BREAKOUT SESSION: CONSTRUCTION INSPECTION PROGRAM

Breakout Session: Construction Inspection Program

- Glenn Tracy
  - Office of New Reactors – Headquarters, NRC
- Russell Bell
  - Nuclear Energy Institute
- Richard Croteau
  - Center for Construction Inspection - Region II, NRC
- Michael Smith
  - Southern Nuclear Operating Company

Breakout Session: Construction Inspection Program (cont'd.)

- **Objectives:**
  - Provide a comprehensive update on industry and regulatory activities in the areas of new reactors construction
  - Provide the latest perspectives on applicants' activities, NRC oversight, and regulatory interactions throughout the new reactor design, manufacturing, fabrication, and construction processes to the 10 CFR 52.103(g) finding

Breakout Session: Construction Inspection Program (cont'd.)

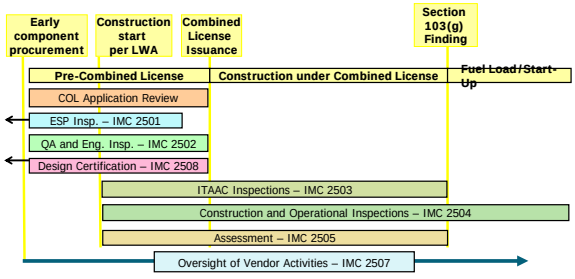
- Panelist contributions have been integrated into a single presentation. The panelists will present their independent views on areas of responsibility or expertise throughout the presentation in an effort to provide:
  - Useful information on the latest oversight and inspections, tests, analyses, and acceptance criteria (ITAAC) initiatives, and regulatory and industry guidance, and
  - Key insights regarding regulator-licensee interactions throughout the process

New Reactors Construction Oversight Program

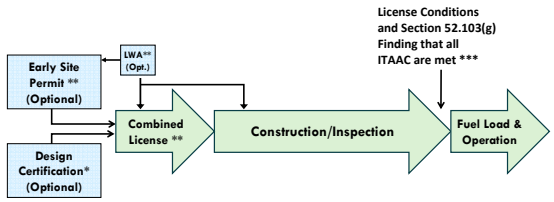
- Ensure that plants are constructed in accordance with approved designs, safety, and security regulations
- Ensure operational readiness
- Communicate results to all stakeholders
- Ensure that a well constructed unit is ready for safe operation and transition to the Reactor Oversight Program

New Reactors Construction Oversight Program

Oversight will assure plants are constructed as designed.



10 CFR Part 52 Licensing Process



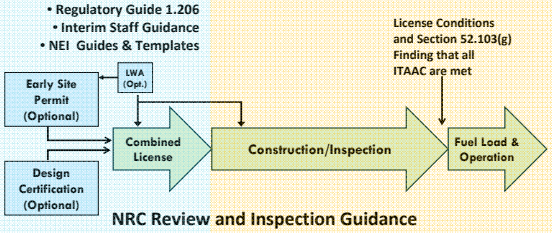
ITAAC is short for Inspections, Tests, Analyses and Acceptance Criteria

*** Public Hearing Opportunity
** Mandatory Public Hearing
* Public Comment Opportunity

10 CFR Part 52 Licensing Process

Guidance for Applicants & Licensees

- Regulatory Guide 1.206
- Interim Staff Guidance
- NEI Guides & Templates



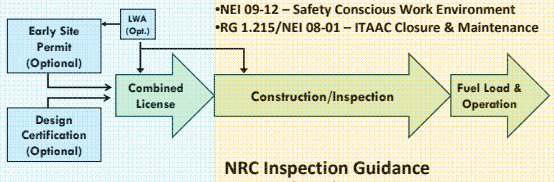
NRC Review and Inspection Guidance

- NRC Standard Review Plan
- IMC-2501 (ESP)
- IMC-2502 (Pre-COL)
- IMC-2508 (DC)

10 CFR Part 52 Licensing Process

Guidance for Applicants & Licensees

- NEI 06-14 – Quality Assurance Program
- NEI 08-02 – Corrective Action Processes
- NEI 09-12 – Safety Conscious Work Environment
- RG 1.215/NEI 08-01 – ITAAC Closure & Maintenance



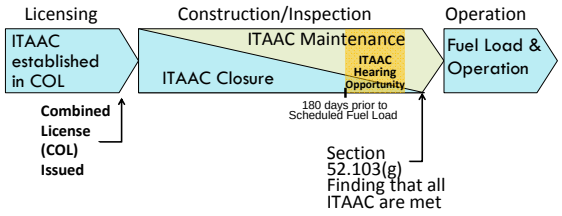
NRC Inspection Guidance

- IMC-2503 (ITAAC)
- IMC-2504 (Construction & Operational Programs)
- IMC-2505 (Construction Assessment)
- IMC-2507 (Vendor Inspection)

Construction Reactor Oversight Program – cROP

- IMC 2505 revision was issued on December 2009
- Program will be implemented soon at Vogtle
- Staff Requirements Memoranda dated December 5, 2008 directed the staff to consider additional options
- NEI proposal received on July 2009
- Information SECY-09-0113 detailing next steps was submitted in August 2009
- Senior level Construction Inspection Assessment Program Workshop in November 2009
- Options to be provided to the Commission by November 2010

Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) Process



ITAAC Maintenance

- After ITAAC are completed, licensees must maintain the validity of ITAAC conclusions to support the Section 52.103(g) finding that all ITAAC are met
  - Quality Assurance Program
  - Corrective Action Program
  - Design/Configuration Control Program
  - Construction/Maintenance Program

ITAAC Maintenance Process

- Licensee is responsible for ITAAC maintenance
- Licensees to notify NRC of activities that materially alter ITAAC Determination Bases
  - Supplemental ITAAC Closure Letter
  - Notification thresholds are being defined in NEI 08-01 (revision in progress)
- Licensee submits All ITAAC Complete Letter
- NRC will assess Licensee's implementation of ITAAC maintenance program

Criteria for Section 103(g) Finding

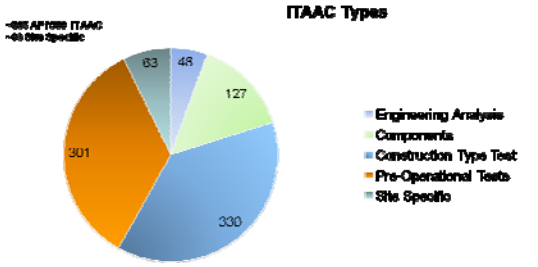
- All ITAAC were met at one time
- Licensee provides confidence that ITAAC determination bases are maintained and ITAAC continue to be met
  - Structure, systems, and components (SSCs) may be out for maintenance at the time of the Section 52.103(g) finding
  - No unresolved conditions that exceed threshold for Supplemental ITAAC Closure Letters
- NRC staff makes recommendation regarding the completion status of ITAAC

Tech Specs take effect upon Section 52.103(g) finding

ITAAC Current Activities

- NEI 08-01 being revised to include ITAAC maintenance guidance and examples
- Revision to be completed in early 2010
- NRC will revise Regulatory Guide 1.215
- NRC Rulemaking to include ITAAC maintenance period

ITAAC Overview



ITAAC Example

- As an example, ITAAC for squib valves in the automatic depressurization system (ADS) for AP1000 reactor will be discussed
- NRC staff continues to develop inspection procedures to verify ITAAC completion during construction of new nuclear power plants

Targeted ITAAC Selection

- There are 51 ITAAC within the reactor coolant system
- Of those, there are 36 targeted for NRC inspection
- 15 of the targeted ITAAC are on automatic depressurization system Squib Valves
- 3 of these 15 ITAAC were chosen for this exercise

Targeted ITAAC Selection

ITAAC	Description
2.1.02.02a	The valve is designed and constructed in accordance with ASME Code Section III requirements.
2.1.02.12a.v	The valve performs its active safety-related function of changing position as indicated in the table.
2.1.02.11b.i	The valve performs its active safety function after receiving a signal from the PMS.

ITAAC 2.1.02.11b.i

Design Commitment	Inspection, Test, Analysis (ITA)	Acceptance Criteria (AC)
The valves identified in Table 2.1.2-1 as having PMS control perform an active safety function after receiving a signal from the PMS.	Testing will be performed on the squib valves identified in Table 2.1.2-1 using real or simulated signals into the PMS without stroking the valve.	The squib valves receive a signal at the valve electrical leads that is capable of actuating the squib valve.

Pre-Operational testing of valve signal initiation

Licensee Construction Oversight of Vogtle 3 & 4

Pre-construction/Pre-Combined License (COL) Activities (Grading, clearing, excavation, erection of transmission lines; major procurement begins)	
Vendor Surveillance	•Applicant site visits to Japan, China, Italy •Applicant resident inspectors in Korea and Louisiana
Program Implementation	•Corrective Action Program •Document Control
Pre-Construction Oversight	•Establish Organization
Procedure Development	•Prepare and approve procedures
ITAAC Implementation	•Squib valve procurement

NRC Oversight of New Reactor Construction

Pre-construction/Pre-COL Activities	
Inspection Areas	•NRC Vendor Inspections (Inspection Manual Chapter (IMC) 2507) • Vendor Inspection of Squib Valve Manufacturer •Early Site Permit Inspections, if applicable (IMC 2501) •Quality Assurance Inspections (IMC 2502) •Inspection of Construction and Operational Programs (IMC 2504)
Public Communications	•Public Outreach Meetings •Publicly Available Inspection Reports •Assessment Meeting

Licensee Construction Oversight of Vogtle 3 & 4

Construction Activities under Limited Work Authorization (LWA)/COL (Backfill, MSE walls, mudmats and liner; procurement continues; onsite fabrication begins)	
Vendor Surveillance	•Ongoing •Squib Valve Fabricator Audit
Program Implementation	•Fitness for Duty •Quality Assurance •SCWE
Construction Oversight	•Expand Construction Oversight
Procedure Development	•Prepare and approve procedures •Implement configuration management
ITAAC Implementation	•Site Specific Backfill

ITAAC Example

Site Specific Backfill

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
2.5.4.5.5a Category 1and 2 backfill soil placed in the power block footprint will consist of sand and silty sand, and shall be placed in maximum12 inch lifts compacted to a minimum of 95 percent of the maximum dry density according to ASTM D 1557-02 (Modified Proctor), to be able to support the Seismic Category 1 structures as specified within the Early Site Permit 2.5.4.5.3 Backfill Design.	Testing shall be performed to confirm the density of the backfilled soil is a minimum of 95 percent of the maximum dry density according to ASTM D 1557-02 (Modified Proctor). Testing of the Category 1and 2 backfill shall be done in accordance with the Early Site Permit 2.5.4.5.5 Quality Control and ITAAC.	Category 1 and 2 backfill will be compacted to a minimum of 95 percent of the maximum dry density, as determined by ASTM D 1557-02 (Modified Proctor).

NRC Oversight of New Reactor Construction

Construction Activities under LWA/COL	
Inspection Areas	•Inspections of Targeted ITAAC (IMC 2503) •NRC ITAAC Inspection of Squib Valves (for ASME, Seismic, EQ) and Backfill •Inspection of Construction and Operational Programs (IMC 2504) •Vendor Inspections (IMC 2507) •Resident Inspectors
Assessment Process	•Periodic Construction Assessment Begins (IMC 2505)
Public Communications	•Public Meetings •ITAAC Completion Notices •Construction Inspection Results •Assessment Meetings

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Licensee Construction Oversight of Vogtle 3 & 4

Approach to 103(g) and Fuel Load (complete safety related construction; prepare for operation)	
Construction Oversight at Plant	•Engineering and Construction personnel engaged.
Fabrication Oversight at Module Facility	•Onsite surveillance
ITAAC Closure	•Reviewed by Southern Nuclear Company (SNC) •Squib Valve Manufacturing Complete – Electrical Testing
Pre-fuel Activity	•Inspections •Plant maintenance and ITAAC maintenance •Program verification •Operator and Plant Training

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NRC Oversight of New Reactor Construction

Approach to 103(g) And Fuel Load	
Inspection Areas	•Targeted ITAAC Inspections completed (IMC 2503) •Pre-Operational inspections (IMC 2504) •Including Automatic Depressurization System •Verification of Operational Programs (IMC 2504) •Verification of Post-COL Items (Interim Staff Guidance 15) •NRC Vendor Inspections (IMC 2507) •Resident Inspectors, including operational
Assessment Process	•Periodic Construction Assessment Continues (IMC 2505)
Public Communications	•Public Meetings •ITAAC Completion Notices •Construction Inspection Results •Assessment Meetings

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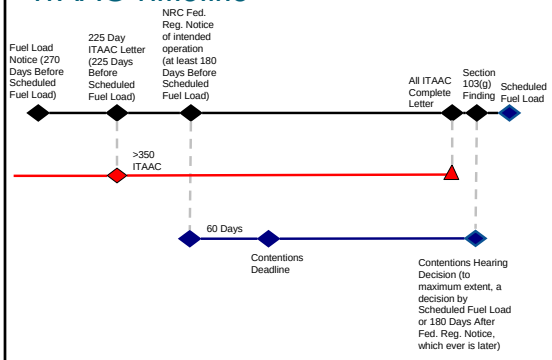
Licensee Construction Oversight of Vogtle 3 & 4

Fuel Load to Full Power Operation (Section 103(g) finding has been received)	
Training Verification	•Engineering and Construction personnel engaged
ITAAC Closure	•All ITAAC closed •Fuel Load
Start-up Testing	•Technical Specifications in effect
Independent Assessment	•Institute of Nuclear Power Operations (INPO) •Authorized Nuclear Inspector

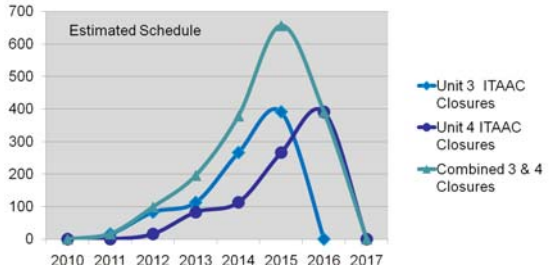
NRC Oversight of New Reactor Construction

Fuel Load to Full Power Operation	
Inspection Areas	•Inspection of Startup Test Program (IMC 2514) •NRC Vendor Inspections (IMC 2700) •Resident Inspectors
Assessment Process	Reactor Oversight Process (IMC 0305)
Public Communications	•Public Meetings •Publicly Available Inspection Reports •Assessment Meetings

ITAAC Timeline



ITAAC Challenges



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