notify the NRC that the prescribed inspections, tests, or analyses for all uncompleted ITAAC will be performed and that the prescribed acceptance criteria will be met prior to operation. The notification must be provided no later than the date 225 days before the scheduled date for initial loading of fuel, and must provide sufficient information to demonstrate that the prescribed inspections, tests, or analyses will be performed and the prescribed acceptance criteria for the uncompleted ITAAC will be met, including, but not limited to, a description of the specific procedures and analytical methods to be used for performing the prescribed inspections, tests, and analyses and determining that the prescribed acceptance criteria have been met.

Key Points of 52.99 Statements of Consideration (cont'd)

- For notifications on ITAAC that "will be met" [52.99(c)(2)], "sufficient information" includes, but is not limited to, a description of the specific procedures and analytical methods to be used for performing the inspections, tests, and analyses and determining that the acceptance criteria have been met.

Conclusions, Recommendations, and Comments

- Guidance document milestones and dates
- TOC agreement for guidance document
- Schedule next workshop for December 2007
- NRC would appreciate detailed feedback on the workshop format