NUCLEAR | South Carolina's Clean Energy Solution

SCE&G
A SCANA COMPANY

Vogtle units 3&4 Nuclear Development

SOUTHERN COMPANY Westinghouse CBI

# Supplier Oversight Challenges

## *New Reactor Construction*


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New Nuclear Deployment
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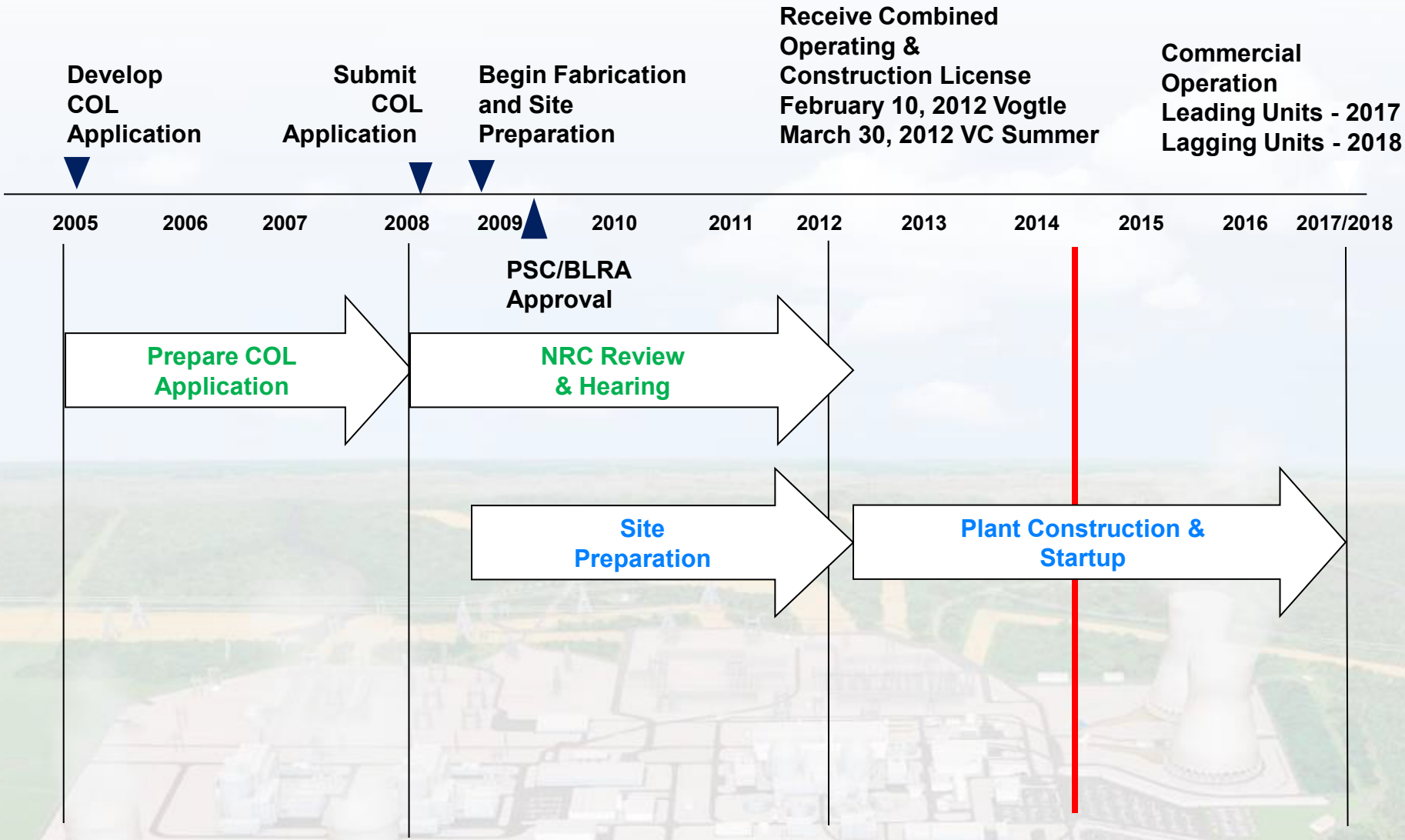
# AP1000 Project Teams

- **VC Summer 2&3 Utilities**
  - Owner –SCE&G – 55% Ownership
  - Santee Cooper – 45% Ownership
- **Vogtle 3&4 Utilities**
  - Georgia Power – 45.7% Ownership
  - Oglethorpe – 30% Ownership
  - MEAG – 22.7% Ownership
  - Dalton Utilities – 1.6% Ownership
- **AP1000 Designer** – Westinghouse
- **General Contractor** – Chicago Bridge & Iron (CB&I)

# Approximate Project Timelines



# VC Summer 2&3 – Construction Site 2014

# VC Summer – Unit 2 Containment Vessel Bottom Head

- **Set Date: May 2013**
- **Design Weight: 936 Tons**
- **Linear Feet of Weld: 2,253**
- **Linear Feet of Repaired Weld: 22**
- **Weld Acceptance Rate: 99.02%**

# | VC Summer – Unit 2 Containment Vessel

# | VC Summer Unit 2 – inside Containment Vessel

# | VC Summer Units 2&3 – Cooling Towers

- Two Towers per Unit
- Mechanical Draft Low Profile Towers
- Precast construction
- 16 fans with 36’ diameters
- 285’ diameter and 56’ Tall

- 633,000 GPM Design
- 14,000 GPM to Evap.

# | VC Summer – Module Assembly

# | VC Summer Unit 2 – Turbine Generator Components

# | VC Summer Unit 2 – Reactor Vessel

# | VC Summer Unit 2 – Unit 2 Deaerator

- From Korea to the Port of Charleston on April 30, 2013.

- Taken to Lake Marion by barge over the course of approx. 20 hours.

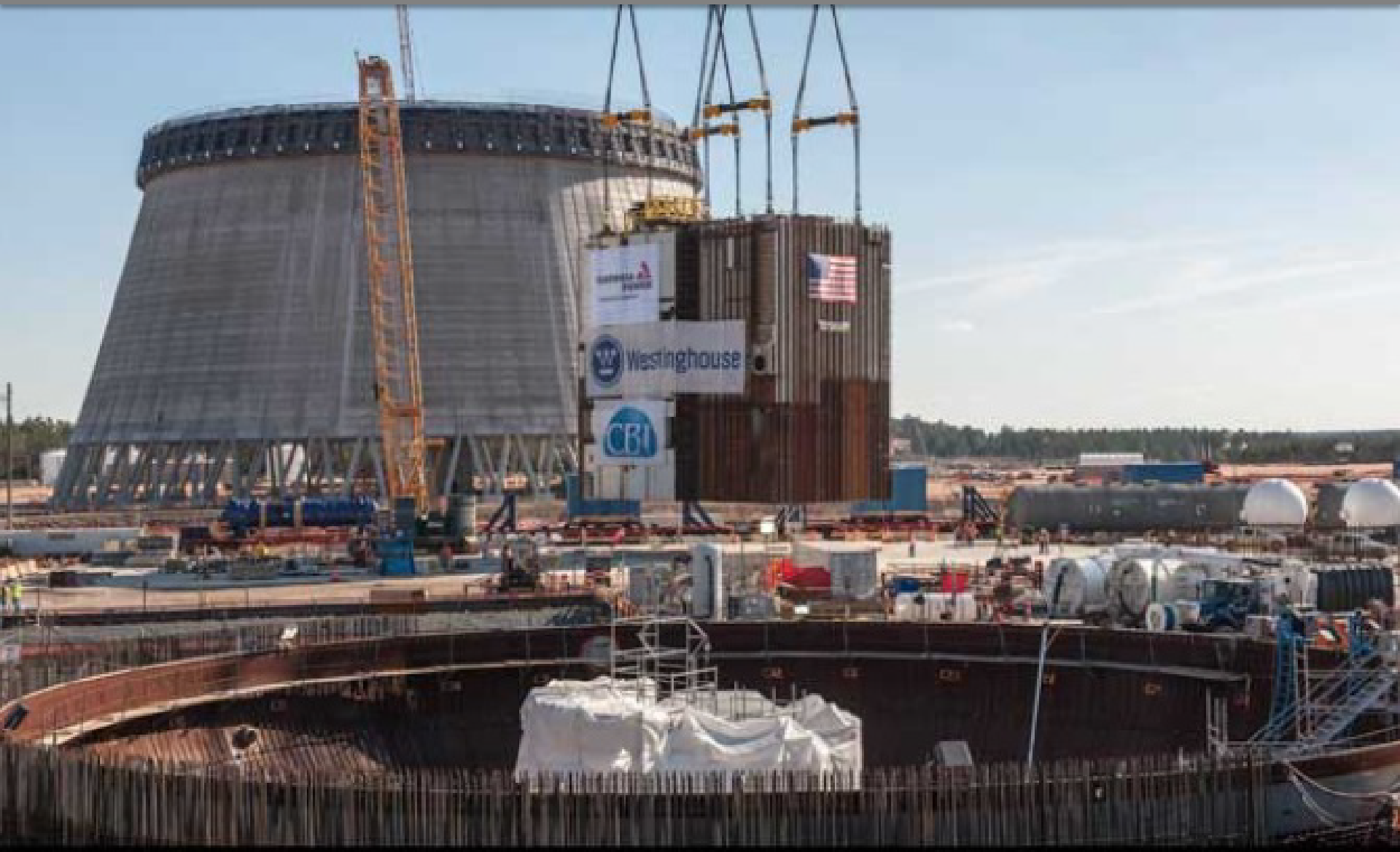
- Hauled by a truck over several days to complete its multi-thousand-mile, water-and-land journey to the construction site.

- Purifies water by removing dissolved gases from feedwater used to generate steam. This process prevents corrosion, which helps reduce plant maintenance and operating cost.

# | Simulator

# Vogtle Units 3&4 – Construction Site 2014

# Vogtle Units 3&4 – CA20 module placement – March 2014




The 1,100-ton CA20 module is placed into Plant Vogtle Unit 3 nuclear island. The module, which is more than five stories tall, will house various plant components, including the used fuel storage area.

March 2014

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# Vogtle Units 3&4 – CA20 module inside Unit 3 – April 2014

CA20 module inside the Vogtle Unit 3 nuclear island.

April 2014

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# Vogtle Units 3&4 – CA04 module in containment – April 2014

CA04 module inside the Vogtle Unit 3 containment vessel bottom head, with CA20 module in the background.

April 2014

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# Vogtle Units 3&4 – Unit 3 Turbine Island – April 2014

Condensers A, B and C in the Vogtle Unit 3 turbine island

April 2014

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# Vogtle Units 3&4 – Unit 3 Cooling Tower – April 2014

Vogtle Unit 3 cooling tower.

April 2014

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# Vogtle Units 3&4 – Engineering and Admin. Bldg – April 2014

Vogtle 3 and 4 Engineering and Administration Building

April 2014

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# Nuclear Construction Historical Perspective

- NUREG-1055 provides key insights and OE from prior nuclear construction projects with regard to Supply Chain
  - Supplier errors were a significant contributor to construction problems
  - Licensee is ultimately accountable-actions taken must be appropriate based on performance history and risk

# AP1000 Supply Chain – Truly Global

# Recent Licensee Supplier Experiences

- Most Suppliers to date have experienced quality issues in early production and fabrication
- Traditional QA Audits & Surveillances failed to uncover many significant issues
- Licensee has had to take much more intrusive role in Supplier Oversight
- Gaps Exist in License-Design-Fabrication translation

# Lessons Learned

- Vendors must have a strong nuclear safety culture that starts at the top
  - Licensees must ensure standards and expectations are understood starting with vendor executives
- Vendors' QA/QC organizations must have nuclear expertise
- Must be accurate flowdown of design & licensing basis requirements as it relates to their work
  - Change Management processes need to be verified to ensure continued compliance

# Lessons Learned (cont'd)

- Corrective Action Program must be a core competency
- Sub-suppliers need to be held to same standards
- Commercial Grade Dedication programs must be validated before start of work
- Consideration of site residents at suppliers where significant risk exists
- Source Inspections must be detailed - including EQ

# Re-cap of Challenges

- Coordination between Owner and Consortium
- Meeting Financial Deadlines (BLRA/Milestones)
- Adequate Sub-supplier Oversight
- Managing site-wide Oversight
- Hiring and Training (Owners & Consortium)
- Shipping Logistics
- Safety-Related Software (DAS, PMS, RMS)
- NRC Trigger Points (ITAAC and Vendor Inspections)

# Questions

# backup

# Project Statistics

- Approximately 2000 construction workers now onsite
- About **3,000** temporary jobs during peak construction
- **600-800** fulltime jobs when plants are operational
- AP1000 design covers 25 acres per unit
- Unit 2 and 3 and support structures will cover 240 acres
- Construction uses approximately 1000 acres