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Current Transport Safety Framework and SMRs

- IAEA SSR-6 covers transport of radioactive material considering classification of material and packages using graded approach.

- The term “Shipment after Storage” was introduced in 2018 Edition particularly to address transport of back end fuel cycle materials after long term storage.

- Framework is technology neutral and cargo approach is used.

Remains applicable If cargo approach is considered for back end of SMR fuel cycle.
Current Transport Safety Framework

Floating Power Units do not formally fall under coverage of SOLAS


Images from IMO presentation to IAEA 27 Oct 2021
Concept of Transportable Reactors

• Concept of “mobility” is already in practice for sealed sources and portable exposure devices having IAEA SSR-6 cover through certification as special form radioactive material and Type B(U) package.

• For SMRs, two approaches are considered:
  – Factory Manufactured TNMs (fueled with the option of onsite refueling)
  – Transportable Nuclear Power Plant (land based or sea based relocatable nuclear power plants but transported in shut down condition)

Concept of Transportable reactors is out of scope of current Transport Safety Framework
Key Challenges

• Define and Classify Transportable reactors considering design, means of transport etc.

• Design safety and security of transportable reactors including platforms (ships, barge or vehicles), transportation scenarios etc.

• Review of exiting safety standards to ensure safe management of spent nuclear fuel either stored at transportable reactors or the reactor is transported to refueling site.

• Study safety considerations in design of integrated TNM containing spent fuel for shipment after operation and storage phase.

• Detailed review of current legal framework, IAEA, IMO, United Nations Convention on the Law of the Sea (UNCLOS), other available material in member states, identify interface between international legal framework and national regulations, identify specific gaps on the regulation of transport safety for transportable reactors loaded with spent nuclear fuel.
Current IAEA Activities

• A TRANSSC Working Group on TNPP is established. The group is holding virtual meetings to discuss the various aspects.
• Joint working (NSRW, NSNI, NSNS) on a new publication on security and design safety considerations for Transportable nuclear power plants is in progress. CSM is planned in December 12-16, 2022.
Thank you!
Questions?