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## **Technical Part 6: RadICS Digital I&C Platform Topical Report**

Details of RadICS Licensing Program

(Closed Session)

July 14, 2015, Rockville, Maryland



# Agenda

- Licensing Strategy Concept
- Overview of Safety Application
- RadICS Licensing Strategy
  - Phase 0
  - Phase 1
  - Phase 2
  - Phase 3
- RadICS Topical Report Contents
- Overview of Support Documents
- Licensing Review Schedule

# Licensing Strategy Concept (1/4)

- Pre-Application Activities (Phase 0) - Goal is to reach general agreement with NRC that:
  - RadICS conceptual design is acceptable
  - Equipment qualification plans are appropriate
  - Commercial grade dedication strategy is acceptable
  - Document submittal plans are understood
  - Overall RadICS project schedule is reasonable
- Radiy Phase 0 Activities
  - Topical Report preparation
  - Equipment qualification plan development
  - Commercial grade dedication plan development
  - 10 CFR Part 50 Appendix B QA Plan certification and implementation

## Licensing Strategy Concept (2/4)

- RadICS Topical Report Submittal (Phase 1) - Goal is to have application accepted for review and get early feedback on acceptability of Equipment Qualification Plan :
  - RadICS Topical Report
  - RadICS Equipment Qualification Plan
  - RadICS Commercial Grade Dedication Plan
  - DI&C-ISG-06 Phase 1 Submittals
- Radiy Phase 1 Activities
  - Topical Report review support
  - Equipment qualification plan implementation
  - Commercial grade dedication plan implementation
  - Respond to NRC Round 1 requests for additional information
  - Prepare Phase 2 Documents for submittal

## Licensing Strategy Concept (3/4)

- Pre-Application Activities (Phase 2) - Goal is to provide timely responses and have successful audits :
  - RadICS Equipment Qualification Summary Report
  - RadICS Commercial Grade Dedication Summary Report
  - DI&C-ISG-06 Phase 2 Submittals
- Radiy Phase 2 Activities
  - Topical Report review support
  - Support NRC audits, as necessary
  - Respond to NRC Round 2 requests for additional information
  - Prepare Final Topical Report Update
  - Review draft safety evaluation report for proprietary information

## Licensing Strategy Concept (4/4)

- Pre-Application Activities (Phase 3) - Goal is to provide timely issuance of approved RadICS Topical Report:
  - RadICS Topical Report (–A Versions)
- Radiy Phase 3 Activities
  - None, project complete

# RadICS Topical Report (1/2)

- Chapter 1 – Introduction
- Chapter 2 - Development and Operational History
- Chapter 3 – Regulatory Design Criteria
- Chapter 4 - Description of the RadICS Platform
- Chapter 5 - Development Process for RadICS Platform Hardware
- Chapter 6 - Software Development Process for Programmable Logic
- Chapter 7 - Equipment Qualification
- Chapter 8 - Diversity and Defense in Depth
- Chapter 9 - Compliance with Standards and Interim Staff Guidance
- Chapter 10 - Secure Development and Operational Environment

## RadICS Topical Report (2/2)

- Appendix A - RadICS Platform Application Guide
- Appendix B - IEEE Standard 603–1991 Compliance Matrix
- Appendix C - IEEE Standard 7-4.3.2-2003 Compliance Matrix
- Appendix D - DI&C-ISG-04 Compliance Matrix
- Appendix E - DI&C-ISG-06 Compliance Matrix
- Appendix F - Documentation Cross-Reference Matrix



# Overview of Phase 1 Documents (1/2)

DI&C-ISG-06 Reference		Radiy Document
1.1	Hardware Architecture Descriptions	D5.1 FSC Product Architecture Document
1.2	Quality Assurance Plan for Digital Hardware	D2.1 FSC Functional Safety Management Plan
1.3	Software Architecture Descriptions	D8.21.1 FSC LM ED Detailed Description (typical of documents for all modules)
1.4	Software Management Plan	D2.1 FSC Functional Safety Management Plan D2.6.1 Project Implementation Plan
1.5	Software Development Plan	D2.1 FSC Functional Safety Management Plan
1.6	Software QA Plan	D12.1 FSC Functional Safety Management Audit Plan
1.7	Software Integration Plan	D10.1 FSC Integration Test Plan
1.8	Software Safety Plan	D2.1 FSC Functional Safety Management Plan
1.9	Software V&V Plan	D2.4 FSC Overall Verification and Validation Plan
1.10	Software Configuration Management Plan	D2.2 FSC Configuration Management Plan
1.11	Software Test Plan	D4.0 FSC Safety Validation Test Plan
1.12	Software Requirements Specification	D3.1 FSC Safety Requirements Specification
1.13	Software Design Specification	D5.1 FSC Product Architecture Document

## Overview of Phase 1 Documents (2/2)

DI&C-ISG-06 Reference		Radiy Document
1.14	Equipment Qualification Testing Plans	To be developed
1.15	D3 Analysis	Topical Report Chapter 8
1.16	Design Analysis Reports	Topical Report Chapter 4
1.17	System Description (To block diagram level)	D5.1 FSC Product Architecture Document
1.18	Design Report on Computer Integrity, Test and Calibration, and Fault Detection	D5.1 FSC Product Architecture Document D7.24 FSC FMEDA Report
1.19	System Response Time Analysis Report	Topical Report Chapter 4
1.20	Theory of Operation Description	D5.1 FSC Product Architecture Document
1.21	Setpoint Methodology	Topical Report Chapter 7
1.22	Vendor Software Plan	Not Applicable
1.23	Software Tool Verification Program	D2.3 FSC Tool Selection and Evaluation Report
1.24	Software Project Risk Management Program	Met by D2.1 FSC Functional Safety Management Plan
1.25	Commercial Grade Dedication Plan	To be developed
1.26	Vulnerability Assessment	D2.8 FSC Security Analysis Report
1.27	Secure Development and Operational Environment Controls	D2.8 FSC Security Analysis Report

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# Licensing Review Schedule

- Proposed Schedule

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# Thank you for your attention!

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