A Note on and a Proposal with Respect to the Transportation of Nuclear Cargoes in International Straits

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A Note on and a Proposal with Respect to the Transportation of Nuclear Cargoes in International Straits

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The adoption of an international agreement to create a regime of prior communication and cooperation in the establishment of a precautionary contingency plan for nuclear spills for straits used for international navigation is vital as the peaceful uses of nuclear energy continue to be attractive to states, including Asian states, as a component of a sustainable energy strategy. With the expected rise in nuclear commerce for peaceful purposes, the need for a comprehensive framework for nuclear cargoes and wastes exists and this includes suitable response action plans for nuclear spills. The international instruments adopted by the International Maritime Organisation and the International Atomic Energy Agency provided a framework for the safe and secure carriage of nuclear materials from, other things, piracy, terrorism and sabotage. This article focuses on the movement of vessels carrying nuclear cargoes and wastes through the territorial seas of international straits and the necessary relationship that should exist between the vessels and the adjacent coastal States.

Keywords nuclear maritime commerce, pollution, transportation

Introduction

The peaceful uses of nuclear energy for civilian purposes continue to be attractive to states, including Asian states, as a component of a sustainable energy strategy.1 With the

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157
expected rise in nuclear commerce for peaceful purposes, the need for a comprehensive maritime transportation framework for nuclear cargoes and wastes exists and this includes suitable response action plans for nuclear spills. The international instruments adopted by the International Maritime Organization (IMO) and the International Atomic Energy Agency (IAEA) provided a framework for the safe and secure carriage of nuclear materials from, among other things, piracy, terrorism, and sabotage. The focus of this article is on the movement of vessels carrying nuclear cargoes and wastes through the territorial sea waters of international straits and the necessary relationship that should exist between the vessels and the adjacent coastal states. We propose the adoption of an international agreement to create a regime of prior communication and cooperation in the establishment of a precautionary contingency action plan for nuclear spills.

The primary regulations with respect to the maritime carriage of nuclear cargoes and wastes in territorial seas are in the 1982 United Nations Convention on the Law of the Sea (LOS Convention). The only express provision on nuclear transportation found in the LOS Convention, Part II on the territorial seas, is the reference to the passage of nuclear and chemical cargoes. There is no equivalent provision in the section of the Convention dealing with straits used for international navigation.

We proceed by providing a brief overview of nuclear materials and wastes and the international instruments that deal specifically with the transportation of nuclear materials and wastes by sea. Our goal in these sections is to provide a context for the latter discussions. The core of our article is the examination of the relevant wording of the LOS Convention and, more importantly, the practice of coastal states that is evolving with respect to vessels carrying nuclear materials and wastes through their adjacent waters. Finally, we make the case for a new international instrument to provide a more appropriate and fair balance between coastal states and vessels carrying nuclear materials and wastes through the nearshore waters of those states.

**Nuclear Materials and Nuclear Wastes**

Nuclear material usually refers to radioactive material with unstable atoms. Radioactive decay is the process by which an unstable atomic nucleus loses energy by emitting ionizing particles or radiation. According to the IAEA, nuclear material refers to the metals uranium, plutonium, and thorium. This is differentiated further into source material, consisting of natural and depleted uranium, and special fissionable material, consisting of highly enriched uranium (U-235), uranium-233, and plutonium-239. Uranium ore concentrates are considered to be a source material, although these are not subject to safeguards under the Nuclear Non-Proliferation Treaty. Uranium-233 and plutonium do not occur naturally, but can form in nuclear reactors and be extracted from the highly radioactive spent fuel by chemical separation. Uranium-233 can be produced in special reactors that use thorium as fuel. Plutonium is produced in reactors using U-238/U-235 fuel. Uranium enriched in uranium-235 is created by an enrichment facility. In the radioactive decay chain alpha, beta, and/or gamma particles are emitted (radioactive radiation). Alpha radiation cannot penetrate human skin. Its main hazard comes when it is ingested into the body; it has great destructive power within its short range. In contact with fast-growing membranes and living cells, it is positioned for maximum damage. Scientists believe that ionizing radiation can damage the body’s cells by breaking one or both strands of the DNA in them, possibly causing them to have a higher probability to become cancerous unless the body can repair the damage or the cell is killed. Radiation is effective at breaking both strands of DNA, the type of damage that is most difficult for the repair processes to cope with properly.
The maritime transportation of a cargo of nuclear wastes is a growing concern. Radioactive waste dumped at sea diffuses in seawater resulting in transboundary pollution that can be difficult to monitor and retrieve. These radiotoxic materials enter the food chain where concentrations build up until they reach toxic levels, a process called bioaccumulation.

**The LOS Convention and State Practice**

*LOS Convention Provisions*

As already noted, the LOS Convention in Part II on the territorial seas makes explicit reference to nuclear and chemical cargo transportation. Three provisions are significant: Articles 20, 22, and 23. Article 20 provides that, during innocent passage through the territorial sea, submarines and other underwater vehicles are required to navigate on the surface and to show their flag. In Article 22(1), for purposes of safety of navigation, a coastal state “may” require foreign nuclear-powered ships and ships carrying nuclear or other inherently dangerous or noxious substances exercising the right of innocent passage through its territorial sea to use designated sea-lanes and traffic separation schemes. “May” is also used in Article 22(2), which states that tankers, nuclear-powered ships, and ships carrying nuclear or other inherently dangerous or noxious substances or materials “may” be required to confine their passage to such sea-lanes. In the designation of sea-lanes and prescription of traffic separation schemes, Article 22(3) requires the coastal state to take into account the recommendations of the competent international organization, the channels customarily used for international navigation, the special characteristics of particular ships, and the density of traffic. Within the territorial sea, sea-lanes and traffic separation schemes based on the recommendations of the competent international organization can be imposed unilaterally by the coastal state, although it is not obliged to do so. But, in adopting such measures, as per Article 22(4), the coastal state is to clearly indicate such sea-lanes and traffic separation schemes on charts to which due publicity shall be given. The “competent international organization” has been interpreted by the IMO as a reference to itself.6

Article 23 reads:

Foreign nuclear-powered ships and ships carrying nuclear or other inherently dangerous or noxious substances, shall when exercising the right of innocent passage through the territorial sea, carry documents and observe special precautionary measures established for such ships by international agreements.

This article focuses on flag state obligations to observe the regulations in international agreements and does not add to coastal state powers. The term “international agreements” could refer to existing and subsequent agreements. It is to be noted that in 1981 the IMO Assembly adopted the Code of Safety for Nuclear Merchant Ships.7

Other complicating factors in these articles of the LOS Convention include a lack of definition of terms such as “inherently dangerous or noxious substances,” nuclear-powered ships, nuclear-powered submarines, and naval nuclear-powered submarines or engines as well as a lack of separation of the transportation regimes for nuclear and chemical cargoes and of the differences between nuclear and chemical marine pollution incidents. Article 23 implicitly refers to chemical solids in packaged form, liquids, and liquid gas cargoes in bulk and has a combined reference to oil and chemical tankers, nuclear-powered ships, foreign nuclear-powered ships, and ships carrying nuclear or other inherently dangerous or noxious substances or materials. Arguably, the transportation of chemical and nuclear
cargoes should be addressed separately given the hazardous environmental consequences of a nuclear spill. Also of note, ships with installations and facilities on board for processing nuclear waste and the theft or unlawful use of nuclear energy are unregulated.

Part III of the LOS Convention on transit passage in international straits does not explicitly provide for the transportation of nuclear or chemical cargoes or for the adoption of precautionary measures respecting such passage. Most waters covered by the straits used for international navigation are territorial waters and the LOS Convention provisions are ambiguous as to the extent to which the rules on territorial seas apply in international straits.

Part III of the LOS Convention has three sections. Article 34(1) in Section 1 states that the regime of passage, referring to transit passage, “shall not in other respects affect the legal status of the waters forming such straits or the exercise by” the strait states “of their sovereignty or jurisdiction over such waters and airspace. . . .” In paragraph 2, it is provided that “the sovereignty or jurisdiction” of the strait states “is exercised subject to this Part and to other rules of international law.” Part III, Section 2 entitled “Transit Passage,” deals with straits that connect a high seas or an exclusive economic zone (EEZ) with another high seas or EEZ. Finally, Part III, Section 3, deals with innocent passage through straits that connect a high seas or EEZ with the territorial sea of a foreign state where innocent passage is not to be suspended. Basically, there is an uncertain relationship between the territorial seas regime and the passage regime that may apply in international straits.

On ratification of the LOS Convention on 14 October 1996, Malaysia declared, in accordance with Article 310, that nuclear vessels must obtain prior authorization of passage before entering the territorial sea of Malaysia until such time as the international agreements referred to in Article 23 of the Convention are concluded and Malaysia becomes a party to them. Further, the declaration stated that the flag state of such vessels is to assume all responsibility for any loss or damage resulting from the passage of such vessels within the territorial sea of Malaysia. The declaration indicates that Malaysia considers the Strait of Malacca, a strait used for international navigation falling within the regime of Part III, as being territorial seas, which it clearly is, and that the territorial sea regime applies. As a state party to the Safety of Life at Sea Convention (SOLAS), Malaysia requires certain vessels to participate in the mandatory ship reporting system in the Straits of Malacca and Singapore.

**State Practice and the EEZ**

Most of the attention on vessels carrying nuclear and dangerous cargoes has been on navigation with the 200-nautical-mile EEZ of coastal states. Jon Van Dyke considered the various bases of coastal state powers for the prohibition or regulation of type of ship or ships carrying dangerous cargoes and their qualified rights of transportation in coastal EEZs, such as Article 58 and Article 220(3) and (6) of the LOS Convention. State practice shows a proclivity toward a requirement of advance notice. Van Dyke provided examples such as the decree on advance notice on passage of oil tankers by France and Spain in their EEZs adopted following the breakup of the oil tanker Prestige, and the requirement of similar prior notification of Portugal and Morocco. In 2004, the IMO granted “particularly sensitive sea areas” status to the EEZs of Spain, France, Portugal, Belgium, and the United Kingdom, followed by the establishment of the West European Tanker Reporting System (WETRE). In 1998 the IMO had approved the establishment of a mandatory ship reporting system off the northeast and southeast coasts of the United States for the protection of the northern right whale from the incidents of navigation. The IMO has undertaken similar actions in 1996 for the Torres Strait region, the Great Barrier
Reef, Ushant islet of France, Denmark’s Great Belt Traffic Area, the Strait of Gibraltar, the area of Finisterre in Spain and in 1998 in the Strait of Bonifacio, the Straits of Malacca and Singapore and in the Strait of Dover/ Pas de Calais.19

There is some state practice on the issue of prior notice in the context of the transportation of ultrahazardous nuclear materials through the EEZs of states. Van Dyke reported that South Africa, Portugal, and Australia prohibited the transit of shipments of nuclear wastes by Japan and that Brazil, Argentina, Chile, South Africa, Nauru, and Kiribati banned the British nuclear ship Pacific Pintail from their EEZs.20 He also noted that Chile forced the ship out of its EEZ and New Zealand issued a statement to this effect.21 Japan has prohibited the transportation of nuclear weapons through its territorial sea.22 An example of the opinio juris of states is found in Chile’s October 2002 Law for Nuclear Safety that requires prior authorization for the transport of “nuclear substances” and “radioactive materials” through Chile’s EEZ which, inter alia, stresses the “safety and contingency measures” being utilized.23 The U.S. Department of Transportation has recognized the importance of advance notification to coastal states which, while not a legal requirement, was an important element in the preparation for contingencies in the San Onofre Nuclear Reactor Shipment.24 Although the Department of Transportation issued a permit for shipment in 2003, an Argentine court ruled that its passage through the Argentine EEZ could not take place since coastal states had the power to block such shipments.25 The United States abandoned the shipment. Van Dyke concluded that the U.S. abandonment of the shipment is a recognition that “coastal countries have the authority to take action to protect their coastal populations and resources, even if such action imposes limits on navigation.”26 The EEZ Group 21, which prepared The Guidelines for Navigation and Overflight in the Exclusive Economic Zone, also affirmed this right of a coastal state, basing it on the international legal right to regulate the navigation of ships carrying inherently dangerous or noxious substances in their cargo in its EEZ.27 Note can also be made of Article 6(4) of the 1996 Izmir Protocol on the Movement of Hazardous Wastes to the Barcelona Convention,28 which has a requirement of prior notification with regard to the movement of hazardous wastes through territorial seas.

IMO International Instruments with Respect to Nuclear Materials: An Overview

The IMO has adopted an integrated approach to controlling marine pollution through numerous conventions and specialized codes for safe and secure shipping and clean oceans, and this extends to vessels carrying nuclear materials. The IAEA-created nuclear safety standards have assisted the IMO in the development of rules of maritime transportation of nuclear materials and wastes.29 The principal IMO conventions dealing with the safety of navigation are: the SOLAS (1974)30 and the 1978 Convention on Standards of Training, Certification and Watch Keeping for Seafarers.31 Pursuant to SOLAS numerous codes and guidelines have been adopted for the safe carriage of nuclear and chemical cargoes:

- the International Maritime Solid Bulk Cargoes Code;32
- the International Maritime Dangerous Goods Code (IMDG) Code;33
- the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code);34
- the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code) (Bulk Gases);35

The most important of the above instruments for the purposes of this article is the INF Code that became compulsory on 1 January 2001. Article 1.2.2 of the INF Code provides that the provisions of the IMDG Code apply to the carriage of INF cargo. Likewise, the IBC Code applies to the INF Code. In the INF Code, nuclear cargoes are divided into four classes based on packaging and transport needs. Article 1.3 defines nuclear cargo as “packaged irradiated nuclear fuel, plutonium and high-level radioactive wastes,” which is further defined as follows:

- irradiated nuclear fuel—material containing uranium, thorium, and/or plutonium isotopes that has been used to maintain a self-sustaining nuclear chain reaction. (Article 1.1.4);
- plutonium—the resultant mixture of isotopes of that material extracted from irradiated nuclear fuel from reprocessing (Article 1.1.5); and
- high-level radioactive wastes—liquid wastes resulting from the operation of the first-stage extraction system or the concentrated wastes from subsequent extraction stages, in a facility for reprocessing irradiated fuel, or solids into which such liquid wastes have been converted (Article 1.1.6).

The INF Code applies to all ships regardless of the date of construction and size. Though the scope of the INF Code does not encompass warships, naval auxiliary, or other ships used only on government noncommercial service, flag state administration of warships engaged in the carriage of INF material are expected to comply with the INF Code. The INF Code regulates damage stability; fire protection; temperature control of cargo spaces; structural consideration; cargo securing arrangements; electrical supplies; radiological protection equipment; and management, training, and shipboard emergency plans. There are three broad INF ship classifications depending on the total radioactivity of INF cargo carried on board, with slight variations across the various classes.

Class INF 1 ship—ships that are certified to carry INF cargo with an aggregate activity less than 4,000 TBq (TeraBecquerel measurement of radioactivity).
Class INF 2 ship—ships that are certified to carry irradiated nuclear fuel or high-level radioactive wastes with an aggregate activity less than $2 \times 106$ TBq.
Class INF 3 ship—ships that are certified to carry irradiated nuclear fuel or high-level radioactive wastes and ships that are certified to carry plutonium with no restriction of the maximum aggregate activity of the materials.

The INF Code deals with the communication and notification of accidents during a voyage, including a breakdown of the ship, to secure the safety of the ship and safety of lives at sea. In the event of an accident involving INF Cargo, Article 11.1 of the Code requires communication and notification of reports of the loss or likely loss of INF cargo overboard and of any incident involving a release or probable release of INF cargo for whatever reason including securing the safety of the ship or saving life at sea. Article 11.2 requires reports to be made in the event of damage, failure, or breakdown of a ship carrying INF cargo that: (1) affects the safety of the ship, including collision, grounding, fire, explosion,
structural failure, flooding, and cargo shifting; or (2) results in the impairment of the safety of navigation, including the failure or breakdown of steering gear, propulsion system, electrical generating system, and essential shipborne navigational aids. This information may be communicated to designated authorities or persons in the event of an incident involving INF cargo according to Article 10.2.2 of Chapter 10 of the Shipboard Emergency Plan. It is not, however, compulsory that accidents involving radioactive marine pollution be communicated to the national and local authorities.

Missing from the INF Code and more generally from the international instruments is significant reference to the benefit that communication before such a ship embarks on its journey in a coastal state’s maritime zone would have for the state that is most likely to be directly affected. Prior communication could enable a coastal state to have a response action plan ready. Communication after the fact, while important, will not enable a coastal state to create an immediate response action plan to manage a nuclear spill.

The Case for a Prior Communication and Cooperation Agreement

With or without the possible existence of a sui generis regime in international straits, what is missing in the equation between coastal states, particularly strait states, and vessels carrying nuclear materials or cargoes is the lack of an international legal duty on flag states to communicate with and participate in the development of an appropriate nuclear spill action plan with strait states. A duty of prior communication, communication before the fact of imminent nuclear marine spill, is vital in a strait’s context since, by definition, a strait is a narrow body of water between one or more states, where the breadth of the sea is sometimes less than 12 nautical miles. In the particular context of the Straits of Malacca, there is a high level of coastal state activity on both sides of the strait and nuclear cargoes should not be shipped near populations or an area that is considered critical. Based on the experience of the European Union, states facing an incident of radiological emergency to contain spills have responsibilities to designate authorities responsible for implementing response action plans, cargo salvage, preparation of evacuation facilities, places of refuge, identification of ports, and hospitals for the victims. States also should have established procedures for circulating information to the public on health protection measures in cases of radiological emergencies, both before and during such an emergency. The transportation of nuclear cargoes for commercial use in straits, including those bordering dense populations, requires special consideration, as there is a lack of communication before the fact of passage of the vessel, for the adoption of a precautionary contingency response action plan.

The proposed Rule on Prior Communication and Cooperation in the Adoption of a Precautionary Contingency Pre-Spill Response Action Plan for Nuclear Spills is based on the precautionary principle; the laws of maritime chemical transportation found in MARPOL 73/78, Annex II, and MEPC Circulars; and contingency response action plans in the 1980 Convention on the Physical Protection of Nuclear Material and Nuclear Facilities and in the 2000 Protocol on Preparedness, Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances. The IMO regulates chemical, but not nuclear, pollution under MARPOL 73/78. The rule on chemical pollution safeguards is, however, useful for nuclear pollution. MARPOL Annex II contains “Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk” (including Regulation 16—Contingency Planning). MARPOL 73/78, Annex II, Chapter 2, Regulation 6.3 is the provision of most interest.
Where it is proposed to carry a liquid substance in bulk which has not been
categorized under paragraph 1 of this regulation, . . . the Government of parties
to the Convention involved in the proposed operation shall establish and agree
on a provisional assessment for the proposed operation on the basis of the
guidelines referred to in paragraph 2 of this regulation. Until full agreement
among the Governments involved has been reached, the substance shall not be
carried. As soon as possible, but not later than 30 days after the agreement has
been reached, the Government of the producing or shipping country, initiating
the agreement concerned, shall notify the Organisation and provide details
of the substance and the provisional assessment for annual circulation to all
Parties for their information. The Organisation shall maintain a register of
all such substances and their provisional assessment until such time as the
substances are formally included in the IBC Code. (emphasis added)

Regulation 6.3 applies to provisionally assessed liquid substances and requires the parties
to enter into provisional arrangements with respect to the transportation of the liquid sub-
stances. A provisional tripartite arrangement is to be entered into between the flag state, the
chemical-producing state, and the receiving state where the cargo is to be discharged. Third
states or the waters through which the vessels will travel are not involved. Nevertheless,
the concept of prior communication is critical to the IMO regime.

While it is a land-based treaty, the 1980 Convention on the Physical Protection of
Nuclear Material and Nuclear Facilities is relevant. Article 4(5) requires:

The State party responsible for receiving assurances that the nuclear material
will be protected at the levels described in Annex I according to paragraphs 1
to 3 shall identify and inform in advance States which the nuclear material is
expected to transit by land or internal waterways, or whose airports or seaports
it is expected to enter.

Annex I, Article 2, describes the levels of physical protection for nuclear material to be
maintained during international transport. For category I, II, and III materials, “trans-
portation shall take place under special precautions including prior arrangements among
sender, receiver, and carrier and prior agreement between natural or legal persons subject
to the jurisdiction and regulation of exporting and importing States, specifying time, place
and procedures for transferring transport responsibility. . . .” Paragraph (c) also provides
that, for natural uranium and other forms of ore transportation, protection is to include
advance notification of shipment specifying mode of transport, expected time of arrival,
and confirmation of receipt of shipment. Under this Convention, one can assert that such
a communication is consistent with the principles of marine environmental law that em-
phasize that user states, coastal states, and other stakeholders are to adopt a preventive,
precautionary, and holistic approach together with the principles of good neighborliness
and a duty to cooperate in their approach to issues. Here, communication is made to third
or transit states.

A last treaty of note is the 2000 HNS-OPRC Protocol, which works through the
cooperation of states in adopting measures necessary for combating major incidents or
threats of marine pollution and having ships carry pollution emergency plans to deal with
hazardous substances incidents. Article 4(2) requires communication on the nature of the
chemical cargo and on the best method to absorb the spill. Article 4 reads:
1. Each Party shall establish a national system for responding promptly and effectively to pollution incidents. This system shall include as a minimum:

a. the designation of:
   i) the competent national authority or authorities with responsibility
      for preparedness for and response to pollution incidents;
   ii) the national operational contact point or points;
   iii) an authority which is entitled to act on behalf of the State to request
        assistance or to decide to render the assistance requested.

b. a national contingency plan for preparedness and response which includes
   the organisational relationship of the various bodies involved, whether public or private, taking into account guidelines developed by the Organisation.

2. In addition, each Party within its capabilities either individually or through bilateral or multilateral co-operation and, as appropriate, in co-operation with the shipping industries and industries dealing with hazardous and noxious substances, port authorities and other relevant entities, shall establish:

a minimum level of pre-positioned equipment for responding to pollution incidents commensurate with the risk involved, and programmes for its use;

a programme of exercises for pollution incident response organisations and training of relevant personnel; detailed plans and communication capabilities for responding to a pollution incident - such capabilities should be continuously available; a mechanism or arrangement to co-ordinate the response to a pollution incident with, if appropriate, the capability to mobilise the necessary resources.

Existing state practice, while supportive of prior communication in the matter of hazardous substances, does not yet extend to all states that might be affected by the movement of the product, except for the rule in Article 4 (5) of the 1980 Convention on the Physical Protection of Nuclear Material and Nuclear Facilities. The adoption of a Rule on Prior Communication with respect to the transportation of nuclear materials and cargoes through international straits is essential and vital, even if there is no legal requirement for such a duty at the moment.

The Proposal

The full proposal can be found in Appendix 1. A number of points need to be made about the proposal as well as items for future discussion. Nuclear weapons transportation and terrorism concerns are not included as they are regulated by other conventions. The proposed rule does not strike at the heart of freedom of navigation; rather it assists in the concomitant duties of user states and the strait states in enhancing control of any nuclear marine pollution for public safety. Dispute resolution mechanisms, while not included, are vital because there is no satisfactory and comprehensive international legal architecture for liability, or absolute liability, for maritime radioactivity. The absence of an adequate liability and compensation regime increases the vulnerability of strait states and puts them at risk of having to absorb the damages resulting from a major disaster without international assistance. Article 235(3) of the LOS Convention requires countries to develop a regime assuring adequate and prompt compensation, but no such regime has been established. The existing treaties covering damages from nuclear installations are inadequate. Subregional
cooperation and tripartite agreements could assess the adequacy of subregional measures on compliance, enforcement, distribution of economic consequences, and interlinkages and perhaps reduce the overall marine radionuclide level of the seas and oceans.

In conclusion, in this article we focused on a lacuna in the LOS Convention, Part III of, Section 2 on international straits regarding the transportation and pollution control of nuclear cargoes and wastes and proposed the adoption of the Rule on Prior Communication and Cooperation in a Precautionary Contingency Pre-Spill Response Action Plan for Nuclear Spills. Prior communication to strait states is necessary and essential, even though not necessarily legally required at the moment. If such a rule is not adopted, an increase in the number of states that adopt a total ban on the movement of vessels carrying nuclear materials and wastes through national waters can be expected since current state practice indicates that the right of free navigation and maritime transportation of nuclear cargoes and wastes is under stress both in the EEZ and the territorial sea.48

Appendix 1

The Proposal


1. All commercial nuclear-powered ships and commercial ships carrying nuclear cargoes and wastes for peaceful purposes shall exercise the right of non-suspendable innocent passage through designated sea-lanes in straits used for international navigation. Before the exercise of such passage, the flag States shall:
   i. Communicate to the strait State the nature of the pre-spill precautionary response action plan that the strait State has to have in place for that cargo; and
   ii. Carry documents that comply with due diligence requirements on safety and security of navigation and observe special precautionary measures established by international agreements.

2. All flag States shall observe the due diligence requirements under the nuclear safety of navigation conventions and nuclear marine pollution control conventions when sailing designated sea-lanes.

3. Strait States shall neither hamper passage nor impede navigation of such ships for non-compliance of Article 1 paragraphs (i) and (ii) and Article 2 above.

4. All government ships and submarines powered by nuclear energy and/or carrying nuclear cargoes and wastes or having nuclear waste processing installations on board, hereinafter referred to as government nuclear ships and submarines, shall exercise the right of non-suspendable innocent passage in compulsorily designated sea-lanes, where applicable, in straits used for international navigation. All government nuclear ships and submarines shall be subject to flag State jurisdiction and shall observe the due diligence requirements under the nuclear safety of navigation conventions and nuclear marine pollution control conventions when sailing designated sea-lanes.

5. Strait States shall neither hamper passage nor impede navigation of such government nuclear ships or submarines for non-compliance of Article 4.
Transportation of Nuclear Cargoes in International Straits

6. Strait States shall prepare the necessary precautionary contingency pre-spill response action plan for nuclear spills upon receiving such prior communication from the flag States.

Notes

3. Ibid., art. 23.
9. Ibid.
10. SOLAS, supra note 7.
14. Ibid., at 64.
15. Ibid.
16. IMO, Marine Environmental Protection Committee (MEPC), “Designation of the Western European Waters as a Particularly Sensitive Sea Area,” Resolution MEPC.121(52), 15 October 2004.
17. Ships’ Routeing, supra note 11, at G.I/4-1-4-11.
18. Ibid., at G.I/19-1-19-6.
19. The IMO routing measures for these areas are all set out in ibid.
20. Van Dyke, supra note 12, at 68.
21. Ibid.
22. Ibid.
23. Ibid.
24. Ibid., at 69.
25. Ibid., at 70–71.
26. Ibid.
30. SOLAS, supra note 7.
33. International Maritime Dangerous Goods (IMDG) Code, MSC, Resolution MSC.122(75), as amended; and see SOLAS, supra note 7, Chapter VII, Part A, Regulations 1–7.
37. International Safety Management Code, IMO Resolution A.741(18), as amended; and see SOLAS, supra note 7, Chapter IX.
38. Emergency Response Procedures for Ships Carrying Dangerous Goods (EmS Guide), MSC/Circ. 1025, as amended; and see SOLAS, supra note 7, Chapter VII, Part A, Regulation 2(4).
39. INF Code, supra note 36.
40. SOLAS, supra note 7, Chapter VII, Part D, Regulation 15(2).


47. HNS-OPC Protocol, supra note 44.