

COMMISSION BRIEFING SLIDES/EXHIBITS

PERIODIC BRIEFING ON NEW REACTOR ISSUES

OCTOBER 24, 2007

Status of Construction Inspection Program Activities

Industry Briefing of NRC Commission

Kevin Richards, Group Vice President

STP Nuclear Operating Company

October 24, 2007



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Industry Participants

- **Kevin Richards, Group Vice President,
STP Nuclear Operating Company**
- **Ed Cummins, Vice President of Regulatory
Affairs, Westinghouse**
- **Sherry Grier, Procurement Quality Manager,
Duke Energy and Chairman of NUPIC**

Construction Quality & Assessment

- **Project Quality**
 - Utilize modern construction practices
 - Establish high standards
 - Open communications at all levels
- **Corrective Action Program**
- **Construction Assessment**
 - Centered on the corrective action program
 - Focused on
 - Programmatic issues
 - Willful misreporting
 - Major defects in significant equipment accepted for service

Workforce & Access Authorization

- **Skilled Work Force**

- **Being addressed by industry through partnerships with educational institutions**
- **Training & knowledge transfer important**

- **Access During Construction**

- **Drug and alcohol screening**
- **Identify terrorists, illegal aliens and outstanding felony warrants**
- **DHS and law enforcement checks are sufficient**

NRC Commission

Meeting

Ed Cummins

Westinghouse Electric Company

October 24, 2007



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Design Lessons Learned

- **Utility Requirements Document (URD)**
 - **Accumulated lessons learned from 30 years of operating experiences**
 - **Detailed, strict conformance reviews were an integral part of the plant design process**
- **European Utility Requirements (EUR)**
 - **Similar to the URD but based on operating experience in Europe**
- **INPO – Operating experience to apply to advanced light water designs**
- **COL applicants are very active participants in the details of the designs that they have selected**
- **NRC generic issues**

Design Maturity

- **Standardization permits design completion for plants after the first unit**
- **10CFR52 licensing process demands more design completion than the 10CFR50 two-step requirements for PSAR**
- **Lessons learned validate the importance of design maturity**
- **Design maturity is a recognized goal by all stakeholders in new nuclear projects**

Construction Lessons Learned

- **Lessons learned from overseas construction and from corrective action plans**

- **Key areas for continued attention include:**
 - **Design completion**
 - **Early regulatory approval**
 - **Supervision of suppliers**
 - **Attention to details, and**
 - **Effective corrective action programs**

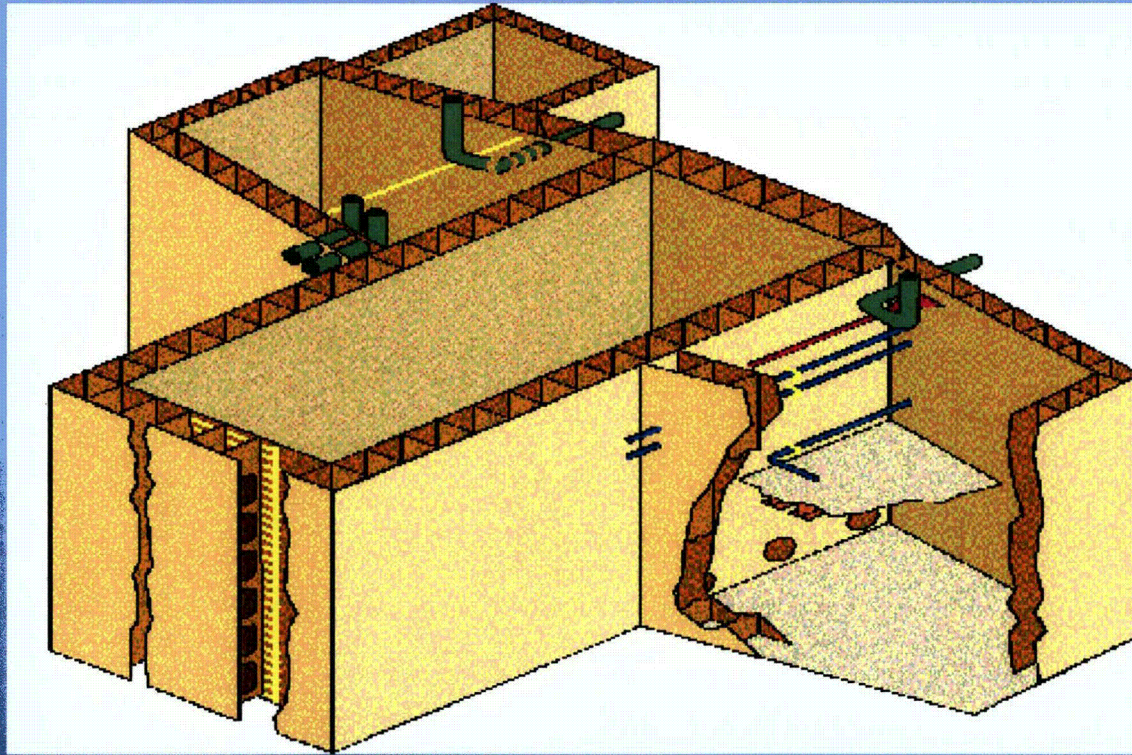
Benefits of Modularization

- **Quality is improved by the use of a controlled environment and a stable, permanent work force**
- **Demand for critical skills at the site are reduced**
- **Preliminary testing such as flushing and hydrostatic testing can be accomplished in the shop**
- **Simplifies construction management challenges**
- **Successfully implemented by all of the nuclear plant suppliers in Japan**
- **Successfully applied in other industries**

Impact of Modularization on Project Delivery

- **Modularization demands early design details**
 - Engineered components must be delivered to the modular fabricator much earlier
 - Develop detailed module design
- **Evaluation of module suppliers**
 - Involvement in design for manufacturability
 - Capability
 - Nuclear experience
- **Regulatory impacts of module supply**
 - Manufacture may start **18-24 months before COL is issued**
 - Large modules assembled on the site
 - Inspection plan should recognize location and schedule for module manufacture

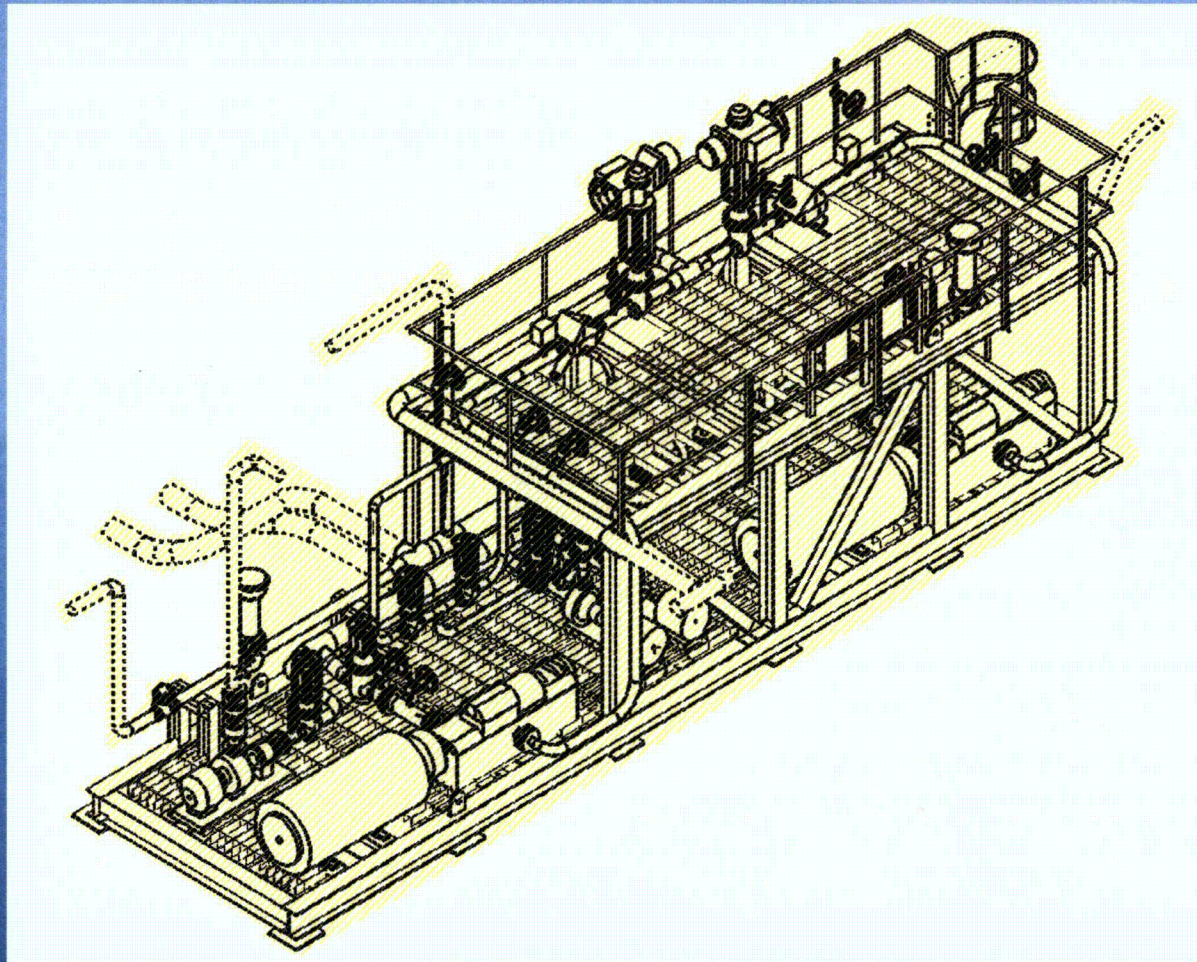
Modular Approach Improves Construction Quality



Large Structural Modules Enable 3-Year Construction Schedule

<u>Module Type</u>	<u>Number</u>
Structural	122
Piping	154
Mechanical Equipment	55
Electrical Equipment	11
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TOTAL	342

Startup Feedwater Pump Module





Nuclear Procurement Issues Committee (NUPIC) and New Plant Issues

October 24, 2007

**Sherry Grier
Procurement Quality Mgr., Duke Energy
NUPIC Chairman**

NUPIC Background

- **Formed in 1989**
- **Membership**
 - **32 US members**
 - **13 International members (Brazil, Canada, Korea, Mexico, Taiwan, Slovenia, South Africa, Spain and Sweden)**

NUPIC Objectives

- **Cooperative program for performing and sharing joint supplier audits**
- **Audits are evaluated by each member and serve as basis for maintaining suppliers on Approved Suppliers List**
- **Forum for sharing procurement and supplier quality issues**

NUPIC Objectives

- **Secure website with information on 800 suppliers with 400 supported by joint audits**
- **Electronic distribution of audit/survey reports**
- **Perform approximately 150 joint audits annually**

NUPIC Key Benefits

- **Industry-wide standardized approach to conducting performance based supplier audits**
- **Diverse audit teams from different utilities**
- **Technical specialist participation required**
- **Peer reviews of audits and supplier feedback**

NUPIC Interfaces with NRC

- **NRC Inspectors observe selected NUPIC audits**
- **NRC Vendor Branch personnel attend NUPIC meetings**
- **Vendor Branches provide feedback on inspections**

New Plant Benefits

- **Standardized designs**
- **Existing infrastructure for information and resource sharing can be expanded**
- **Foundation in place for new plant supplier audits**

Challenges

- **Complex regulations, standards and guidance for procurement**
- **Increased use of new and international suppliers**
- **Increased manufacturing pressure for existing suppliers**

Fraudulent Materials

- Not a new issue**
- Industry addressed in early 90's through Comprehensive Procurement Initiative**
- Heightened industry awareness of potential for fraudulent items**
- Industry information exchange prior to audit**

Effective Actions to Identify Fraudulent Items

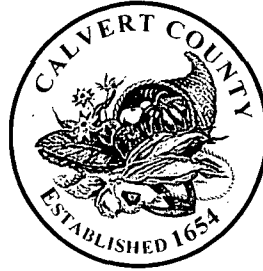
- **Increased engineering involvement**
- **Emphasis on technical verification of product quality**
- **Developed commercial grade dedication process**
- **Enhanced tests and inspections**
- **Performance based vendor audits instead of programmatic audits**

NUPIC Preparations for New Plants

- **Established standing committee to identify and address new plant needs**
- **Interacting with NEI New Plant QA Task Force**
 - **Lessons learned reviews**
 - **Review recent DOE experience**

NUPIC Preparations for New Plants

- **Evaluating the results of the “lessons learned”**
- **Checklists being enhanced**
- **Auditor training**
- **Developing strategies for conducting oversight of common suppliers**



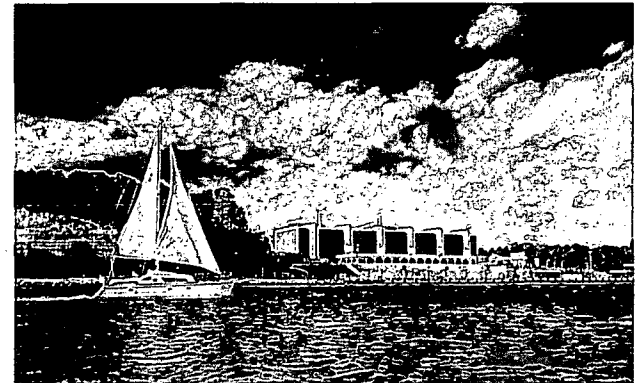
The NRC Process & Nuclear Energy: Calvert County, Maryland

October 24, 2007

**Wilson H. Parran
President, Calvert County, Maryland Board
of County Commissioners**

Nuclear Energy & Calvert County, Maryland

- **Calvert County is home to Calvert Cliffs Nuclear Power Plant, Lusby, Maryland**
 - In March 2000, Calvert Cliffs was the first nuclear power plant in the United States to achieve re-licensing
 - Calvert Cliffs has 30+ years of operating history with an outstanding safety record, remains an outstanding corporate citizen and maintains a significant environmental commitment
 - Calvert Cliffs is a major economic engine, contributing \$16.2M (FY07), has been a stable revenue source since FY1973, and currently has over 800+ jobs on site



NRC Regulatory Process: Calvert County, Maryland

- **Historical**

- Calvert County's relationship with the NRC began after Calvert Cliffs Nuclear Power Plant came on line; licensing occurred prior to NRC creation
- However, NRC oversaw the relicensing of Calvert Cliffs
 - NRC process was outstanding
 - NRC ensured significant public participation
 - NRC addressed all regulatory questions and constituent concerns

- **Current**

- Calvert Cliffs Nuclear Power Plant currently under consideration for 3rd reactor. NRC involvement has been proactive and positive:
 - NRC approached the County, requesting to publically present the NRC's role and process for new reactor construction
 - NRC conducted public outreach session in the County; 300+ individuals attended
 - Because of the historical and current approach, Calvert County remains confident in the NRC process

NRC Process New Reactors

- **Calvert County understands, and is comfortable with, the fact that the NRC is:**
 - An independent and technically oriented government agency that only evaluates the safety of the proposed plant and its potential impact on the environment and the surrounding community
 - Not an advocate for nuclear power or for the proposed expansion
 - This provides an unbiased, independent review process

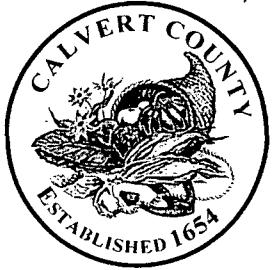
NRC Process New Reactors

- **NRC's Role in Calvert County:**
 - Calvert County is appreciative of the NRC's efforts and trusts the regulatory process and oversight
 - Calvert County encourages the NRC to continue to:
 - Provide outstanding public information
 - Be accessible
 - Be responsible to constituent concerns
 - Be open and responsive to citizen input

Calvert County & Potential Calvert Cliffs Expansion

- **Calvert County supports the potential expansion**
 - Calvert County already granted a 50% tax credit for new construction
 - Calvert County stands ready to share in our nation's responsibility to provide resources that produce energy to minimize the impact to our global environment and reduce foreign energy supply reliance
 - Calvert County looks to the NRC to continue to address constituent questions and concerns throughout the process

Calvert County, Maryland



Contact information:

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President

Calvert County, Maryland

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Environmental Justice Requires Public Participation

October 24, 2007

Louis A. Zeller
Blue Ridge Environmental Defense League

www.BREEDL.org

PO Box 88 Glendale Springs, NC 28629

BREEDL@skybest.com (336) 982-2691

CAA Section 112

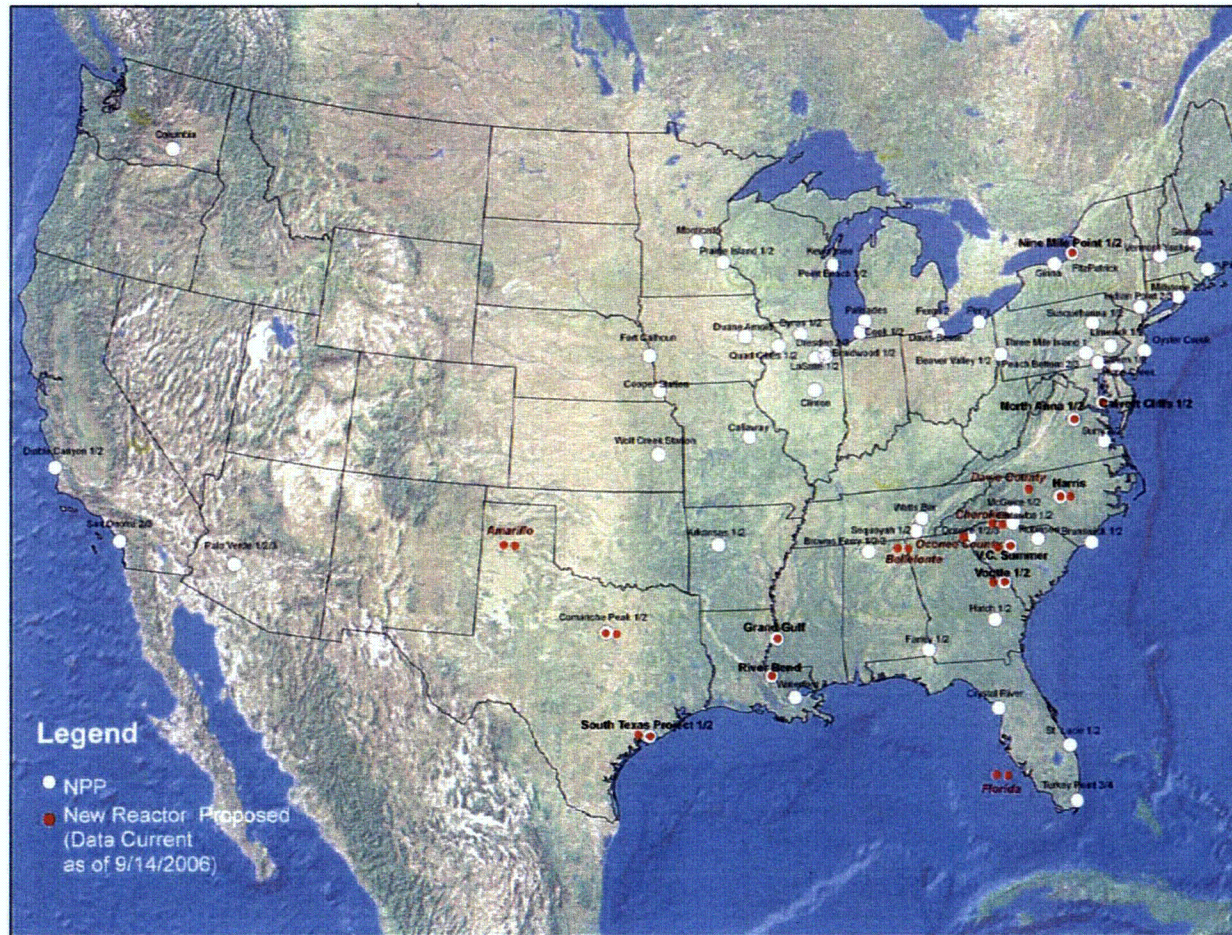
In 1989, EPA established its risk policy by deciding that the life-time excess risk of cancer, or maximum individual risk (MIR), to any given toxic should not be greater than one in 10,000 (1×10^{-4}). In the same year, EPA promulgated its final rule for radionuclides, that protects the public from a MIR risk of 1×10^{-4} but also regulates to protect 90% of the people within eighty kilometers of a source to risk levels of 1×10^{-6} using the two-step approach required by the *NRDC v. EPA* case. (138)

MACTs: Technology Based Standards

For new sources, MACT must be at least as stringent as the average emissions achieved by the best controlled sources in the same category. For existing sources, MACT may not be less stringent than the average emission limitation of the best performing 12% of existing units. Where there are few sources, the average of the best performing five sources is to be used. Hazardous pollutants are to be controlled by the reduction in emissions through process changes, substitution of materials or other modifications, as well as through the use of traditional pollution control devices and work practices. (254)

title

NPPs and COL Application Sites



NRC INFORMATION NOTICE 2007-04

February 5, 2007

NRC INFORMATION NOTICE 2007-04: CONSTRUCTION EXPERIENCE RELATED TO THE ASSURANCE OF QUALITY IN THE CONSTRUCTION OF NUCLEAR FACILITIES

In both Finland and the United States, interest in new reactor and fuel cycle facility construction is resuming after many years. However, the problems currently being identified in Finland are very similar to those that occurred in the United States more than 20 years ago. Regardless of the licensing process and the type of construction, a commitment to quality, instilled early in a nuclear construction project, is important to ensure that the facility is constructed and will operate in conformance with its license and the NRC's regulations.

UNITED STATES NRC OFFICE OF NUCLEAR REACTOR REGULATION

Insufficient guidance of subcontractors' work in Olkiluoto 3 nuclear power plant project

*This past March, the Finnish Radiation and Nuclear Safety Authority (STUK) appointed an investigation team to assess compliance with safety requirements in the construction of Olkiluoto 3 nuclear power plant unit. In its report published today, the investigation team states that the major problems involve project management, in particular with regard to construction work, but not nuclear safety. The power plant vendor has selected subcontractors with no prior experience in nuclear power plant construction to implement the project. These subcontractors have not received sufficient guidance and supervision to ensure smooth progress of their work. The investigation team provides recommendations both to the buyer and the vendor company. **Furthermore, there is also room for improvement in the practices of the regulatory body.***

December 7, 2006

http://www.stuk.fi/stuk/tiedotteet/en_GB/news_419/

Environmental Justice

07 LC 25 4926ER

Senate Resolution 598

Senator Thomas of the 2nd

- WHEREAS, four counties within 40 miles of Plant Vogtle have areas that are persistently distressed and suffer from unemployment or poverty; and
- WHEREAS, radiological monitoring programs reveal that Savannah River fish, particularly resident game fish species, are contaminated with cesium 137. Large mouth bass are contaminated with cesium 137 and are a target species of subsistence fishermen on the Savannah River. Recreationally important fish species in the vicinity of Plant Vogtle routinely have been found to have detectable levels of cesium 137 in the edible flesh of collected samples; and
- WHEREAS, African American and low-income individuals are at specific heightened risk from hazardous materials in the Savannah River, and although individuals from all socioeconomic backgrounds engage in fishing in the area, African Americans in particular commonly engage in subsistence fishing along the Savannah River and have a higher than average consumption of fish, frequently surpassing allowable contaminated fish consumption levels.



New Reactor Inspection Program

Luis Reyes
Executive Director for Operations
October 24, 2007

Recent Accomplishments

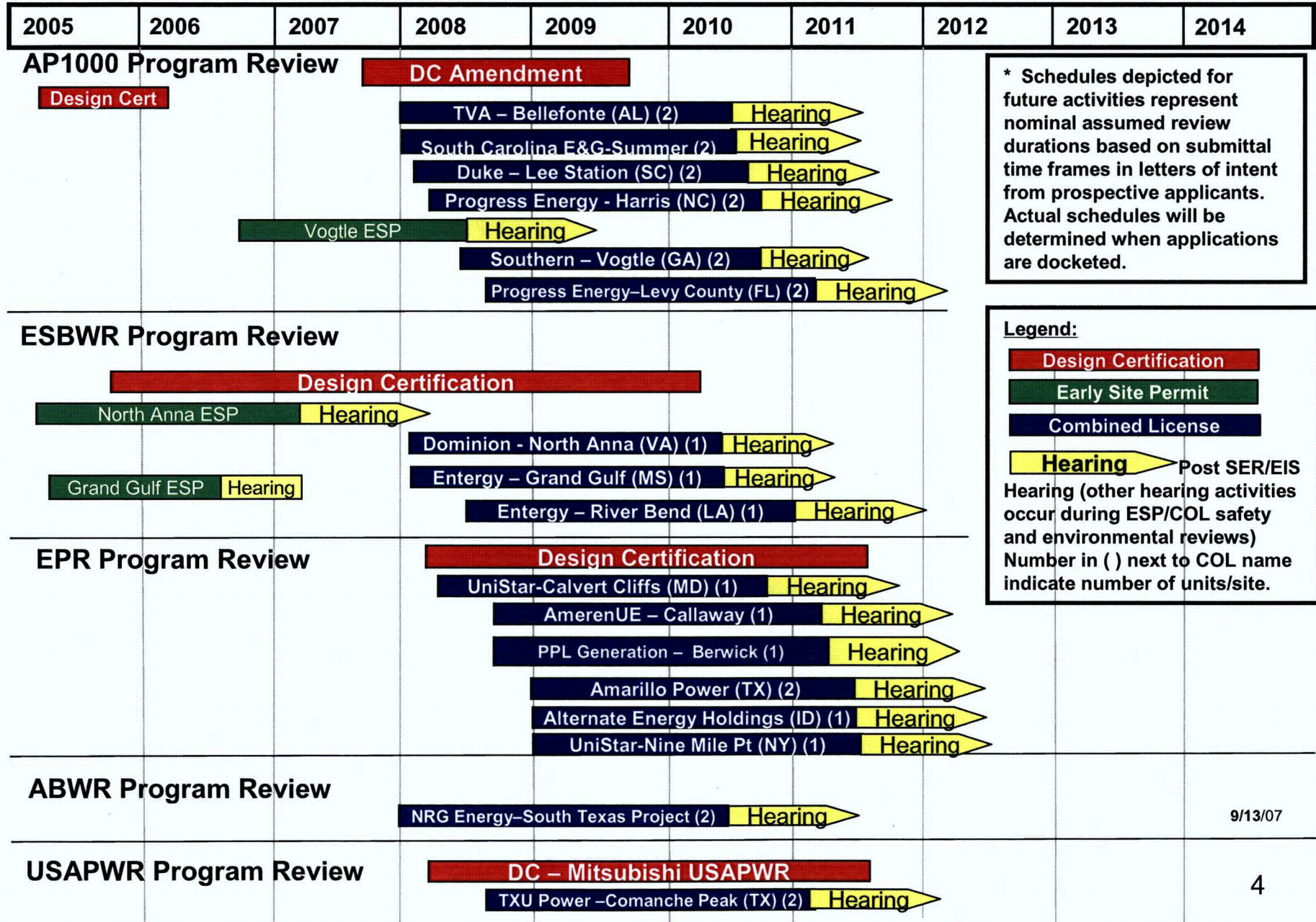
- **Rules published: Part 52, Limited Work Authorization Rule, Aircraft Impact Assessments (proposed)**
- **COL applications submitted**
- **Safeguards protection orders issued**
- **Public outreach meetings held**
- **Technical support contracts awarded**

Staffing

- **386 on board, 40 anticipated gains by January 2008. FY08 goal is 485**
- **Status of office consolidation:**
 - **256 staff in TWFN 6th/7th floors**
 - **113 staff on OWFN 7th floor**
 - **12 staff OWFN 4th floor**
 - **Of these, 47 in conference rooms**

New Reactor Licensing Applications (Site and Technology Selected)

An estimated schedule by Fiscal Year



* Schedules depicted for future activities represent nominal assumed review durations based on submittal time frames in letters of intent from prospective applicants. Actual schedules will be determined when applications are docketed.

Legend:

- Design Certification** (Red bar)
- Early Site Permit** (Green bar)
- Combined License** (Blue bar)
- Hearing** (Yellow arrow)

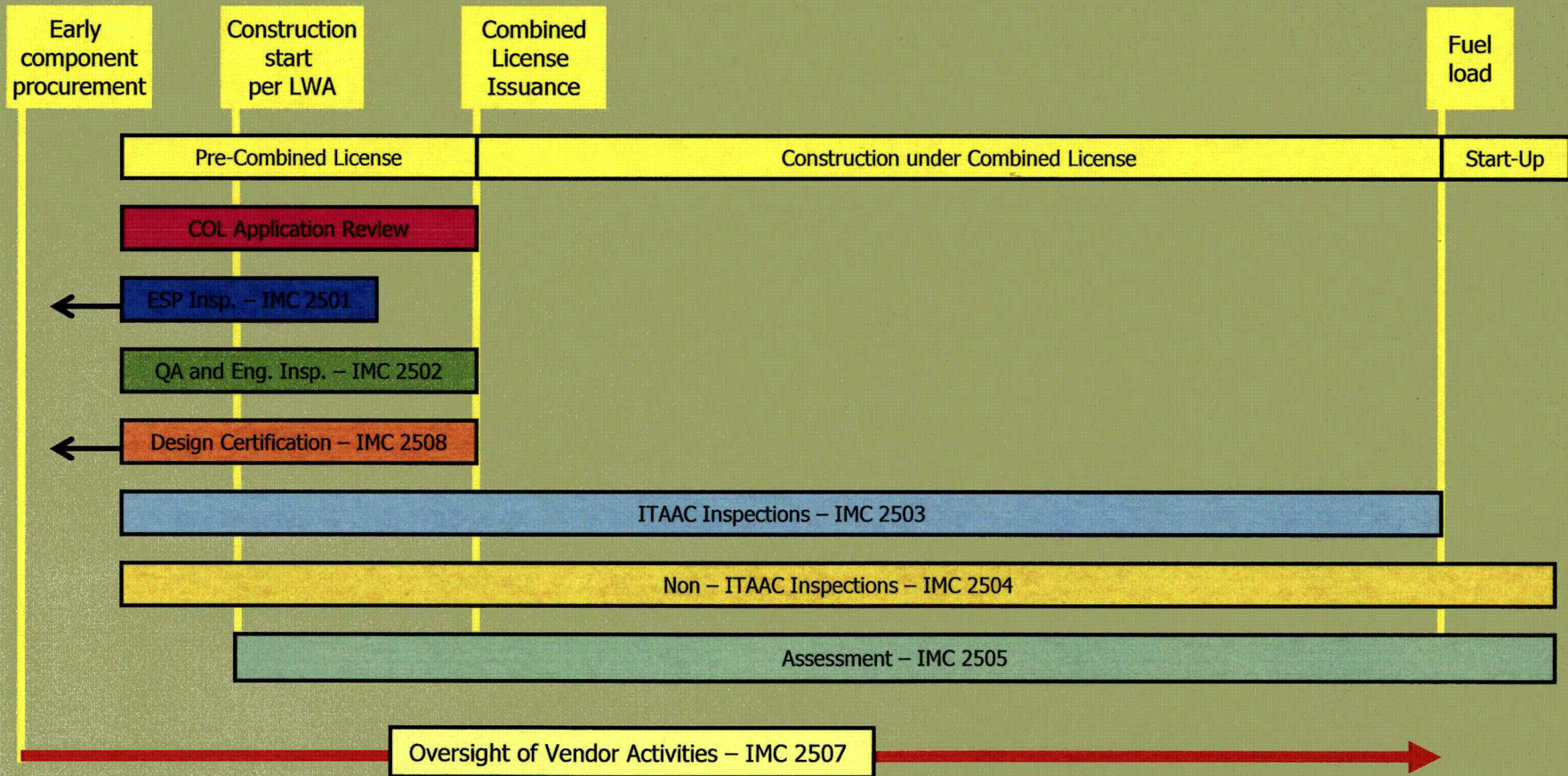
Post SER/EIS Hearing (other hearing activities occur during ESP/COL safety and environmental reviews)
 Number in () next to COL name indicate number of units/site.

Objectives

- **Ensure that plants are constructed in accordance with approved designs and safety regulations**
- **Determine operational readiness**
- **Communicate results to all stakeholders**
- **Ensure effective transition to Reactor Oversight Program**

NRC CONSTRUCTION OVERSIGHT HAS MULTIPLE COMPONENTS

Oversight will assure plants are constructed as designed.



Completed Milestones

- **Pre-COL/DC audit program developed and six audits completed**
- **Enhanced vendor inspection program established and six inspections conducted**
- **ITAAC sampling methodology endorsed by ACRS**

Completed Milestones

(continued)

- **Key international relationships established**
- **Construction experience program developed**

Current Areas of Focus

- **Quality Assurance**
- **Vendor Oversight**
- **Program Development**

Pre-Application Audits

- **Support agency's acceptance review by:**
 - **Verifying acceptability of an applicant's QA program used in the development of a COL/DC application**
 - **Assessing the completeness of a proposed COL/DC application**

Oversight of First-of-a-Kind Engineering

- **NRC review necessary to finalize design and develop procurement and construction documents**
- **Inspection results will:**
 - **Inform the ITAAC closure verification process**
 - **Verify that design acceptance criteria have been appropriately implemented in the design**

Vendor Inspection Program Enhancements

- **Built upon existing vendor inspection program and coordinated with NRR**
- **Increase inspection frequency and scope**
 - **Verify QA program implementation**
 - **Detect possible fraudulent parts or materials**

Vendor Inspection Program Enhancements

(continued)

- **Support ITAAC closure verification**
- **Expand international cooperation in vendor oversight**
- **Clarify oversight and improve interface with third party industry audits**

Ongoing ITAAC Activities

- **ITAAC closure letter templates and verification process**
- **ITAAC inspection and closure resource requirements**
- **New Reactor Inspection Program IT Infrastructure**

Construction Assessment Process Guiding Principles

- **Well defined**
- **Designed for a construction environment**
- **Timely communication and resolution of identified issues**
- **Transparency, predictability, scrutability**
- **Public availability of inspection information**

Construction Assessment Process Future Work

- **Define criteria and process for assessing the effectiveness of licensee's corrective action program**
- **Define thresholds for agency response**
- **Define periodicity and content of agency assessments**

Construction Assessment Process Future Work (continued)

- **Clarify aspects of the allegation program, including applicability of NRC process and scope of employee protection**
- **Integrate enforcement policy with assessment process**

Construction and Operational Experience Program

- **Program Goals:**
 - **Use construction experience gained from both international and domestic projects for NRC reviews and inspections**
 - **Provide insights to stakeholders**

Construction and Operational Experience Program

(continued)

- **Element of existing agency OpE program**
- **Near-term activities include guidance development, training, and agreements sharing construction experience**

External Stakeholder Interaction

- **Numerous public meetings and workshops held in FY07**
- **New reactor inspection program briefings at all NRO public outreach activities**
- **Visits to proposed new reactor sites and module fabricators**
- **Current information on public web site**

International Bilateral Cooperation

- **Interaction with counterparts in several areas, including:**
 - **Multi-national vendor inspections with Korean and French regulators**
 - **Sharing information with United Kingdom regarding ESBWR and AP1000**

International Bilateral Cooperation

(continued)

- Discussions with Japan regarding foreign vendor oversight**
- Sharing construction and vendor experience with Finland (STUK)**
- NRC inspector rotation at STUK and Olkiluoto 3**

Conclusions

- **The staff is effectively conducting pre-application audit activities and vendor inspections, supporting application reviews, coordinating with international partners, and carrying out construction inspection program development activities**

Conclusions

(continued)

- **Project plans for the development of key program areas, such as assessment and ITAAC closure include opportunity for stakeholder involvement**
- **Timely stakeholder support for and involvement in program development is necessary for success**

Acronyms

**ACRS: Advisory Committee on
Reactor Safeguards**

COL: Combined License

DC: Design Certification

DOE: US Department of Energy

**ESBWR: Economic Simplified
Boiling Water Reactor**

ESP: Early Site Permit

IMC: Inspection Manual Chapter

IT: Information Technology

Acronyms (continued)

ITAAC: Inspections, Tests, Analyses, and Acceptance Criteria

LWA: Limited Work Authorization

NRO: Office of New Reactors

NRR: Office of Nuclear Reactor Regulation

OpE: Operating Experience

QA: Quality Assurance

STUK: Radiation and Nuclear Safety Authority (Finland)