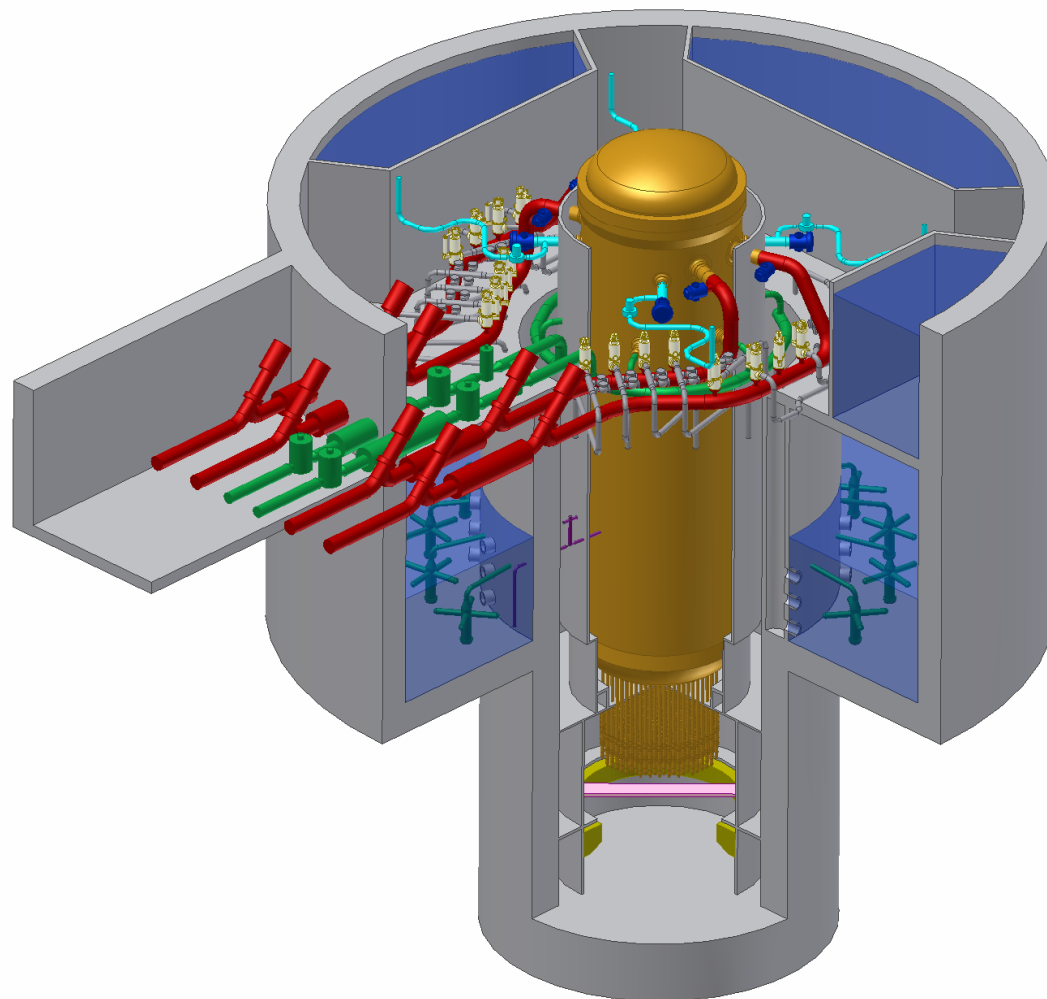


# ESBWR

DCD Tier 1  
Meeting

NRC Meeting  
August 27, 2008

GE Hitachi Nuclear Energy



# Introductions

## Presenters:

- Rick Kingston, VP ESBWR Licensing
- Patricia Campbell, VP Washington Reg. Affairs
- Richard Wachowiak, Tier 1 Engineering Lead
- Steve Kimura, I&C/Software Engineering Lead
- Mike Herron, Sr. Software Engineer
- George Honma, Tier 1 Regulatory Affairs Lead
- Pareez Golub, Chapter 7 Regulatory Affairs Lead

# Opening Remarks

## Background:

- ESBWR Design Control Document, Rev. 5 was submitted by GEH letter MFN 08-487 (June 1, 2008)

## Purpose:

- Discuss Tier 1 ITAAC issues
- Discuss Software and Digital I&C ITAAC issues
- Discuss Tier 1 RAIs

# TIER 1 ITAAC ISSUES

# Tier 1 ITAAC Issues

NRC Comments: Format and inconsistency issues identified in Tier 1. For example:

- Consistent formatting of ITAAC should be used (ref: NRC RIS 2005-05)
- “Functional Arrangement” tables associated with several of the different systems creates some confusion and exhibits inconsistency
- Seismic requirements listed for components is missing a subsection for seismic structure location and there are no seismic ITAAC for piping
- Some system ITAAC (e.g., SSLC/ESF) require controls, interlocks and bypasses to be performed however, the referenced table only lists the controls, interlocks and bypasses, providing no information that would allow the ITA + AC to checked or verified
- ITAAC AC should have words ‘exist and’ added in front of word ‘conclude’
- ITAAC AC should have words ‘exist and conclude’ added to replace word ‘document’
- ITAAC Item 2, Table 2.2.2-7 is missing step for reconciliation of the design with as-built installation for components
- ITAAC Item 2, Table 2.6.2-2 where is the step for verifying components were fabricated, installed and inspected in accordance with ASME Code

# Tier 1 ITAAC Issues

GEH Position: GEH acknowledges some inconsistencies exist within DCD Tier 1 sections. To address these issues, a consistency review will be performed for Tier 1 Sections to identify and correct format and inconsistency issues prior to issuance of DCD Revision 6. GEH response to RAI 14.3-380S02 describes the consistency review. This response will address similar inconsistencies identified in RAIs 14.3-345 and 14.3-399.

# SOFTWARE ISSUES And DIGITAL I&C

# RAI Number 14.3-402

RAI Issue: Provide results summary reports for all safety-related systems with ITAAC invoking DCD Tier 1 Section 3.2.

GEH Position: GEH will include all the Safety-Related Digital I&C systems described in the DCD in the scope of the ESBWR Software Program ITAAC Result Summary Reports.



# Software ITAAC - Proposed RAI

RAI Issue: There are no DAC/ITAAC items explicitly established for creating the specific project plans from the templates contained in the SMPM and SQAPM. Please provide DAC/ITAAC to address this issue.

GEH Position: Based on discussions with the staff, GEH is considering adding separate DAC/ITAAC items for the individual safety related platforms within the ESBWR Digital I&C systems.

# Software ITAAC - Proposed RAI

RAI Issue: The provided DAC/ITAAC does not clearly delineate between design and inspection tasks. Please provide clearer detail as to the task allocation and descriptions for each DAC and/or ITAAC task.

GEH Position: Based on discussions with the staff, GEH will be adding Digital I&C Platform specific DAC and ITAAC to support both design and construction/inspection tasks.

# Summary of Approach to Address Digital I&C RAI Generic Issues

- Revise Tier 1 & Tier 2 text, tables, and figures to provide a consistent listing of Safety-Related Digital I&C systems.
- Add IEEE 603 Section 4 Criteria to Tier 2 and appropriate Criteria to Tier 1.
- Delete Tier 1 Tables 2.2.10 and 2.2.11.
- Ensure all information in Tier 1 is also in Tier 2.
- GEH actions will be informed by the Aug. 28 DAC-ITAAC Closure workshop.

# RAI Number 7.1-99

RAI Issue: Identify the applicability of IEEE 603 requirements to I&C systems in a clear and consistent manner in Tier 2. Address inconsistencies in Tables 7.1-1 and 7.1-2.

GEH Position:

**Part A:** The degree of conformance or method of implementation will be provided via reports for closure of DAC & confirmatory ITAAC, thus no additional changes are required for this RAI.

**Part B:** All IEEE-603 criteria and their applicability to safety-related I&C systems will be addressed.

**Part C, D, E, F, H:** Concur

**Part G:** The listing of GDC was reviewed and was found to be appropriate. The regulatory requirements for ATWS/SLC are for reliability (10 CFR 50.62 states that ATWS/ARI and ATWS/SLC must perform their functions “in a reliable manner” and SRP 7.8 lists GDC 1,13, 19, and 24 for the diverse I&C systems). The ATWS/SLC system is considered safety-related simply because it is located in the RTIF cabinet.

**Part I (?):** Need clarification for last sentence in RAI.

# RAI Number 7.1-100

RAI Issue: Address discrepancies between Tier 1, Tier 2 and Tables 7.1-1, 7.1-2.

GEH Position:     **Parts A, B, C:** Concur –Tier 1 & Tier 2 tables will be made consistent.

**Part D:** Chapter 7 IEEE Std 603 conformance statements will be revised to be consistent, including conformance with IEEE Std 379.

# RAI Number 7.1-101

RAI Issue: Address discrepancies between Tier 1, Tier 2 and Tables 7.1-1, 7.1-2.

GEH Position: **Parts A, B, D, E, F, G, H, I:** Concur.  
**Part C:** Concur. Delete Tier 1 sections 2.7.1– add Main Control Room Panels to S2.2.13. Revise Tier 1 S2.7.3 to delete Local Control Panels since the only SR control panel outside of the MCR is the RS panel and that is already covered. Add a Tier 2 Ch 7.1 section for Local Instrument Racks. Add a column for Local Instrument Racks to Tables 7.1-2 and 2.2.15-1.

# RAI Number 14.3-265S01

RAI Issue: Address all IEEE Std 603  
criteria in Tier 1.

GEH Position: Parts A, B, C: Concur

# RAI Number 14.3-403

RAI Issue: Revise Table 2.2.7-2 to include Anticipatory Reactor Trip

GEH Position: GEH will make Tier 1 and Tier 2 consistent based on a review of the documents.



# RAI Number 14.3-404

RAI Issue: Revise Table 2.2.14 to include diverse design feature (RPS and SSLC/ESF)

GEH Position: GEH will revise Table 2.2.14 to state that DPS uses separate and independent hardware with diverse software from that used by the RPS and SSLC/ESF. (Aligns with Tier 2 Chapter 7.)

# OTHER KEY TIER 1 RAIs

# RAI Number 14.3-397

RAI Issue: Add Neutron Monitoring System component and neutron source locations to Tier 1, Fig 2.1.1-2.

GEH Position: The number and arrangement of the LPRM and SRNM strings are described in Section 2.2.5. The specific neutron source locations are not a critical design parameter within the ESBWR.

# RAI Number 14.3-398

RAI Issue: ITAAC Criteria for FIV Testing. Provide supporting information in Tier 2 DCD.

GEH Position: DCD Tier 2 Section 4.2.3.12 provides supporting information for FIV testing of fuel bundles.

# RAI Number 14.3-399 (also relates to 14.3-204S02)

RAI Issue: For RPV internals (fuel bundles and control rods) functional arrangement, revise acceptance criteria.

GEH Position: See slide above for RAI 14.3-397. GEH will change “will accommodate” to “has”.

# RAI Number 14.3-400

RAI Issue: Clarification needed for SLCS and ICS ITAAC based on previous response to RAI 14.3-354.

GEH Position: The information provided in the columns entitled “Active Safety Function” is either provided in the Table 2.1.2-1 (e.g., valve safety related position) or is not necessary (e.g., there is no inspection performed to specifically verify that the reactor pressure transmitters have an active function). GEH will also look at this in the consistency review.

# RAI Number 14.3-401

RAI Issue: For Isolation Condenser System ITAAC, add reference to Section 3.3.

GEH Position: Table 2.4.1-3 Item 8, will be revised to reflect the standard ITAAC

# RAI Number 14.3-394

RAI Issue: Interface requirements for offsite power.

GEH Position: GEH agrees that GDC 17 requirements for two physical independent circuits of offsite power are required for ESBWR facilities. No other requirements of GDC 17 apply to passive plant because power is not required to respond to anticipated accidents or occurrences. New Tier 1 Section 4.2 will be added to include interface item.