



*SCE&G • Santee Cooper
Shaw • Westinghouse Electric Company*

Licensee Perspective on ITAAC Completion Process

NRC Commission Briefing

August 30, 2011

Alan Torres, SCE&G

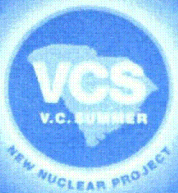
Topics

- Requirements for ITAAC Performance
- Utility's Role
- ITAAC Completion Process
- Transition to Operation
- CIP Task Force Efforts



Requirements for ITAAC Performance

- 10 CFR Part 52 – ITAAC provide reasonable assurance that the facility “has been constructed and will be operated in conformance with the License.”
- ITAAC originate from the COL, including those from the referenced DCD, and ESP (if applicable)
 - There are approximately 900 ITAAC per unit for V.C. Summer 2&3



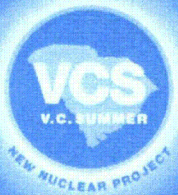
Requirements for ITAAC Performance

- The technical work for ITAAC completion is performed in accordance with normal work processes, requirements, and guidance:
 - 10 CFR 50 Appendix B
 - NRC Regulatory Guides
 - ASME Code Section III
 - ANSI, IEEE, AWS, ACI and other Industry Standards
 - Licensee Programs and Procedures

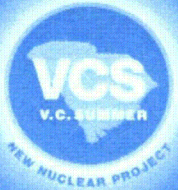
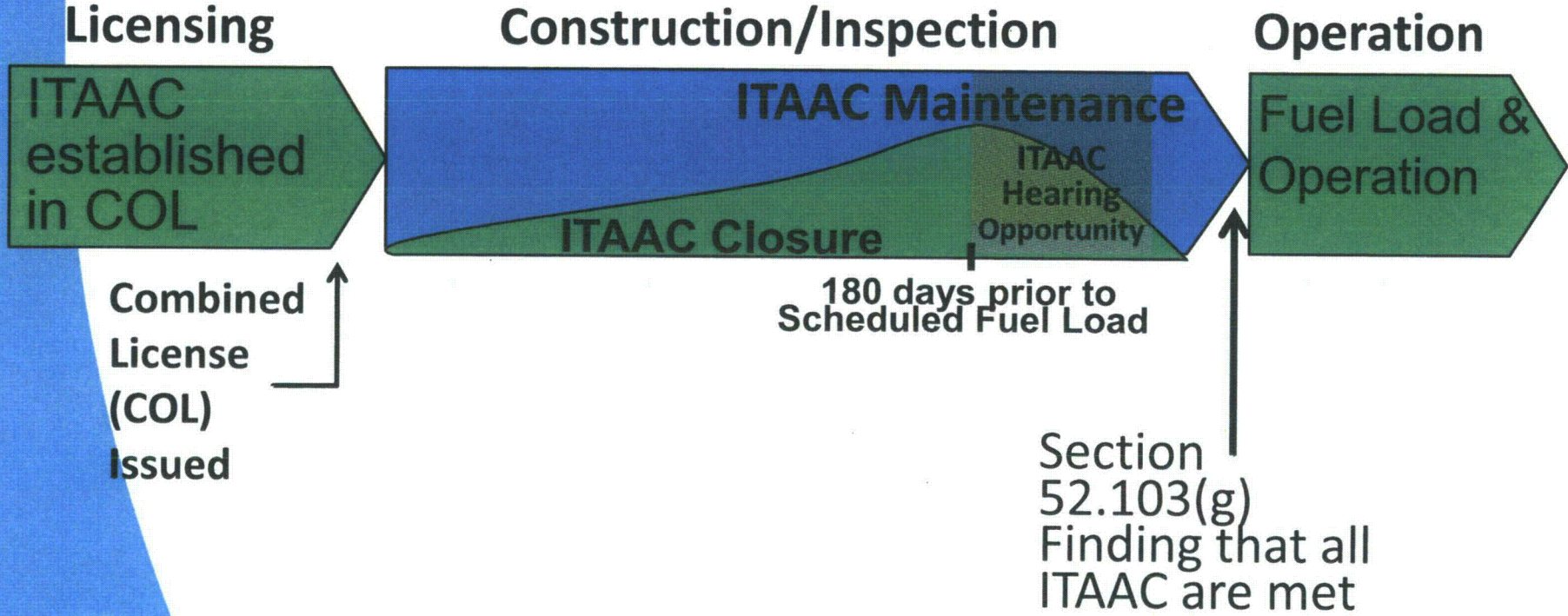


Utility's Role

- The licensee is ultimately responsible for all activities
 - Self-performance of some ITAAC (Emergency Planning, Physical Security Program)
 - Provide direct oversight of ITAAC performance by the Reactor Vendor and Constructor (Westinghouse/Shaw Consortium)
- The utility will be the primary interface to facilitate NRC Inspection of ITAAC activities under IMC-2503



ITAAC Completion Process



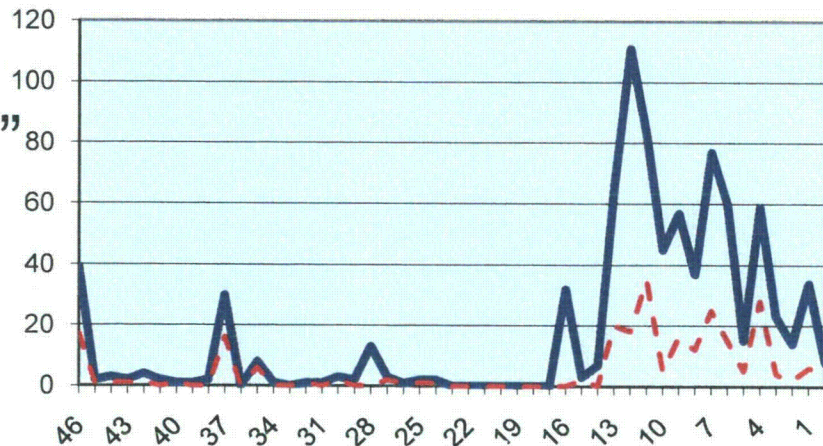
ITAAC Completion Process

- Inspections, Tests, and Analyses are performed in accordance with normal work processes
 - Not all ITAAC are safety-related, but all ITAAC are performed under the Licensee's QA program
 - Extra visibility is provided on ITAAC activities due to their regulatory significance
 - Identification on project schedules
 - Highlighted within construction work documents and pre-operational test procedures
 - Emphasized in procurement technical requirements



ITAAC Completion Process

- ITAAC Closure Notifications prepared in accordance with NEI 08-01 and RG 1.215
 - Work continues with the CIP Task Force to refine the ITAAC Closure process and develop additional examples
 - Planning to mitigate the expected “surge” in ITAAC Closure Notifications late in construction



ITAAC Completion Process

- The Staff has proposed new requirements for post-closure ITAAC notifications
 - Supplemental ITAAC closure notifications re: ITAAC Maintenance
 - All ITAAC Complete notification
- Consistent with NEI 08-01 (July 2010)
- NEI provided comments on the proposed rule and draft regulatory guide DG-1250



ITAAC Completion Process

- Licensee's programs will be used to maintain ITAAC (per NEI 08-01)
 - Problem Identification and Resolution
 - Construction/Maintenance
 - Configuration Control
 - Quality Assurance
- NRC Notification when:
 - Material error or omission in ITAAC Closure Notification
 - Design Change is implemented because the ITAAC acceptance criteria can no longer be met
 - Licensee activities materially affect the ITAAC Determination Basis



Transition to Operation

- All ITAAC are met. The as-built configuration of the plant is verified to meet the requirements of the COL
- Commission can make finding under 10 CFR 52.103(g) allowing fuel load and operation
- Additional clarity/regulatory guidance needed for requirements associated with interim operation under 10 CFR 52.103(c)



CIP Task Force Efforts

- Preparation of additional example ITAAC Closure Notifications to reduce uncertainty in the closure process
- Streamlining processes and clarifying expectations to assist with the surge in ITAAC Closure Notifications late in construction



Vogtle
units 3&4 Nuclear Development



Preparations for ITAAC - Vogtle 3&4 Experience

Chuck Pierce

Southern Nuclear Operating Company
Nuclear Development Licensing Manager

August 30, 2011

Preparations for ITAAC Closure

- Constructive public interactions with NRC (SECY-11-0111)
 - NRC Construction Inspection Program
 - NRC Region II
 - Simulated ITAAC Closure and Verification Demonstration sponsored by DOE
- ITAAC closure process development and oversight
 - Contractor interactions and oversight
 - Ongoing development of process

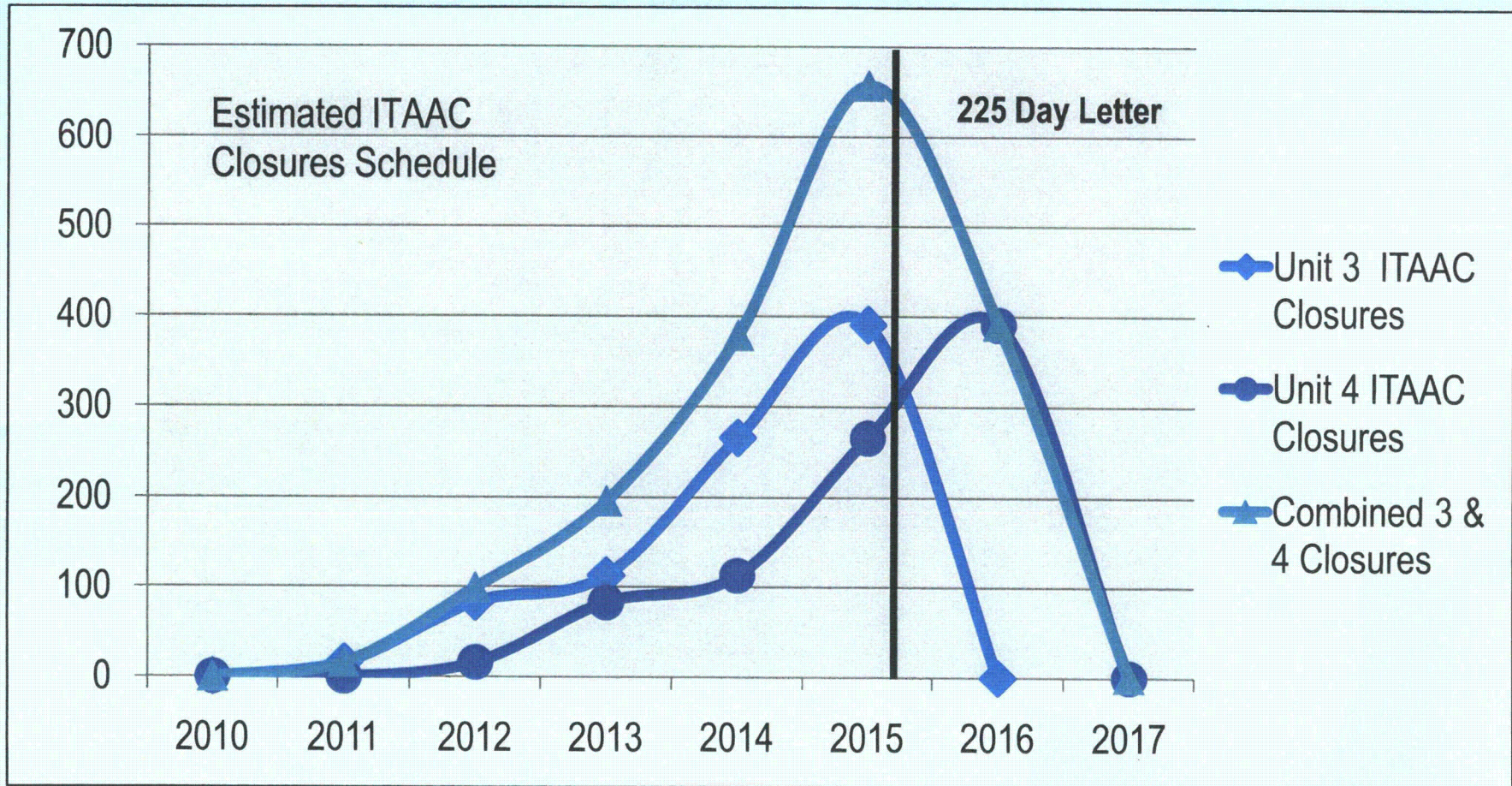
Early Construction Experience

- LWA value
 - Limited scope construction program development
 - Early exercise of ITAAC process
- Contractual alignment – Licensee is Responsible
 - Licensee oversight

Vogtle 3 and 4 Status

- ITAAC Underway
 - RPV charpy
 - Type tests
 - Backfill shear wave velocity
 - Waterproof membrane
- First ITAAC Closure Notification submittal soon

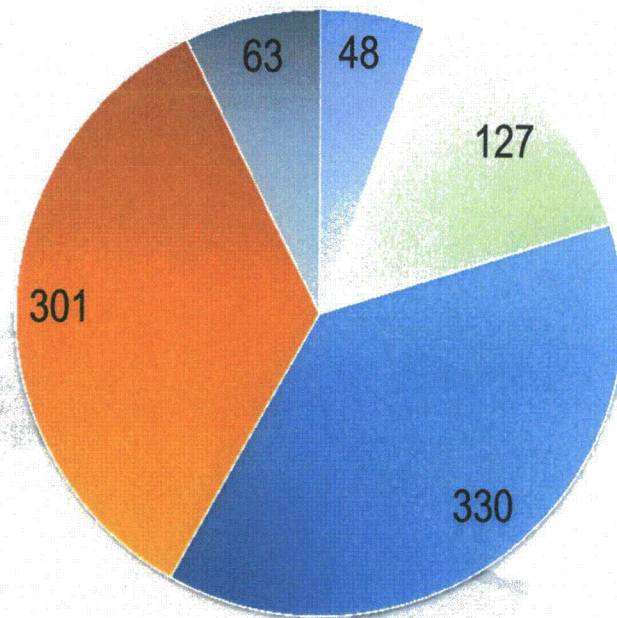
ITAAC Process – The Challenge Ahead



ITAAC Process – The Challenge Ahead

~806 AP1000 ITAAC
~63 Site Specific ITAAC

ITAAC Type Assessment



- Engineering Analysis
- Components
- Construction Type Test
- Pre-Operational Tests
- Site Specific



ITAAC Process – The Challenge Ahead

- 20% of ITAAC have higher levels of complexity

<u>Design Commitment</u>	<u>Inspections, Tests, or Analyses</u>	<u>Acceptance Criteria</u>
The Class 1E equipment identified in Table 2.1.2-1 as being qualified for a harsh environment can withstand the environmental conditions that would exist before, during, and following a design basis accident	Type tests, analyses, or a combination of type tests and analyses will be performed on Class 1E equipment located in a harsh environment.	A report exists and concludes that the Class 1E equipment identified in Table 2.1.2-1 as being qualified for a harsh environment



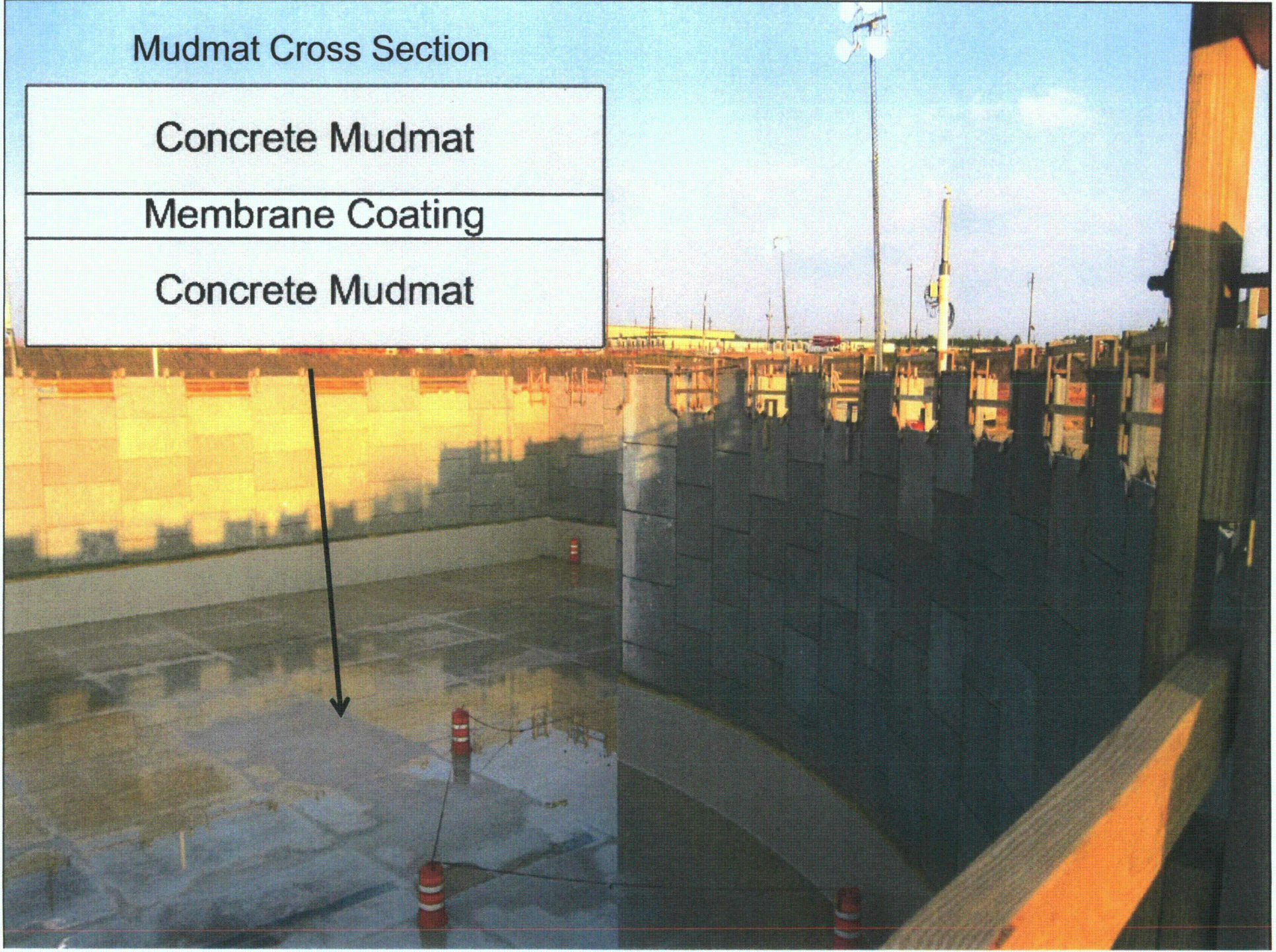
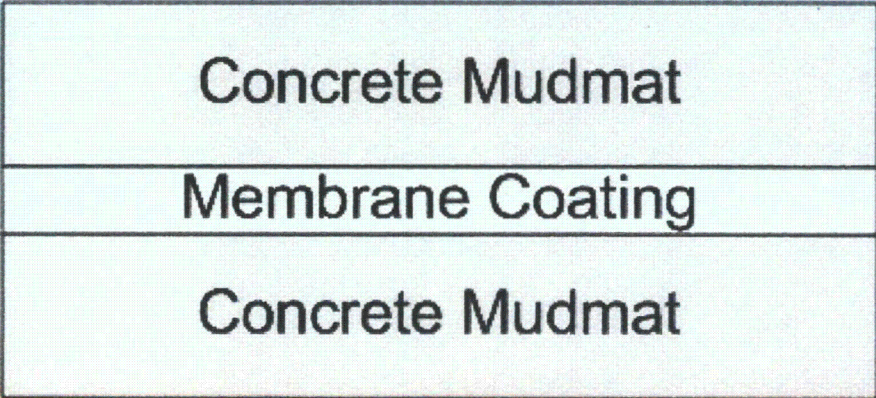
ITAAC Process –Recent Lessons Learned

- Waterproof membrane ITAAC

<u>Design Commitment</u>	<u>Inspections, Tests, Analyses</u>	<u>Acceptance Criteria</u>
<p>The friction coefficient to resist sliding is 0.7 or higher</p>	<p>Testing will be performed to confirm that the mudmat-waterproof-mudmat interface beneath the Nuclear Island basemat has a minimum coefficient of friction to resist sliding of 0.7</p>	<p>A report exists and documents that the as-built waterproof system (mudmat-waterproofing-mudmat interface) has a minimum coefficient of friction of 0.7 as demonstrated through material qualification testing.</p>



Mudmat Cross Section



Moving Forward

- Major area of focus between industry and NRC
- Progress continues to be made
 - Closure process maturing
 - Maintenance process developing
- Future demonstration projects may be appropriate to obtain greater clarity
- ITAAC lead plant approach for standard plant inspections



NRC Commission Briefing on ITAAC



Rolf Ziesing

Director, US Licensing, Nuclear Power Plants

Westinghouse Electric Company

August 30, 2011



Westinghouse Non-Proprietary Class 3





TOPICS

- Westinghouse Role in ITAAC Process
- Progress on Generic ITAAC Issues
- Application of Lessons Learned
- Standardization and the Fleet Approach



Westinghouse Role in ITAAC Process

- Westinghouse/Shaw Consortium is the EPC provider for the complete AP1000® standard plant
- Consortium will complete all “Standard Plant” ITAAC under Licensees’ oversight
 - Planning
 - Status Tracking
 - Performance
 - Documentation
 - ITAAC Completion Package Preparation
 - Maintenance



Generic ITAAC Issues – Steady Progress

- **2007** – New Rules on ITAAC Closure
- **2008** – NEI 08-01 ITAAC Closure Guidance
- **2010-11** – ITAAC Maintenance Guidance
- **2010-11** – ITAAC Closure & Verification Demonstration Project
- **2011-12** – Application of Lessons Learned

*Industry Task Force coordinated by NEI
Working with NRC Staff*



ITAAC Demonstration Project

- Six AP1000 ITAAC selected to demonstrate the ITAAC Closure process
 - NRC Inspection of simulated performance of ITAAC activities
 - Licensee submittal of ITAAC closure letters
 - NRC verification of ITAAC closure
 - Examination of the surge in ITAAC closure letters late in construction
 - Identification and documentation of Lessons Learned



ITAAC Demonstration Project – Lessons Learned

- Project was a very useful learning experience, identifying several opportunities for improvement
- Five main categories of Lessons Learned
 1. Roles/Interfaces: HQ, Region II CCI, Licensee
 2. Information Management Systems (Licensee and NRC)
 3. Resolve differing interpretations of ITAAC
 - Ongoing CIP Task Force Discussions
 - Update NEI 08-01 with additional guidance when necessary
 4. Assuring Sufficient Information in ITAAC Closure Letters
 5. Mitigate impact of ITAAC Surge

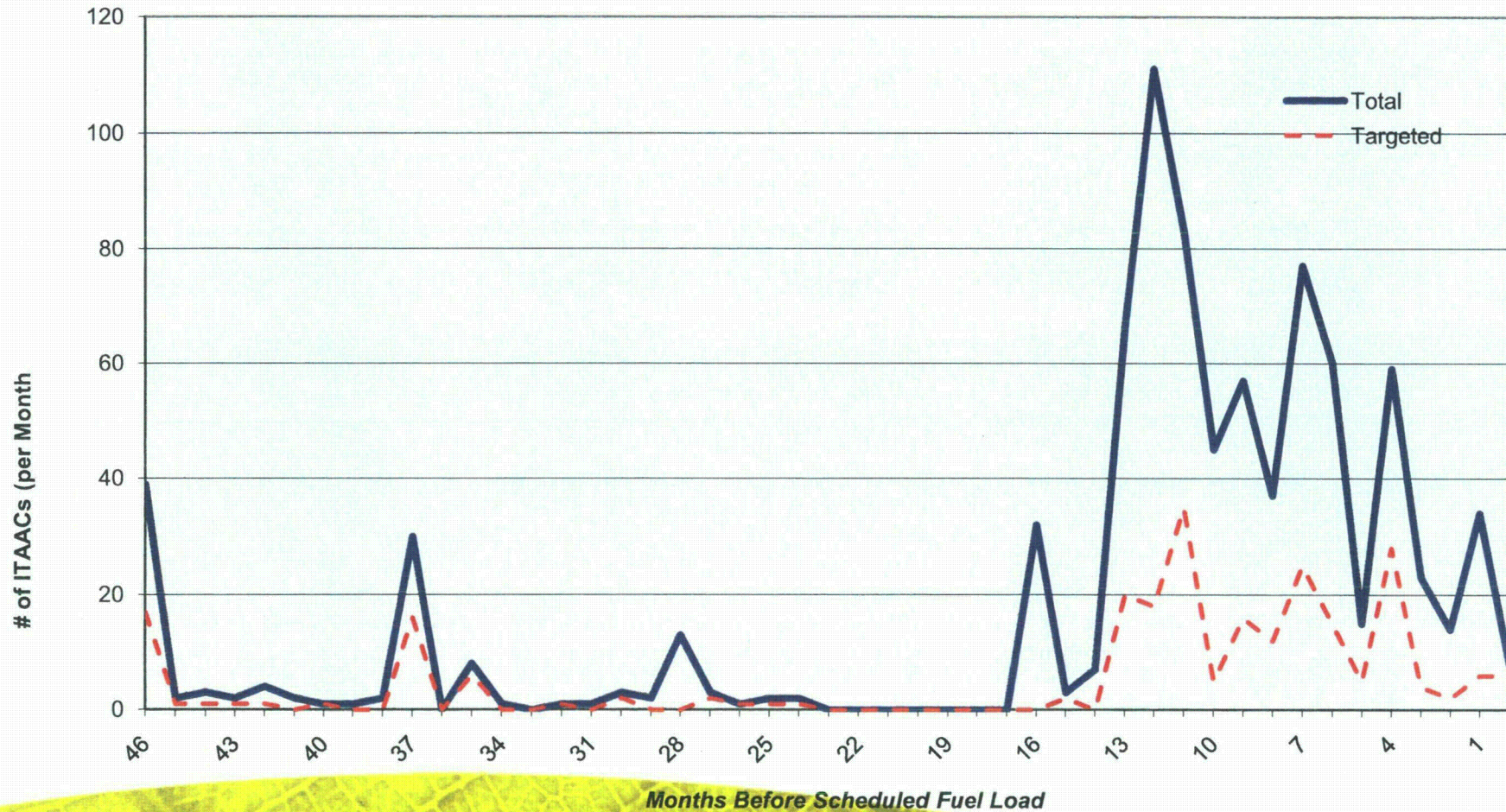


Lesson Learned – Closure Letter Information

- Lesson – Different expectations on closure letter content for ITAAC without a similar NEI 08-01 example resulted in re-submittal of closure letters
- Goal - Provide additional confidence and certainty in the content of ITAAC closure letters
- Activity – “Expanded ITAAC Closure Notification Project”
 - Westinghouse/NEI will prepare approximately 30 additional example letters
 - More than 80% of AP1000 ITAAC will be represented
 - Letters reviewed with NRC staff at CIP Task Force Public Meetings
 - Letters added to NEI 08-01 after mutual NRC/NEI concurrence



Lesson Learned – Forecast ITAAC Surge



Months Before Scheduled Fuel Load



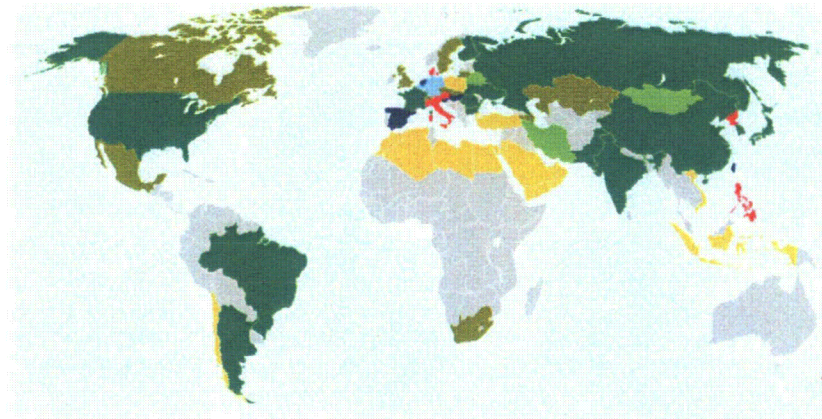
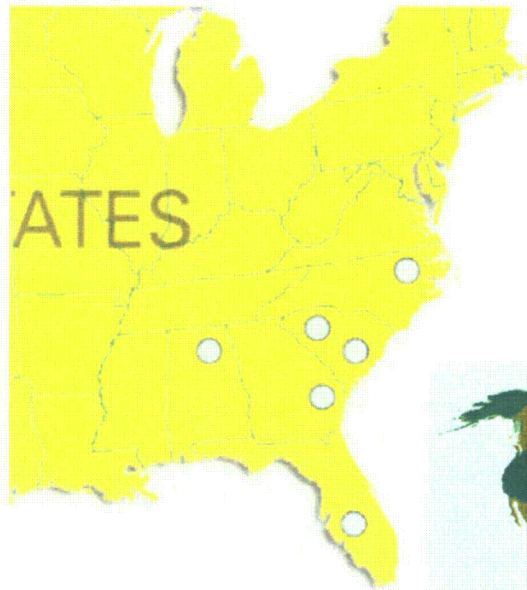
Lesson Learned – ITAAC Surge Mitigation

- Lesson – By their nature, ITAAC require verification of the as-built plant, and therefore most occur late in construction
- Goal – Mitigate the challenges associated with this surge
- Factors Identified During Demo Project
 - Work frequently occurs well in advance of Closure Letter submittal (Example: ASME ITAAC)
 - Many of the latest ITAAC are pre-operation tests, which involve a well understood process with significant NRC Inspector involvement
- Additional Activities In-Progress
 - Detailed planning for each ITAAC
 - Focus on process efficiency
 - Leverage CIP Task Force work to reduce process uncertainty

Standardization and the Fleet Approach



The vision is to identify and apply common activities to the entire AP1000 Fleet





Standardization and the Fleet Approach

- ITAAC Closure Plans for each Standard Plant ITAAC
- Equipment Qualification applicable to all AP1000 units
 - Standard EQ Documentation Package used as basis for closing seismic and harsh environment qualification ITAAC for each unit
- First/First-3 of a Kind Pre-Operational Testing
 - Demonstration of key functional capabilities unique to AP1000
 - Apply stringent standard technical requirements to justify applicability to all units and regulatory frameworks



**BRIEFING ON
INSPECTIONS, TESTS, ANALYSES,
AND ACCEPTANCE CRITERIA
(ITAAC) - RELATED ACTIVITIES**

**Bill Borchardt
Executive Director for Operations
August 30, 2011**

Agenda

- **Introduction – Michael Johnson**
- **Overview – Laura Dudes**
- **NRC's Construction Inspection Program – James Beardsley**
- **Execution of the CIP – Alan Blamey**
- **ITAAC Closure – Mark Kowal**

Construction Inspection Program Update

**Laura A. Dudes, Director
Division of Construction Inspection
and Operational Programs**

Program Accomplishments

- **Transition to execution**
- **Program structure and procedures**
- **Assessment process**
- **Vendor inspection program**

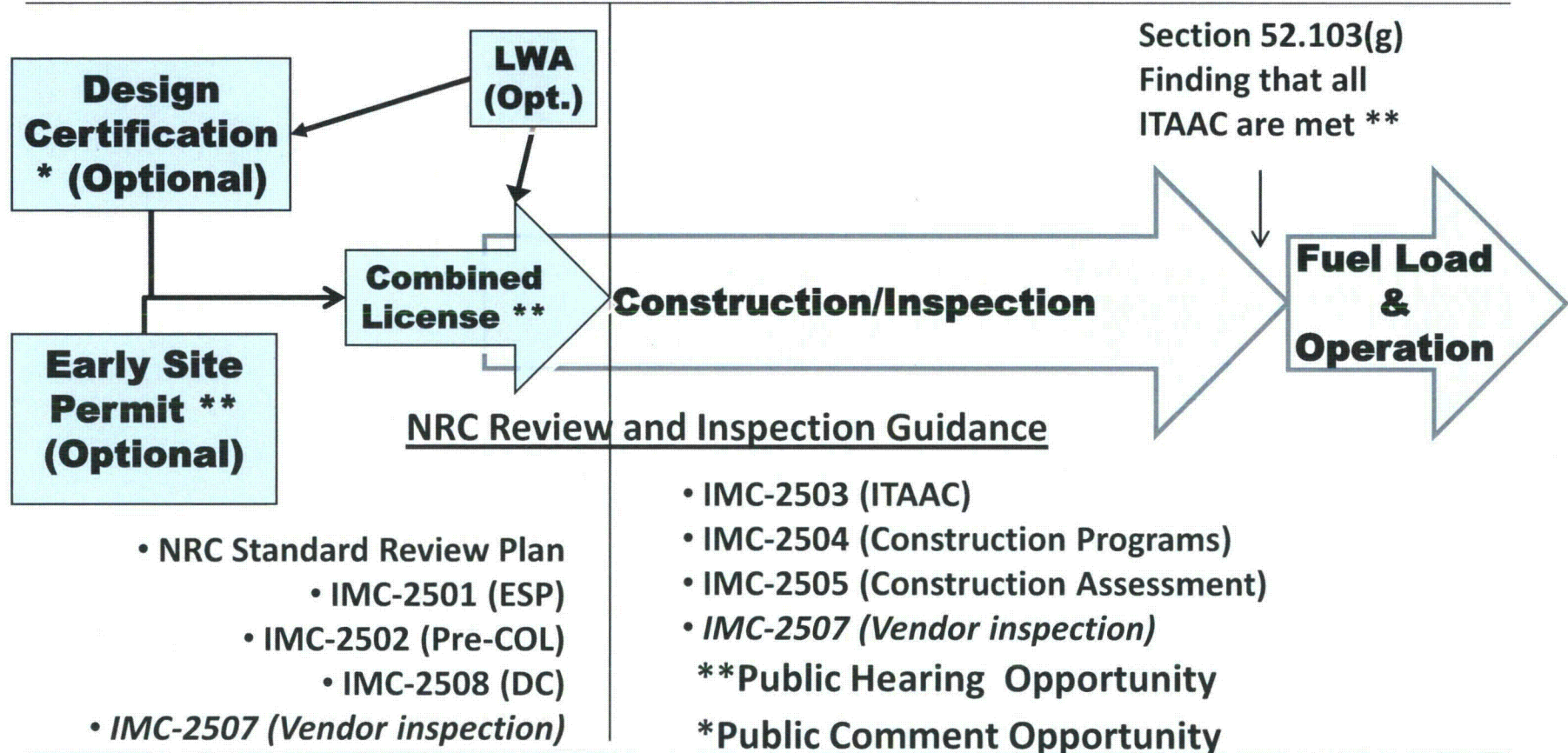
Areas of Focus

- **ITAAC closure verification**
- **Construction business processes**
- **Vendor program improvements**
- **Advanced reactor inspection program**
- **Safety culture**

**New Nuclear Plant
Construction Inspection
Program (CIP)**

**Jim Beardsley
Chief, Construction Inspection
Program Branch
Office of New Reactors**

Part 52 Licensing and Inspection



CIP Infrastructure

- **Technical Assistance Requests**
 - **Between the inspectors and HQ**
- **Construction Inspection Program Information Management System (CIPIMS)**
 - **Planning, scheduling and reporting**
- **Verification of ITAAC Closure, Evaluation and Status (VOICES)**

CIP Accomplishments

- **Inspection procedures are approved and ready for use**
- **A construction inspection support contract is in place to provide specialization and capacity**
- **Processes and procedures are on track to support ITAAC Closure**

**Planning, Scheduling, and
Execution of the Construction
Inspection Program**

Alan Blamey

Region II

Center for Construction Inspection

Construction Inspection Infrastructure

- **CIPIMS**
- **Primavera**
- **Scalable platforms**

Preparing to Conduct Construction Inspections

- **Inspection planning**
- **Inspection scheduling**
- **Reconciliation**

CIPIMS Upgrade

- **Based on OIP and inspector input**
- **Maintain inspector focus on field inspection**
- **Support ITAAC closure and ITAAC inspection program management**

AP-1000 Sanmen Experience

- **Verify / validate NRC ITAAC inspection process**
- **Inspection of off-site module fabrication**
- **Agile response to schedule changes**

Transition to Program Execution

- **Resident inspectors stationed at Vogtle and VC Summer**
- **Receiving construction schedules**
- **ITAAC inspections underway**
- **Continue to gain experience executing the inspection program**

ITAAC Closure

**Mark Kowal, Chief
Technical Specifications
and ITAAC Branch**

ITAAC Quality and Inspectability

- **Promote common understanding**
- **Frequent dialogue with applicants and stakeholders**
- **RIS 2008-05, Rev. 1 (2010)**
- **NRO technical reviewer training**

ITAAC Closure Verification

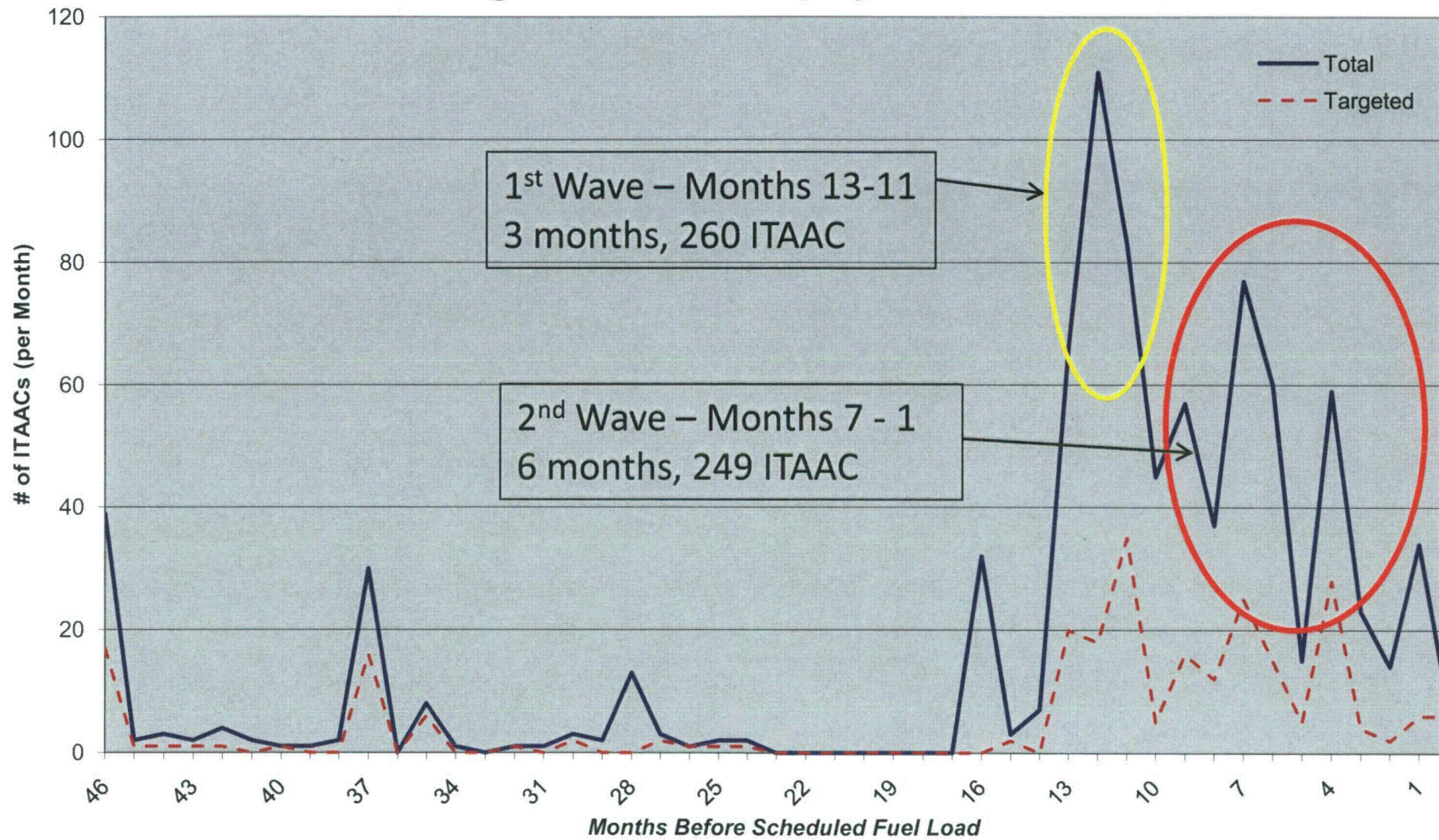
- **Office Instruction drafted**
- **Exercised process during:**
 - **Internal counter-part meetings**
 - **Public meetings**
 - **ITAAC closure demonstration exercise**

ITAAC Closure Demonstration

- **Participants: DOE, NRC, NEI, Southern, and Westinghouse**
- **Inspections at Vogtle site and Westinghouse headquarters**
- **Tested main aspects of ITAAC closure processes**

Expected ITAAC Surge

Source: Westinghouse Electric Company SEPT 2010 Schedule - 1 Unit



ITAAC Closure Demonstration

- **Successful in identifying lessons learned and challenges**
- **ITAAC interpretations**
- **Next steps and future ITAAC closure work**
- **52.103(g) finding recommendation process under development**

Summary

- **Transitioning from development to implementation**
- **Continue to be forward looking and proactive**
- **ITAAC are first of a kind; we will adjust as needed to address any emerging challenges**

Acronyms

CIP Construction Inspection Program

LWA Limited Work Authorization

TAR Technical Assistance Request

OIP Oversight Infrastructure Program

RIS Regulatory Information Summary

DOE Department of Energy

NRC Nuclear Regulatory Commission

NEI Nuclear Energy Institute

Acronyms

ITAAC **Inspections, Test, Analysis,
and Acceptance Criteria**

CIPMS **Construction Inspection
Program Information
Management System**

VOICES **Verification of ITAAC
Closure Evaluation and
Status**