


**Digital Instrumentation and Control
Licensing for Power Reactors**

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Overview

- **Purpose and Goals of Digital I&C Project**
- **Status of Digital I&C Task Working Groups**



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Digital I&C Project

- **Purpose - develop technical and regulatory guidance for digital I&C licensing activities**
 - Existing plant upgrades
 - New plant applications
- **NRC and industry working together**
- **Steering Committee and 7 Task Working Groups (TWGs) established**



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Digital I&C Project

- **Short term deliverable is Interim Staff Guidance (ISG)**
 - Technically sound
 - Practical to apply
 - Define appropriate regulatory analysis/review
- **Long term goal to incorporate ISGs into regulatory guidance or consensus standards**
- **Pilot plant License Amendment Request will validate certain ISGs and may identify new issues**



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TWG #1: Cyber Security

- **ISG issued in December 2007**
 - No technical disagreement with ISG
- **Industry prefers NRC endorsement of NEI guideline for cyber security (NEI 04-04 Rev 2)**
- **Anticipating issue of**
 - Draft final rule language for cyber security
 - Draft regulatory guide in mid-February
- **Industry priority is review of draft regulatory guide**



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TWG #2: Diversity & Defense in Depth

- **ISG issued in September 2007**
- **Several issues remain to be resolved**
 - Manual operator actions (working with Human Factors TWG)
 - Common Cause Failure applicability
 - System-level actuation
 - Adequate diversity
- **Requesting ISG revision**



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TWG #3: Risk Informing

- **Draft ISG issued in January 2008**
 - Addresses evaluation of digital systems in PRAs
 - Industry has comments on
 - Treatment of Common Cause Failure in digital systems
 - Adequacy of modeling methods
 - Use of risk importance measures
 - Does not address use of risk insights in decision making
 - Risk impact of Diverse Actuation System (DAS)
 - Does not address development of advanced PRA models
- **Considering pilot plant project**



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TWG #4: Communications

- **ISG issued in September 2007**
 - One minor issue of consistency
 - Intend to address via clarification to IEEE 603



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TWG #5: Human Factors

- **ISG issued in September 2007**
 - Addresses
 - Minimum inventory of human system interfaces (e.g., alarms, controls, indicators, and procedures)
 - Computerized procedures
- **ISG revision needed to address**
 - Safety Parameter Display System (SPDS)
 - Graded approach to human factors engineering
 - Methodology to determine the acceptability for manual operator actions
- **Human Factors TWG supporting other TWGs**
 - Licensing process (documentation)
 - Diversity and defense-in-depth (manual operator actions)
 - Communications (HF aspects of multi-channel visual displays)



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TWG #6: Licensing Process

- **Draft ISG expected in April 2008**
- **Current activities**
 - Evaluating timing and content of license submittal



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TWG #7: Nuclear Fuel Facilities

- **Draft ISG expected in late March**
- **Current activities**
 - Refining Problem Statements
 - Defining reliability assessment methods
 - Considering existing ISA and/or Chemical Process Standards
 - Evaluating methodologies for assessing Safety Control System Reliability
 - Determining intent of associated regulations



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