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UNITED STATES NUCLEAR REGULATORY COMMISSION

Protecting People and the Environment

ITAAC Closure Guidance Development Workshop 5

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Workshop Objectives

- Review resubmitted AP1000 ITAAC closure letter examples and uncomplete ITAAC notification letter examples

- Introduce ABWR and ESBWR ITAAC closure letter examples and uncomplete ITAAC notification letter examples

- Introduce draft 52.103(g) process flowchart

Workshop Series Accomplishments

- Success path identified to review and approve industry guidance for 52.99 in a draft regulatory guide by the end of 2008
- Reviewed multiple 52.99(c)(1) and (c)(2) notifications with a focus on “sufficient information”; the selection of these ITAAC was based on providing a diverse sample to provide the basis for the industry guidance document
- Discussed how to preserve the satisfaction of the acceptance criteria for completed ITAAC until the 52.103(g) finding

Workshop Examples

- 225-day Uncomplete ITAAC Notification template
- AP1000 Examples
  - 2.5.2-8, #10 Set-points/Loop Accuracy (225-day uncomplete notification revision)
  - 3.3-6, #2(a)(i) and (ii) Seismic Category 1 Structures (Closure letter revision)
  - 3.3-6, #7.d 225-day Uncomplete ITAAC Notification Cable Separation (225-day uncomplete notification revision)
  - 3.7-3, #1 D-RAP Risk Design Assumption (Closure letter revision)
- ESBWR Examples
  - 2.1.2-3, #8 Nuclear Boiler System
  - 2.4.2-3, #12 GDCS Squib Valves

ESBWR
2.1.2-3, #8 Nuclear Boiler System

Design Commitment

Instrumentation and Control

a) Control Room alarms, displays, and/or controls provided for the NBS System are defined in Table 2.1.2-2.

b) The MSIVs close upon any of the following conditions:

- Main Condenser Vacuum Low (Run mode)
- Turbine Area Ambient Temperature High
- MSL Tunnel Ambient Temperature High
- MSL Flow Rate High
- Turbine Inlet Pressure Low
- Reactor Water Level Low

Inspections, Tests, Analyses

a) Inspections will be performed on the as-built Control Room alarms, displays, and/or controls for the NBS System.

b) Valve closure tests will be performed on the as-built MSIVs using simulated signals.

Acceptance Criteria

a) Report(s) document that alarms, displays, and/or controls exist or can be retrieved in the Control Room as defined in Table 2.1.2-2.

b) Report(s) document that the MSIVs close upon generation of any of the following simulated signals:

- Main Condenser Vacuum Low (Run mode)
- Turbine Area Ambient Temperature High
- MSL Tunnel Ambient Temperature High
- MSL Flow Rate High
- Turbine Inlet Pressure Low
- Reactor Water Level Low

ESBWR
2.4.2-3, #12 GDCS Squib Valves

Design Commitment

Gravity-Driven Cooling System (GDCS) squib valves maintain RPV backflow leak tightness and maintain reactor coolant pressure boundary integrity during normal plant operation.

Inspections, Tests, Analyses

A test will be performed to demonstrate the squib valves are leak tight during normal plant conditions.

Acceptance Criteria

Testing concludes GDCS squib valves have zero leakage at normal plant operation pressure.

Workshop Examples

- ABWR Examples

– 2.1.1d, #7	Prototype Vibration Testing
– 2.1.2, #1	Nuclear Boiler System Basic Configuration
– 2.3.3, #3	CAMS Power Divisions
– 2.4.4, #1	RCIC Basic Configuration
– 2.15.12, #5	Control Building
– 3.1, #1	HFE Program Analysis
– 3.3, #1	ASME Piping Design Criteria

ABWR
2.1.1d, #7 Prototype Vibration Testing

<u>Design Commitment</u>

The basic configuration of the RPV System is as defined as Section 2.1.1.

<u>Inspections, Tests, Analyses</u>

Inspections of the as-built RPV System will be conducted.

<u>Acceptance Criteria</u>

The RPV System conforms with the basic configuration defined in Section 2.1.1.

ABWR
2.1.2, #1 Nuclear Boiler System
Basic Configuration

<u>Design Commitment</u>

The basic configuration of the NBS is shown in Figures 2.1.2a, 2.1.2b, 2.1.2c, 2.1.2d, 2.1.2e, and 2.1.2f.

<u>Inspections, Tests, Analyses</u>

Inspections will be conducted for the NBS System.

<u>Acceptance Criteria</u>

The as-built NBS conforms with the basic configuration shown in Figures 2.1.2a, 2.1.2b, 2.1.2c, 2.1.2d, 2.1.2e, and 2.1.2f.

ABWR
2.3.3, #3 Containment Atmospheric Monitoring System Power Divisions

Design Commitment

Each CAMS division is powered from its respective divisional Class 1E power source. In the CAMS, independence is provided between Class 1E divisions, and between Class 1E divisions and non-Class 1E equipment.

Inspections, Tests, Analyses

a. Tests will be performed on the CAMS by providing a test signal to only one Class 1E division at a time.

b. Inspection of the as-built Class 1E divisions in the CAMS will be performed.

Acceptance Criteria

a. The test signal exists only in the Class 1E division under test in the CAMS.

b. In the CAMS, physical separation or electrical isolation exists between Class 1E divisions. Physical separation or electrical isolation exists between these Class 1E divisions and non-Class 1E equipment.

ABWR
2.4.4, #1 RCIC Basic Configuration

Design Commitment

The basic configuration of the RCIC System is as shown on Figures 2.4.4a and 2.4.4b.

Inspections, Tests, Analyses

Inspections of the as-built system will be conducted.

Acceptance Criteria

The as-built RCIC System conforms with the basic configuration shown on Figures 2.4.4a and 2.4.4b.

ABWR
2.15.12, #5 Main Control Area Envelope

Design Commitment

The main control area envelope is separated from the rest of the C/B by walls, floors, doors and penetrations which have a three-hour fire rating.

Inspections, Tests, Analyses

Inspections of the as-built structure will be conducted.

Acceptance Criteria

The as-built C/B has a main control area envelope separated from the rest of the C/B by walls, floors, doors and penetrations which have a three-hour fire rating.

ABWR
3.1, #1 Human Factors Engineering Program Analysis

<u>Design Commitment</u>

a. A multi-disciplinary HFE Design Team shall be established and be comprised of personnel with expertise in HFE and in other technical areas relevant to the HSI design, evaluation and operation.

b. An HFE Program Plan shall be developed which establishes that the human-system interfaces shall be developed, designed, and evaluated based upon human factors systems analysis and shall reflect human factors principles. The HSI scope shall apply to the MCR and RSS.

<u>Inspections, Tests, Analyses</u>

a. The composition of the HFE Design Team shall be reviewed.

b. The HFE Program Plan shall be reviewed.

<u>Acceptance Criteria</u>

a. The HFE design team shall be comprised of the following expertise: (1) Technical Project Management, (2) Systems Engineering, (3) Nuclear Engineering…..

b. The HFE Program Plan shall establish: (1) Methods and criteria for the HIS development, design and evaluation in accordance with accepted human factors practices and principles…..

ABWR
3.3, #1 ASME Piping Design Criteria

<u>Design Commitment</u>

The piping system shall be designed to meet its ASME Code Class and Seismic Category I requirements.

The ASME Code Class 1, 2, and 3 piping system shall be designed to retain its pressure integrity and functional capability under internal design and operating pressures and design basis loads. Piping and piping components shall be designed to show compliance with the requirements of ASME Code Section III.

<u>Inspections, Tests, Analyses</u>

Inspections of ASME Code required documents will be conducted.

<u>Acceptance Criteria</u>

An ASME Code Certified Stress Report exists for the piping system and concludes that the design complies with the requirements of ASME Code, Section III.

Draft 52.103(g) Flowchart

- Developed to reflect requirement that all acceptance criteria are met at the time of the 52.103(g) finding
- Incorporates both a timeline and a flowchart
- Lists major process items for presentation simplification
- Provides flow path for every ITAAC
- Includes a convenient description of process blocks

Conclusions and Recommendations

- Workshop Summary
- Public Meeting Schedule:
  - March 6, 2008
  - Recommend early April, 2008
- NRC would appreciate detailed feedback on the workshop format – forms available in the back of the room

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