Construction Inspection Program

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Construction Inspection Program
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Current Construction Outlook

AP1000 – COL applications
    5 companies, 6 sites, 11 units
ESBWR – COL applications
    3 companies, 3 sites, 3 units
EPR – COL applications
    1 company, 2 sites, 3 units
ABWR – COL applications
    1 company, 2 units
Unknown technology – Design Certification
Inspection Program Structure

- Inspection Manual Chapters – keyed to organization of approach in 10 CFR Part 52
  - IMC-2501: Early Site Permits
    - 5 Inspection Procedures
  - IMC-2502: Inspections to Support Issuing a COL
    - 9 Inspection Procedures
  - IMC-2503: Inspections of ITAAC-Related Work
    - 25 Inspection Procedures – addressing the specific attributes of the different kinds of ITAAC
  - IMC-2504: Inspections of Non-ITAAC Work
    - Approximately 150 Inspection Procedures – addressing the programs and processes common to all work activities; pre-op and startup testing; operational programs
What is different this time?

• Combined license (COL) rather than CP and OL
  – Utility will hold an operating license *prior* to starting construction
• ITAAC
  – Required Commission finding
  – Greater cooperative licensing and inspection effort
• Faster pace using Modular Construction
• Energy Policy Act
  – Standby support – delay insurance

What is **not** different this time?

• How inspectors will look at work-in-progress in the field.
What is an ITAAC?

• Inspections, tests, analyses and acceptance criteria
• Provision to a combined license
• Successful completion of all ITAAC demonstrates that plant constructed in accordance with the Atomic Energy Act, the regulations, and the license
Format of an ITAAC

Design commitment
  – what is the target?

Inspections, tests and analyses
  – what observations or examinations will be done by the licensee to determine if the target was met?

Acceptance Criteria –
  – what does success look like?
How does an ITAAC work?

• The list of ITAAC are submitted with the COL application.
• NRC reviews and approves the ITAAC and incorporates them as part of the license.
• NRC inspectors watch the licensee perform ITAAC or ITAAC-related activities during construction.
Not all ITAAC are created equal

<table>
<thead>
<tr>
<th>Design Commitment</th>
<th>Inspection Test Analysis</th>
<th>Acceptance Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety related displays in the main control room can be retrieved</td>
<td>Simple inspection</td>
<td>Safety related displays can be retrieved in the main control room</td>
</tr>
<tr>
<td>ASME code piping retains pressure boundary integrity at design pressure</td>
<td>Report demonstrating piping meets ASME code</td>
<td>A report exists and concludes that piping meets requirements of ASME code</td>
</tr>
</tbody>
</table>
What the differences mean to the CIP:

• COL vs a CP and OL means:
  – Decisions that were made to support an OL will now be made much earlier and on less specific information
  – Inspection program will check on implementation of licensee commitments used to obtain the COL

• Having ITAAC means:
  – ITAAC-based, not system-based inspection procedures
  – Linking to and tracking inspection results by ITAAC to support Commission finding
  – Selecting which ITAAC should receive direct inspection
  – Developing tools so that licensing and inspection can share information
  – Ensuring that the NRC review and acceptance of the ITAAC completion does not cause unnecessary delays
What the differences mean to the CIP

• Faster pace and modular construction means:
  – Potential for more inspections at vendor sites
  – potentially off-shore
  – Need for better scheduling tools for NRC
  – Must have the inspection staff ready to do the job

• Enforcement – still to be worked out
Startup Feedwater Pump Module – AP1000
Closing an ITAAC

• The licensee informs the NRC when each ITAAC has been met

• NRC reviews ITAAC closeout letters:
  – Licensing performs acceptance review
  – Construction inspection group examines inspection record for that ITAAC
  – Licensing documents the basis for the ITAAC acceptance criteria being successfully met

• A notice is published in the Federal Register
Non-ITAAC Inspections

What else are we going to inspect?

- Licensee Construction Programs
- Corrective Action Program
- Control and Oversight of Contractors
- Design Change Process
- Licensee Operational Programs
- Start-up Testing Program
- Pre-Op Testing Program
- Transition to the ROP
Lessons from the Past

• A steep learning curve for NRC and licensees

• Construction problems
  – Inadequate storage and labeling
  – Inadequate procedures
  – Inadequate training of construction staff
  – Inadequate process controls
  – Inadequate contractor oversight
What are the most significant NRC challenges?

• Overconfidence
• Keeping pace with the work
• Keeping focused
• Remembering the Part 52 context
• Documenting as you go
• Dealing with the diversity of designs