POSITION PAPER

Nuclear Propulsion

(Revision 1)

IACS
International Association
of Classification Societies

Our Position

IACS recognizes the potential of nuclear power to support deep decarbonization of shipping, particularly for high-energy, long-autonomy ship operations. Its development requires a comprehensive international framework that clearly defines nuclear–maritime regulatory interfaces and ensures robust safety, security, liability, inspection coordination, radioactive waste management, and end-of-life decommissioning arrangements.

BACKGROUND

The global shipping sector faces the challenge of achieving deep decarbonization while continuing to support international trade. Many alternative fuels are being explored, including hydrogen, ammonia, methanol, and biofuels. However, these fuels typically involve trade-offs related to energy density, fuel storage requirements, and infrastructure availability.

Nuclear power presents a fundamentally different approach to maritime energy supply. A nuclear reactor can produce large amounts of power for extended periods without refuelling, offering operational endurance measured in years rather than days or weeks.

Civilian nuclear power in merchant shipping is not a new concept. During the mid-twentieth century technology demonstration ships were developed, including the NS Savannah in the United States and the Otto Hahn in Germany. These ships demonstrated that nuclear power was technically feasible for commercial ships. However, economic factors, public perception, regulatory complexity, and the availability of inexpensive fossil fuels limited their long-term adoption.

Interest in nuclear power has recently re-emerged due to advances in reactor technology and growing decarbonization pressures. Several reactor developers and maritime stakeholders are exploring concepts based on small modular reactors and microreactors, which offer compact designs and enhanced passive safety features. New initiatives and industrial consortia have been formed to investigate maritime nuclear solutions, involving reactor vendors, shipyards, shipowners, insurers, and research organizations.

Summary of key issues

Nuclear power has the potential to support maritime decarbonization, particularly in operational contexts such as nuclear icebreakers and ultra-large container ships, where sustained high energy demand and long-autonomy requirements make the use of other zero-carbon fuels technically or economically challenging.

However, the introduction of nuclear power into commercial shipping raises a number of questions. These stem primarily from the absence of a comprehensive and international regulatory framework capable of supporting the safe deployment of nuclear-powered merchant ships.

Several key themes can be identified:

- The IMO Nuclear Ships Code (1981) was developed long before modern reactor concepts such as SMRs and microreactors, and does not reflect contemporary maritime safety practice, digital control systems, cyber resilience, or current port safety and security expectations. SOLAS Chapter VIII, which incorporates the Code, would also require revision to integrate modern nuclear safety principles, reactor–ship interface requirements, and updated operational concepts.

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- Existing national nuclear regulatory regimes are designed for fixed, land-based installations. They do not readily accommodate mobile nuclear installations that operate internationally, may change flag, and interact with multiple port States—each of which presents a wide range of environmental and operational conditions that the reactor must be able to withstand and for which safety must be demonstrated.

- There is currently no effective international nuclear liability regime governing power reactors on ships, as the 1962 Brussels Convention on the Liability of Operators of Nuclear Ships never entered into force. This leaves unresolved questions regarding liability channeling, jurisdiction, and compensation in the event of an incident.

- PSC regimes do not have the mandate, training, or tools to assess nuclear installations onboard ships. At the same time, port authorities require clarity and assurance before receiving nuclear-powered ships.

- No international mechanism exists to coordinate inspections and oversight between national nuclear regulators, flag administrations, classification societies, and Port State Control.

- The handling, storage, and transfer of radioactive waste generated onboard ship—whether from operations, maintenance, or emergency response—requires infrastructure and regulatory frameworks that are not yet established for mobile assets. Current MARPOL provisions do not address radioactive waste from shipborne reactors, and amendments may be required to define acceptable handling, transport, discharge prohibitions, and port reception arrangements for nuclear-related wastes.

- End-of-life requirements for reactor removal, waste management, and dismantling obligations are significant. Dedicated, ring-fenced financial assurance mechanisms will be required to ensure long-term safety and regulatory compliance throughout the ship's lifecycle, including changes in ownership or flag. In addition, the future framework must be aligned with the Hong Kong Convention for the Safe and Environmentally Sound Recycling of Ships, ensuring a clear handover from nuclear decommissioning to the environmentally sound recycling of the remaining hull and marine systems under IMO rules.

- Nuclear power will require reinforced ISM-compliant processes that integrate nuclear operational requirements, reactor–ship interface management, radiological protection measures, and coordinated emergency planning with ports and national nuclear regulators.

- Nuclear-powered ships will require new or expanded competence frameworks for crew involved in reactor support functions, radiological monitoring, emergency response, and the reactor–ship operational interface. Amendments or additions to STCW may be necessary to define training requirements, certification paths, simulators, and training specific to nuclear power.

- Public acceptance will be a critical factor in enabling nuclear-powered ships to operate internationally. Ports, coastal States, and local communities will require transparent, predictable, and credible assurances regarding emergency planning, safety arrangements, and radiological protection. A future framework must therefore include communication protocols and consistent, accessible safety case summaries to support public and stakeholder confidence.

- The security of nuclear-powered ships against malicious activities represents an additional critical concern. The presence of nuclear installations on board merchant ships may increase exposure to threats such as terrorism or piracy, particularly given ships' mobility, international operation, and interaction with ports and coastal infrastructure. The establishment of appropriate security arrangements therefore requires international consideration beyond the remit of classification societies.

IACS POSITION

A central item to be discussed and addressed is the difference between nuclear and maritime regulatory philosophies. Nuclear safety regimes are typically implemented through national legislation and enforced by national nuclear regulators, while maritime safety conventions are implemented through flag States and supported by classification societies and Port State Control regimes.

A future regulatory framework for nuclear-powered ships must therefore bridge these two systems and establish clear interfaces and responsibilities.

Against this background, the following sections set out IACS's position on how these issues should be addressed within a coherent international framework

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1. Governance of the Nuclear Reactor

A central consideration in the introduction of nuclear propulsion into commercial shipping is the fundamental difference between nuclear and maritime regulatory philosophies, and the need to establish a framework that allows these two systems to interact coherently.

Maritime regulation is based on international conventions adopted by the International Maritime Organization and implemented by Flag States through their maritime administrations. Compliance is demonstrated through certificates issued under the authority of a Contracting Government, with the underlying principle that such certificates are recognized and accepted by other Contracting Governments, unless there are clear grounds for believing that the condition of the ship or its equipment does not substantially correspond with the particulars of those certificates. This principle of mutual recognition, supported by Port State Control as a verification mechanism rather than a parallel approval regime, underpins the ability of ships to operate internationally.

By contrast, nuclear safety regulation is typically established through national legislation and enforced by national nuclear regulatory authorities, in accordance with international principles and standards developed by the IAEA. These regulatory frameworks are primarily designed for fixed, land based installations operating within a single national jurisdiction.

IACS considers that the reactor system and nuclear island—including the reactor core, containment, shielding, nuclear safety systems, fuel management arrangements, and radiological protection measures—should remain under the authority of national nuclear regulators applying IAEA aligned safety standards. However, reactors installed on board ships differ from land based installations in several important respects.

- Nuclear powered ships operate internationally, may trade to ports under the jurisdiction of authorities other than the one that originally licensed the reactor, and may change flag during their operational life. This mobility introduces unique regulatory challenges and highlights the need for robust mechanisms to ensure continuity of oversight, mutual understanding between nuclear authorities, and confidence in safety arrangements across jurisdictions.
- In addition, shipborne reactors must be designed to operate under dynamic and variable maritime conditions, including ship motions, vibration, exposure to maritime hazards such as collision and grounding, and a wide range of environmental conditions that may not be fully known or fixed at the time of construction. This stands in contrast to land-based nuclear installations, which are licensed for operation in well-defined and site-specific environmental conditions. These differences are not typically addressed in conventional nuclear licensing frameworks and will require adapted safety assessment approaches that take account of the full operational envelope and trading flexibility of ships throughout their service life..

Another important aspect of governance is that ships are subject to periodic statutory inspections and classification surveys conducted under IMO conventions and Class requirements. Coordination between nuclear inspections and maritime surveys will therefore be essential. Any future framework will need to ensure that nuclear inspection regimes and maritime survey schemes are aligned to avoid duplication, conflicting requirements, or gaps in oversight. Clear arrangements will be required for the exchange and interpretation of findings that may have implications for both nuclear safety and maritime certification.

Against this background, the reactor–ship interface emerges as a critical area where nuclear and maritime responsibilities converge, and where coherent governance arrangements are essential to ensure that nuclear safety objectives and maritime safety requirements are addressed in a consistent and compatible manner.

2. The Reactor–Ship Interface

The interface between the reactor installation and the ship's marine systems represents the most critical technical boundary in the design and operation of nuclear-powered ships. At this boundary, nuclear safety functions rely on ship systems, and key ship functions are influenced by the presence and behavior of the nuclear installation. This mutual dependence creates a set of engineering, regulatory, and operational challenges that cannot be fully addressed within either the nuclear or the maritime domain alone.

2.1 Structural Integration

The reactor module must be structurally integrated into the hull so that it remains safe under ship motions, vibration, slamming, collision, and grounding scenarios. While the integrity of the containment and other nuclear safety structures falls under the

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responsibility of nuclear regulation, the way the reactor module is incorporated into the ship—its supports, load paths, and survivability under maritime hazards—lies within maritime safety rules and Class requirements. In this case, the nuclear installation depends on the ship for structural protection, while the ship's structural arrangements are affected by the characteristics of the reactor module.

2.2 Cooling Water Systems
Decay heat removal is a fundamental nuclear safety function. In many design concepts, this function relies on seawater cooling systems that are part of the ship's marine systems. As a result, the reliability, redundancy, and segregation of seawater intakes, pumps, and overboard discharges become direct contributors to nuclear safety.

At the same time, the thermal and operational characteristics of the reactor plant influence how these marine systems are configured and operated. This is a clear case where nuclear safety functions depend on maritime systems, and maritime requirements must adapt to nuclear safety needs.

2.3 Electrical Power and Redundancy
In several nuclear ship architectures, the reactor plant supplies the main electrical power for power and ship services. Conversely, nuclear safety systems require independent, highly reliable sources of power that remain available under all conditions. This means that the ship's electrical distribution, emergency generators, battery systems, and segregation arrangements must satisfy nuclear safety requirements, while nuclear system behavior shapes the design and operation of the ship's electrical network. Each domain therefore depends on the other for power availability, diversity, and protection against common-cause failures.

2.4 Emergency Response
Effective emergency response requires the integration of nuclear emergency actions—such as rapid reactor shutdown, containment isolation, and radiological response—with maritime emergency procedures defined under SOLAS, including firefighting, escape, evacuation, rescue and communication with port and coastal authorities. In this area, nuclear emergency functions rely on maritime systems and organisation, while maritime emergency planning must be adapted to account for nuclear-specific hazards and timelines.

2.5 Operational States
Failures or degraded conditions affecting nuclear safety systems may leave the ship technically seaworthy yet operationally restricted as defined by the nuclear safety case. Conversely, maritime casualties—such as loss of power, flooding, or loss of cooling water—can trigger nuclear safety actions or require changes in reactor operation. Existing maritime regulations do not define operational states for such circumstances. New, jointly governed operational conditions and reporting mechanisms may therefore be required to manage situations where ship operations are constrained by nuclear requirements, or nuclear operations are constrained by ship conditions.

3. Construction, commissioning and repairs

The construction, integration, and commissioning of nuclear-powered ships present specific challenges that require close coordination between nuclear regulatory authorities, maritime Administrations, shipyards, and classification societies.

Nuclear reactors used in terrestrial applications are manufactured and assembled at facilities that are licensed and supervised by national nuclear regulatory authorities. For nuclear reactors envisaged to be installed on board ships, additional considerations arise due to the involvement of shipyards, which may not traditionally fall within the scope of nuclear licensing regimes. Where reactor modules or nuclear-related components are constructed, assembled, tested, or integrated within shipyard or repair yard facilities, it may be necessary for such facilities—or their subcontractors—to obtain appropriate authorisations from the competent nuclear regulatory authority.

Even where reactor modules are manufactured at external, licensed nuclear facilities and subsequently delivered for installation on board, shipyards will remain directly involved in the handling, installation, and integration of nuclear equipment with the ship's structure and systems. In this context, a clear and internationally recognised framework would be required to define the extent to which shipyards are expected to implement and demonstrate compliance with applicable nuclear quality control and assurance requirements, particularly where their activities may influence nuclear safety functions or the reactor–ship interface.

Consideration would also need to be given to the role, approval, and oversight of service suppliers. Existing Class approval and certification schemes may need to be reviewed and, where appropriate, adapted for

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suppliers whose work could affect the integrity or performance of reactor-related interfaces, including fabrication, installation, testing, maintenance, and inspection activities.

The commissioning phase, including sea trials, represents a critical transition from construction to operational service and requires particular vigilance from both nuclear regulators and maritime Administrations. Sea trials of nuclear-powered ships will involve not only verification of propulsion and manoeuvring performance, but also the demonstration of safe reactor operation under maritime conditions.

Clear arrangements will therefore be required to define trial areas and exclusion zones, taking into account navigational safety, radiological protection, and coordination with coastal and port authorities. In addition, protocols and frameworks will be needed to clarify the respective roles and responsibilities of nuclear and maritime authorities with regard to the authorisation, supervision, and acceptance of sea trials. These arrangements should ensure that nuclear safety objectives and maritime safety requirements are jointly satisfied, and that emergency preparedness, communication procedures, and decision-making responsibilities are clearly established prior to entry into service.

In addition to new construction, repair and maintenance activities present specific challenges for nuclear powered ships throughout their service life. Unlike construction shipyards, repair yards may be required to intervene on short notice and in a wide range of locations worldwide, often under operational constraints that differ significantly from those of purpose built nuclear facilities.

Repair shipyards are not generally licensed for nuclear activities and may lack familiarity with nuclear quality assurance, radiological protection measures, or reactor specific interfaces. Nevertheless, certain repair activities—whether planned or arising from damage, failures, or modifications—may require work in proximity to nuclear installations or systems connected to the reactor–ship interface. This raises important questions regarding yard authorisation, personnel competence, contamination control, quality assurance, and coordination with nuclear regulators.

A clear and practicable framework will therefore be required to define:

- which repair activities may be conducted in conventional repair shipyards;
- which activities would require involvement of licensed nuclear facilities or specialised service providers;
- and how responsibilities are shared between shipowners, repair yards, nuclear regulators, maritime administrations, and classification societies.

In particular, arrangements will be needed to ensure that emergency repairs or damage response can be carried out without undue delay while maintaining appropriate safety controls, and that ships are not rendered operationally impracticable due to the absence of suitable repair facilities. The role of Class in verifying compliance with approved repair arrangements, and in coordinating surveys following repair or modification, will also need to be clearly aligned with nuclear regulatory oversight.

These considerations underline that repair and maintenance aspects cannot be treated in the same manner as those for conventional ships and must form part of the broader governance approach for nuclear powered ships, while remaining compatible with international operation and existing maritime practices.

4. Port State control

Port State Control (PSC) officers cannot be expected to conduct nuclear safety inspections, nor can they assume responsibilities that belong to national nuclear regulators. Nevertheless, PSC authorities retain the obligation to verify compliance with international maritime conventions before permitting a nuclear-powered ship to enter port. This creates a unique regulatory and operational interface: PSC must neither duplicate nuclear oversight nor ignore nuclear-related concerns that may affect maritime safety or port security.

A structured and formally defined interface between PSC regimes and national nuclear regulators will therefore be essential. This should include standardized documentation—such as nuclear licences, safety case summaries drafted in a form accessible to maritime authorities, interface control documentation, and integrated emergency response plans—that PSC officers can verify without stepping outside their mandate. Clear communication procedures will also be required so that PSC authorities can consult the relevant nuclear regulator promptly whenever concerns arise.

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Specialized PSC guidance for nuclear-powered ships may become necessary, ensuring that expectations, verification methods, and escalation pathways are harmonized across port States. Preparedness exercises involving ships, port authorities, nuclear regulators, and local emergency services will be indispensable for ensuring effective response capabilities, building familiarity with procedures, and maintaining public confidence in ports that may receive nuclear-powered ships.

This topic is particularly important for IACS because PSC regimes rely heavily on Class and Recognized Organizations for technical verification under IMO conventions. Nuclear-powered ships will still be subject to the same certificate regimes—Load Line, SOLAS, MARPOL, ISM, ISPS—and PSC will expect clear evidence of compliant marine systems.

By helping define the PSC–nuclear regulator interface, IACS can ensure that maritime safety assessments remain coherent, that Class surveys are properly recognized, and that PSC officers understand where IACS members' responsibilities stop and where nuclear oversight begins. This prevents regulatory conflict, protects the integrity of IACS survey processes, and supports the safe and predictable reception of nuclear-powered ships in ports worldwide.

5. Liability and Insurance

One key area to be discussed and addressed for the deployment of nuclear power in commercial shipping is the absence of an appropriate international liability regime. Existing nuclear liability conventions were designed primarily for land based nuclear installations and generally exclude power reactors on ships. The only international instrument intended specifically to address nuclear powered ships—the 1962 Brussels Convention on the Liability of Operators of Nuclear Ships—never entered into force.

As a result, fundamental questions remain unresolved, including:

- the allocation of liability between shipowners and reactor operators
- jurisdiction and applicable law in the event of an accident
- compensation mechanisms for nuclear damage

These questions are compounded by the fact that maritime and nuclear liability regimes are built on different principles. Maritime frameworks typically assign liability to the shipowner and rely on limitation funds and P&I insurance structures, whereas nuclear liability frameworks channel liability exclusively to the nuclear installation operator and rely on State backed tiered compensation mechanisms.

Moreover, most real incidents will simultaneously involve nuclear and non nuclear elements, because any significant event involving a nuclear powered ship triggers reactor control actions, even when the initiating event is purely non nuclear. A grounding, collision, loss of cooling water, or major fire—even if entirely conventional in cause—could lead to protective nuclear actions, port closures, or contamination prevention measures. These scenarios blur the boundary between nuclear and maritime liability, making it difficult to assign responsibility cleanly to one regime or the other.

Any future framework for nuclear powered ships will therefore need to address mixed mode accident scenarios, where conventional maritime damage and radiological consequences coexist. A robust, internationally harmonized liability architecture will be essential to ensure clarity for shipowners, reactor operators, insurers, ports, and coastal States—and to enable commercial deployment of nuclear power in the global fleet.

6. Radioactive Waste and Contaminated Materials

Nuclear-powered ships will generate radioactive waste and potentially contaminated materials during normal operations, maintenance activities, and emergency situations. Unlike land-based nuclear installations, ships operate across multiple jurisdictions, each with its own regulatory requirements and infrastructure limitations. They cannot rely on fixed national waste management systems, and port reception facilities for nuclear-related materials are not yet standardized or widely available.

For this reason, nuclear-powered ships must incorporate robust onboard storage arrangements capable of safely accommodating different categories of radioactive material. These may include spent fuel (where refuelling is foreseen), operational radioactive waste such as filters and resins, activated components removed during maintenance, and consumables such as tools or protective equipment that become contaminated during routine work.

Maintenance activities can also produce contaminated parts or components that cannot be handled in conventional shipyards, many of which are not

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licensed or equipped to manage nuclear-related materials. This may necessitate the development of dedicated repair facilities, the use of licensed mobile support teams, or pre-agreed arrangements with specialized yards capable of handling nuclear-contaminated materials in compliance with national and international regulation.

Emergency situations present additional challenges. Events such as fires, flooding, or damage control operations could result in contaminated firefighting water, debris, personal protective equipment, or structural materials. At present, maritime conventions do not address the classification, management, or international transport of contaminated materials arising from nuclear emergencies on ships. As a result, ports and coastal States may lack clear guidance on obligations, responsibilities, and permitted actions—highlighting the need for additional regulatory provisions that provide clarity for both ship operators and port authorities.

The safe and internationally consistent management of radioactive waste and contaminated materials is therefore an essential component of any credible framework for nuclear power in commercial shipping. Clear standards, port interface protocols, recognized waste package specifications, and harmonized transport permissions will be required to ensure safety, avoid operational uncertainty, and maintain public confidence in ports receiving nuclear-powered ships.

7. Decommissioning and Financial Assurance

Decommissioning nuclear-powered ships presents questions pertaining to technical, regulatory, and financial aspects. Reactor dismantling, decontamination, waste management, and—where relevant—spent fuel disposition may extend well beyond the ship's operational life and often involve regulatory authorities entirely different from those overseeing day-to-day operations.

These long-term obligations must be planned and funded from the outset to ensure that decommissioning can be carried out safely, predictably, and without reliance on future commercial viability.

To ensure that adequate resources are available for safe decommissioning, mechanisms similar to those employed for offshore energy infrastructure and land-based nuclear facilities may be required. This may include mandatory, ring-fenced decommissioning funds, sized using independently verified cost models, and periodically reviewed throughout the ship's life. Such funds must be portable so that they remain intact in cases of ownership transfer or flag changes

An additional consideration is the interface between nuclear decommissioning obligations and maritime recycling requirements. Once the reactor island and all activated or contaminated structures have been removed under nuclear regulatory oversight, the remaining hull and marine systems will ultimately fall under ship recycling regulations.

The Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships is therefore directly relevant. Even though it does not explicitly address nuclear installations, the Convention will govern the recycling of the non-nuclear portions of a nuclear-powered ship.

Ensuring a clear handover between the nuclear decommissioning process and Hong Kong Convention-compliant recycling activities will be essential to avoid regulatory gaps, residual risks, or ambiguity over responsibility.
For these reasons, a future framework for nuclear-powered ships will need to integrate:

- nuclear decommissioning requirements under national and IAEA-aligned regulation,
- maritime recycling obligations under the Hong Kong Convention, and
- robust, long-term financial assurance mechanisms that span both regimes

The Role of IACS

As a conclusion, IACS therefore considers that the introduction of nuclear power in commercial shipping must be governed by a revised, internationally coordinated regulatory framework that:

- Ensures safety and security levels at least equivalent to those achieved in the existing maritime and nuclear sectors.
- Clearly defines the respective responsibilities of maritime authorities, nuclear regulators, classification societies, and ship operators.
- Establishes robust mechanisms for inspection coordination, liability and insurance coverage, waste management, and decommissioning.
- Enables innovation while maintaining strong public confidence and international acceptance.

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Within such a framework, IACS can play an important role by developing and applying technical requirements that address the reactor–ship interface, ensuring that marine systems interacting with nuclear installations achieve appropriate levels of reliability, redundancy, and survivability.

IACS members already have deep experience assessing complex offshore and marine installations that operate in demanding environments, as well as the unique capability to conduct continuous surveys throughout a ship's operational life. These functions are particularly important for nuclear powered ships, which may change flag, operate across jurisdictions, and require consistent, transparent oversight over decades of service.

Future nuclear powered ships will remain ships governed by IMO conventions, requiring class certificates and statutory certification under flag-State responsibilities. For this reason, IACS must be fully integrated into any future regulatory framework for nuclear powered ships. Ensuring that maritime safety considerations, class rules, and statutory survey regimes are aligned with nuclear safety frameworks is essential for international acceptance, technical credibility, and the safe global operation of nuclear power in the commercial fleet

However, the effective performance of this role is contingent upon agreement by all concerned parties on the delineation of responsibilities and regulatory interfaces, as well as the establishment of clear and reliable arrangements for the communication and exchange of information required to support the assessment and oversight of the reactor–ship interface. In the absence of such agreed boundaries and information sharing mechanisms, the ability of IACS to develop and apply classification requirements in a coherent and internationally consistent manner would be constrained.

As a next step, IACS considers that continued collaborative work will be required, in close coordination with IMO, flag States, nuclear regulatory authorities, and relevant international organisations, to:

- develop a common understanding of the reactor–ship interface and the associated allocation of responsibilities;
- identify, at a high level, which functions and systems fall within nuclear regulatory oversight and which fall within maritime safety and classification regimes;
- define principles for the coordination of surveys, inspections, and compliance activities, avoiding gaps, duplication, or conflicting requirements.

This work should be iterative and informed by emerging reactor concepts, operational profiles, and risk assessments, with the objective of progressively narrowing and clarifying responsibility boundaries as regulatory and technical maturity increases

Within this process, IACS stands ready to contribute its expertise on ship structures, marine systems, lifecycle survey, and compliance with IMO instruments, supporting the development of a coherent and internationally accepted framework while respecting the established mandate of nuclear regulators.

Latest IMO Decisions on Nuclear Powered Ships

Recent developments at the IMO mark a major turning point for the future of nuclear power in commercial shipping. At the 110th session of the Maritime Safety Committee (MSC 110) in June 2025, IMO formally agreed to begin a comprehensive revision of the Code of Safety for Nuclear Merchant Ships (Resolution A.491) and the associated provisions of SOLAS Chapter VIII.

MSC 110 recognized that the existing Nuclear Ships Code is outdated and constitutes a barrier to the adoption of modern reactor technologies such as SMRs and microreactors.

The Committee therefore instructed the Sub Committee on Ship Design and Construction (SDC) to initiate the revision work, ensuring that it takes into account recent advances in nuclear technology and avoids limiting the updated Code solely to traditional pressurized water reactors.

Building on MSC 110's decision, the 12th session of the Sub Committee on Ship Design and Construction (SDC 12) in January 2026 developed a high level work plan for revising the Nuclear Code and preparing the necessary amendments to SOLAS Chapter VIII. The work plan anticipates adoption of the updated framework by 2030.

SDC 12 also agreed that the revision must be conducted in close cooperation with the International Atomic Energy Agency (IAEA) to ensure alignment with modern nuclear safety standards. These

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developments align with the IAEA's ATLAS initiative, which aims to establish internationally consistent regulatory foundations for floating nuclear installations and shipborne reactors

A correspondence group was established to begin detailed work, including developing an inventory of technical issues and conducting hazard identification exercises relevant to maritime nuclear reactors.

SUMMARY OF WORK CARRIED OUT BY IACS ON THIS ISSUE TO DATE

- Supported the IAEA Consulting Group on FNPPs since 2023.
- Participated as panellists at the IAEA Symposium on Floating Nuclear Power Plants, November 2023 [1].
- Contributed to the IAEA International Conference on SMRs and Their Applications, October 2024 [2].
- Engaged in Industry working groups on nuclear maritime regulations, safety, and insurance.
- Participation in the CG established at SDC 12.

Footnotes:

[1] [1] IAEA Symposium on FNPPs, November 2023, www.iaea.org.

[2] IAEA Conference on SMRs, October 2024, www.iaea.org.

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