IAEA/ANL
Interregional Training Course

Technical and Administrative Preparations Required for Shipment of Research Reactor Spent Fuel to Its Country of Origin

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Lecture L.2.1d

Physical Security Plan for Sea Shipment of IAEA Category II Foreign Spent Research Reactor Fuel

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Physical Security Plan for Sea Shipment of IAEA Category II Foreign Spent Research Reactor Fuel

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Office of Environmental Management
U. S. Department of Energy

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Draft Physical Security Plan for Sea Shipment of Category II Quantities

- Preparation an EM-62 initiative following 9/96 shipments
- Security Plan a contractual requirement in RFP for DOE shipping contractor
- DOE contractor ships fuel from developing countries calendar 1997

Sierra Club vs James D. Watkins, Secretary of U.S. Department of Energy, et.al. (December 9, 1991)

- Federal Court found inadequate a DOE Environmental Assessment re: impact of shipping Taiwanese spent fuel to Savannah River
- Department has to consider possibility of human intervention and attendant risks of low probability event
  - even though police might escort shipments, risk of low probability event can’t be ignored

Infcirc/225/Rev. 3

- Is material self-protecting?
  - 100 rads/hr. at one meter unshielded
  - if not, treat as unirradiated, not self-protecting
- Cat I unirradiated 5 kg U-235 or more
- Cat II unirradiated
  - less than 5 kg but more than 1 kg if enrichment is 20% or higher
  - 10 kg U-235 or more if enrichment is 10% - 20%
- Reduce Cat I or II quantity one category level if self-protecting

DOE Order 5633.3B, Control & Accountability of Nuclear Material

Moderately irradiated >15r/hr.

- Category II Attractiveness Level D U-235≥50 kg.
- Category III Attractiveness Level D U-235≥8<50 k

Highly irradiated>100r

- Reportable Quantities

Fuel Categorization Critical

- Security for Category I quantity significantly higher than for IAEA Category II or lower
- If Category II under DOE Order 5633.3B, protect as if Category I

Stages of Transport

- Reactor to Port of Embarkation
- Port of Embarkation
- At Sea
- U.S. Territorial Limits to Charleston or Concord NWS
- U.S. Port to Savannah River or Idaho

Scope of Category II Plan

- Focus from reactor to U.S. port
- Host country regulations (if any) apply from reactor to port of embarkation
  - Do national regulations incorporate Infcirc/225/Rev.3?
- IAEA Guidelines on Physical Protection of Nuclear Material (Infcirc/225/Rev. 3) while at sea
  - satisfy requirements of Convention on Physical Protection of Nuclear Material (Infcirc/274/Rev. 1)
- 10 CFR 73.37 for spent fuel applies to NRC licensee while in US. territorial waters
- DOE Order 5632.1C-1, Protection & Control of Safeguards and Security Interests, requirements for sea shipment of irradiated fuel

Clarify Who Does What

- Designation of U.S. and shipper country government POCs under Physical Security Convention
- Designation of emergency response agency in host country and while at sea
- Shipper 24-hour communications center
- Cognizant DOE operations center

Draft Category II Plan

- Shipper fills in summary matrix and plan text on how shipper fulfills all applicable elements of Infcirc/225/Rev. 3
- Several stages
  - how fuel gets to exit port
  - security at exit port
  - security at sea
  - entry into US territorial waters

Information Which Plan Will Generate

- Security capability for transport to port
  - route, stop-overs, hand-overs, etc.
  - guard and response force
  - who is in charge
  - with whom is security plan on file
  - load vehicle check, locks and seals
- At sea
  - who has advance knowledge of route
  - escort(s)
  - communications, monitoring cargo, emergency response
- At receiving Port
  - hand-over arrangements

Some Key Issues

- Current threat assessment of the route and its alternatives
- How the security plan addresses the assessed threat
- Who is responsible for doing what
  - capability to carry out the responsibility
- Use of “need to know” principle and tight information security to protect access to sensitive route and security information
- Language barrier

Need for:

- Early communications with DOE on security
- Planning for security

DOE ready to help

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