



U.S.NRC

UNITED STATES NUCLEAR REGULATORY COMMISSION

Protecting People and the Environment

Manufacturing Nuclear Components in a Global Environment

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Issues and Challenges of the Global Supply Chain

- Shift from mostly domestic to international market for key equipment and components
- Additional lead times need to be considered
- Number of suppliers with Part 50 Appendix B QA programs has substantially declined

Issues and Challenges of the Global Supply Chain (continued)

- Some manufacturers are unfamiliar with requirements for nuclear-grade components
- New reactor projects in the U.S. may employ multinational modular construction techniques
- Concerns continue to arise regarding counterfeit items
- Resources and access to oversee the global marketplace are critical

Vendor Inspection Program Enhancements

- NRC does inspections of equipment vendors
- Increase inspection frequency and scope
 - Verify QA program implementation
 - Emphasize importance of identifying counterfeit parts and materials

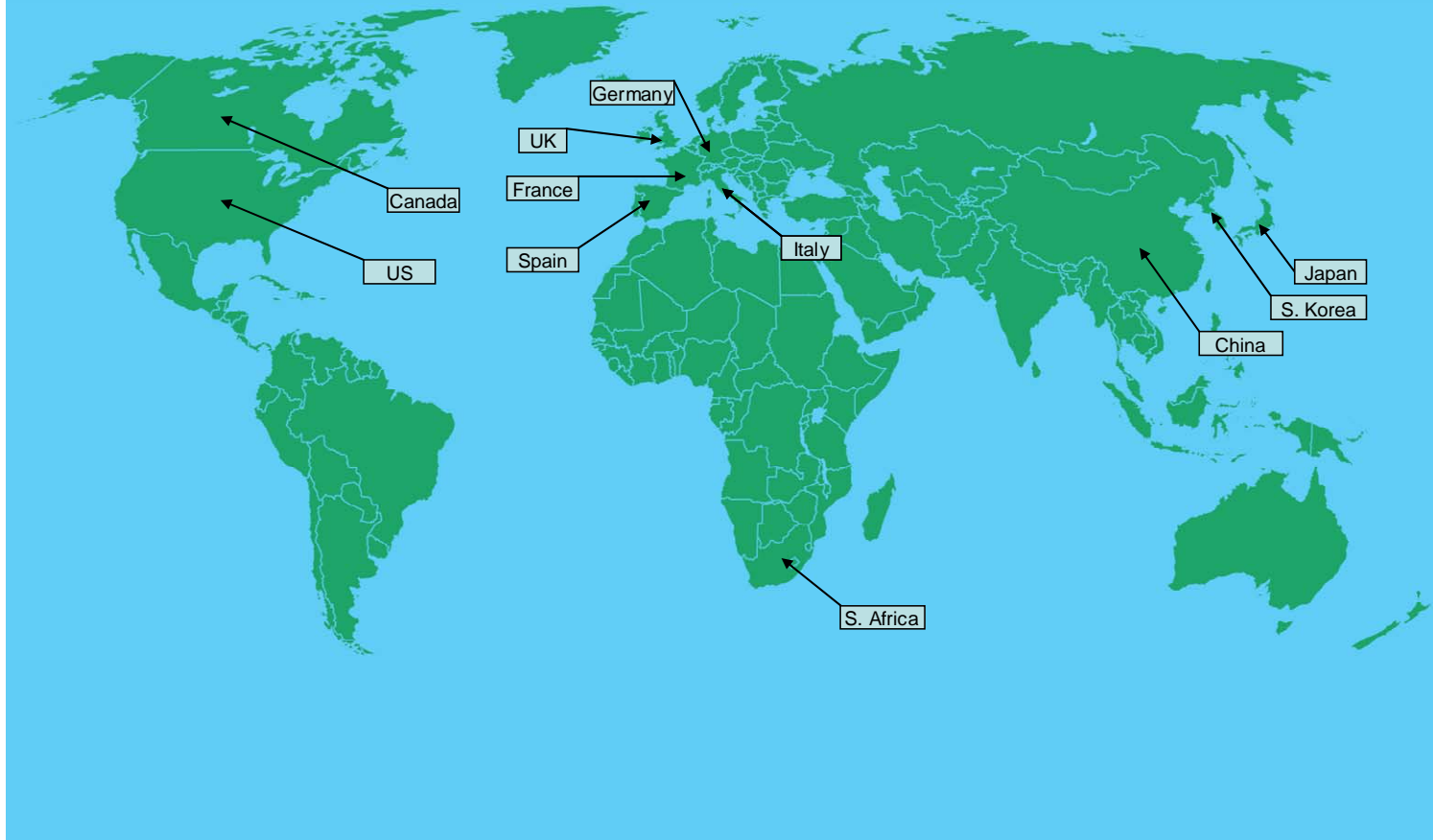
Vendor Inspection Program Enhancements (continued)

- Expand international cooperation in vendor oversight
- Clarify oversight and improve interface with third party industry audits

Overview of Anticipated Oversight

- Modular fabrication
 - Routine vendor and field inspection
 - Potential for resident inspection
- Component fabrication
 - Vendor inspection
 - International regulatory bilateral activities
 - Oversight of third party audit activities
- Design and licensing activities
 - Vendor and QA inspections with technical specialists

Global Supply Chain



NRC Regulations Related to Vendors

- 10 CFR Part 50, Appendix B
 - 18 Quality Assurance Criteria for Nuclear Power Plants
- 10 CFR Part 21
 - Evaluating Deviations and Reporting Defects
- 10 CFR 50.55a
 - Codes and Standards
- ❖ <http://www.nrc.gov/reactors/new-reactors/oversight/quality-assurance/vendor-insp.html>

Codes, Standards and Guidance

- NRC establishes regulatory requirements and issues guidance
- ASME establishes code requirements
- Industry develops programs and technology to meet these requirements
- All participate in an open consensus process
- Common Goals (NRC, ASME, Industry)
 - safe plant operation
 - practical requirements
 - cost-effective technology

Vendor Related Guidance

- NRC Issued
 - Standard Review Plan, Section 17.5 (NUREG-0800)
 - Regulatory Guides (RGs) 1.28, 1.33, 1.123
- NRC Endorsed
 - 10 CFR Part 50, Appendix B
 - QA Program for Nuclear Facilities (ASME NQA-1)
 - QA Program Description (NEI 06-14)
 - Commercial-Grade Dedication
 - Guideline for the Utilization of Commercial-Grade Items in Nuclear Safety-Related Applications (EPRI NP-5652)

Regulations on Codes and Standards

- 10 CFR 50.55a “requires” licensees to use ASME Codes
 - ASME BPV Code, Section III for design
 - ASME BPV Code, Section XI for in-service inspection
 - ASME OM Code for in-service testing
- The NRC approves, conditions, or disapproves ASME Code cases
- NRC regulations allow the use of alternatives to 10 CFR 50.55a when:
 - the alternative provides an acceptable level of quality and safety, or
 - compliance would result in a hardship without a compensating increase in quality and safety.

International Experience

- Imported reactor vessel replacement heads must meet the original design specification requirements
- Current design certification applications from France and Japan specify the use of ASME Code, Section III.
- Foreign material specifications are approved by ASME or NRC as alternatives to ASME Code material requirements.
- The Multinational Design Evaluation Program (MDEP) is assessing code differences and possible reconciliation.

Suspect, Counterfeit & Fraudulent Parts

- Licensees are held accountable for quality of parts
- NRC issues Generic Communication for counterfeit products
- Potential inspection focus areas:
 - Procurement and commercial-grade dedication programs
 - Industry practices for identifying counterfeit or fraudulent parts
 - Documents that provide traceability for quality-related components
 - Supply chain for a sample of specific components provided to each new reactor project

Generic Communications Listed in GL 89-02

Counterfeit Products	
Bulletin 87-02 (with supplements)	Fastener Testing to Determine Conformance with Applicable Material Specifications
Bulleting 88-05 (with supplements)	Nonconforming Material Supplied by Piping Supplies, Inc., at Folsom, New Jersey and West Jersey manufacturing Company at Williamstown, New Jersey
Bulletin 88-10	Nonconforming Molded-Case circuit Breakers
Information Notice 88-19	Questionable Certification of Class 1E Components
Information Notice 88-46	Licensee Report of Defective Refurbished Circuit Breakers
Inadequate Dedication	
Information Notice 87-66	Inappropriate Application of Commercial-Grade Components
Information Notice 88-35	Inadequate Licensee Performed Vendor Audits

Other Generic Communication on Counterfeiting

Information Notice 88-48 (with supplements)	Licensee Report of Defective Refurbished Valves
Generic Letter 89-02	Actions to Improve the Detection of Counterfeit and Fraudulently Marked Products
Information Notice 89-03	Potential Electrical Equipment Problems
Information Notice 89-39	List Of Parties Excluded From Federal Procurement Or Non-Procurement Programs
Information Notice 89-45 (with supplements)	Metalclad, Low-Voltage Power Circuit Breakers Refurbished With Substandard Parts
Information Notice 89-56	Questionable Certification Of Material Supplied To The Defense Department By Nuclear Suppliers
Information Notice 89-59 (with supplements)	Suppliers Of Potentially Misrepresented Fasteners
Information Notice 89-70 (with supplements)	Possible Indications Of Misrepresented Vendor Products

Other Generic Communication on Counterfeiting

(cont'd)

Information Notice 90-46	Criminal Prosecution Of Wrongdoing Committed By Suppliers Of Molded-Case Circuit Breakers And Related Components
Information Notice 90-57 (with supplements)	Substandard, Refurbished Potter & Brumfield Relays Represented As New
Generic Letter 91-05	Licensee Commercial-Grade Procurement and Dedication Programs
Information Notice 91-09	Counterfeiting Of Crane Valves
Information Notice 92-22	Criminal Prosecution And Conviction Of Wrongdoing Committed By A Commercial-Grade Valve Supplier
Information Notice 92-56	Counterfeit Valves In The Commercial Grade Supply System
Information Notice 92-68 (with supplements)	Potentially Substandard Slip-On, Welding Neck, And Blind Flanges
Information Notice 93-43	Use Of Inappropriate Lubrication Oils In Safety-Related Applications

Other Generic Communication on Counterfeiting

(cont'd)

Information Notice 93-73	Criminal Prosecution Of Nuclear Suppliers For Wrongdoing
Information Notice 95-12	Potentially Nonconforming Fasteners Supplied By A&G Engineering II, Inc.
Part 21 1995-212	Aerofin - Cardinal Industrial Products capscrews
Part 21 1996-06-4	Aerofin - Cardinal Industrial Products capscrews
Information Notice 96-40	Deficiencies In Material Dedication And Procurement Practices And In Audits Of Vendors
Part 21 1997-06-0 through 1997-06-3	Limitorque - counterfeit component
Information Notice 07-19	Fire Protection Equipment Recalls And Counterfeit Notices
Information Notice 08-04	Counterfeit Parts Supplied to Nuclear Power Plants

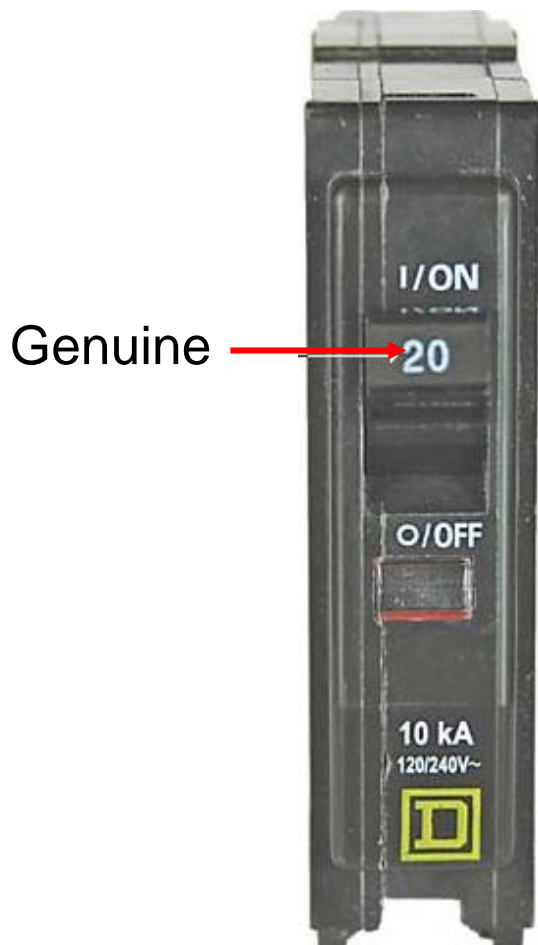
Ladish Valve



Counterfeit



Square D Breakers



Press Release:

U.S. Consumer Product
Safety Commission
December 27, 2007,



NRC International Activities

- Multinational Design Evaluation Program (MDEP)
 - Member of Codes and Standards and Vendor Inspection working groups
 - Efforts to compare and reconcile codes and standards
- Vendor Inspection Activities
 - Develop a framework for multinational construction and vendor inspection knowledge exchange
 - Joint vendor inspections in Canada and Japan
 - Vendor inspections and technical exchanges in the U.S. by S. Korean and U.K. regulators
 - Observed construction activities in Finland at Olkiluoto 3