



2nd Workshop on Vendor Oversight
for New Reactor Construction

**NRC Perspective on the
Vendor Inspection Program
for New Reactors**

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Topics

- ▶ Messages from 1st Workshop on Vendor Oversight for New Reactors
- ▶ Status of New Reactors and Fuel Facilities
- ▶ Recent Vendor Issues
- ▶ Counterfeit, Fraudulent, and Suspect Items
- ▶ Global Regulatory Cooperation in Vendor Oversight
- ▶ Key Messages for 2nd Workshop

1st Workshop on Vendor Oversight for New Reactors



- ▶ December 2008
- ▶ Focused on:
 - ▶ NRC Vendor Inspection Program
 - ▶ Part 21
 - ▶ Commercial Grade Dedication
- ▶ Answered over 300 questions

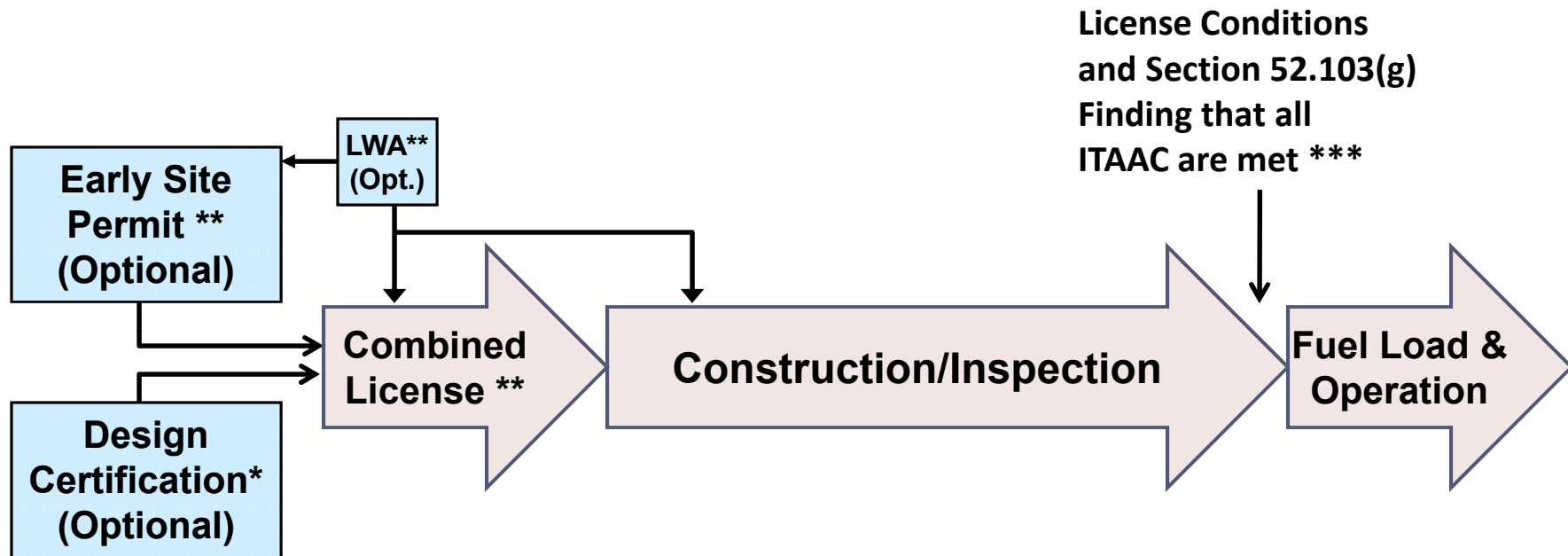
1st Workshop on Vendor Oversight for New Reactors (cont'd.)



▶ Messages:

- ▶ Importance of robust Part 21 program
- ▶ Applicability of Part 21 and Appendix B to the design, fabrication, procurement, and use of basic components.
- ▶ Basic components may be purchased from Appendix B vendors, or by procuring commercial grade items (CGIs) and then implementing the dedication process.
- ▶ Verification of acceptability of an item being dedicated in accordance with Part 21 should focus on the critical characteristics of the item being dedicated.
- ▶ Importance of the interaction between vendor and purchaser/licensee

COL Review Process



*** Public Hearing Opportunity

** Mandatory Public Hearing

* Public Comment Opportunity

ITAAC is short for Inspections, Tests, Analyses and Acceptance Criteria

Completed New Reactor Actions



- ▶ 4 Early Site Permits Approved
 - ▶ Clinton, North Anna, Grand Gulf, and Vogtle
- ▶ 4 Designs Certified
 - ▶ GE Advanced Boiling Water
 - ▶ Westinghouse AP600 and AP1000 Reactor
 - ▶ C-E System 80+

New Reactor Applications Under Review



- ▶ 13 Combined License Applications
 - ▶ 18 received, 5 suspended
 - ▶ One includes a request for a Limited Work Authorization
- ▶ 3 Design Certification (DC) Applications
 - ▶ General Electric Economic and Simplified Boiling Water Reactor (ESBWR)
 - ▶ AREVA U.S. EPR
 - ▶ Mitsubishi U.S. Advanced Pressurized Water Reactor (US APWR)
- ▶ 1 Amended DC Application
 - ▶ Westinghouse AP1000 Certification Amendment
- ▶ 1 DC Rule Amendment
 - ▶ Advance Boiling Water Reactor (ABWR)
- ▶ Early Site Permits
 - ▶ Victoria – Received 3/10
 - ▶ PSEG- Salem Hope Creek – Received 5/10

Advanced Reactor Program

- ▶ Created in 2009 as lead project management organization to focus on licensing new technologies
 - ▶ Next Generation Nuclear Plant (NGNP)
 - High Temperature/Very High Temperature Gas-Cooled Reactors
 - ▶ Integral Pressurized Water Reactors (iPWRs)
 - ▶ Liquid-Metal-Cooled Fast Reactors (LMRs)
 - ▶ Other Conceptual Designs
- ▶ Anticipating submittals in 2012 with pre-application work starting now

Licensing Approach for Advance Reactors



- ▶ **NRC anticipates that 10 CFR Part 52 will be the overall process for licensing all new power reactors.**
 - ▶ Analysis methods and criteria for satisfying regulations are being evaluated for non-LWRs.
 - ▶ May warrant changes to existing regulations.
- ▶ **NRC and DOE developed the licensing strategy for NGNP**
 - ▶ 10 CFR Part 52
 - ▶ Deterministic approach supplemented by risk insights
- ▶ **For iPWRs, the NRC expects that limited exceptions to requirements and guidance will be needed.**
- ▶ **For liquid metal-cooled fast reactors, expect a strategy similar to NGNP.**

Fuel Facilities Currently Under Construction



- ▶ **Louisiana Energy Services L.L.C. (LES), National Enrichment Facility**
 - ▶ Located in Eunice, New Mexico
 - ▶ Operation of the first cascades of enrichment centrifuges scheduled to begin this month
 - ▶ LES plans to bring additional cascades online in stages until full facility operation is achieved in April 2013
- ▶ **Shaw Areva MOX Services (MOX), Mixed Oxide Fuel Fabrication Facility**
 - ▶ Located on DOE's Savannah River Site near Aiken, South Carolina
 - ▶ Construction is 28% completed
 - ▶ MOX anticipates operations to commence in October 2016

Global Supply Chain



Oversight of Vendors

Licensees

**Industry Auditors
(NUPIC)**

**Consensus Standards
Organizations (ASME/ANI)**

Contractors/Vendors

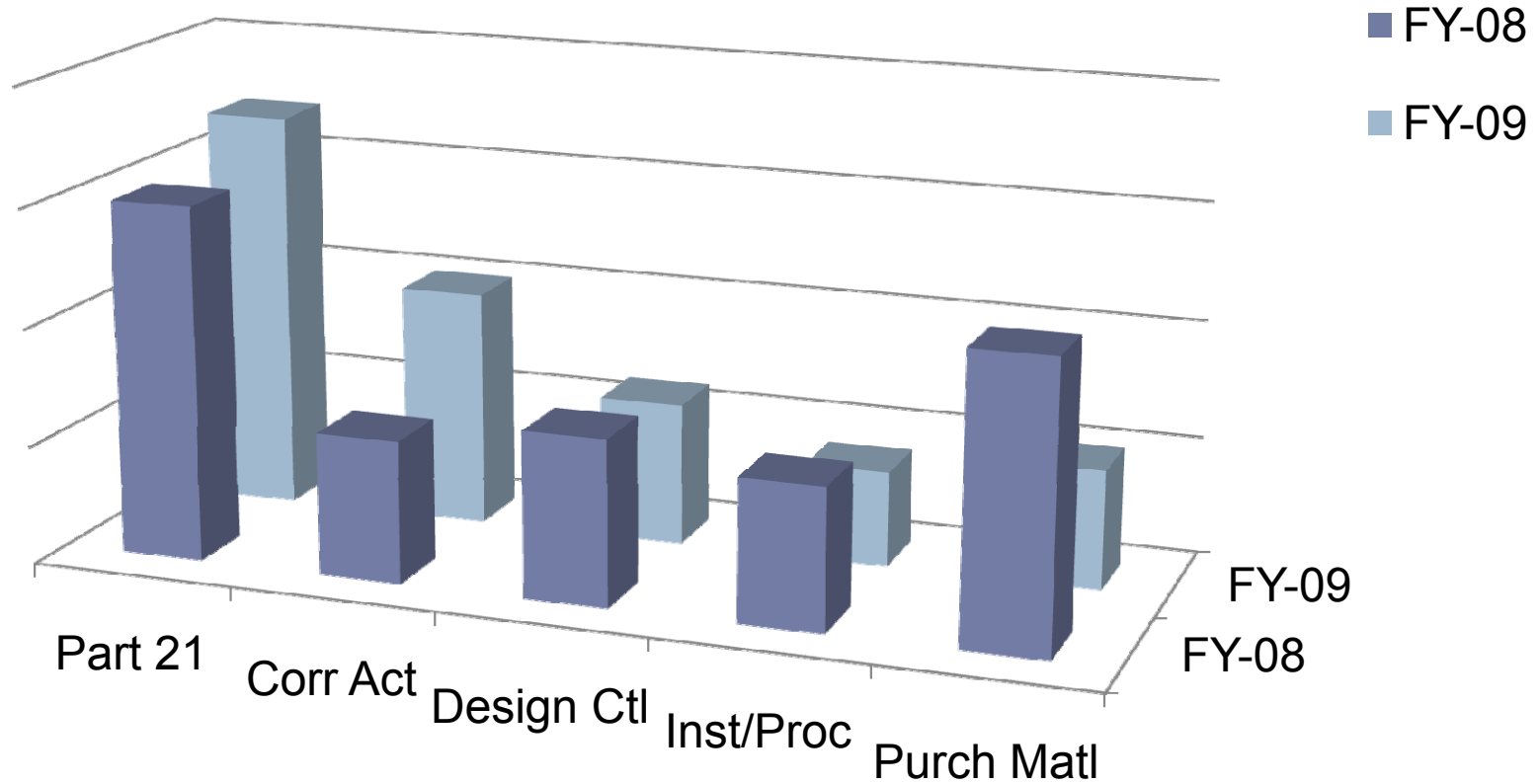
Sub-contractors

- ▶ The ultimate responsibility lies with licensees
- ▶ NRC verifies licensees meet their responsibilities

Focus Areas

- ▶ Oversight of sub-contractors
- ▶ Importance of a good safety culture
- ▶ Counterfeit, fraudulent, and suspect items
- ▶ Historical NUREG 1055 lessons
 - ▶ Completion of detailed designs before construction
 - ▶ Schedule pressure
 - ▶ Insights from recent issues

Vendor Issues



Recent Issues

- ▶ Licensee oversight of contractors performed under Appendix B program
- ▶ Licensee must retain control of contractors
- ▶ Contractors must implement Appendix B requirements
- ▶ Commercial Grade Dedication is an Appendix B activity
- ▶ Procedure adherence and documentation

Counterfeit, Fraudulent, and Suspect Items

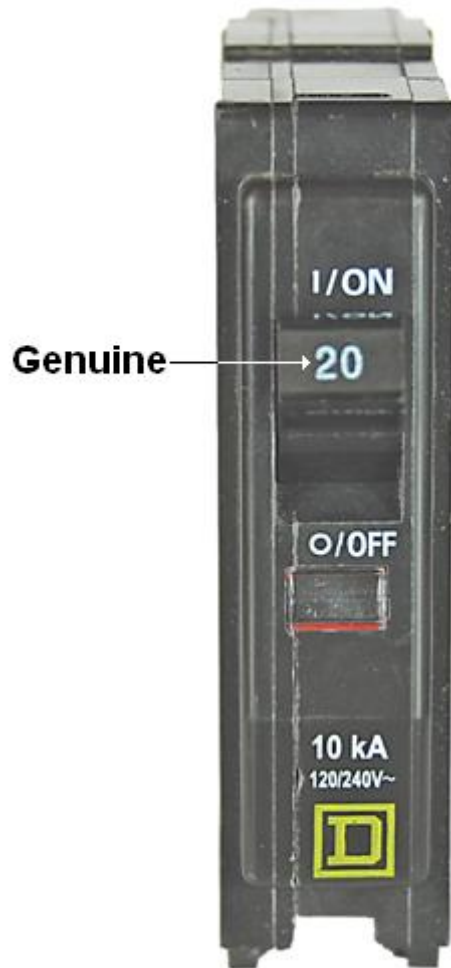
Ladish Valve



Counterfeit



Counterfeit, Fraudulent, and Suspect Items



Press Release:
U.S. Consumer Product
Safety Commission
December 27, 2007



Counterfeit, Fraudulent, and Suspect Items



- ▶ Current and past operating experience
- ▶ Inspection activities being refined
- ▶ Interacting with broader Federal community
- ▶ Assessing industry ability to identify
- ▶ Licensees are accountable

Communication



United States Nuclear Regulatory Commission

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Vendor QA Inspections

[NRO SECY Paper on Enhancements to the Vendor Inspection Program for New Reactors](#)

[Inspection Procedures](#)

[Generic Letters](#)

[Information Notices](#)

[Regulatory Information Summaries](#)

[Commercial-Grade Dedication](#)

[NUREG-0302, Revision 1 \(10 CFR Part 21\)](#)

[Inspection Reports](#)

[Home](#) > [Nuclear Reactors](#) > [New Reactors](#) > [Regulatory Oversight](#) > [Quality Assurance](#) > [Vendor QA Inspections](#) > [Inspection Reports](#)

Vendor Quality Assurance (QA) Inspection Reports for New Reactors

The purpose of inspection reports is to document the inspection scope, observation, and findings of inspections conducted by the NRC. The NRC performs inspections to oversee the commercial nuclear industry to determine whether its requirements are being met by licensees and their contractors. The NRC performs inspections to verify the quality and suitability of vendor products, licensee-vendor interface, and review of equipment problems found during operation and their corrective action.

For inspections and related vendor inspections conducted by Region II for the Mixed Oxide Fuel Fabrication Facility, please reference the [Meetings About Mixed Oxide Fuel](#) page.

Prior to December 1999, the NRC issued NUREG-0040, "Licensee Contractor and Vendor Inspection Status Report," (The White Book) to document the results of inspections performed by the NRC's Quality Assurance, Vendor Inspection, Maintenance and Allegations Branch that were distributed to the inspected organizations. As of November 1999, these inspection reports are available electronically in the NRC's record retrieval system, ADAMS. The following inspections have been conducted since May 2005:

THESE INSPECTIONS WERE LIMITED IN SCOPE AND DO NOT CONSTITUTE NRC ENDORSEMENT OF A VENDOR'S OVERALL QA PROGRAM:

2000s: | [2010](#) | [2009](#) | [2008](#) | [2007](#) | [2006](#) | [2005](#)

Global Regulatory Cooperation in Vendor Oversight



- ▶ Vendor Inspection Cooperation Working Group (VICWG)
- ▶ Significant bilateral and multilateral cooperative efforts
- ▶ International vendor oversight practices

International vendor oversight practices



- ▶ Licensee's role on the oversight process should include the following elements
 - ▶ Consider the safety significance of the product or service
 - ▶ Qualifications of the contractor
 - ▶ Adequate oversight of contractors work
 - ▶ Periodic assessment

- ▶ Key considerations for licensee oversight

Current Topics and Future Initiatives



- ▶ Clarity of US NRC 10 CFR Part 21 requirements and development of an international practice
- ▶ Third-party calibration services accrediting organizations
- ▶ Continued self-assessment, communication to the Commission and a moderate increase in vendor inspection activities
- ▶ Thwarting potential cyber vulnerabilities at the design and production phases of hardware, software, and firmware

Summary

- ▶ Rigorous vendor oversight is crucial to maintaining the integrity of the global supply chain and new reactor safety
- ▶ Safety Culture promotes quality in the global supply chain
- ▶ Vigilance is key to prevent the entry of counterfeit, fraudulent, and suspect items into the industry
- ▶ The importance of an intelligent customer. Know your supplier.

▶ ²³ **The licensee is accountable**

