



3rd NRC Workshop on Vendor Oversight of New Reactor Construction

Enhancing the Integrity of the Supply Chain

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U.S. Nuclear Regulatory Commission
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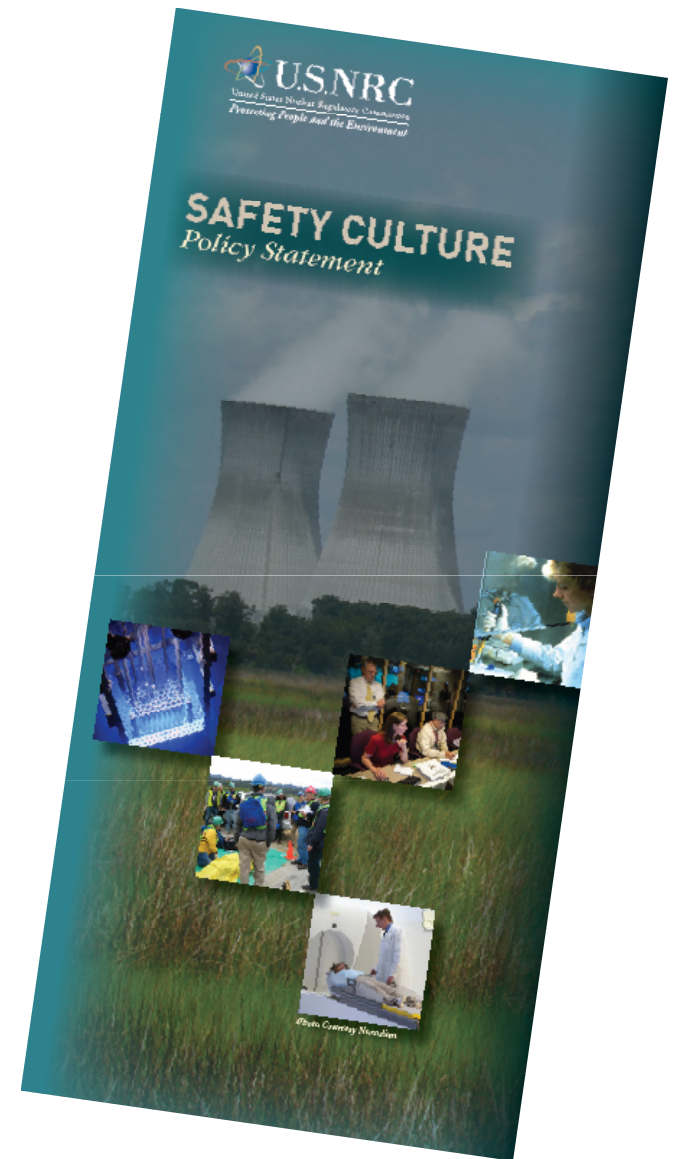
Topic Areas

- Safety Culture
- Nuclear Supply Chain
- Increased Attention on Counterfeit, Fraudulent, and Suspect Items (CFSI)
- Current Environmental Factors
- NRC Activities



Safety Culture

The Commission defines **Nuclear Safety Culture** as the core values and behaviors resulting from a collective commitment by leaders and individuals to emphasize safety over competing goals to ensure protection of people and the environment.





Then



Browns Ferry Unit 1





Now

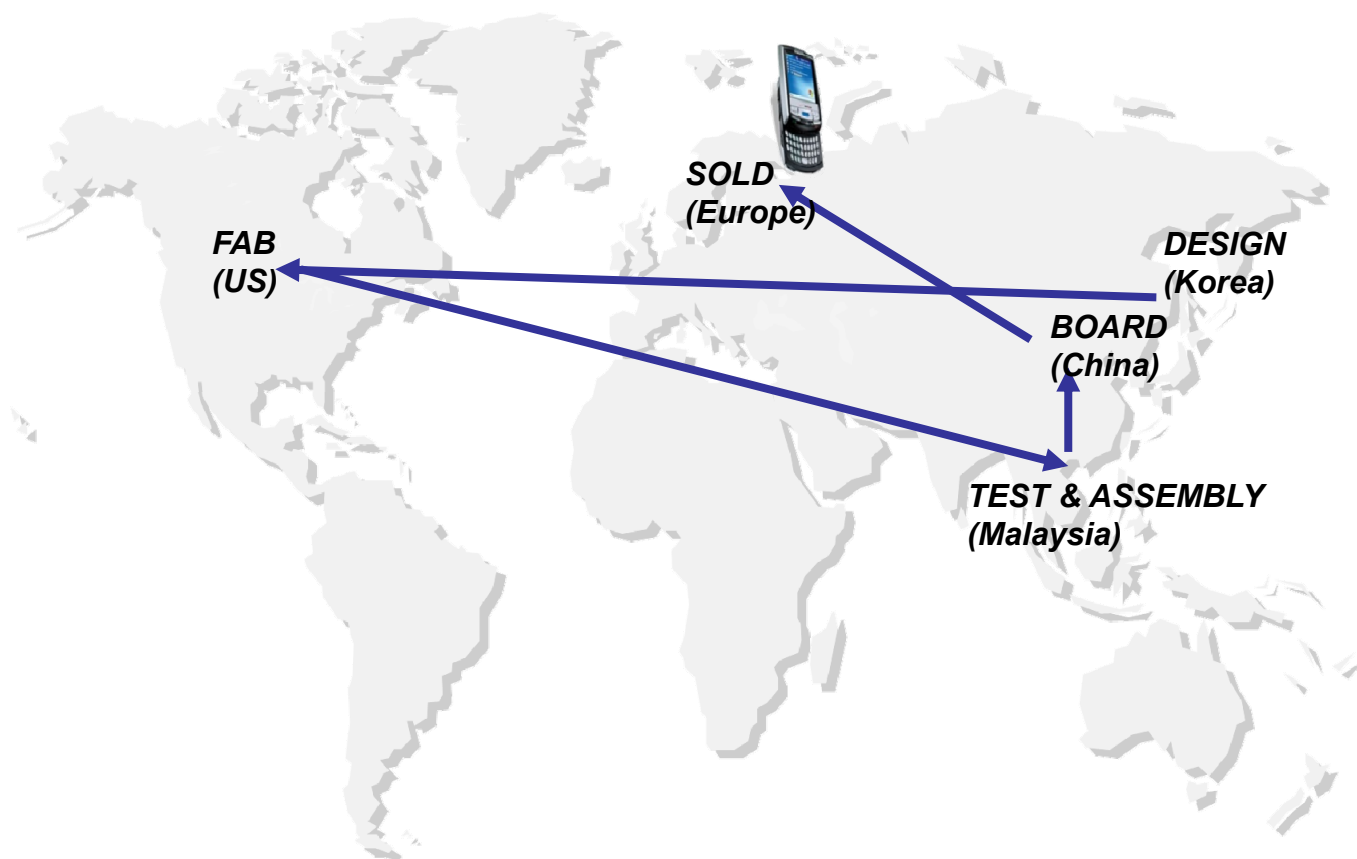


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Nuclear Supply Chain Increasingly Global



The supply chain from chip design to the final end customer is complex and global.



Source: SIA: SEMICONDUCTOR INDUSTRY ASSOCIATION

Nuclear Supply Chain

The integrity of the supply chain is a fundamental element of an effective quality assurance program for NRC-licensed facilities and their suppliers.





Characteristics of Effective Procurement and Dedication

1. Involvement of engineering staff in the procurement and product acceptance processes
2. Effective source & receipt inspection, and testing programs
3. Thorough, engineering-based programs for review, testing, and dedication of commercial-grade items

Common Counterfeits

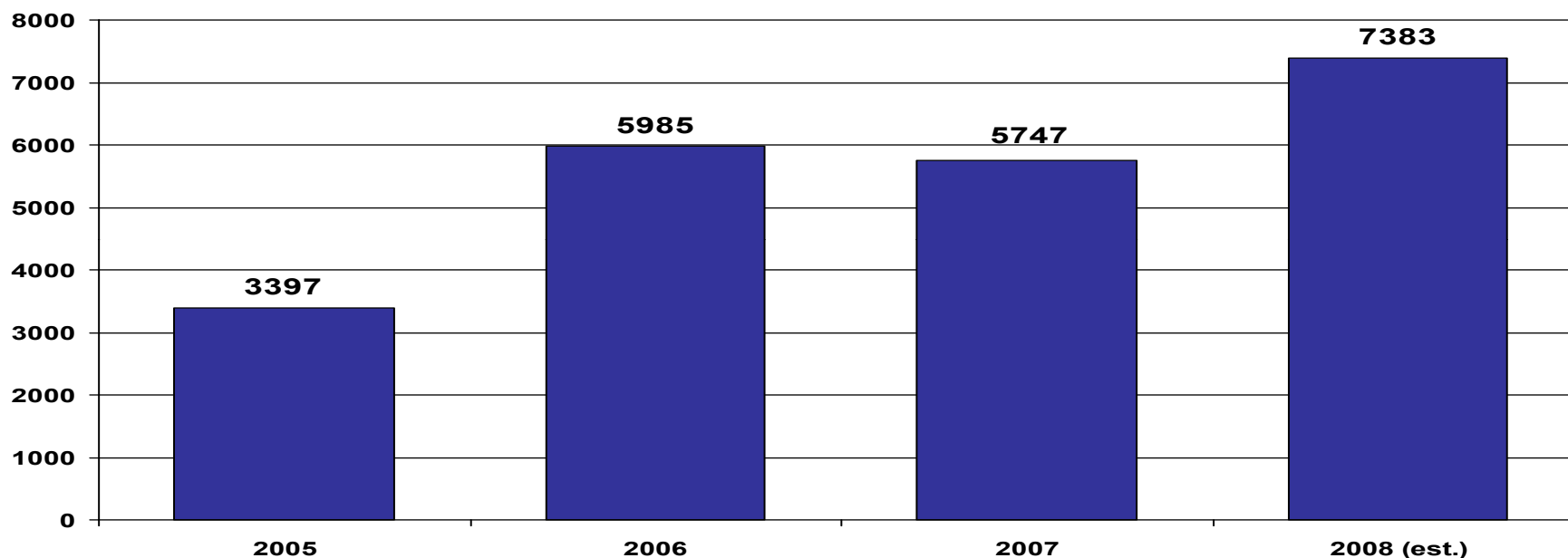




CFSI Status

- Little or no significant counterfeit activity in commercial nuclear industry since NRC's issuance of guidance documents in 1990's.
- Other industries have seen an increase in Counterfeit, Fraudulent, and Suspect Items (CFSI) activity in recent years.

Increased Attention on CFSI



Total Counterfeit Incidents – Original Component Manufacturers,
Distributors, Board Assemblers – 2005 to 2008
(Courtesy U.S. Department of Commerce)



Current Environmental Factors

1. Material shortages (Increased opportunity/threat)
2. Diminishing Appendix B Safety-Related suppliers
3. Global supply chain
4. Advancing technology (Digital I&C)
5. High in-service failure rates (non-nuclear)
6. Lack of reporting



Advancing Technology

Industry Migration to Digital I&C

U.S. Operating Reactors

- 100% of license renewal applicants are expected to migrate to Digital I&C for safety systems
- 1/3 of operating plants have already migrated for some safety systems

U.S. New Reactors

- 100% of all new reactor designs have Digital I&C Systems

Advancing Technology

Advanced Counterfeiting Technology



*Small Electrical Parts
or
Integrated Circuits*



Good

*Field
Programmable
Gate Arrays
(FPGAs)*



Bad



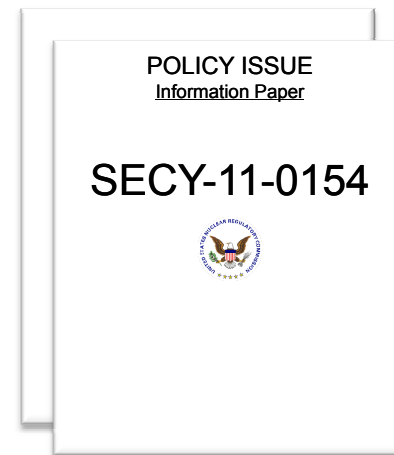
NRC Activities

- Developing The NRC's CFSI Community
 - Continuing To Enhance The NRC Inspection Process
 - Issuance Of Information Notice 2008-04
 - Issuance Of SECY-11-0154
- Working with the Nuclear Community
 - Sharing Information
 - Working With NUPIC to Revise Audit Checklists
 - Working With EPRI Technical Advisory Group
- Cooperating with U.S. Government Agencies
- International Activities



NRC Activities - Commission Paper

- Development of NRC's CFSI Response Strategy
 - Agencywide plan to monitor and evaluate CFSI
- Assessment of key areas:
 - Supply Chain Oversight
 - Communications
 - Agency Response Protocols
 - Malicious Products
- Continuing Activities





Questions ?