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Defense-in-Depth and Diversity Issues

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DI&C D3 Issues

- D3 ISG Issue 1 – Adequate Diversity
- D3 ISG Issue 2 – Manual Operator Actions
- D3 ISG Issue 3 – BTP-19 Position 4
- D3 ISG Issue 4 – Effects of CCF
- D3 ISG Issue 5 – CCF Applicability
- D3 ISG Issue 6 – Echelons of Defense
- D3 ISG Issue 7 – Single Failure

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D3 ISG Issue 1 – Adequate Diversity

- The Issue – Where diversity is needed, what constitutes “adequate diversity”?
- ISG
  - Issue combined with operator action (not clear why)
  - NRC waiting for contractor input from ORNL
  - Draft report from contractor due now
- Planned actions
  - Wait for NRC contractor report
  - Develop draft industry guidance on diversity/defensive measures approach

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D3 ISG Issue 2 – Manual Operator Actions

- The Issue – When can operator action be credited as a diverse backup for CCF?
- ISG
  - Still invokes 30 minute criterion
- Industry concerns
  - Conflicts with precedents
  - May be adverse to safety
  - Designs will be changed to reduce regulatory risk
- Planned actions
  - Provide industry white paper on methodology to NRC
  - Endorse effort to look at risk implications

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D3 ISG Issue 3 – BTP-19 Position 4

- The Issue – System-level versus component-level diverse controls and indications
- ISG
  - Requires system-level controls
  - Change from previously agreed-upon solution
- Industry concerns
  - Operating plants have component-level actuation
  - Some new plant designs use component-level actuation to maintain simplicity, reliability
- Planned actions
  - Push to return to BTP-19 position that allows component-level actuation

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D3 ISG Issue 4 – Effects of CCF

- The Issue – Must spurious actuations be considered in D3 evaluation?
- ISG
  - Nothing required beyond what is already in design basis evaluations
  - Effects of spurious trips should be evaluated
- Industry concerns
  - Guidance is confusing, possibly contradictory
  - Applies design-basis standard to beyond design-basis event
- Planned actions
  - Recommend edits to clarify ISG

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D3 ISG Issue 5 – CCF Applicability

- The Issue – Identify design attributes that are sufficient to eliminate consideration of CCFs
- ISG – two attributes allowed
  - Diversity
  - 100% testability
- Industry concerns
  - Does not allow credit for defensive measures in design and processes
  - 100% testability not generally practical
- Planned actions
  - Provide industry white paper on CCF Applicability to NRC
  - Maintain consistency with communication TF approach

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D3 ISG Issue 6 – Echelons of Defense

- The Issue – Clarify treatment of echelons for D3 evaluation
- ISG
  - Clarifies that echelon description in BTP-19 is only conceptual (our words)
- Industry concerns
  - Minor – confusing reference to other ISG positions
- Planned actions
  - Propose edits to ISG

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D3 ISG Issue 7 – Single Failure

- The Issue – Clarify classification of digital CCF as a “single failure” for purposes of D3 evaluation
- ISG
  - Clarifies earlier Staff position that digital CCFs are not classified as single failures
- Industry concerns
  - None
- Planned actions
  - Monitor future revisions

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- Questions?
- Items to carry to NEI?

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