

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

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**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

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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

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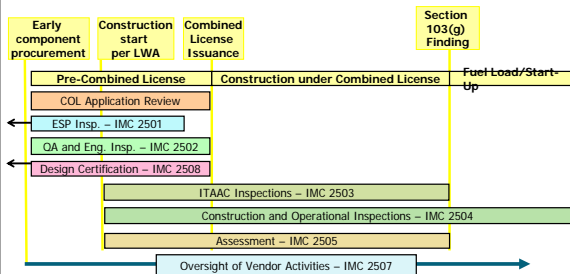
New Reactors Construction Oversight Program

- 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

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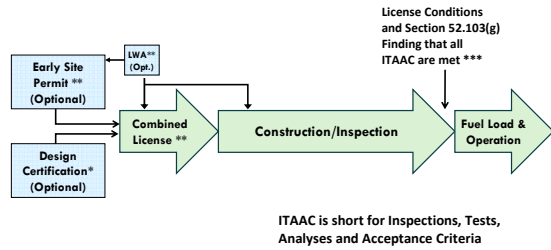
New Reactors Construction Oversight Program

Oversight will assure plants are constructed as designed.



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10 CFR Part 52 Licensing Process



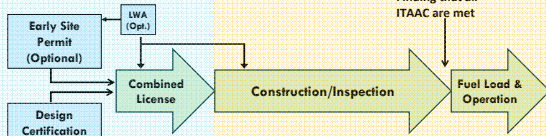
*** Public Hearing Opportunity
 ** Mandatory Public Hearing
 * Public Comment Opportunity

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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

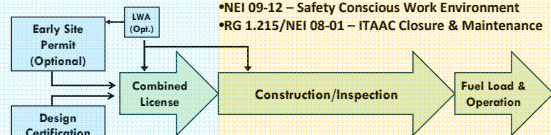
- NRC Standard Review Plan
 - IMC-2501 (ESP)
 - IMC-2502 (Pre-COL)
 - IMC-2508 (DC)

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

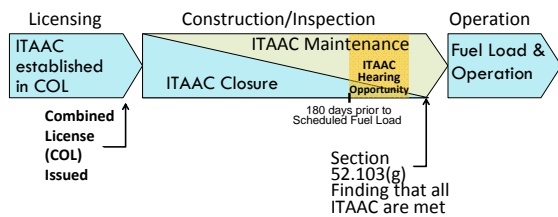
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Construction Reactor Oversight Program – cROP

- 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

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



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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

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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

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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

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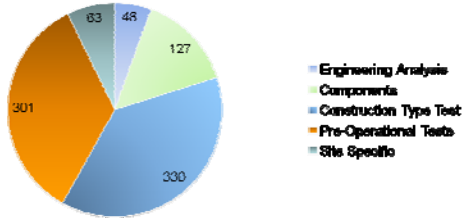
ITAAC Current Activities

- 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

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ITAAC Overview

-85 AP1000 ITAAC
-40 Site Specific



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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

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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

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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. |

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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

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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 | <ul style="list-style-type: none"> •Applicant site visits to Japan, China, Italy •Applicant resident inspectors in Korea and Louisiana |
| Program Implementation | <ul style="list-style-type: none"> •Corrective Action Program •Document Control |
| Pre-Construction Oversight | •Establish Organization |
| Procedure Development | •Prepare and approve procedures |
| ITAAC Implementation | •Squib valve procurement |

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NRC Oversight of New Reactor Construction

Construction Activities under LWA/COL

| | |
|-----------------------|--|
| Inspection Areas | <ul style="list-style-type: none"> •Inspections of Targeted ITAAC (IMC 2503) <ul style="list-style-type: none"> •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 | <ul style="list-style-type: none"> •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 | <ul style="list-style-type: none"> •Reviewed by Southern Nuclear Company (SNC) •Squib Valve Manufacturing Complete <ul style="list-style-type: none"> – Electrical Testing |
| Pre-fuel Activity | <ul style="list-style-type: none"> •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 | <ul style="list-style-type: none"> •Targeted ITAAC Inspections completed (IMC 2503) •Pre-Operational Inspections (IMC 2504) <ul style="list-style-type: none"> •Including Automatic Depressurization System •Verification of Operational Programs (IMC 2504) •Verification of Post-COL Items (Interim Staff Guidance 1.5) •NRC Vendor Inspections (IMC 2507) •Resident Inspectors, including operational |
| Assessment Process | •Periodic Construction Assessment Continues (IMC 2505) |
| Public Communications | <ul style="list-style-type: none"> •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 |

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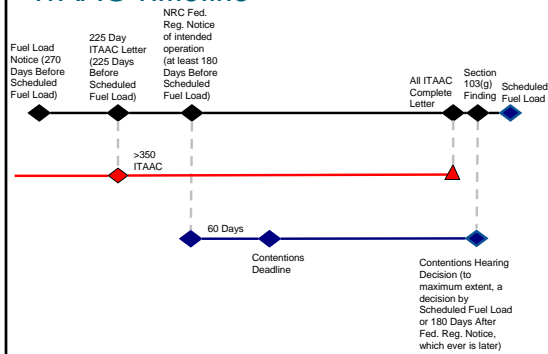
NRC Oversight of New Reactor Construction

Fuel Load to Full Power Operation

| | |
|-----------------------|---|
| Inspection Areas | •Inspection of Startup Test Program (IMC 251.4) •NRC Vendor Inspections (IMC 2700) •Resident Inspectors |
| Assessment Process | Reactor Oversight Process (IMC 0305) |
| Public Communications | •Public Meetings •Publicly Available Inspection Reports •Assessment Meetings |

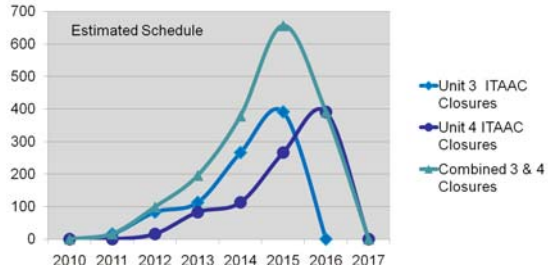
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ITAAC Timeline



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ITAAC Challenges



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