



# SSPS Lessons Learned

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July 1, 2015

# Outline

- Context
- Challenges
- PWROG Involvement
- Direct Interactions with Engineers
- Frequent Technical Exchanges
- SharePoint
- Project Specific Characteristics
- Summary of Lessons Learned

# Context

- SSPS is a Proven System (and Components)
- New-design Components Already Completed:
  - Design, Manufacturing, Test, & Installation
- Licensing Aspects addressed in Topical Report
  - It would be interesting to compare the level of effort between licensing and developmental activities.
- Evolving Regulatory Criteria
  - ISGs, RGs, SRP, STDs, ...

# Challenges

- Short Span Time for Project
  - Engineering done and documented
  - Only Licensing
    - Several months to develop the topical report
    - Seven months to evaluate it
- Common Understanding of Regulatory Criteria
  - Terminology
    - e.g., Software
  - Model behind endorsed standards

# PWROG Involvement

- Customer Representative/Advocate
- Development of Cards
  - Operating experience
    - Elimination of single point vulnerability's
    - Improved diagnostics
  - Testing of prototypes
    - Diversity
    - Independence
- Topical Report
  - Apply pressure to vendor

# Direct Interaction with Engineers

- PWROG Engineers – Plant Experts
- Westinghouse Engineers – Equipment Experts
- Licensing Engineers – Processes Experts

# Frequent Technical Exchanges

- Audits
- Open Item List
- Phone Calls
  - Discuss open item list

# SharePoint

- Vendor Portal
  - Identify documentation needed on the docket
- NRC Staff Internal Tool
  - Concurrent editing of safety evaluation



# Project Specific Characteristics

- Components vs. System
- Proven Design
  - Systems & cards proven in operating experience
  - Requirements specification
  - Test specifications
  - Implemented in new technology
    - Same requirements with augmentation
    - Pass all old tests with some additional testing
- Specific vs. Abstract
- Users and Designers
- Project Completed Prior to Application
- “...this SE cannot be used as an example or precedent for referencing in future topical reports associated with digital instrumentation and control (DI&C) upgrades that are submitted to the NRC for review and approval.”

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- Regulations and Guidance are Poorly Understood
  - NRC should hold workshops to inform
  - Harmonizing of understandings takes lots of time
- Frequent Technical Exchanges are Helpful
- End user Involvement is Very Beneficial
  - Operation & maintenance

# Acronyms

CPLD – Complex Programmable Logic Device

DI&C – Digital Instrumentation and Control

NRC – Nuclear Regulatory Commission

NRR – Nuclear Reactor Regulation

PLD – Programmable Logic Device

PWROG – Pressurized Water Reactor Owners Group

SDOE – Secure Development and Operational Environment

SSPS – Solid State Protection System

SRP – Standard Review Plan, NUREG-0800

TR – Topical Report