



# **New Reactor Business Line Commission Briefing**

**September 25, 2012**



# **Opening Remarks**

**Bill Borchardt,  
Executive Director for Operations**



# **Overview of the New Reactor Program**

**Glenn M. Tracy, Director  
Office of New Reactors**

# **Agenda**

- **Overview of the New Reactor Program**
- **Large Light Water Reactor Licensing**
- **Small Modular Reactor Licensing and Oversight Preparations**

# **Agenda**

- **Site Safety and Environmental Reviews**
- **Construction Inspection and Vendor Inspection Programs**

# **Historical Perspectives**

## **New Reactor Program Goals**

**2009–2012**

- Completed AP1000 design certification amendment**
- Issued first combined licenses**
- Made significant progress on other design certification and combined license applications**

# **Historical Perspectives**

- Developed construction inspection and support infrastructure**
- Established an advanced reactor organization and identified policy issues**

# **Key Planning Assumptions**

- **Four AP1000 units and one Part 50 reactor under construction**
- **First AP1000 unit expected in operation in 2017**
- **Significant increase in implementation of Inspections, Tests, Analyses and Acceptance Criteria closure verifications**



# **Key Planning Assumptions**

- **Increasing number of licensing actions and technical assistance requests for plants under construction**
- **Continued support to the operating reactor program for Fukushima lessons learned**

# **Workload Projections**

- **Receipt of one large reactor design certification and one early site permit application through 2017**
- **Receipt of two small modular reactor applications in 2013-2014**
- **Continued monitoring of advanced reactor developments**

# **New Reactor Program Goals 2012-2016**

**I. Support the construction oversight of four AP1000 units**

**II. Implement the agency's Reactor Vendor Inspection Program**

# **New Reactor Program Goals 2012-2016**

**III. Develop an integrated transition plan from construction to operations**

**IV. Support completion of design certifications, early site permits, and license applications**

# **New Reactor Program Goals 2012-2016**

**V. Establish the infrastructure to support review of small modular reactor applications**

**VI. Prepare for the licensing of advanced non light-water reactors**



# **Large Light Water Reactor Licensing**

**David Matthews, Director  
Division of New Reactor Licensing  
Office of New Reactors**

# **Plans to Address Key Challenges**

- **Maintaining the licensing basis during construction**
- **Addressing Waste Confidence decision**
- **Implementing Fukushima recommendations**

# **Key Staff Activities**

- **Managing license amendments**
- **Completing safety and environmental reviews**
- **Preparing for transition to operations**



# **Potential Policy Issue**

- **Financial qualifications for merchant plants**



# **Small Modular Reactor and Advanced Reactor Licensing and Oversight Preparations**

**Michael Mayfield, Director**

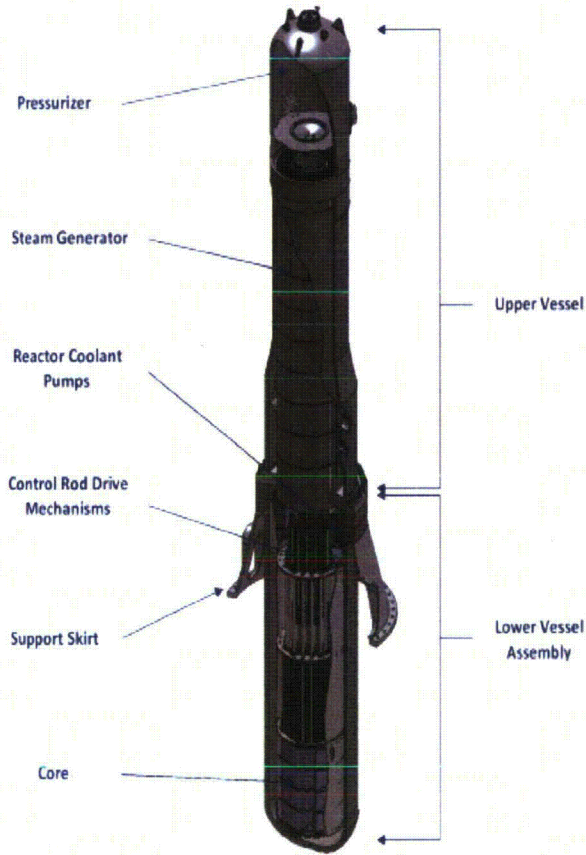
**Division of Advanced Reactors and  
Rulemaking, Office of New Reactors**

# **Plans to Address Key Challenges**

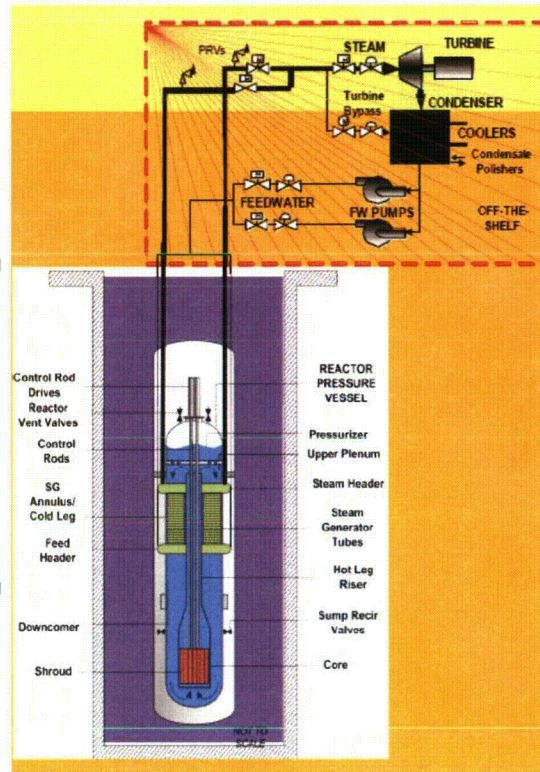
- **Developing an effective approach to review small modular reactors**
- **Applying lessons learned**
- **Undertaking first-of-a-kind reviews with unique technical challenges**

# Integral Pressurized Water Reactors

## B&W mPower

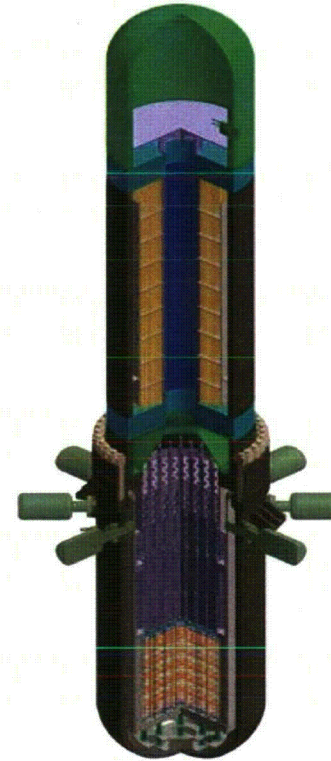


## NuScale

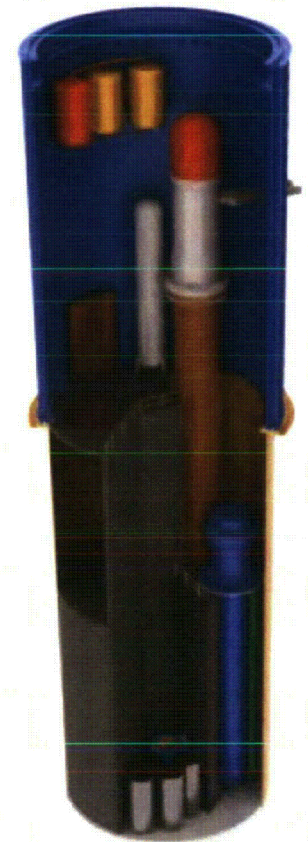


## Westinghouse

### SMR



## Holtec SMR-160



# **Key Staff Activities**

- **Developing plans to support the review of the two small modular reactor projects to be selected by DOE**
- **Formulating Design Specific Review Standards**
- **Communicating that the progress of any future reviews depends on industry's readiness**

# **Potential Policy Issue**

- **Emergency Planning requirements**



# **Site Safety and Environmental Reviews**

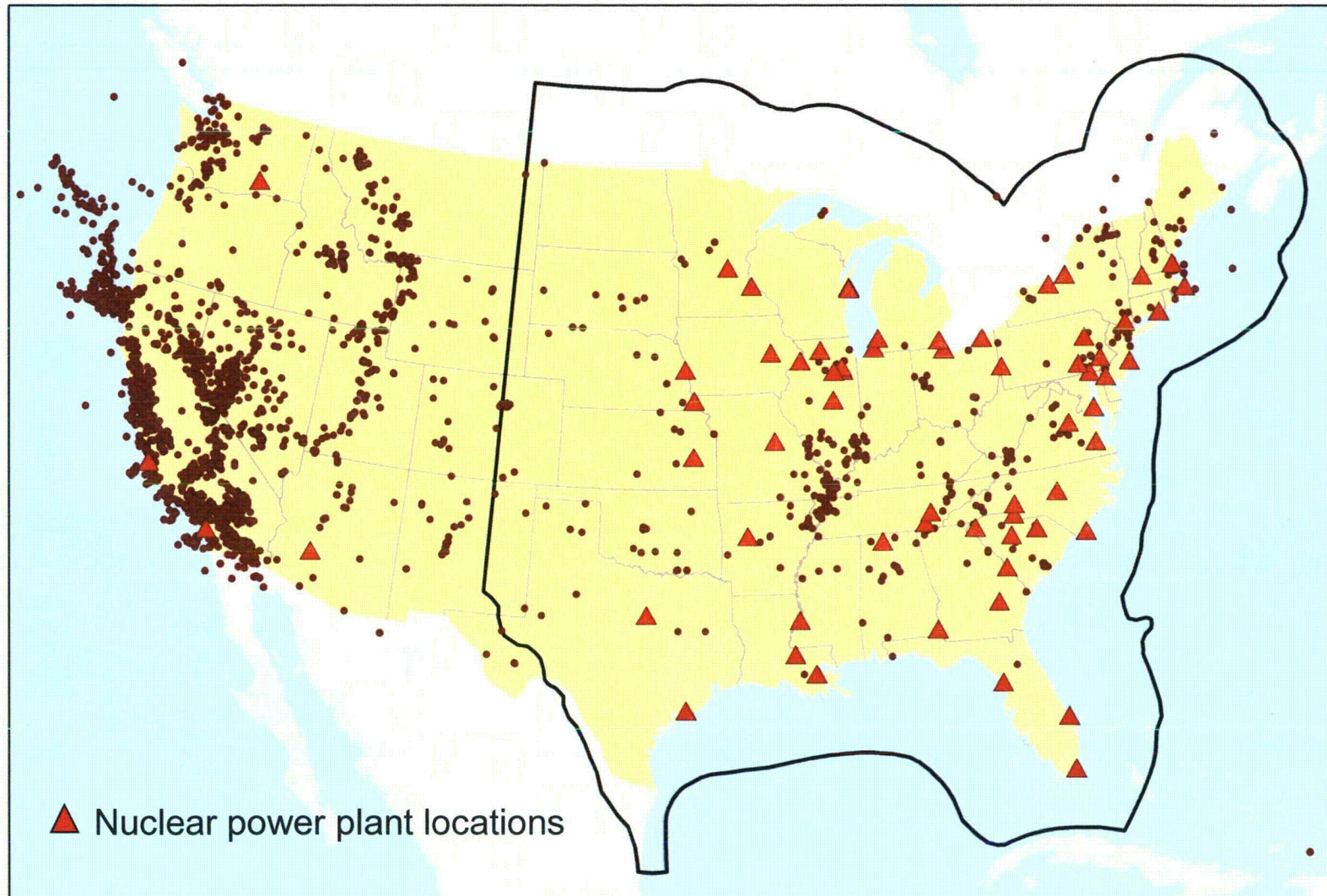
**Scott Flanders, Director  
Division of Site Safety and  
Environmental Analysis  
Office of New Reactors**

# **Plans to Address Key Challenges**

- **Implementing Fukushima seismic and flooding lessons learned for operating and new reactors**
- **Evaluating the first western site for a new reactor**



# Earthquakes and NPPs



USGS Catalog of Felt/Damaging Earthquakes in the USA 1568 - 2004

# **Key Staff Activities**

- **Preparing for small modular reactor reviews**
- **Ensuring critical skills are available to support planned activities**

# **Construction and Vendor Oversight**

- **Construction Reactor Oversight Program and Vendor Inspection Program – Laura Dudes**
- **Construction Oversight at Vogtle, Summer and Watts Bar – Victor McCree**

# **Construction and Vendor Oversight**

- **Construction Oversight Implementation – Rick Rasmussen and Justin Fuller**



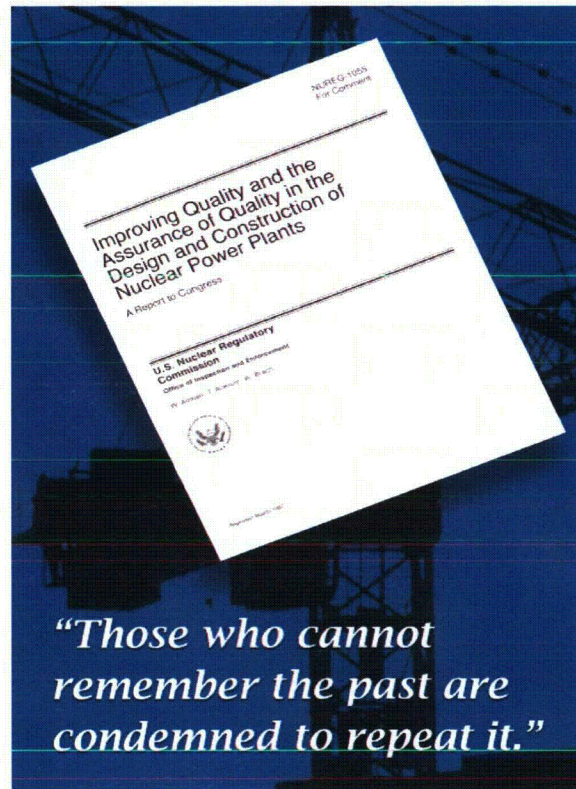
# **Construction Reactor Oversight Program and Vendor Inspection Program**

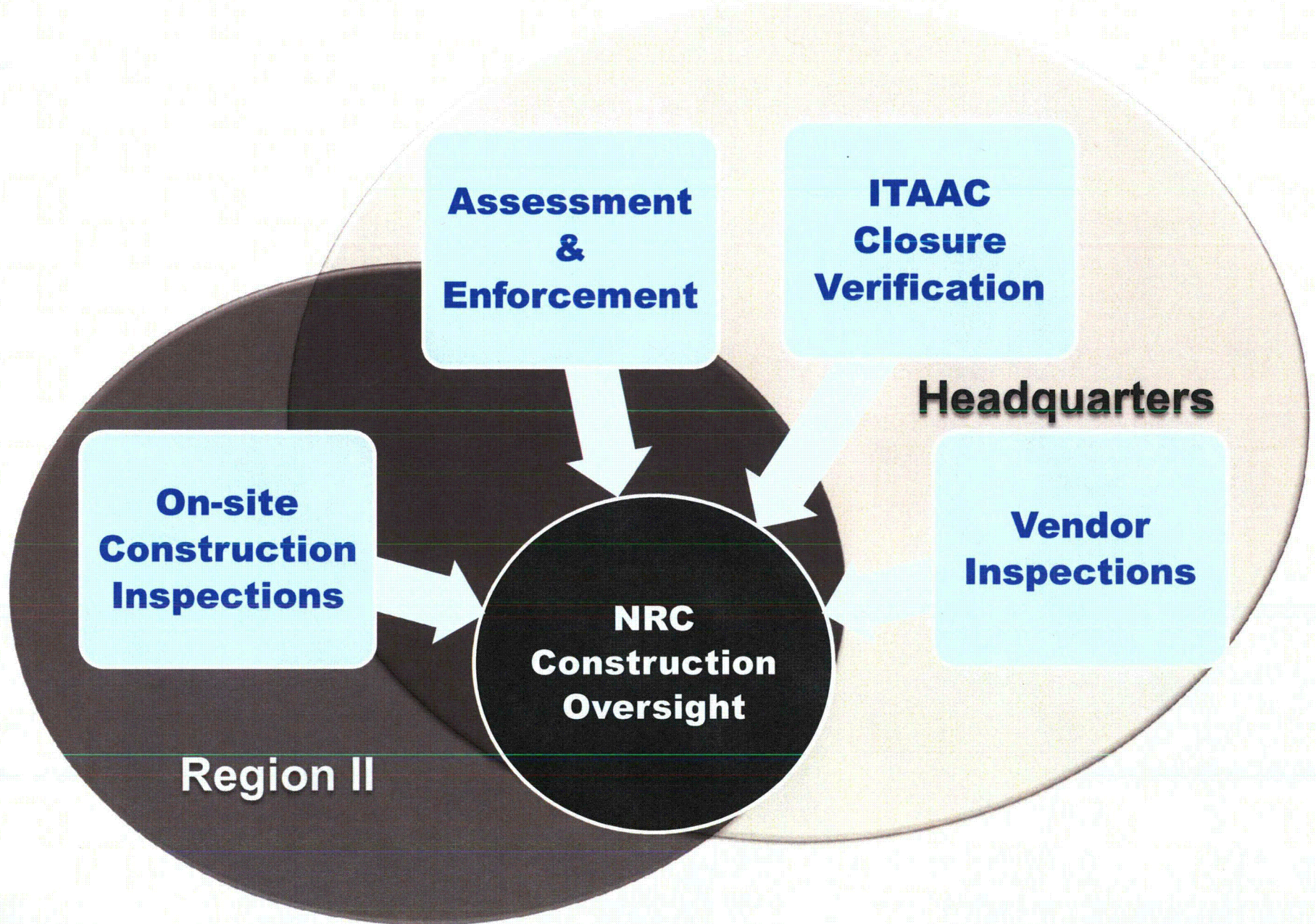
**Laura Dudes, Director**

**Division of Construction Inspection and  
Operational Programs,  
Office of New Reactors**

# Construction Reactor Oversight Program

**NUREG-1055**





**ITAAC = Inspections, Tests, Analyses, and Acceptance Criteria**

# **Plans to Address Key Challenges**

- **Addressing emerging lessons learned**
- **Planning for integrated transition**
- **Developing small modular reactors construction oversight**





# **Construction Oversight of Vogtle, Summer, and Watts Bar**

**Victor McCree**  
**Regional Administrator**  
**Region II**

# **Construction Oversight of Vogtle, Summer, and Watts Bar**

- **Region II responsibilities**
- **Construction inspectors and operator licensing examiners**
- **Site staffing (current/future)**

# **Plans to Address Key Challenges**

- **Managing inspections amidst changes to construction schedules**
- **Applying international lessons learned**

# **NUREG 1055 – NRC Lessons**

- **Inspect early in any new process**
- **Provide a larger resident inspector presence**
- **Compile an accurate inspection record**
- **Ensure an effective licensee corrective action program**



# **Vendor Inspection Program**

**Richard Rasmussen**

**Branch Chief**

**Construction Electrical Vendor Branch**

# **Vendor Inspection Program**

- **Implementing vendor oversight for operating and new reactors**
- **Planning approximately 30 inspections in FY 2013**
- **Verifying effective licensee oversight of vendors**

# **VC Summer #2 Reactor Vessel Upper Shell**



# AP1000 Components

**Core Nozzle**

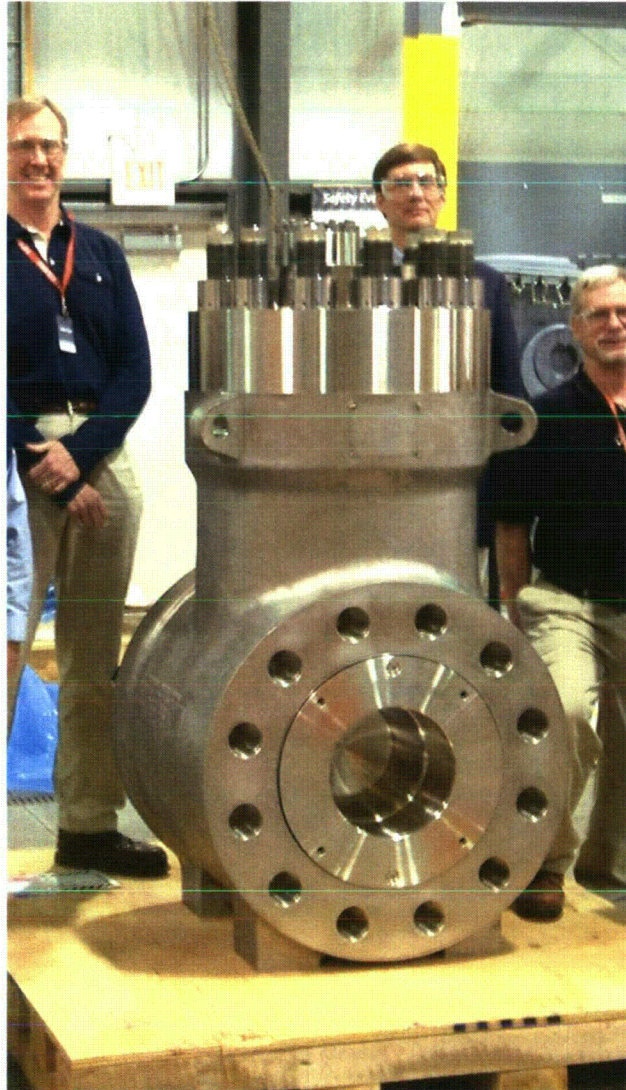


**Core Barrel**





# AP1000 14 inch Squib Valve



# **Vendor Inspection Program**

- **Vendor Inspection Program Plan highlights ranking criteria used for vendor selection**
- **Ongoing coordination and communication with RII**

# **Vendor Inspection Program**

- **Focusing on Counterfeit, Fraudulent and Suspect Items**
- **Utilizing international cooperation**

# **Vendor Inspection Results**

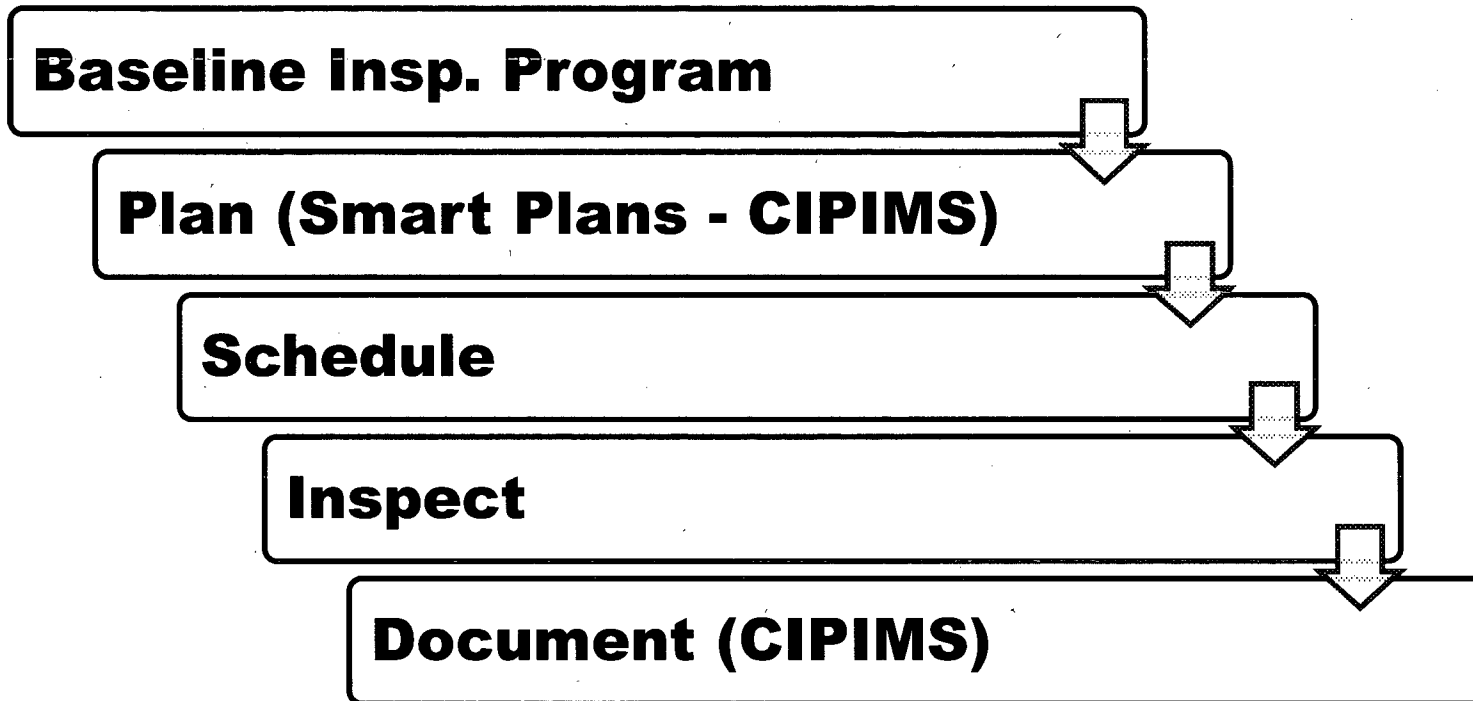
- **Inspections sample activities supporting ITAAC**
- **Provide early identification of issues and valuable inspection insights**
- **Support the Commission's finding that all ITAAC are complete**



# **Region II Implementation of Inspection Process and Tools**

**Justin D. Fuller**  
**Senior Resident Inspector**  
**Vogtle 3&4**

# Inspection Process & Tools



**CIPIMS = Construction Inspection Program Information Management System**

# Smart Plans



CIPIMS ▶ Preplan Site SmartPlans: Fuel transfer tube insert plate welding inspection



Activity Description	Fuel transfer tube insert plate welding inspection
Pre-Plan Site ID	149
DCD	AP1000
ITAAC	2.2.01.03a
ITAAC Owner Branch	Construction Inspection Branch 3
ITAAC Family	06B
Activity Number	11
Engineering Discipline	Mechanical Inspections
Unit	VOG3
IVR	No
Inspection Link Information	Link to CV BH assembly duration 50% complete to 100% complete (CB&I work)
Number of Inspectors	1
Hours	40
Skillset	Mechanical Engineer
Non-CCI Support	
Non-CCI Support Hrs	
Resident Needed	Yes

- **Smart Plan Identifies:**
- **Description of activity or item to inspect**
- **Link to licensee construction schedule**
- **Estimate # of hours (inspection effort)**
- **Resident support**
- **Inspection guidance**
- **Construction & fabrication insights**

# Example ITAAC – Containment System

ITAAC No.	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
2.2.01.03a	3.a) Pressure boundary welds in components identified in Table 2.2.1-1 as ASME Code Section III meet ASME Code Section III requirements.	Inspection of the as-built pressure boundary welds will be performed in accordance with the ASME Code Section III.	A report exists and concludes that the ASME Code Section III requirements are met for non-destructive examination of pressure boundary welds.

- **The containment vessel was selected for inspection**
- **Fuel Transfer Tube Insert Plate Weld (Pressure Boundary Weld)**

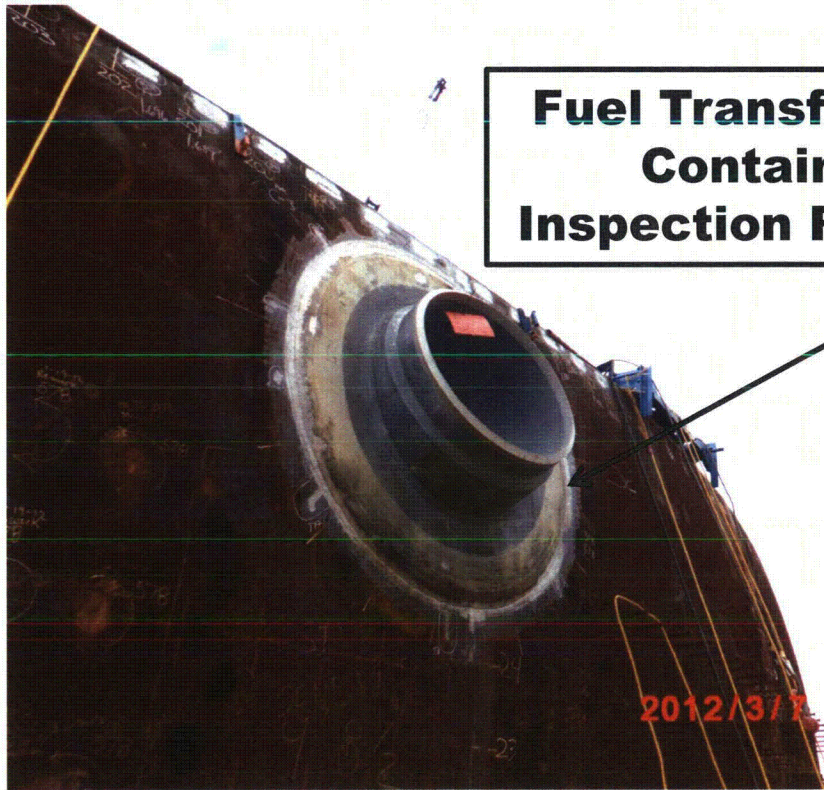


# Inspection Schedule

Vogtle Units 3 4 Inspection Schedule					NRC New Reactor 13W Insp Schedule Report						
Activity ID	USNRC AP 1000R19 DCD ITAAC Number	USNRC ID Number	Activity Name	USNRC Approved Task	Start	Finish	Original Duration	USNRC Unit Number	USNRC Resp. Branch	Role IDs	Resources
<ul style="list-style-type: none"> <li>- Report published weekly (13 Week Look Ahead)</li> <li>- Smart plan items available for inspection</li> <li>- Linked to the licensee's construction schedule</li> <li>- ITAAC #, smart plan #, title, dates, and assigned inspector</li> <li>- Estimated # of hours for inspection</li> </ul>											
VG0401d050b	3.3.00.05c	2	PXS Room Flood Barrier Inspection Report Review	No			4		CIB2	EE, NRO/DE, EE	
VG0401a0050a	3.3.00.02b	1	Site Gate Walkdown	No			4		CIB2	EE	
VG0401a0060a	3.3.00.02f	1	NI Key Dimension Inspection	No			2.4		CIB2	RI-V	Coleman Abbott
<b>Mechanical Branch</b>											
VG0406b0010k	2.2.01.03a	11	Fuel Transfer Tube Insert Plate welding Inspection	Yes			4		CIB3	CE, WE, CE	Justin Fuller

# Inspect

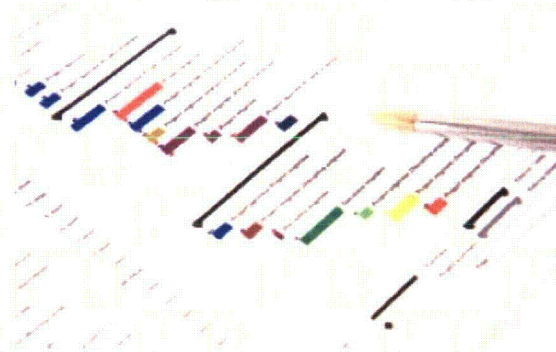
**Fuel Transfer Tube Insert Plate to  
Containment Vessel Weld  
Inspection Report 052-25/2012-002**



# Document (CIPIMS)

## CIPIMS 2.1

### Planners



- Review **ITAAC Master Data**
- Review/Edit **DCD PrePlans**
- Review/Edit **Site Specific PrePlans**
- Create new **Site Specific PrePlan**

### Inspectors



- Review/Edit **Inspection Plans**
- Review/Edit **Inspection Reports**
- Create new **Inspection Plan**
- Create new **Inspection Reports**

### Approvers



- Review/Approve designated **Inspection Plans**
- Review/Approve designated **Inspection Reports**

**CIPIMS = Construction Inspection Program Information Management System**

# Summary

- **The staff has demonstrated its effective use of programs and processes developed to evaluate new reactor applications**

# Summary

- **The staff will be prepared to evaluate small modular reactor applications by applying its experience with large light water reactor reviews**

# Summary

- **The new reactor construction oversight program is built on lessons learned**
- **The inspection program confirms that the plant is built in accordance with the license**