Contribution ID: **188** Type: **ORAL**

INTERNATIONAL LEGAL INSTRUMENTS ON SAFETY, SECURITY, AND CIVIL LIABILITY GOVERNING THE TRANSPORT OF SMALL MODULAR REACTORS IN FLOATING NUCLEAR POWER PLANTS

Abstract

Although the International Convention for the Safety of Life at Sea (SOLAS) Chapter 8 (through Resolution A.491.XII in 1981, which is currently being revised) contains the Code of Safety for nuclear-propulsion ships, the relevant legal instruments governing the nuclear safety-and-security by the International Maritime Organization (IMO) and the International Atomic Energy Agency (IAEA) on maritime-nuclear systems were written primarily for transport of nuclear and radioactive materials.

These IMO instruments include: the International Ship and Port Facilities Security Code (ISPS); the Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation (SUA); the SUA Protocol for Fixed Platforms Located on the Continental Shelf; and the International Code for the Safe Carriage of Package Irradiated Nuclear Fuel, Plutonium, and High-Level Radioactive On-Board Ships (INF).

The IAEA instruments include: the Convention and Protocol of Physical Protection of Nuclear Materials (CPPNM); the International Convention on the Suppression of Acts on Nuclear Terrorism (ICSANT); the IAEA Nuclear Security Series 26-G –Security of Nuclear Material in Transport, Implementation Guide; and the IAEA Nuclear Security Series 27-G –Physical Protection of Nuclear Material and Nuclear Facilities.

The IAEA Safety Standard Requirement (SSR-6) and all the Safety Standard Guides (SSGs) requires that fresh and irradiated fuel are transported in their respective appropriate package types as approved by the competent authorities. As written, the SSR and SSGs were not intended for the transport by sea of small modular reactors (SMRs) in a Floating Nuclear Power Plant (FNPP)-barge containing fresh/irradiated fuel in their reactor cores. In addition, The IAEA SSR and SSGs were developed for water-cooled reactors, they may or may not be applicable to non-water-cooled reactors, such as pebble-bed or molten-salt reactors.

On Civil Liability Conventions for nuclear damages, the 1971 Convention on Civil Liability for the carriage of nuclear material by sea was endorsed by the IMO, IAEA and OECD to regulate liability with respect to damage arising from the maritime carriage of nuclear and radioactive materials. There was a Liability Convention for operators of nuclear-propulsion ships, signed in 1962, but it was not ratified. Hence, both IMO and IAEA should work together to ratify the liability convention for nuclear-propulsion ships, and join together with insurers and re-insurers to establish the insurability of a commercial nuclear-propulsion systems.

To path the way for a viable operation of SMRs in FNPPs (or nuclear-propulsion ships), new nuclear technologies can be employed, and new/modified legal instruments governing the rules and regulations on safety, security, and civil liability by the IMO and the IAEA must be available to support such technologies. This study examines the safety-and-security aspects of several advanced/novel SMR technologies, and identifies the essential challenges in the effort of harmonizing the legal instruments governing the rules and regulations on safety-and-security of maritime-nuclear systems, for both FNPPs and nuclear-propulsion ships, by the IMO and the IAEA.

Country or International Organization

C

Instructions

Author: Dr CHOI, Jorshan (Lawrence Livermore National Lab. (retired))

Presenter: Dr CHOI, Jorshan (Lawrence Livermore National Lab. (retired))

Track Classification: Track 1 Legislative and Regulatory Framework for Safe and Secure Transport