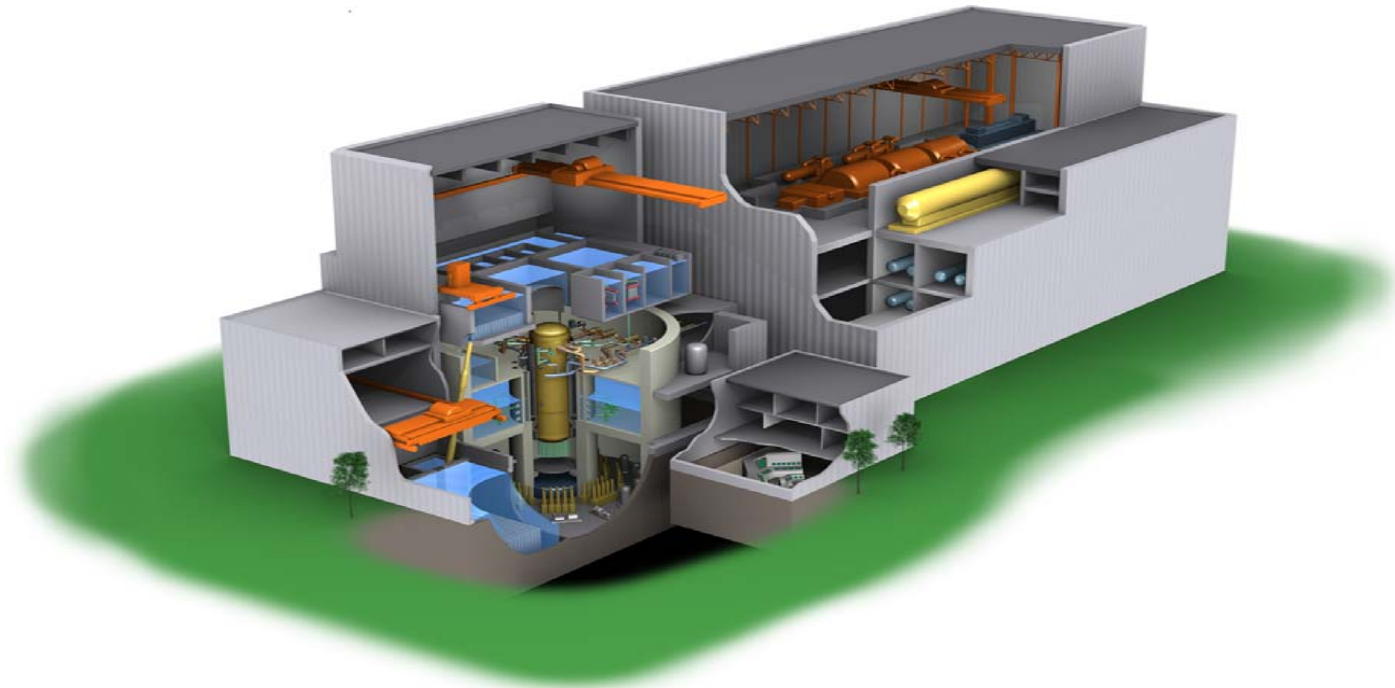


NRC 20TH Annual Regulatory Information Conference (RIC)
Digital Instrumentation and Control Licensing for Power Reactors
March 12, 2008

Perspective of ISGs to the ESBWR



HITACHI

Rich Miller
March 12, 2008

Perspective of ISGs to ESBWR

- **ISGs Associated with Digital Instrumentation & Controls**
 - ISG-01, Cyber Security
 - ISG-02, Diversity and Defense-in-Depth (D3)
 - ISG-03 (Draft), Risk Informed Digital Instrumentation and Controls
 - ISG-04, Highly Integrated Control Rooms (HICR) – Digital Communication Systems
 - ISG-05, Highly Integrated Control Rooms (HICR) – Human Factors
 - ISG-06 (Draft), Licensing Process



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ISGs Associated with Digital Instrumentation & Controls

- **Summary of ISGs**

- Interim Staff Guidance assist Standard Review Plan – for both Regulators and Industry
- New and existing reactors can benefit from increased specificity in guidance
- To the extent that ISGs identify the NRC expectations, the industry may now provide feedback to the NRC where the guidance appears to require additional clarifications



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ISGs Associated with Digital Instrumentation & Controls

- **ISG-01, Cyber Security**

- Applies to ESBWR, no general conflict
- Found good use of R.G. 1.152, NEI-04-04, and BTP 7-14
- Industry looks forward to NRC endorsement of NEI-04-04, Rev. 2
- Future Cyber Security Regulation and Guidance is expected based on the sensitivity of this subject.



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ISGs Associated with Digital Instrumentation & Controls

- **ISG-02, Diversity and Defense-in-Depth (D3)**
 - Applies to ESBWR, no general conflict
 - Issues
 - Issue 1: Adequate Diversity
 - Issue 2: Manual Operator Action
 - Issue 3: BTP 7-19 Position 4 Challenges
 - Issue 4: Effects of Common Cause Failure (CCF)
 - Issue 5: Common Cause Failure (CCF) Applicability
 - Issue 6: Echelons of Defense
 - Issue 7: Single Failure



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ISGs Associated with Digital Instrumentation & Controls

- **ISG-03 (Draft), Risk Informed Digital Instrumentation and Controls**

- Applies to the ESBWR, no general conflict
- Guidance is good in that it provides a set of topics that should be looked at by the PRA reviewer



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ISGs Associated with Digital Instrumentation & Controls

- **ISG-04, HICR – Digital Communication Systems**

- Applies in general to the ESBWR, additional clarity and consistency required. Industry intends to address via IEEE-603 clarification.

- Four General Areas of Interest

- Interdivisional Communications

- Command Prioritization

- Multidivisional Control and Display Stations

- Digital System Network Configuration



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ISG-04, HICR – Digital Communication Systems

- **Summary for Future Consideration of ISG-04 Revision**

- Staff Position 1.3 requires additional clarification with Staff Positions 1.5, 1.13, 1.15, 1.16, and 1.18.
- Staff Positions 1.4, 1.6, 1.8, 1.9, 1.12, 1.15 and 1.16 have inconsistencies in that there are restatements and/or redundancy of the similar positions.



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ISG-04, HICR – Digital Communication Systems

- **Staff Position 2 – Command Prioritization**

- *“Existing Diversity and Defense-in-Depth guidance indicates that diverse actuation signals should be applied to plant equipment control circuits downstream of the digital system to which they are diverse, in order to ensure that the diverse actuation will be unaffected by digital system failures and malfunctions.”*

- ESBWR has no conflict with this ISG. Does not have this situation.



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ISG-04, HICR – Digital Communication Systems

• Staff Position 3 – Multidivisional Control and Display Stations

- “This position presents guidance concerning operator workstations used for the control of plant equipment in more than one safety division and for display of information from sources in more than one safety division. This guidance also applies to workstations that are used to program, modify, monitor, or maintain safety systems that are not in the same safety division as the workstation.”

“Multidivisional control and display stations addressed in this guidance may themselves be safety-related or not safety-related, and they may include controls and displays for equipment in multiple safety divisions and for equipment that is not safety-related, provided they meet the conditions identified herein.”

- The ESBWR has no conflict with this guidance.



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ISGs Associated with Digital Instrumentation & Controls

- **ISG-05, HICR – Human Factors**
 - Computer Base Procedures
 - Applies to ESBWR, in general no conflict
 - Minimum Inventory
 - Applies to ESBWR, in general no conflict



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ISGs Associated with Digital Instrumentation & Controls

- **ISG-06 (Draft), Licensing Process**

- Provides guidance for evaluating license amendment requests for safety-related system digital upgrades
- Not applicable to New Units
 - Does not cover the Design Acceptance Criteria (DAC) / Inspection Test and Acceptance Criteria (ITAAC) process utilized for Design Certification of New Reactors' I&C system design



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End of Presentation / Backup



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