



# Vogtle Electric Generating Plant & Virgil C. Summer

## Constructing to the Licensing Basis

November 19, 2012

# Agenda

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- Introduction
- Background
  - Specific challenges
- Processes/Lessons Learned
  - Root Cause findings
  - Actions taken to address the cause
  - Results from actions taken
  - Oversight Improvements
- Future plans
- Closing



# Introduction

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- 10 CFR 52 construction vs 10 CFR 50 construction
- Construct in accordance with licensing basis
- Licensing basis level of detail varies

*Objective for today: discuss lessons learned and application going forward regarding design and construction under 10 CFR 52*

# Vogtle Basemat Rebar

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- During installation of re-bar on Vogtle Unit 3, NRC found
  - Design changes were made to Tier 2\* information without prior NRC approval
  - Design did not conform to ACI-349 provisions as invoked in the Final Safety Analysis Report

# Consortium Background

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- The Consortium (Westinghouse & Shaw) will conduct business in accordance with the Current Licensing Basis (CLB)
  - Includes engineering, construction & procurement
  - Acting on behalf of the Licensees (SNC and SCANA)
- Prior to issuance of the COLs:
  - The Consortium conducted reviews for adherence to the Licensing basis
    - Discrepancies noted
    - Departure evaluations or design changes were developed to ensure conformance with the COLs
- Subsequent to issuance of the COLs:
  - Broader scope of reviews conducted and additional discrepancies notes
  - Opened an Issue Report in early March
    - Launched the Root Cause Analysis
- Westinghouse recognized through the Vogtle rebar issues that further assessments of the licensing basis were required for maintaining the FSAR

# Westinghouse Root Cause Analysis

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- Root Cause Analysis (RCA) conducted
  - Part of the Corrective Action Process (CAPs) response
- Examined in detail multiple representative issues
  - Derived from the CAPs and the past reviews
- Primary Root Cause – *‘Issues in processes linking the current licensing basis (CLB) to the design and specification documents led to licensing conflicts.’*

# Westinghouse Root Cause Analysis

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- Needed improvements included:
  - Improve procedural control and training on how to locate the CLB licensing requirements
  - Better documentation of the review process and decisions made
  - Better access to the CLB
  - Better definition of what documents and document changes need review for impact to the CLB
- Effectiveness Review Planned - Part of Process
  - Kickoff March 2013
  - Scheduled completion July 2013

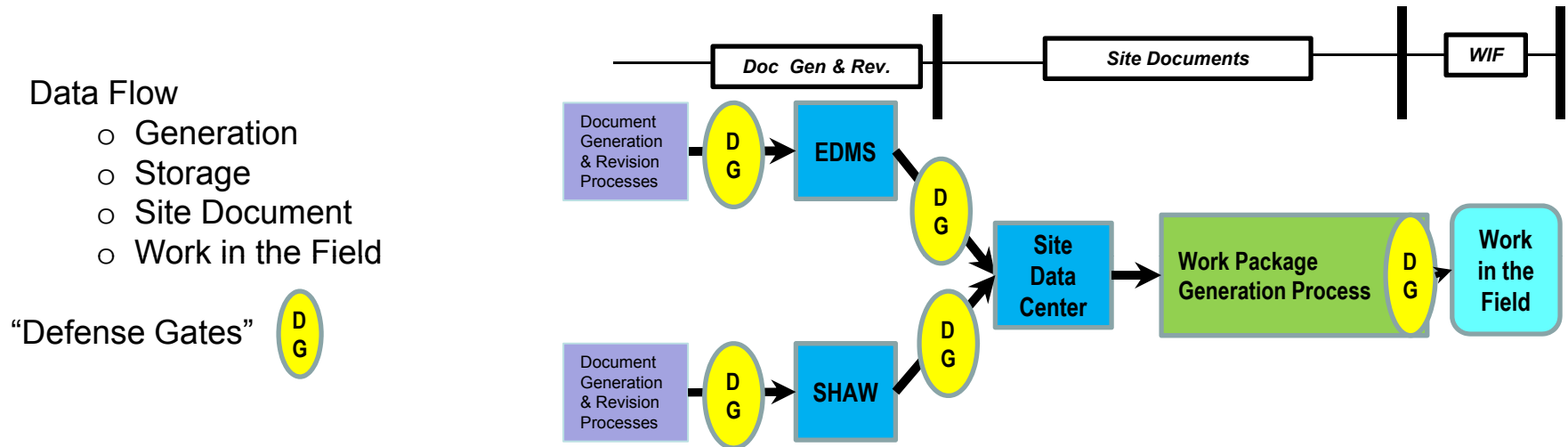
# Response Actions

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- Consortium initiated a Part 52 review and process improvement program, mid April 2012
- Initial immediate actions included:
  - Consortium wide stand-downs to enforce the importance of licensing basis adherence,
  - Multiple Executive Leadership sessions with all AP1000 managers, and a
  - Rapid institution of, and training for, a single improved process to conduct licensing basis impact reviews
- The purpose of the Constructing to the Licensing Basis program was:
  - To perform a validation of design documents released for use in construction against the Current Licensing Basis (CLB), and
  - To provide improvements such that thorough processes for conducting licensing impact reviews during production of new/ revised design documents are effective.<sup>8</sup>

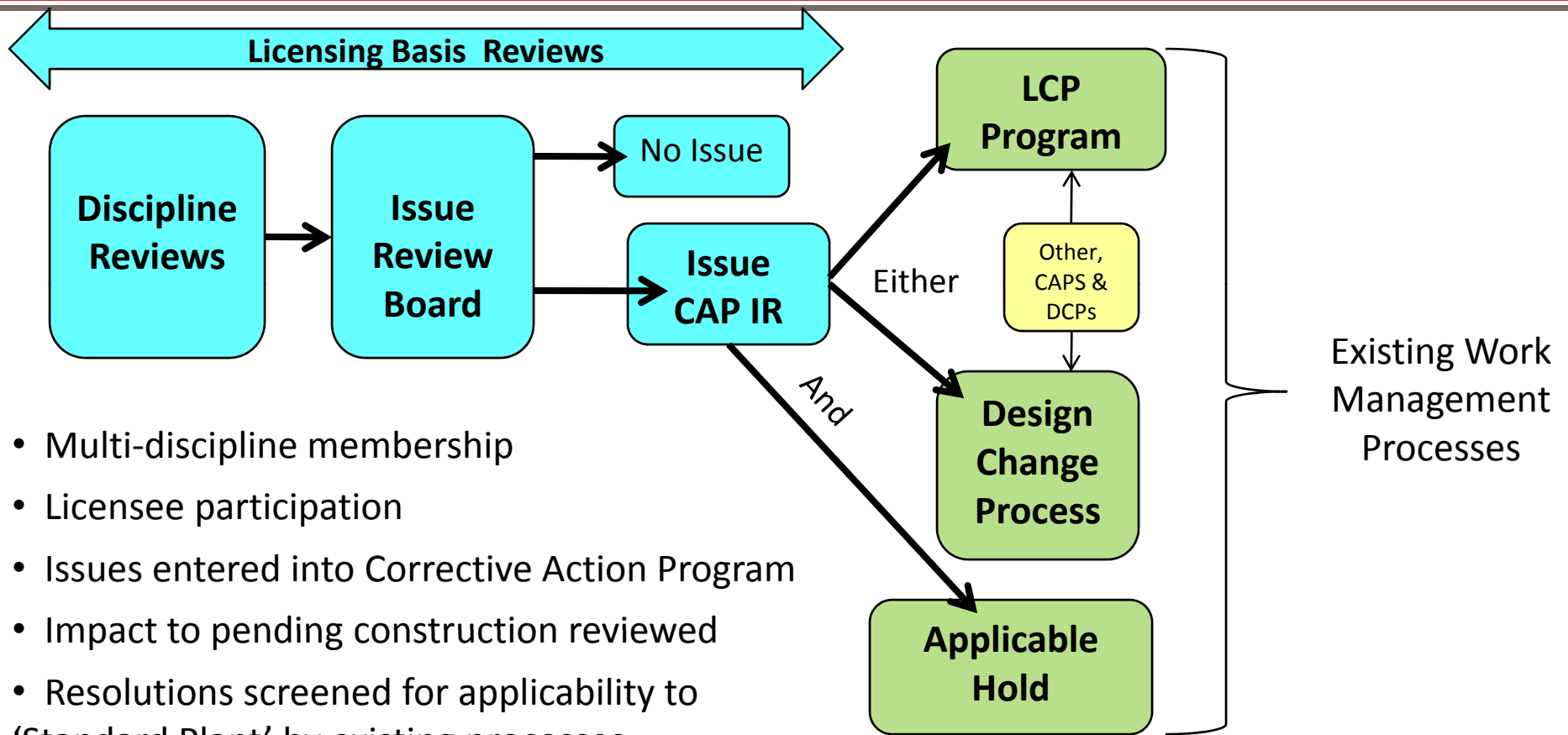


# Constructing to Licensing Basis Review



- Design documents grouped into phases in support of construction
- Review focused on documents in support of construction
  - Work in the Field
  - Site Documents
- Document Generation & Revisions addressed through process improvements

# Licensing Basis Review - Issue Resolution Flow



- Multi-discipline membership
- Licensee participation
- Issues entered into Corrective Action Program
- Impact to pending construction reviewed
- Resolutions screened for applicability to 'Standard Plant' by existing processes

# Licensing Basis Review Results

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- Over 36,000 Documents Reviewed
- 223 Total Issues Identified

## Recommended Resolution Paths:

91 Issues - Change the design to match the Current Licensing Basis (CLB)

110 Issues – Update the CLB via a Departure (i.e. Tier 2 Change) in accordance with 10 CFR 52 Appendix D, Sec VIII

22 Issues – Update the CLB via a License Amendment Request (LAR)

**Note:** The actual number of LARs and Departures will be less than the above numbers. As the issues requiring resolution are further reviewed and incorporated into Licensing Change Packages, consolidation of related changes will occur.

# Licensing Basis Review – LAR Impacts

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## 22 Issues Identified

- 6 - Issues have been incorporated into or determined to be part of a previously identified existing LAR
- 3 - Issues subsequently determined to not require a LAR
- 2 - Issues have been combined into another new LAR

## 11 Total Potential New LARs

- 7 - Issues requiring a new LAR
- 4 - Issues still under review

Review to determine the feasibility of returning design to match CLB

These are in addition to previously planned set of LARs that are based on changes requiring NRC approval after respective application-phase freeze point

# Licensing Basis Review – Examples of New LAR Submittals

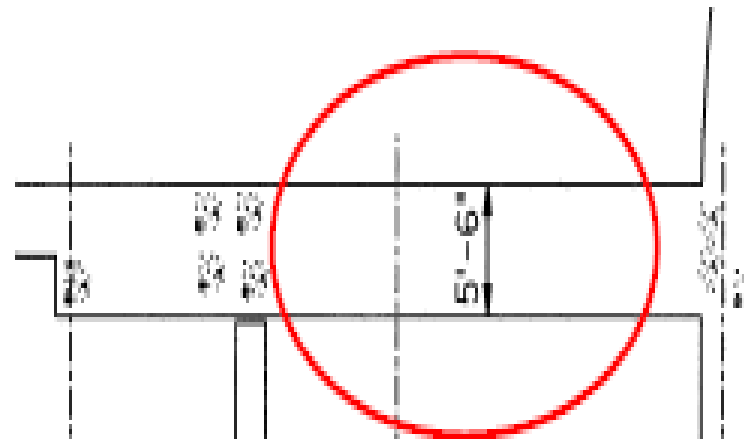
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- Inconsistencies in a Tier 1 Table
- Provisions for Stud/Channel Obstruction in Modules
- RC to SC Connections Details (Shield Building)
- PCS Line Numbers missing from DCD a Tier 1 Table
- CA03 Module Design Details in a Figure
- Clip Angle Details in a Figure
- Tier 2\* Clarification and Consistency Improvements

# Licensing Basis Review – LAR Sample Inconsistencies in a Tier 1 Table

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- Tier 1 table wall thickness
  - 3 feet thick
- Tier 1 and Tier 2 Figures
  - Both figures are in agreement
  - Show 5 ½ feet thick in a given portion
- No design change
- Consistency changes within licensing basis



# Processes & Lessons Learned

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- Rapidly established a more robust licensing review procedure
  - Provides a systematic approach to identifying CLB impacts
    - 1) Better defined the AP1000 Current Licensing Basis
    - 2) Made available a common, more easily accessible CLB library
    - 3) Established a more detailed process for reviewing and identifying impacts within the CLB
    - 4) Improved the formal documentation of licensing impact determinations
  - Used by the Consortium design change process and the licensing adherence reviews

# Processes & Lessons Learned

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- Improved and updated the procedure
  - Incorporating lessons learned since initial implementation
  - The revised procedure provides:
    1. A process for crediting a previously completed licensing impact determination
    2. A procedure more easily usable by all stakeholder users/engineers
    3. Enhanced licensing impact determination documentation
- Multiple Self Assessments Scheduled
  - Overall process self-assessment commence January 2013
  - Improved procedure provisions self-assessment commence March 2013

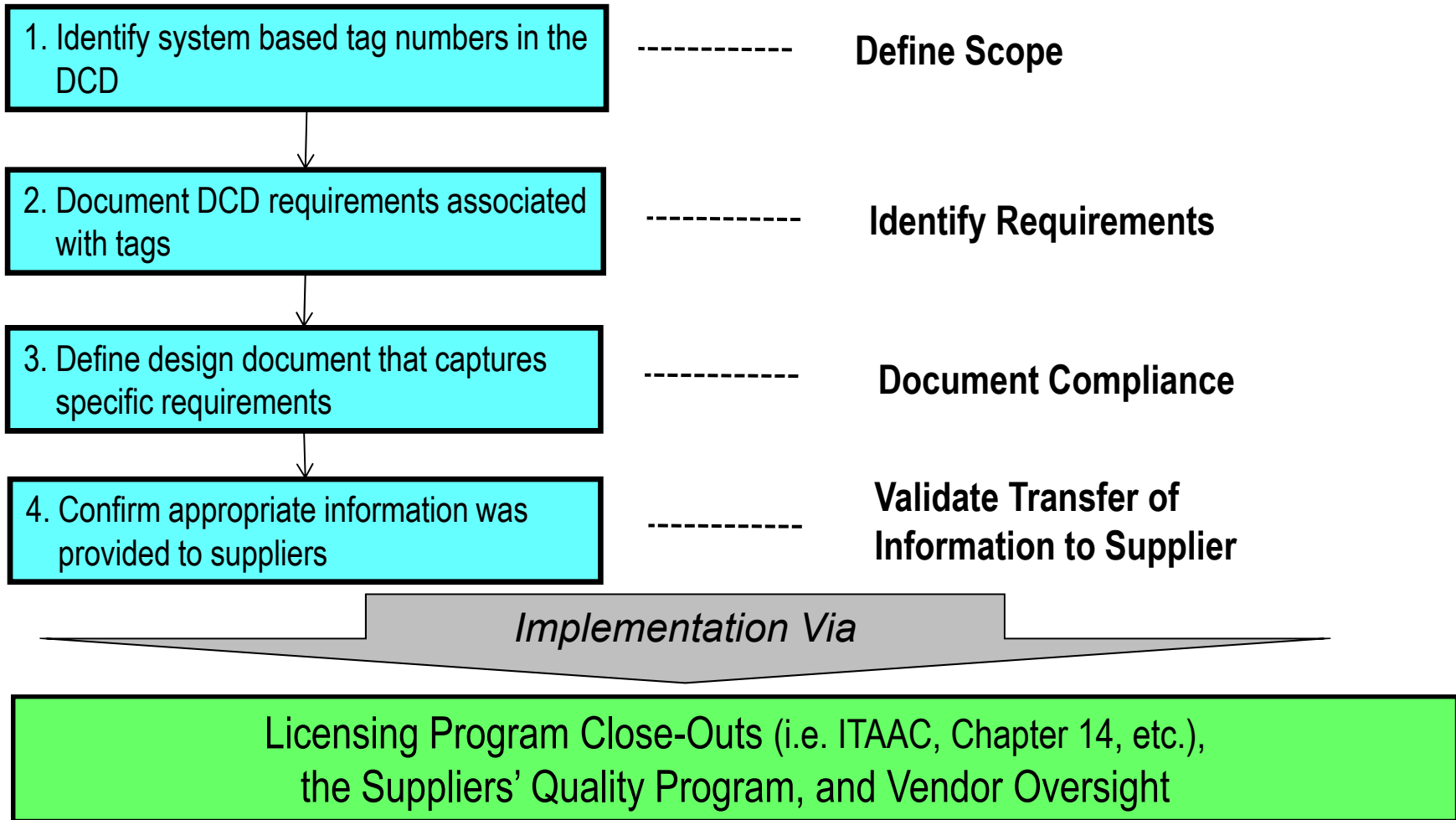


# Additional Actions - Procurement Review

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- **Objective:** Demonstrate component based licensing requirements are captured in primary design documents
- **Scope:** Review to include system based components with a tag number identified in the certified design
  - Review components with dedicated sections in the licensing basis, e.g. Pressurizer, Reactor Vessel, etc.
  - Review system based commodities/equipment with a tag number identified in the certified design
  - Perform licensing basis review of related Deviation Notices (DN) and Engineering & Design Coordination Reports (E&DCR) approved prior to implementation of Licensing Impact Review Process Improvement
  - Validate appropriate licensing information was provided to equipment suppliers
- **Prioritization:** Based on location in CLB (Tier 1 vs. Tier 2) and procurement schedule

# Procurement Review Process



# Procurement Review

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- **Pilot Plan Results**

- Pilot of reviews completed

- Pilot reviews identified need to differentiate between system & component based requirements
    - Pilot reviews identified a need to capture location based requirements, e.g. coatings, seismic, etc.
    - Lessons learned were incorporated into initial reviews for the Pressurizer, CMTs, Accumulators, & PRHR

- **Plan**

- Procurement Document Review has started

- Implementation Plan

- Assessments have been divided into categories by equipment type, reviews are in process
    - Review Duration: 4 to 6 months, comparable to the Construction Review

# Procurement Review

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## Example: Passive Residual Heat Removal (PRHR) HX

- Component tag number for PRHR HX called out in the certified design; i.e. it is within scope of procurement review
- Initial Review is Complete
  - Identified approximately 60 component based licensing requirements within the certified design for Chapters 3.2, 3.9, 5.2, 5.4, & 6.3
  - 3 Corrective Actions have been generated to resolve minor discrepancies between design documentation and the licensing basis
- Primary design documents capturing licensing basis requirements are PRHR HX Design Specification and Fabrication Specification
- Performed basis reviews on 31 documents

# SNC Root Cause Analysis

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- NRC Finding

May 18, 2012 NRC Inspection Report

“...licensee’s failure to assure that regulatory requirements and the design basis for systems, structures, and components were correctly translated into specifications and instructions associated with the nuclear island (NI) basemat reinforcement.”

- SNC performed root cause analysis

- SCANA participated on the RCA team

- Problem Statement - Unit 3 Nuclear Island Rebar Oversight:

Southern Nuclear failed to perform adequate oversight of Consortium activities to ensure design documents are issued in accordance with the licensing basis and the licensing basis is appropriately updated to reflect design changes.

# SNC Root Cause Analysis – Vendor Oversight

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## Root Cause:

- Oversight role not adequately defined

## Key Findings:

- Oversight Role not Defined
- First Time Implementation of New Licensing Process in 10CFR52
- Ineffective Use of Corrective Action Program

# SNC Oversight Improvements

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- Updated Engineering procedures to better define roles and responsibilities
- Embedded SNC Engineering and Licensing staff in Consortium licensing adherence processes
- Trained staff on oversight of conformance to licensing basis
- Increased design change and nonconformance oversight focus on conformance to licensing basis
- Performed external assessment of SNC oversight processes
- Secured additional civil engineering resources from 2 outside contractors
- Conducted detailed design review of Nuclear Island basemat design
- Supporting Consortium's Procurement Licensing Basis Review
- Reinforced expectations for use of Corrective Action Program

# SNC Corrective Action Effectiveness

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- Performed self assessment of effectiveness at confirming licensing basis impacts associated with minor design change packages
- 20 packages reviewed by Engineering to confirm the conclusion drawn by the package reviewer as it relates to licensing basis compliance
- No cases were identified in which the SNC reviewer failed to identify a discrepancy between the licensing basis and a minor design change package



# SNC Corrective Action Effectiveness

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- Reviewing condition reports indicating potential discrepancies between design documents and licensing basis issued between April 1, 2012 and November 1, 2012
- Review scheduled for completion end of November

# SCANA Oversight Improvements

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- Incorporate lessons learned from SNC root cause
  - Coordinated oversight strategy with clear DOR
    - Validate touch points for oversight
    - Revise/update/create procedures and processes
    - Provide training
- SNC/SCANA best practices (benchmarking)
- SNC/SCANA joint oversight opportunities
- Continuous process

# SCANA Site Specific Oversight

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- SCANA oversight activities identified seven differences between site design documents and the Licensing Basis in early 2010
- Issues associated with Site Specific design
- Entered into Corrective Action Programs for Shaw and SCANA

# Corrective Actions Summary

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- Issued “Hold” on all Shaw site specific design deliverables
- Issued procedures to govern licensing basis reviews
- Training conducted for Shaw site design personnel
- Conducted 100% review of Shaw site specific design deliverables

# Corrective Actions Summary (cont)

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- 1000 documents reviewed for compliance
- 30 individual discrepancies identified and addressed in the corrective action program
- QA Audit to verify corrective action effectiveness is scheduled in the first quarter of 2013

# Closing

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- Nuclear safety is #1 priority
- Committed to constructing to licensing basis
- Continuous learning organization mindset
- SNC, SCANA, WEC and Shaw all incorporating lessons learned
- All participants will continue to collaborate, check, and adjust

