

CHAPTER 8

CO-OPERATION

INTRODUCTION

8.1. Ireland believes that its population, its natural resources, and its interests are at risk of being detrimentally affected by various aspects of the operation of the Sellafield plant and the associated shipments of nuclear materials. Particular aspects of their concern are identified elsewhere in this Memorial. Ireland appreciates, however, that it is not possible for the protection of all of a State's interests in these matters to be secured entirely by detailed legal regulations. The issues are too complicated, and too changeable, to be dealt with comprehensively by such legal means. It is necessary for there to be a practical and effective co-operation between the States concerned, so that the rights and interests of each of them can be taken into account by any State that is proposing to take steps that might affect those rights and interests. As is explained below, particular importance is placed on the obligation to co-operate in the UNCLOS.

8.2. Ireland's concerns relating to the failure of the United Kingdom to conduct an adequate environmental impact assessment were described in the previous chapter. That failure might be termed a "procedural" failure, in as much as it does not itself directly cause physical or economic harm. Rather, the failure cuts out a safety mechanism that is built into the UNCLOS in order to ensure, so far as is possible, that physical or economic harm is not caused by the implementation of projects such as the MOX plant.

8.3. The second of Ireland's principal concerns in this case is also procedural. It is that the United Kingdom has failed to co-operate with Ireland as the obligations assumed by the United Kingdom under UNCLOS require, and that the United Kingdom continues to manifest an unwillingness to co-operate in a meaningful manner.

8.4. The obligation to co-operate is distinct from the obligation to carry out an adequate environmental impact assessment. Such an assessment might, in theory, be carried out unilaterally by a State. UNCLOS Article 206 does not itself explicitly impose a legal obligation upon the State planning the activity to involve other, potentially affected States in the assessment process, although it does require the assessment report to be made available to other States. (An obligation to involve other States might be argued to be implicit in Article 206. It is hard to see that any one State can ever have such complete knowledge of the interests of its neighbours and other potentially affected States as to enable it to produce a satisfactory assessment without consulting them. Nonetheless, the duty is analytically distinct.)

8.5. The obligation to co-operate is also distinct from the obligation under UNCLOS to take adequate steps to protect and preserve the marine environment, which is the third of Ireland's principal concerns and is addressed in the following chapter. That obligation relates to the substantive steps taken in order to protect and preserve the marine environment, whereas the obligation to co-operate is concerned with the procedure by which decisions on, *inter alia*, such steps are taken.

8.6. This chapter sets out the basis upon which Ireland considers the United Kingdom to have violated UNCLOS requirements on co-operation. The chapter is divided into four main sections. Section 1 describes the nature and scope of the duty under UNCLOS Article 123 to co-operate. Section 2 describes the obligations arising under Article 197 of UNCLOS. Those obligations include (i) the duty to inform; (ii) the duty to consult; and (iii) the duty to co-ordinate. Section 3 considers the implementation of the duty to co-operate in the circumstances of present case, and the failures by the United Kingdom to fulfil that duty. It does so by reference to (i) the failure to co-operate in relation to the assessment of the environmental implications of the MOX plant; (ii) the failure to co-operate in relation to the protection and preservation of the marine environment from risks associated with the MOX plant; and (iii), more specifically, the failure to co-operate in relation to the shipments of nuclear material associated with the MOX plant. Section 4 addresses the question whether the United Kingdom's determinations that it has complied with its international obligations can be reviewed by the Tribunal.

A. THE IRISH SEA AS A SEMI-ENCLOSED SEA AND THE DUTY TO CO-OPERATE

8.7. UNCLOS imposes upon the United Kingdom a duty to co-operate with Ireland in respect of the environmental implications of the development and operation of the MOX plant and associated facilities at Sellafield. This duty is imposed by several UNCLOS Articles. UNCLOS Article 123 imposes specific duties upon States that border semi-enclosed seas. Article 197, in contrast, imposes a general duty, applicable in respect of all seas. It is supplemented by obligations applicable by virtue of the terms of various UNCLOS Articles including Articles 192, 193, 194, 206, 207, 211, 212, 213 and 217, which are similarly applicable to all sea areas. These provisions are discussed in turn.

UNCLOS ARTICLE 123: SEMI-ENCLOSED SEAS

8.8. Article 123 sets out specific principles applicable to enclosed and semi-enclosed seas. Almost uniquely in the UNCLOS¹ enclosed and semi-enclosed seas are singled out from among the world's seas and made the subject of special provisions. The legal obligations imposed by UNCLOS Article 123 on States bordering semi-enclosed seas are specific, and are not applied to States that do not border semi-enclosed seas.

8.9. UNCLOS Article 123 reads as follows:

“Article 123

Co-operation of States bordering enclosed or semi-enclosed seas

States bordering an enclosed or semi-enclosed sea should co-operate with each other in the exercise of their rights and in the performance of their duties under this Convention. To this end they shall endeavour, directly or through an appropriate regional organization:

- (a) to co-ordinate the management, conservation, exploration and exploitation of the living resources of the sea;

¹ The other examples being straits governed by long-standing regimes, under Article 35(c), and especially vulnerable sea areas, under Articles 211(6) and 234.

- (b) to co-ordinate the implementation of their rights and duties with respect to the protection and preservation of the marine environment;
- (c) to co-ordinate their scientific research policies and undertake where appropriate joint programmes of scientific research in the area;
- (d) to invite, as appropriate, other interested States or international organizations to co-operate with them in furtherance of the provisions of this article.”

DEFINITION OF SEMI-ENCLOSED SEAS

8.10. The Irish Sea is unquestionably a semi-enclosed sea within the meaning of UNCLOS Article 123. UNCLOS Article 122 defines a semi-enclosed sea as:

“a gulf, basin or sea surrounded by two or more States and connected to another sea or the ocean by a narrow outlet or consisting entirely or primarily of the territorial seas and exclusive economic zones of two or more coastal States”

The Irish Sea is encircled by the United Kingdom and Ireland, and is connected to the North Atlantic by the North Channel (approximately 20 kms wide) in the north, and by St George’s Channel (approximately 80 kms wide) in the south. The whole of the Irish Sea falls within the 200-mile zones that have been claimed both by Ireland² and by the United Kingdom since 1976. It is not in dispute that the Irish Sea is a semi-enclosed sea within the meaning of UNCLOS.³

8.11. There are two sets of duties that are applied by UNCLOS to the littoral States of semi-enclosed seas. The first is the duty to take into account the particular characteristics of the sea in question. The second is the duty of co-operation.

THE DUTY TO TAKE ACCOUNT OF SPECIAL CHARACTERISTICS OF SEMI-ENCLOSED SEAS

8.12. The drafting history of Article 123 makes it clear that the States participating in UNCLOS III considered the duty to have regard for the “special characteristics” of those areas to be a key element of the concept of enclosed and semi-enclosed seas. Thus, an early Iranian proposal stipulated that “[T]he general rules set out in this Convention shall apply to an enclosed or semi-enclosed sea in a manner consistent with the special characteristics of these seas and the needs and interests of their coastal States.”⁴ Similar provisions were included in a number of other drafts of what became Article 123.⁵

8.13. The insistence upon regard for the particular characteristics of semi-enclosed seas is reflected in Article 15 of the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to

² The Irish claim appears in the Maritime Jurisdiction Act (Exclusive Fishery Limits) Order 1976.

³ See Chapter 1, paragraphs 6-9.

⁴ A/CONF.62/C.2/L.72, 21 August 1974, UNCLOS III, Official Records, vol III, p 237.

⁵ See S. N. Nandan, S. Rosenne and N. R. Grandy, *United Nations Convention on the Law of the Sea 1982: A Commentary* (the “*Virginia Commentary*”), vol III, (1995), pp 358-65.

the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (the “Straddling Stocks Agreement”).⁶ Article 15 reads as follows:-

“In implementing this Agreement in an enclosed or semi-enclosed sea, States shall take into account the natural characteristics of that sea and shall also act in a manner consistent with Part IX of the Convention and other relevant provisions thereof.”

8.14. The duty to take into account “the natural characteristics” of the sea is significant, and particularly relevant in the present case. An earlier draft of Article 15 of the Straddling Stocks Agreement had proposed to refer to the “geographical and ecological characteristics” of the sea. As one authoritative commentator has remarked, “[T]he expression retained by the 1995 Agreement is in fact broader since natural characteristics may include elements other than the geographical and ecological.”⁷

8.15. The relationship between the specific characteristics of various sea areas and the general principles set out in the UNCLOS was clearly explained by the chairman of the Straddling Stocks Conference in a statement that he made in 1993:

“It is acknowledged that conservation and management arrangements should take into account specific regional differences and situations and that regional conservation and management measures should be based on globally agreed principles in order to ensure uniformity and consistency in the application of the basic framework for fisheries management established by the 1982 Convention on the Law of the Sea.”⁸

8.16. States bordering semi-enclosed seas, such as the Irish Sea, are expected to consider the particular characteristics of those seas when they are implementing their rights and duties under the UNCLOS and engaging in the management and conservation of those seas.

8.17. The characteristics of the Irish Sea and of the Sellafield site were described above.⁹ The particular characteristics of the Irish Sea that are relevant in the present context include:

- a. the separation of the waters of the Irish Sea from the main body of North Atlantic waters;
- b. siting of British nuclear facilities on the shores of the Irish Sea ;
- c. the piping into the Irish Sea of effluents from the British nuclear facilities at Sellafield;
- d. the patterns of water currents, including the Irish Sea “gyre”, which tend to concentrate radioactive deposits from the Sellafield effluents in “hotspots” in the centre of the Irish Sea;

⁶ UN Doc. A/CONF.164/37, 8 September 1995; Published at http://www.un.org/Depts/los/convention_agreements/texts/fish_stocks_agreement/A_CONF.164_37_English.pdf.

⁷ F. Orrego Vicuña, *The Changing International Law of High Seas Fisheries* (1999), p 195.

⁸ UN Doc. A/CONF.164/12, 21 July 1993, quoted in F. Orrego Vicuña, *The Changing International Law of High Seas Fisheries* (1999), p 202.

⁹ Chapters 1, 2. See also Hartnett, vol 2, Appendix 7.

- e. the narrowness and proximity to Ireland's main centres of population of maritime passages through which ships carrying nuclear materials to Sellafield via the Irish Sea must pass.

THE DUTY OF CO-OPERATION UNDER ARTICLE 123

8.18. The specific duties of co-operation under Article 123 upon States bordering a semi-enclosed sea that are of primary relevance in this case are the duties:

- (i) to co-operate with each other in the exercise of their rights and in the performance of their duties under UNCLOS;
- (ii) to endeavour, directly or through an appropriate regional organization, to coordinate the management and conservation of the living resources of the sea;
- (iii) to endeavour, directly or through an appropriate regional organization, to co-ordinate the implementation of their rights and duties with respect to the protection and preservation of the marine environment.

8.19. Plainly, what is required of bordering States in any specific case will depend upon the specific facts of that case. That point is addressed later in this chapter. There are, however, certain general legal obligations arising from UNCLOS Article 123.

THE JURIDICAL NATURE OF THE OBLIGATION UNDER ARTICLE 123

8.20. Article 123 expressly imposes upon UNCLOS States Parties certain immediately binding legal obligations. The first is the duty of coordination. It expressly obliges them (i) to endeavour to coordinate the management and conservation of living resources, and (ii) to endeavour to coordinate the implementation of rights and duties with respect to the protection and preservation of the marine environment. Article 123 may not impose on the coastal States an obligation to achieve coordination in every case by, for example, reaching agreement on measures or policies: but it does oblige them to *try*, in good faith, to achieve it.

8.21. On a plain reading of the text, this must mean that the implementation of management and conservation policies, and of rights and duties, must in every case proceed with an awareness of the actual (as opposed to the hypothetical) interests of other littoral States and in such a way as to pursue the goal of coordination. Unilateral actions taking no account of the interests or rights or policies of neighbouring States, and making no attempt to coordinate with them, are plainly incompatible with the duty in Article 123.

8.22. Article 123 also contains a broader obligation in relation to co-operation and co-ordination, couched in the language of moral, rather than legal, obligation. It stipulates that bordering States "should co-operate with each other in the exercise of their rights and in the performance of their duties under this Convention."

8.23. This duty to co-operate is expressed in hortatory, rather than mandatory, language. Nonetheless, the fact that this obligation is not couched in the language of immediately binding legal duties does not mean that it is without binding legal effect.

8.24. There are three ways in which this broader obligation under Article 123 has legal effects: (i) as an element in the interpretation of other UNCLOS obligations; (ii) according to the principle of good faith; and (iii) in relation to the principle of the abuse of rights.

(i) Article 123 and the Interpretation of UNCLOS

8.25. First, Article 123 indicates the particular manner in which indisputably binding obligations in the UNCLOS, such as those imposed by UNCLOS Articles 192, 193, 194, 197, 206, 207, 211, 212, 213 and 217, are to be discharged in so far as they fall to be applied in the context of enclosed and semi-enclosed seas.

8.26. This is elementary law, and follows from the duty under Article 31 of the 1969 Vienna Convention on the Law of Treaties to interpret treaty provisions “in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose.”

8.27. For example, the interpretation of the obligations under UNCLOS Article 192 “to protect and preserve the marine environment,” and under Article 198 to “jointly develop and promote contingency plans for responding to pollution incidents in the marine environment” are themselves plainly binding obligations. The substantive action that is necessary in order to fulfil those obligations will vary from case to case. In relation to States bordering semi-enclosed seas, the question of the nature of the action that must be taken under Articles 192 and 197 is one that must be approached and answered in the light of Article 123. This in turn requires that regard be had to the nature of the activity giving rise to the obligation to co-operate, to the characteristics of the sea in question, and to the impact of the activity on that sea. States must, accordingly, co-ordinate *inter alia* their management and pollution policies and take into account the particular characteristics of the sea area in question, when taking steps to protect and preserve the marine environment and jointly developing and promoting contingency plans for responding to pollution incidents.

8.28. Those conclusions are applicable equally to the other UNCLOS Articles upon which Ireland relies in this case. The implementation of all of the duties imposed by the UNCLOS upon the United Kingdom must, in so far as their application in respect of the Irish Sea is concerned, proceed in the light of the duty to co-ordinate and the duty to co-operate under Article 123.

8.29. This conclusion follows from the interpretation in their context (that is, in the context set, in the case of semi-enclosed seas, by Article 123) of the other UNCLOS Articles. The same conclusion would be reached directly, by the straightforward and good faith interpretation of those Articles.

(ii) Article 123 and the Principle of Good Faith

8.30. Second, even as a hortatory provision of the UNCLOS, Article 123 cannot be entirely disregarded by States Parties. An outright, blanket refusal to co-operate or co-ordinate actions and plans would not be compatible with the implementation of the UNCLOS in good faith.

8.31. This would be the case even if (as is plainly not the case) Article 123 were regarded as no more than a declaration of policy. Long-established principles of

international law stipulate that States do not have an absolute and unlimited right to depart from declared policies. The point was explained clearly by Professor Cheng:

“The protection of good faith extends equally to the confidence and reliance that can reasonably be placed not only in agreements but also in communications or other conclusive acts from another State. If State A has knowingly led State B to believe that it will pursue a certain policy, and State B acts upon this belief, as soon as State A decides to change its policy – although it is at perfect liberty to do so – it is under a duty to inform State B of this proposed change. ... What the principle of good faith protects is the confidence that State B may reasonably place in State A.”¹⁰

8.32. The same principle is evident in Article 18 of the Vienna Convention on the Law of Treaties, which obliges a State that has signed but not ratified a treaty to refrain from acts which would defeat the object and purpose of the treaty until such time as it has made clear its intention not to become a party to the treaty. Announced policies cannot be disregarded at will. There is a legal duty to act consistently with them.

8.33. UNCLOS Article 123 is an integral part of the UNCLOS. It defines the nature of the relationship between States Parties in those parts of the world where the implementation of rights and duties under the Convention by one State is likely to have the greatest and most immediate impact upon the rights and interests of other States, simply because of the geographical nature of enclosed and semi-enclosed seas. Indeed, for States bordering such seas, it is Article 123 that defines the essential basis upon which the entire Convention regime will be applied to those States. In that sense, Article 123 is the crucial provision determining the “tone” or “nature” – the precise content – of the Convention for those States. Clearly, no State Party is free to disregard either its specific legal obligations under Article 123, or the broader effect of Article 123 upon the implementation of its other duties. It may perhaps abandon the policy spelled out in the broader obligation to co-operate under Article 123; but even then it may not do so without giving notice of its intention.

(iii) Article 123 and the Principle of the Abuse of Rights

8.34. Third, it will be noted that UNCLOS Article 300 stipulates that “States Parties shall fulfil in good faith the obligations assumed under this Convention and shall exercise the rights, jurisdiction and freedoms recognized in this Convention in a manner which would not constitute an abuse of right.” The duty of good faith is attached specifically to “obligations” under the Convention. This provision is relevant in two ways.

8.35. First, it applies to Article 123 itself. It applies, by virtue of the plain terms of Article 300, to the legally binding obligations in Article 123 to co-ordinate. There is, however, no reason why Article 300 should be limited in its application to the sub-category of obligations that are immediately legally enforceable. The plain words of Article 300 encompass hortatory provisions, such as the broader aspects of Article 123; and as a matter of policy it is difficult to conceive of any reason for holding that States are not bound to act in good faith in conformity with such hortatory provisions. Accordingly, Article 300 also applies to the duty to co-operate under Article 123. This is, in essence, the same conclusion as is entailed by the customary law duty of good faith.

¹⁰ B. Cheng, *General Principles of Law as applied by International Courts and Tribunals*, (1987, 1994), p 137, citing the *Portendic* case, 42 BFSP 1377-1378, 30 BFSP 619 at 641.

8.36. Second, it is also clear that States Parties are constrained as a matter of law in the exercise of their “rights, jurisdiction and freedoms” under other UNCLOS Articles, and must not exercise them in a manner amounting to an abuse of right. That observation applies to Articles 192, 193, 194, 197, 206, 207, 211, and 213, upon which Ireland relies in this case. In that context, UNCLOS Article 123 is relevant to the determination of what would constitute an “abuse of right.”

8.37. The principle of the abuse of rights has a narrower and more objective nature than its slightly pejorative name suggests. Again, it is clearly stated by Professor Cheng:

“Good faith in the exercise of rights ... means that a State’s rights must be exercised in a manner compatible with its various obligations arising either from treaties or from the general law. It follows from this interdependence of rights and obligations that rights must be reasonably exercised. The reasonable and *bona fide* exercise of a right implies an exercise which is genuinely in pursuit of those interests which the right is destined to protect and which is not calculated to cause any unfair prejudice to the legitimate interests of another State, whether these interests be secured by treaty or by general international law.”¹¹

8.38. The principle, often referred to in positive terms as the duty of good faith, has been applied on many occasions by international tribunals. For instance, it was applied in the context of the uses of the seas by neighbouring coastal States in the *La Bretagne* arbitration.¹²

CONCLUSION REGARDING ARTICLE 123

8.39. The foregoing discussion has, it is submitted, demonstrated that Article 123 is applicable in three distinct roles. First, it directly imposes upon Ireland and the United Kingdom alike immediate, legally-binding duties to endeavour to co-ordinate their management and conservation of living resources, and to endeavour to co-ordinate the implementation of their rights and duties with respect to the protection and preservation of the marine environment. Second, it obliges Ireland and the United Kingdom alike to hold to the policy of co-operating with each other in the exercise of their rights and in the performance of their duties under this Convention. Third, it defines a crucial part of the context within which the nature and scope of obligations imposed by other UNCLOS Articles must be interpreted. Those other Articles are considered next.

¹¹ B. Cheng, *General Principles of Law as applied by International Courts and Tribunals*, (1987, 1994), pp 131-132. Cf., E. Zoller, *La bonne foi en droit international public* (1977); J. F. O’Connor, *Good Faith in International Law* (1991).

¹² 82 ILR 591 at 614 (1986).

B. THE GENERAL DUTY TO CO-OPERATE UNDER UNCLOS ARTICLE 197

8.40. The indispensability of the duty to co-operate is generally recognised. For example, the International Law Commission has stated that

“the principle of co-operation between States is essential in designing and implementing effective policies to prevent or minimise the risk of causing significant transboundary harm. The requirement of co-operation of States extends to all phases of planning and of implementation.”¹³

8.41. The fulfilment of the duty to co-operate with neighbouring States is usually secured simply by following the practices of good neighbourliness (“*voisinage*”) and diplomatic courtesy. The duty does not, however, rest solely upon considerations of international comity. It has a specific legal content.

8.42. The general duty to co-operate in relation to the protection and preservation of the marine environment is set out in UNCLOS Article 197, which reads as follows:

“Article 197

Co-operation on a global or regional basis

States shall co-operate on a global basis and, as appropriate, on a regional basis, directly or through competent international organizations, in formulating and elaborating international rules, standards and recommended practices and procedures consistent with this Convention, for the protection and preservation of the marine environment, taking into account characteristic regional features.”

8.43. As the *Virginia Commentary* notes, Articles 197-201 are “couched in the language of legal obligation, to be implemented in good faith.”¹⁴ As was noted above, in the circumstances of the present case Article 197 must be interpreted in the light of Article 123. It is accordingly necessary that the duty of co-operation be fulfilled having regard to the particular circumstances pertaining to the Irish Sea.

8.44. UNCLOS itself does not indicate precisely what form co-operation should take; but such indications may be inferred from the practice of States.

8.45. Indeed, State practice has itself generated a duty of co-operation under customary international law, which is applicable in this case in two roles: first, as a guide to the interpretation of the duty of co-operation imposed by UNCLOS Article 197; and second, as one of what UNCLOS Article 293(1) refers to as the “other rules of international law not incompatible with this Convention,” which the present Tribunal is directed to apply to the case before it.

8.46. The practical necessity for co-operation was recognised in Principle 24 of the 1972 Stockholm Declaration, which stated that:

“Co-operation through multilateral and bilateral arrangements or other appropriate means is essential to effectively control, prevent, reduce and eliminate

¹³ Report of the International Law Commission on the work of its Fifty-third session, *Official Records of the General Assembly, Fifty-sixth session, Supplement No. 10 (A/56/10)*, chp.V.E.2. Commentary on Article 4, paragraph 1.

¹⁴ Vol IV, ¶ 197.1.

adverse environmental effects resulting from activities conducted in all spheres, in such a way that due account is taken of the sovereignty and interests of all States.”¹⁵

That necessity is itself sufficient to give rise to a legal duty. In this respect the obligation to co-operate is among the norms that arise from the direct and irresistible operation of the facts of international life.¹⁶ There is, however, no need to rely upon that doctrine, because the specific duty to co-operate is clearly established in State practice.

8.47. State practice reveals a number of distinct elements that together make up the international law duty of co-operation. A good example of the content of the duty is to be found in the International Convention on Maritime Search and Rescue, 1979 (the “SAR Convention”).¹⁷

“CHAPTER 3: CO-OPERATION

3.1 Co-operation between States

3.1.1 Parties shall co-ordinate their search and rescue organizations and should, whenever necessary, co-ordinate search and rescue operations with those of neighbouring States.

3.1.2 Unless otherwise agreed between the States concerned, a Party should authorize, subject to applicable national laws, rules and regulations, immediate entry into or over its territorial sea or territory of rescue units of other Parties solely for the purpose of searching for the position of maritime casualties and rescuing the survivors of such casualties. In such cases, search and rescue operations shall, as far as practicable, be co-ordinated by the appropriate rescue co-ordination centre of the Party which has authorized entry, or such other authority as has been designated by that Party.

3.1.3 Unless otherwise agreed between the States concerned, the authorities of a Party which wishes its rescue units to enter into or over the territorial sea or territory of another Party solely for the purpose of searching for the position of maritime casualties and rescuing the survivors of such casualties, shall transmit a request, giving full details of the projected mission and the need for it, to the rescue co-ordination centre of that other Party, or to such other authority as has been designated by that Party.

3.1.4 The competent authorities of Parties shall:

1. immediately acknowledge the receipt of such a request; and
2. as soon as possible indicate the conditions, if any, under which the projected mission may be undertaken.

3.1.5 Parties should enter into agreements with neighbouring States setting forth the conditions for entry of each other’s rescue units into or over their respective territorial sea or territory. These agreements should also provide for expediting entry of such units with the least possible formalities.

3.1.6 Each Party should authorize its rescue co-ordination centres:

¹⁵ UN Doc. A/Conf. 48/14; 11 *ILM* 1416 (1972).

¹⁶ See Ch. De Visscher, *Problèmes de confins en droit international public* (1969), p 148ff, and *Les effectivités du droit international public* (1967), *passim*.

¹⁷ 1405 UNTS 97.

1. to request from other rescue co-ordination centres such assistance, including vessels, aircraft, personnel or equipment, as may be needed;
2. to grant any necessary permission for the entry of such vessels, aircraft, personnel or equipment into or over its territorial sea or territory; and
3. to make the necessary arrangements with the appropriate customs, immigration or other authorities with a view to expediting such entry.

3.1.7 Each Party should authorize its rescue co-ordination centres to provide, when requested, assistance to other rescue co-ordination centres, including assistance in the form of vessels, aircraft, personnel or equipment.

3.1.8 Parties should enter into search and rescue agreements with neighbouring States regarding the pooling of facilities, establishment of common procedures, conduct of joint training and exercises, regular checks of inter-State communication channels, liaison visits by rescue co-ordination centre personnel and the exchange of search and rescue information.

3.2 Co-ordination with aeronautical services

3.2.1 Parties shall ensure the closest practicable co-ordination between maritime and aeronautical services so as to provide for the most effective and efficient search and rescue services in and over their search and rescue regions.

3.2.2 Whenever practicable, each Party should establish joint rescue co-ordination centres and rescue sub-centres to serve both maritime and aeronautical purposes.

3.2.3 Whenever separate maritime and aeronautical rescue co-ordination centres or rescue sub-centres are established to serve the same area, the Party concerned shall ensure the closest practicable co-ordination between the centres or sub-centres.

3.2.4 Parties shall ensure as far as is possible the use of common procedures by rescue units established for maritime purposes and those established for aeronautical purposes.”

8.48. If it is asked what steps are necessary in order to discharge these duties under the SAR Convention, three distinct elements may be distinguished. First, there is an implicit duty to inform other parties concerned of the facilities and arrangements in place to assist with search and rescue missions. Second, there is a duty to react to that information, or to seek such information if it has not already been given, and to take it into account in planning. That may involve the clarification of uncertainties, exploration of the possibility of changes in the practices or facilities or roles of each State, and the like. That is, there is a duty to consult. Third, there is a duty, having obtained the information and consulted the other State, to try to arrange matters so that each State’s activities complement and do not conflict with those of other States. That is, there is a duty to co-ordinate.

8.49. The 1979 SAR Convention is a good example of the need for practical co-operation between States fully and in good faith being addressed in an international instrument that spells out in some detail how that co-operation is to be implemented. The provisions must, of course, be interpreted in good faith. As is the case in other contexts where co-operation between States is necessary, the purpose and utility of the SAR Convention would be subverted if States sought to co-operate to the minimum possible extent.

8.50. Perhaps the clearest indication of the content of the duty to co-operate is provided by the work of the International Law Commission on the Prevention of Transboundary

Harm from Hazardous Activities. In the Draft Articles on the subject adopted in 2001,¹⁸ the International Law Commission included the following provisions relating to “activities not prohibited by international law which involve a risk of causing significant transboundary harm through their physical consequences”:

“Article 4. Cooperation

States concerned shall cooperate in good faith and, as necessary, seek the assistance of one or more competent international organizations in preventing significant transboundary harm or at any event in minimizing the risk thereof.

Article 7. Assessment of risk

Any decision in respect of the authorization of an activity within the scope of the present articles shall, in particular, be based on an assessment of the possible transboundary harm caused by that activity, including any environmental impact assessment.

Article 8. Notification and information

1. If the assessment referred to in article 7 indicates a risk of causing significant transboundary harm, the State of origin shall provide the State likely to be affected with timely notification of the risk and the assessment and shall transmit to it the available technical and all other relevant information on which the assessment is based.

2. The State of origin shall not take any decision on authorization of the activity pending the receipt, within a period not exceeding six months, of the response from the State likely to be affected.

Article 9. Consultations on preventive measures

1. The States concerned shall enter into consultations, at the request of any of them, with a view to achieving acceptable solutions regarding measures to be adopted in order to prevent significant transboundary harm or at any event to minimize the risk thereof. The States concerned shall agree, at the commencement of such consultations, on a reasonable time-frame for the consultations. [...]

3. If the consultations referred to in paragraph 1 fail to produce an agreed solution, the State of origin shall nevertheless take into account the interests of the State likely to be affected in case it decides to authorize the activity to be pursued, without prejudice to the rights of any State likely to be affected.

Article 12. Exchange of information

While the activity is being carried out, the States concerned shall exchange in a timely manner all available information concerning that activity relevant to preventing significant transboundary harm or at any event minimizing the risk thereof. Such an exchange of information shall continue until such time as the States concerned consider it appropriate even after the activity is terminated.

Article 14. National security and industrial secrets

Data and information vital to the national security of the State of origin or to the protection of industrial secrets or concerning intellectual property may be withheld, but the State of origin shall cooperate in good faith with the State likely

¹⁸ Vol 3(1), Annex 73.

to be affected in providing as much information as possible under the circumstances.

Article 16. Emergency preparedness

The State of origin shall develop contingency plans for responding to emergencies, in cooperation, where appropriate, with the State likely to be affected and competent international organizations.”¹⁹

In the Draft Articles, “risk of causing significant transboundary harm” is defined so as to include both risks taking the form of a high probability of causing significant transboundary harm and a low probability of causing disastrous transboundary harm.²⁰ The Commentary²¹ added that “‘significant’ is something more than “detectable” but need not be at the level of “serious” or “substantial.”²²

8.51. Again, the Draft Articles emphasise the duties to inform, to consult, and to cooperate. This is emphasised throughout the text. For example, the Commentary states that information that the State is obliged by Draft Article 8 to pass on to States likely to be affected includes

“includes not only what might be called raw data, namely fact sheets, statistics, etc., but also the analysis of the information which was used by the State of origin itself to make the determination regarding the risk of transboundary harm. The reference to the available data includes also other data which might become available later after transmitting the data which was initially available to the States likely to be affected.”²³

8.52. Further, the Commentary on Draft Article 12 states that:-

“Article 12 requires the State of origin and the likely affected States to exchange information regarding the activity after it has been undertaken. The phrase ‘concerning that activity’ after the words ‘all available information’, is intended to emphasize the link between the information and the activity and not any information. The duty of prevention based on the concept of due diligence is not a one-time effort but requires continuous effort. This means that due diligence is not terminated after granting authorization for the activity and undertaking the activity; it continues in respect of monitoring the implementation of the activity as long as the activity continues.

¹⁹ Report of the International Law Commission on the work of its Fifty-third session, *Official Records of the General Assembly, Fifty-sixth session, Supplement No. 10 (A/56/10)*, chp.V.E.1.

²⁰ Draft Article 2(a).

²¹ Vol 3(1), Annex 73.

²² Report of the International Law Commission on the work of its Fifty-third session, *Official Records of the General Assembly, Fifty-sixth session, Supplement No. 10 (A/56/10)*, chp.V.E.2. Commentary on Article 2, paragraph 4.

²³ Report of the International Law Commission on the work of its Fifty-third session, *Official Records of the General Assembly, Fifty-sixth session, Supplement No. 10 (A/56/10)*, chp.V.E.2. Commentary on Article 8, paragraph 6. Reproduced in vol 3(1), Annex 73.

The information that is required to be exchanged, under article 12, is whatever would be useful, in the particular instance, for the purpose of prevention of risk of significant harm.”²⁴

8.53. Similarly, the ILC, citing in support the decisions of the arbitral tribunal in the *Lac Lanoux* case²⁵ and of the International Court of Justice in the *Fisheries Jurisdiction* and *North Sea Continental Shelf* cases,²⁶ stressed the need to enter into consultations in good faith.²⁷

8.54. The ILC Draft Articles are regarded by Ireland as reflecting the minimum requirements of existing obligations of co-operation under general international law, underpinning the particular requirements applicable under UNCLOS and in the European and Northeast Atlantic regions.

8.55. The duties to inform, to consult, and to co-ordinate, which together make up the duty to co-operate, are considered in more detail in the following paragraphs, in the context of the broad UNCLOS duty to protect and preserve the marine environment.

(1) THE DUTY TO INFORM

8.56. First, there is a duty on UNCLOS States Parties to inform potentially affected States of activities that are capable of having significant environmental consequences in the territory of the other State.

8.57. The wide scope of duties to inform was recognised by the International Law Commission, in the Commentary on Draft Article 8. There it was said, in relation to a provision calling on each State to notify other States that are likely to be affected by planned activities, that:

“(2) The activities here include both those that are planned by the State itself and those planned by private entities. The requirement of notification is an indispensable part of any system designed to prevent transboundary harm or at any event to minimize risk thereof.

(3) The obligation to notify other States of the risk of significant harm to which they are exposed is reflected in the *Corfu Channel* case, where the International Court of Justice characterised the duty to warn as based on “elementary considerations of humanity”. This principle is recognised in the context of the use of international watercourses and in that context is embodied in a number of international agreements, decisions of international courts and tribunals, declarations and resolutions adopted by intergovernmental organisations, conferences and meetings, and studies by intergovernmental and international non-governmental organisations.

²⁴ Report of the International Law Commission on the work of its Fifty-third session, *Official Records of the General Assembly, Fifty-sixth session, Supplement No. 10 (A/56/10)*, chp.V.E.2. Commentary on Article 12, paras 2, 3.

²⁵ *Lac Lanoux* Arbitration (France v. Spain), UNRIAA, vol XII, p 281, vol 3(1), Annex 80.

²⁶ *ICJ Reports 1974*, para 78, and *ICJ Reports 1969*, p 3, especially paragraphs 85 and 87, respectively.

²⁷ Report of the International Law Commission on the work of its Fifty-third session, *Official Records of the General Assembly, Fifty-sixth session, Supplement No. 10 (A/56/10)*, chp.V.E.2. Commentary on Article 9, paragraphs 1-8.

(4) In addition to the utilisation of international watercourses, the principle of notification has also been recognised in respect of other activities with transboundary effects. For example, article 3 of the Convention on Environmental Impact Assessment in a Transboundary Context and Articles 3 and 10 of the Convention on the Transboundary Effects of Industrial Accidents. Principle 19 of the Rio Declaration on Environment and Development speaks of timely notification:

“States shall provide prior and timely notification and relevant information to potentially affected States on activities that may have a significant adverse transboundary environmental effect and shall consult with those States at an early stage and in good faith.”

(5) The procedure for notification has been established by a number of OECD resolutions....

(6) Where assessment reveals the risk of causing serious transboundary harm ... the State which plans to undertake such activity has the obligation to notify States which may be affected. The notification shall be accompanied by available technical information on which the assessment is based.”²⁸

8.58. The duty to inform appears in, *inter alia*,²⁹

- a. the 1909 Convention Concerning Boundary Waters between the United States and Canada;³⁰
- b. the 1929 Convention between Norway and Sweden on Certain Questions Relating to the Law on Watercourses;³¹
- c. the 1931 General Convention Concerning the Hydraulic System Concluded between the Kingdom of Romania and the Kingdom of Yugoslavia;³²
- d. the 1932 Convention between Poland and the USSR Concerning Juridical Relations on the State Frontier;³³
- e. the Convention of 27 October 1960 between Austria, Switzerland, and the German Lander of Bavaria and Baden-Wurtemberg on the protection of Lake Constance against Pollution (Article 1);³⁴
- f. the 1974 Nordic Environmental Protection Convention (Articles 5, 7, 10);³⁵

²⁸ Report of the International Law Commission on the work of its Fifty-third session, *Official Records of the General Assembly, Fifty-sixth session, Supplement No. 10 (A/56/10)*, chp.V.E.2. Commentary on Article 8. Reproduced in vol 3(1), Annex 73.

²⁹ For further citations see P. Okowa, “Procedural Obligations in International Environmental Agreements”, 67 *BYIL* 274 at 289-300, 317-330 (1996).

³⁰ Ruster and Simma, *International Protection of the Environment – Treaties and Related Documents*, (1977), vol X, p 5158.

³¹ Ruster and Simma, vol X, p 4942.

³² Ruster and Simma, vol IX, p 4435.

³³ Ruster and Simma, vol IX, p 4454.

³⁴ Agreement on the Protection of Lake Constance from Pollution”, in Burhenne (ed.), *Beiträge zur Umweltgestaltung, Internationales Umweltrecht Multilaterale Verträge* (Berlin, 1974), 960: 80.

- g. the 1979 Geneva Convention on Long Range Transboundary Air Pollution (Articles 5 and 8(b));³⁶

8.59. This practice is by no means confined to bilateral and multilateral treaties. The duty to inform is set out or reflected in many other international instruments, including:

- a. UNGA Res. 2995 (XXVII) on Co-operation between States in the Field of the Environment;³⁷
- b. UNGA Res. 3281 (XXIX), the Charter of Economic Rights and Duties of States;³⁸
- c. the 1978 UNEP Council Document on Natural Resources Shared by Two or More States;³⁹
- d. the 1994 Convention on Nuclear Safety;⁴⁰
- e. the OECD Recommendations on Transfrontier Pollution, adopted on 14 November 1974,⁴¹ 11 May 1976,⁴² 17 May 1977,⁴³ 21 September 1978,⁴⁴ and 8 July 1988;⁴⁵
- f. the 1991 Espoo Convention on Environmental Impact Assessment in a Transboundary Context;⁴⁶
- g. the International Law Commission's 2001 Draft Articles on Prevention of Transboundary Harm from Hazardous Activities (Article 4);⁴⁷

8.60. The duty has also been recognised in the decisions of international tribunals. The clearest and most detailed examination of the duty appears in the arbitral award in the *Lac Lanoux* case.⁴⁸ That case concerned the interpretation of a treaty provision (Article 11 of the relevant treaty) which stipulated that certain hydrological works on a river of which France and Spain were co-riparians had to be the subject of prior notification to the other State "so that, if they might threaten the rights of the riparian owner of the adjoining Sovereignty, the claim may be lodged in due time with the competent authorities, and thus the interests that may be involved on both sides will be safeguarded."

8.61. The Arbitral Tribunal in the *Lac Lanoux* case set out its reasoning in relation to that provision as follows:

³⁵ Burhenne (ed.), *Beiträge zur Umweltgestaltung, Internationales Umweltrecht Multilaterale Verträge* (Berlin, 1974), 974: 14.

³⁶ 18 *ILM* 1442 (1979).

³⁷ UN GAOR, 27th Session, Supp No. 30, 42.

³⁸ 14 *ILM* 251 (1975).

³⁹ 17 *ILM* 1094 (1978).

⁴⁰ IAEA INFCIRC/449; 33 *ILM* 1514 (1994).

⁴¹ 14 *ILM* 242 (1975).

⁴² 15 *ILM* 1218 (1976).

⁴³ 16 *ILM* 977 (1977).

⁴⁴ 17 *ILM* 530 (1978).

⁴⁵ 28 *ILM* 278 (1989).

⁴⁶ 13 *ILM* 802 (1991).

⁴⁷ UN GAOR, 56th Session, Supp No. 10 (A/56/10).

⁴⁸ 24 *ILR* 101 (1957). Reproduced in vol 3(1), Annex 80.

“Article 11 [...] imposes on the States in which it is proposed to erect works or to grant new concessions likely to change the course or the volume of a successive watercourse a double obligation. One is to give prior notice to the competent authorities of the frontier district; the other is to set up machinery for dealing with compensation claims and safeguards for all interests involved on either side.

The first obligation does not call for much comment, since its sole object is to permit the carrying out of the second. In any event, the possibility of prejudicing the course or the volume of the water mentioned in Article 11 cannot in any case be left exclusively to the discretion of the State which proposes to execute those works or to grant new concessions; the assertion of the French Government that the projected works can cause no prejudice to the Spanish riparian owners is, despite what has been said in argument ... not sufficient to relieve the Government from any of the obligations contained in Article 11. ... A State which is liable to suffer repercussions from work undertaken by a neighbouring State is the sole judge of its interests; and if the neighbouring State has not taken the initiative, the other State cannot be denied the right to insist on notification of works or concessions which are the object of a scheme.⁴⁹

8.62. As the passage makes plain, a State that is under a duty to co-operate cannot simply put the duty to one side by claiming that its proposed acts will have no harmful impact upon other States to whom the duty is owed. That point is of particular importance in the context of the present case; and it is addressed further below.⁵⁰

8.63. The decision of the International Court of Justice in the *Corfu Channel* case also lends support to the view that there is a fundamental duty to inform potentially affected States in the vicinity of risks emanating from material or activities located within a State’s territory.⁵¹ In that case, the International Court ruled that Albania was under a legal duty to warn British warships of the danger that they faced in approaching Albanian territorial waters that had been mined. The Court based the duty of prior notification upon the provisions of Hague Convention No. VIII of 1907, and also upon “certain general and well recognised principles”, including “elementary considerations of humanity, even more exacting in peace than in war; the principle of the freedom of maritime communication; and every State’s obligation not to allow knowingly its territory to be used for acts contrary to the rights of other States.”⁵²

8.64. By the same reasoning, States may not allow, or plan for, the use of their waters in a manner that infringes the rights of neighbouring States. They have a duty to inform neighbouring States of the nature of the threatened infringement, so that the neighbouring States may decide what action, if necessary, should be taken in response.

8.65. Given the weight of practice on the point, it is not surprising that the obligation to inform is regarded as forming a part of customary international law. Thus, as long ago as 1987, the *Restatement of the Law: Foreign Relations Law of the United States* included a provision that read as follows:

⁴⁹ 24 *ILR* 101 at 138.

⁵⁰ Paragraph 8.275 *et seq.*; and see paragraphs 10.1-10.12.

⁵¹ *ICJ Reports 1949*, p 4 at p 22.

⁵² *ICJ Reports 1949*, p 4 at p 22.

“§ 601 State Obligations with Respect to Environment of Other States and the Common Environment

(1) A State is obligated to take such measures as may be necessary, to the extent practicable under the circumstances, to ensure that activities within its jurisdiction or control

(a) conform to generally accepted international rules and standards for the prevention, reduction, and control of injury to the environment of another State or of areas beyond the limits of national jurisdiction [...]

The Comment on the provision went on to stipulate that:

“(e) [...] Under Subsection 1(a) a state has an obligation to warn another state promptly of any situation that may cause significant pollution damage in the state. A state has also an obligation to consult with another state if a proposed activity within its jurisdiction or control poses a substantial risk of significant injury to the environment of the other state, but it need not permit such consultations to delay the proposed activity unduly.”

8.66. UNCLOS does not provide a definition of “significant harm”. Ireland submits that the question whether the possible pollution is “significant” must take into account three factors: the degree of possible harm that may be caused; the probability of that harm being caused; and the reversibility of the harm. Possible pollution is significant if there is a high probability of pollution arising, even if that pollution may cause relatively little harm. Possible pollution is also significant even if there is only a low probability of pollution, if that pollution would cause a great deal of harm. Both possibilities are relevant in the present case.

8.67. As far as the third element is concerned, where the harm would be easily or quickly reversed, it may be regarded as less significant than harm that is irreversible or reversible only in the long term. It is in all practical senses impossible to remove radioactive pollution from the sea and seabed. Nuclear material carried by ship, on the other hand, might be salvageable in certain conditions. In all cases, the half-life of the radioactive material is such that radioactive pollution is, in human terms, completely irreversible.

8.68. The content of the duty to inform has been summarised in the following terms:

“In treaty regimes and in the works of codification bodies, it is frequently provided that the notification duty requires the State of origin to inform the State which might be affected of any activity on its territory (either planned or actual) which entails a risk of transboundary harm. It is also required to provide the potentially affected State with all the necessary information relating to the nature of the activity, the risks involved, as well as the injury may cause. This is to enable the potentially affected States to make its own evaluation of the situation. The notification is also intended to provide the parties with an opportunity for finding an amicable solution to the problems raised, taking into account the interests of both the State of origin and the affected States.”⁵³

8.69. That summary of the duty needs to be considered in the context of the UNCLOS provisions. In particular, it must be considered in the light of the rights of coastal States secured by the UNCLOS. Coastal States have throughout their territorial seas and 200 mile

⁵³ P. Okowa, “Procedural Obligations in International Environmental Agreements”, 67 *BYIL* 274 at 291-292 (1996).

EEZs sovereign rights for the purpose of conserving and managing natural resources, and jurisdiction with regard to the protection and preservation of the marine environment (UNCLOS Articles 56(1); 211), and also have particular competences concerning maritime casualties (UNCLOS Articles 22, 23, 221).

8.70. The territorial sea is a part of the territory of the State. As a matter of law, pollution of those waters should be treated as seriously as pollution of any other part of the territory of the State. As a matter of fact, pollution of the territorial sea is the pollution of a part of the critical coastal area where fishing, tourism, shipping and other interests tend in all States to be concentrated.

8.71. Further, the right of a coastal State to be informed of risks and hazards to its marine environment must be interpreted in the light of the legal recognition of the primary interest of the coastal State in the marine environment out to the limits of its 200-mile zone. The coastal State not only has exclusive rights over the resources of its 200-mile zone. Its rights are akin to property rights, but they are accompanied by a specific responsibility for the conservation of the living resources of the 200-mile zone: UNCLOS Article 61 obliges States to take measures designed to maintain or restore populations of harvested species.

8.72. These coastal States interest may be affected by activities occurring in the territory of another State, as well as activities actually within or in proximity to the concerned State's 200-mile zone.

8.73. The interest, and the rights, of the coastal State in the preservation of its territorial sea and EEZ from pollution and from maritime casualties have been underlined by recent changes in the legal regime of liability for nuclear accidents. In 1997 the IAEA adopted two instruments modifying the area within which the coastal State has exclusive jurisdiction over legal actions concerning nuclear damage under the 1963 Vienna Convention on Civil Liability for Nuclear Damage. One was the 1997 Protocol to Amend the Vienna Convention,⁵⁴ the other the 1997 Convention on Supplementary Compensation.⁵⁵ Unlike the 1963 Vienna Convention, Article XI of which had limited the exclusive jurisdiction of the coastal State to incidents occurring within its territorial sea, the 1997 instruments extend that right to all cases

“where a nuclear incident occurs within the exclusive economic zone of a Contracting Party or, if such a zone has not been established, in an area not exceeding the limits of an exclusive economic zone, were one to be established by that Party.”

8.74. Those two instruments follow the established approach in international law to responsibility for reacting to incidents offshore that may lead to marine pollution. The International Convention on Oil Pollution Preparedness, Response and Co-Operation, 1990, for instance, obliges ships to report pollution incidents to “the nearest coastal State.”⁵⁶

⁵⁴ Protocol to Amend the 1963 Vienna Convention on Civil Liability for Nuclear Damage; IAEA INF/CIRC/566.shtml; <http://www.iaea.or.at/worldatom/Documents/Legal/protamend.shtml>. See Article 12.

⁵⁵ Convention on Supplementary Compensation for Nuclear Damage; IAEA Doc. INF/CIRC/567; <http://www.iaea.or.at/worldatom/Documents/Legal/supcomp.shtml>. See Article XIII(2).

⁵⁶ International Convention on Oil Pollution Preparedness, Response and Co-Operation, 1990, Article 4. 1891 UNTS 51; 30 *ILM* 733 (1991); 18 *Law of the Sea Bulletin* 37 (1991).

8.75. Similar steps have recently been taken in relation to the 1960 Paris Convention on Third Party Liability in the Field of Nuclear Energy. In February 2002, a draft protocol was adopted which contained a provision in exactly the same terms as the 1997 revision of the Vienna Convention just quoted.⁵⁷ There has also been prepared another draft protocol, to amend the 1963 Supplementary Convention. That assimilated, for the purposes of that Convention, damage suffered in the territorial sea and “in or above the exclusive economic zone of a Contracting Party or on the continental shelf in connection with the exploitation or exploration of the natural resources of that exclusive economic zone or continental shelf.”⁵⁸

(2) THE DUTY TO CONSULT

8.76. The second component of the duty to co-operate is the duty to consult. The duty to inform is an essentially “one way” obligation. It is discharged by the passing of information from one State to the other. The duty to consult, on the other hand, requires a “two way” process of the exchange and consideration of their respective views by the States concerned.

8.77. A leading textbook describes consultations as follows:

“Consultations usually involve discussions specifically intended to impart or exchange information about the matter in question ... While consultations must be undertaken in good faith, they do not give to any of the states involved a right to have its views accepted by the others or to stop them acting in whatever way they propose.”⁵⁹

The text then quotes a definition of “the essence of consultation” drawn from an English case: “the communication of a genuine invitation, extended with a receptive mind, to give advice ... If the invitation is once received, it matters not that it is not accepted and no advice is proffered.”⁶⁰

8.78. It has been observed that “[a]most all the treaty instruments on environmental protection provide for the exchange of information on a regular basis.”⁶¹

8.79. Again, the decision in the *Lac Lanoux* case is directly in point. The Arbitral Tribunal there considered the content of the obligation upon States to seek, by preliminary negotiations, terms for an agreement over the use of a shared watercourse, in circumstances where there was no obligation actually to reach an agreement. The obligation was, in essence, an obligation of consultation, with a view to the negotiation of an agreement. The Tribunal said:

⁵⁷ OECD Doc. NEA/LEG/CPPC(98)10/FINAL/REV1, 22 February 2002. Draft Protocol to amend the Convention on Third party Liability in the Field of Nuclear Energy of 29 July 1960..., paragraph M (f), amending Article 13 of the 1960 Convention.

⁵⁸ OECD Doc. NEA/LEG/CPPC(2000)31/FINAL, 22 February 2002. Draft Protocol to amend the Convention of 31st January 1963 Supplementary to the Paris Convention of 29th July 1960 on Third party Liability in the Field of Nuclear Energy..., Article 2(a)(iii).

⁵⁹ Sir R. Jennings and Sir A. Watts, *Oppenheim's International Law* (9th ed. 1992), pp 1181-1182.

⁶⁰ From *Agricultural Board v. Aylesbury Mushrooms* [1974] 1 WLR 190, 194-5.

⁶¹ P. Okowa, “Procedural Obligations in International Environmental Agreements”, 67 *BYIL* 274 at 300 (1996), where many instances of such treaty practice are cited.

“...[O]ne speaks, although often inaccurately, of the ‘obligation of negotiating an agreement’. In reality, the engagements thus undertaken by States take very diverse forms and have a scope which varies according to the manner in which they are defined and according to the procedures intended for their execution; but the reality of the obligations thus undertaken is incontestable and sanctions can be applied in the event, for example, of an unjustified breaking off of the discussions, abnormal delays, disregard of the agreed procedures, systematic refusals to take into consideration adverse proposals or interests, and, more generally, in cases of violation of the rules of good faith (*Tacna-Arica Arbitration: Reports of International Arbitral Awards*, vol. II, pp. 921 *et seq.*; *Case of Railway Traffic between Lithuania and Poland: PCIJ.*, Series A/B, No. 42, pp. 108 *et seq.*).”⁶²

8.80. As was noted above,⁶³ the *Restatement of the Law: Foreign Relations Law of the United States* indicated that the duty to consult other States had become a part of customary international law.

8.81. Light is cast upon the content of the duty to consult by the award in the *Lac Lanoux* case. Having explained the legal force of obligations of this kind, the *Lac Lanoux* Tribunal went on to discuss in greater detail the content of the obligation of consultation as it arose under the treaty in question in that case. It said, speaking of the safeguarding of interests of co-riparians by means of that obligation:

“The ... question is to determine the method by which these interests can be safeguarded. If the method necessarily involves communications, it cannot be confined to purely formal requirements, such as taking note of complaints, protests or representations made by the downstream State. The Tribunal is of the opinion that, according to the rules of good faith, the upstream State is under the obligation to take into consideration the various interests involved, to seek to give them every satisfaction compatible with the pursuit of its own interests, and to show that in this regard it is genuinely concerned to reconcile the interests of the other riparian State with its own.

[...]

[...] A State which has conducted negotiations with understanding and good faith in accordance with Article 11 of the Additional Act is not relieved from giving a reasonable place to adverse interests in the solution it adopts simply because the conversations have been interrupted, even though owing to the intransigence of its partner. Conversely, in determining the manner in which a scheme has taken into consideration the interests involved, the way in which negotiations have developed, the total number of the interests which have been presented, the price which each Party was ready to pay to have those interests safeguarded, are all essential factors in establishing, with regard to the obligations set out in Article 11 of the Additional Act, the merits of that scheme.”⁶⁴

8.82. The duty to consult plainly requires the active engagement of both States in the process of seeking to ensure that the interests of both States are accommodated as far as is possible in activities touching upon those interests, even where one of the States may have

⁶² 24 ILR 101 at 128. Reproduced in vol 3(1), Annex 80.

⁶³ Paragraph 8.65.

⁶⁴ 24 ILR 101 at 139, 141. Reproduced in vol 3(1), Annex 80; p 489 at pp 527, 529.

a right to engage in those interests unilaterally. The duty does not, on the other hand, require that both States should have agreed to a course of action before it can be lawfully undertaken. The duty to consult another State does not amount to a duty to obtain the prior consent of that other State.

8.83. This approach was reflected in the Commentary of the International Law Commission on Draft Article 9 on the Prevention of Transboundary Harm from Hazardous Activities . That Article, quoted above,⁶⁵ sets out an obligation to enter into consultations with a view to achieving acceptable solutions regarding measures to be adopted in order to prevent significant transboundary harm or at any event to minimize the risk thereof, arising from activities undertaken by a State. The relevant section of the Commentary, which reflects Ireland's understanding of the legal position, read as follows:

“(2) There is a need to maintain a balance between two equally important considerations in this article. First, the article deals with activities that are not prohibited by international law and that, normally, are important to the economic development of the state of origin. Secondly, it would be unfair to other States to allow those activities to be conducted without consulting them and taking appropriate preventive measures. Therefore, the article does not provide a mere formality which the State of origin has to go through with no real intention of reaching a solution acceptable to the other States, nor does it provide a right of veto for the States that are likely to be affected. To maintain a balance, the article relies on the manner in which, and purpose for which, the parties enter into consultations. The parties must enter into consultations in good faith and must take into account each other's legitimate interests. The parties should consult each other with a view to arriving at an acceptable solution regarding the measures to be adopted to prevent significant transboundary harm, or at any event to minimize the risk thereof.”⁶⁶

(3) THE DUTY TO CO-ORDINATE

8.84. The duty to co-ordinate is explicitly set out in UNCLOS Article 123. It arises also from the provisions of UNCLOS Article 207. Paragraph (3) of that Article obliges States to “endeavour to harmonize their policies ... at the appropriate regional level.” In the context of a semi-enclosed sea, the “appropriate regional level” is harmonization among the littoral States of that sea. That means, in this case, Ireland and the United Kingdom.

8.85. Furthermore, the duty to co-ordinate is an implicit element of the duty to cooperate in UNCLOS Article 197.

8.86. That the duty to co-ordinate should be a component of UNCLOS Article 197 is in part a matter of common sense. There is an obligation to inform another State of activities that will affect it, and to take account of the other State's interests. The impact of the activity on the other State will depend in part upon factors in the other State, including the plans and proposals that the other State has for dealing with the matter. It cannot seriously be suggested that a State is obliged to listen to explanations of the interests of other States but not to their plans for dealing with the impact of the projected activity upon those plans

⁶⁵ Paragraph 8.50.

⁶⁶ Report of the International Law Commission on the work of its Fifty-third session, *Official Records of the General Assembly, Fifty-sixth session, Supplement No. 10 (A/56/10)*, chp.V.E.2. Commentary on Article 9. Reproduced in vol 3(1), Annex 73.

(and *vice versa*). If it must take account of those plans and proposals, that must mean that it is obliged to take account of them not merely in an abstract sense, as factors to be weighed in deciding *whether* to prosecute the proposed activity but also in considering *how* to prosecute that activity, if it does go ahead. There must be a duty upon both States to co-ordinate their plans.

8.87. It is appropriate in this context to recall that activities concerning the oceans will not affect merely the two (or more) States immediately concerned. In due course, all States will be affected. Pollution of the sea is the pollution of a global resource. This is already recognised in relation to Sellafield and the pollution of the Irish and North Seas, as protests by Norway and the Nordic Council demonstrate.⁶⁷

8.88. There is no authoritative statement of the content of the duty to co-ordinate in international law. Nonetheless, the term has a plain ordinary meaning, well understood in the context of legal relations. At least two core obligations are included within the duty.

8.89. First, before adopting unilateral measures or practices which might affect the exercise by the other State of its own right unilaterally to adopt measures or practices in relation to matters in which both States have interests, the State must inform the other State of the steps that it proposes to take. In this respect the duty is essentially the same as, and reinforces, the duties to inform and consult.

8.90. Second, States that are subject to a duty to co-ordinate must not adopt unilateral measures or practices whose effect would undermine measures or practices adopted by the other State. That is plainly implicit in any reading of the term “co-ordinate”.

8.91. The obligation not to undermine measures taken by another regulatory authority is increasingly commonly found in the Law of the Sea. It is found, for example, in the 2001 Convention on the Conservation and Management of Fishery Resources in the South East Atlantic Ocean,⁶⁸ Article 19 of which reads (in part) as follows:

“Article 19. COMPATIBILITY OF CONSERVATION AND
MANAGEMENT MEASURES

1. The Contracting Parties recognise the need to ensure compatibility of conservation and management measures adopted for straddling fish stocks on the high seas and in areas under national jurisdiction. To this end, the Contracting Parties have a duty to cooperate for the purposes of achieving compatible measures in respect of such stocks of fisheries resources as occur in the Convention area and in areas under the jurisdiction of any Contracting Party. The appropriate Contracting Party and the Commission shall accordingly promote the compatibility of such measures. This compatibility shall be ensured in such a way which does not undermine measures established in accordance with articles 61 and 119 of the 1982 Convention.
2. For the purpose of paragraph 1, the coastal States and the Commission shall develop and agree on standards for reporting and exchanging data on fisheries for the stocks concerned as well as statistical data on the status of the stocks.”

⁶⁷ See e.g. chapter 1, para 1.68.

⁶⁸ <http://www.fao.org/Legal/TREATIES/032t-e.htm>; 41 *ILM* 257 (2002).

8.92. Similarly, Article 5(1)(e) of the Framework Agreement for the Conservation of Living Marine Resources on the High Seas of the Southeast Pacific (the “Galapagos Agreement”)⁶⁹ lists among the “conservation principles” applicable under that Agreement the following principle concerning measures adopted to regulate high seas fisheries:

“The measures adopted shall not be less strict than those established for the same species in the zones under national jurisdiction adjacent to the Agreement’s area of application, shall not undermine the effectiveness of the same, and shall be fully compatible with them in all cases.”

C. IMPLEMENTATION OF THE DUTIES TO INFORM, TO CONSULT AND TO CO-ORDINATE IN THE PRESENT CASE

8.93. Ireland considers that the duty of co-operation, as described above, may be discharged through bilateral or through multilateral mechanisms. What is, however, necessary in each case is that there should be (a) sufficient information passed to the interested State to enable it to assess for itself the implications of any proposed measures or actions for its own interests, and (b) a proper procedure in the State passing on the information to ensure that any representations made by the other State will be considered and evaluated, and in so far as possible accommodated, before a final decision is taken on the proposed measures or actions.

8.94. It is the submission of Ireland that the United Kingdom has failed properly to discharge the duty of co-operation that is imposed upon it by the UNCLOS. Ireland considers that:

- a. the United Kingdom has not made sufficient information available to Ireland to enable Ireland to make its own assessments of the implications and risks arising from the MOX plant;
- b. Ireland’s representations and interests have not been properly taken into account, and in some instances have not been taken into account at all.

8.95. Ireland acknowledges that there have, over the years, been continuing contacts between the Irish and British authorities in relation to the Sellafield plant and associated shipments. The problem is not that the United Kingdom is unwilling to participate in procedures that are appropriate vehicles for co-operation with Ireland and for the discharge of the United Kingdom’s other responsibilities under UNCLOS, or to attend meetings. The problem is that the procedures do not in practice lead to the degree of co-operation to which Ireland is entitled, and do not fulfil the obligations to co-operate that the United Kingdom has assumed under the UNCLOS and also under the OSPAR Convention and other legal instruments.

8.96. The United Kingdom’s obligation to co-operate with Ireland includes, as was explained above, a duty to notify, consult and co-operate with Ireland. Ireland is accordingly entitled to be notified by the United Kingdom of the essential details concerning the operation of the MOX plant and the international movements of radioactive materials associated with the operation of the plant, without Ireland having to request each

⁶⁹ The text is published on the website of the Comisión Permanente del Pacífico Sur at <http://www.cpps-int.org/jurgaltxteng.htm>.

piece of that information. In fact, Ireland has been provided with very little information, and in certain respects (notably in relation to the shipments of nuclear materials to and from the Sellafield site) the evidence is that co-operation with Ireland has actually *diminished* over recent years – and not because of the current litigation.

8.97. In addition to the United Kingdom's obligation *on its own initiative* to notify Ireland of the plans for the MOX plant, the United Kingdom has a further obligation to respond in a timely and substantive fashion to Ireland's reasonable requests for further assistance and information on the proposed MOX plant and international movements of radioactive materials associated with its operation. The record shows that Ireland has repeatedly transmitted such requests for assistance and information over the past five years. In the majority of cases the United Kingdom has failed to respond at all, or has responded very late and with little or no information. That failure is evident from the documentary record.

THE HISTORY OF NON-COOPERATION

8.98. Ireland's letter of 23 December 1999⁷⁰ provides a clear example. In that letter Ireland's request concerned three matters. The first was the falsification of data relating to MOX fuel exported to Japan, which came to light in the autumn of 1999, and the consequent suspension by Japan of MOX imports from Sellafield. In that regard Ireland sought the United Kingdom's confirmation that–

“(1) no decision [on the MOX plant] will be taken on economic justification so long as the Government of Japan has not indicated its agreement to the utilization of MOX fuel, and (2) that the process of consultation will be extended to permit consideration of the economic viability of the proposed MOX plant in the absence of any (or any significant) Japanese contracts.”⁷¹

8.99. The United Kingdom's response arrived on 9 March 2000.⁷² It stated that when a final decision regarding the full operation of the plant is taken it would set out the reasons in full, and would be sent to Ireland.

8.100. Ireland's second request in the letter of 23 December 1999 related to the inadequacy of the 1993 Environmental Statement. In that letter Ireland

“calls upon the United Kingdom to carry out a new environmental impact assessment procedure taking into account the requirements of the 1982 UNCLOS, the 1991 Espoo Convention, the 1992 OSPAR Convention, Directive 97/11/EC, and the 1998 Sintra Ministerial Declaration. The Irish Government also seeks confirmation that the operation of the proposed MOX plant will not be authorized before such a revised environmental impact assessment procedure has been carried out.”⁷³

8.101. The United Kingdom's letter of 9 March 2000 did not respond at all to this point. Nor has the United Kingdom responded to it since.

⁷⁰ Vol 3(1), Annex 20, p 129.

⁷¹ Vol 3(1), Annex 20, p 129 at p 130.

⁷² Vol 3(1), Annex 22.

⁷³ Vol 3(1), Annex 20, p 129 at p 133.

8.102. Ireland's third request in its letter of 23 December 1999 concerned the impact of the discharges from the MOX plant into the marine environment, having regard to the obligation that the United Kingdom accepted in 1998 to reduce concentration of artificial radioactive substances in the Irish Sea to "close to zero" by 2020, as well as the precautionary principle. In this regard Ireland wrote that it—

“seeks the views of the UK Government as to the basis upon which the proposed authorization of discharges from the MOX plant into the marine environment would “meet all...international standards and legal requirements”, as the Environment Agency claims. The Irish Government further seeks confirmation that no authorization will be granted or put into effect pending resolution of these matters.”⁷⁴

8.103. The United Kingdom's letter of 9 March 2000, purportedly in response to Ireland's letter of 23 December 1999, did not address this aspect of Ireland's request.

8.104. It is clear from this exchange that the United Kingdom has not responded to any of Ireland's enquiries, and cannot be considered to have taken into account Ireland's interests.

THE FAILURE TO PROVIDE INFORMATION

8.105. A second example of the United Kingdom's failure to fulfil its obligations concerns Ireland's request for information under Article 9 of the OSPAR Convention, resulting in the invocation by Ireland of the OSPAR dispute settlement procedure and the constitution of an arbitral tribunal to resolve the dispute.

8.106. As described in its Statement of Claim in that Case,⁷⁵ Ireland requested information relating *inter alia* to the proposed start date for the operation of the MOX plant, the number of years over which the plant is to operate, the volume of plutonium and uranium oxides which are to be reprocessed into MOX pellets, and the number of international transports of spent nuclear fuel and of MOX fuel assemblies which will be entering the Irish Sea in close proximity to Ireland (as set out in the PA Report). Ireland reiterated that request on several occasions. Each time the request was met with silence or a refusal to give the information, without any reasons beyond a general and unparticularised claim to “commercial confidentiality.”⁷⁶

8.107. Ireland has also been obliged to remind the United Kingdom about requests for information which have been made but not responded to. For example, in the letter of 30 July 1999 Ireland sought a full copy of the PA Report.⁷⁷ Some five months later no response had been received from the United Kingdom. A further request was made by letter of 18 November 1999.⁷⁸ A response finally came on 17 December 1999, refusing to provide the information. The reasoning in that response was limited to a statement that “[d]isclosure of this information could cause BNFL unacceptable commercial harm.”⁷⁹ On

⁷⁴ Vol 3(1), Annex 20, p 129 at pp 133-134.

⁷⁵ Vol 3(1), Annex 72, p 331.

⁷⁶ Vol 3(1), Annex 72 at pp 336 *et seq.*

⁷⁷ Vol 3(1), Annex 16.

⁷⁸ Vol 3(1), Annex 18.

⁷⁹ Vol 3(1), Annex 19.

21 May 2001 the United Kingdom Environment Minister responded to a further request⁸⁰: “I am still considering this but I hope to be able to provide you with a substantive reply shortly”.⁸¹ No such reply was forthcoming until after Ireland had commenced arbitration proceedings; and when it did arrive it provided a less than complete set of reasons for the refusal to give the information.⁸² Once again, the exchange of letters demonstrates the reluctance of the United Kingdom to engage with Ireland, amounting in Ireland’s view to a failure to co-operate.

NON-COOPERATION ON MOX START-UP

8.108. A third example of non-cooperation concerns the United Kingdom’s failure to accede to Ireland’s request that the United Kingdom not authorise the MOX plant pending the outcome of the OSPAR arbitration proceedings. It will be recalled that one purpose of those proceedings is to obtain basic information which will allow Ireland to assess whether the environmental consequences of the operation of the MOX plant have been properly considered in accordance with the United Kingdom’s obligations under UNCLOS. Here, Ireland’s request was made in its Statement of Claim of 15 June 2001 and the covering letter.⁸³ No response was received. Ireland sent a reminder on 27 August 2001.⁸⁴ On 13 September 2001 the United Kingdom responded, declining to accede to Ireland’s request.⁸⁵

8.109. The United Kingdom’s failure to fulfil its duty of co-operate with Ireland is pervasive. It reaches across all aspects of the State-to-State relationship in respect of the MOX plant and associated activities. For the purposes of the present case, however, it may be convenient to summarise the particular failings under three broad headings:

- (a) failures arising from breach of the UNCLOS obligations relating to environmental impact assessments
- (b) failures arising from breach of the UNCLOS obligations relating to the substantive protection and preservation of the marine environment;
- (c) failures arising from breach of the UNCLOS obligations relating to the shipments of nuclear materials associated with the MOX plant.

Each will be considered in turn.

Non-cooperation over Environmental Impact Assessments

8.110. Ireland submits that the failings of the United Kingdom in relation to the obligation to prepare an environmental impact assessment, detailed in chapter 7, and also in relation to the obligation to protect and preserve the environment, detailed in chapter 9, have two aspects. They are, as is explained in chapters 7 and 9, violations of the United Kingdom’s specific obligations under the UNCLOS to conduct a proper environmental impact assessment and to prevent the pollution of the sea. Where, as here, such violations are

⁸⁰ Vol 3(1), Annex 25.

⁸¹ Vol 3(1), Annex 26.

⁸² Vol 3(1), Annex 31.

⁸³ Vol 3(1), Annex 72.

⁸⁴ Vol 3(1), Annex 30.

⁸⁵ Vol 3(1), Annex 32.

committed by a co-riparian State on a semi-enclosed sea, and in the face of attempts by another co-riparian to engage in a process of consultation and co-operation that will avert those substantive violations of the UNCLOS obligations, the violations amount in addition to a breach of the duty to co-operate imposed by UNCLOS Article 123 and the other UNCLOS provisions described above. The analysis set out in chapters 7 and 9⁸⁶ will not be repeated here; but the main points relevant to the duty to co-operate will be summarised.

8.111. Non-cooperation over environmental impact assessments will be dealt with first. First, the inadequacy of the environmental assessment of the MOX plant and related activities is in itself a failure on the part of the United Kingdom to fulfil its duties to co-operate with Ireland.

8.112. The circumstances surrounding the production of the United Kingdom's assessment of the environmental impact of the MOX plant and related activities have been described above.⁸⁷ Ireland has repeatedly made representations to the United Kingdom, both in the form of representations that no adequate environmental assessment has been or is being carried out and in the form of responses to such public consultations as have been held by the United Kingdom on the matter.

8.113. The record shows that Ireland has repeatedly transmitted requests for assistance, co-operation and information in relation to the environmental impact assessment over the past seven years. In the great majority of cases the United Kingdom has simply failed to respond at all, or has responded very late. When the United Kingdom has responded, no substantive material or information has been provided. Indeed, the record shows compellingly that on no occasion has the United Kingdom responded substantively to any request put by Ireland.

8.114. The proposed MOX plant was the subject of an environmental impact assessment procedure in 1993. In 1994 Ireland communicated to the United Kingdom its views as to the inadequacies of the Environmental Statement, summarising its position as follows:

“the Environmental Statement does not provide sufficient and adequate information to enable the effects on the environment of the MOX plant to be assessed and that it does not comply with the relevant requirements of the EC Directive on Environmental Impact Assessment [Directive 85/337/EEC]”⁸⁸

8.115. In that submission Ireland set out its various concerns. It noted in particular the complete failure to assess the consequences of transport accidents or of accidents to the proposed MOX plant, or the impact of exposures of members of the public, either near the site or in the nearest Member State, Ireland. It noted also the failure to provide any information about the relationship between the plant and the marine environment of the Irish Sea; the failure to consider the effect of further radioactive discharges on the ecology of the marine environment and the failure to provide complete information on the nature and quantities of the effluents and wastes to be generated by the MOX plant, or the

⁸⁶ See also the account in Chapters 1 and 4.

⁸⁷ Chapter 4, paragraph 4.7 *et seq.*

⁸⁸ *Submission to Copeland Borough Council on Proposed Sellafield Mixed Oxide (MOX) Plant*, 1994, page 10; vol 3(1), Annex 8, p 89 at p 94.

methods of processing them. These concerns were reiterated in Ireland's submissions of 4 April 1997⁸⁹ and 16 March 1998.⁹⁰

8.116. Subsequently, in its letter of 30 July 1999 Ireland again set out its concerns about the MOX plant, associated transports of radioactive materials and the impact of these activities on the marine environment of the Irish Sea.⁹¹

8.117. These concerns were taken up again, and in further detail, in Ireland's letter of 23 December 1999 to the UK Secretary of State for the Department of the Environment, Transport and the Regions.⁹² By this time more than five years had passed since the Environmental Statement had been published, and no supplement had been prepared to update it. Ireland wrote to the United Kingdom reiterating its earlier concerns, (in particular in relation to the inadequate assessment of impact of discharges into the marine environment) and setting forth its view that the environmental assessment of the plant was further deficient by reason of the fact that it failed to take any account of the material developments in English, EC and international law which had occurred since 1993 for the protection of the marine environment of the Irish Sea.

8.118. The letter of 23 December 1999 expressly identified further international legal obligations which had to be taken into account in authorising the MOX plant and international movements of radioactive materials, including:

- The obligation to protect and preserve the marine environment and to prevent pollution of the marine environment: UNCLOS Arts. 192 to 194;
- The obligation to take all possible steps to prevent and eliminate pollution from land based sources in accordance with Annex 1 of the 1992 OSPAR Convention, making use *inter alia* of "best available techniques" and "best environmental practice": see UNCLOS Art. 207, and 1992 OSPAR Convention, Art 3;
- The obligation to reduce concentrations in the environment to "close to zero" for artificial radioactive substances, by the year 2020; see the 1998 Sintra Ministerial Statement;
- The obligation to ensure that national authorities make available information on activities or measures adversely affecting or likely to affect the state of the maritime area: see 1992 OSPAR Convention, Art 9(1); and
- The obligation to prepare an environmental impact assessment prior to a decision to authorise a proposed activity: see UNCLOS Art 206.

8.119. The United Kingdom did not respond at all to the first letter, and merely acknowledged receipt (ten weeks later) of the second.⁹³

8.120. In its letter of 23 December 1999 Ireland had made a number of requests to the United Kingdom. One of them related to the inadequacy of the 1993 Environmental Statement. Here, Ireland

⁸⁹ Vol 3(1), Annex 9.

⁹⁰ Vol 3(1), Annex 11.

⁹¹ Vol 3(1), Annex 16.

⁹² Vol 3(1), Annex 20.

⁹³ Vol 3(1), Annex 22.

“calls upon the United Kingdom to carry out a new environmental impact assessment procedure taking into account the requirements of the 1982 UNCLOS, the 1991 Espoo Convention, the 1992 OSPAR Convention, Directive 97/11/EC, and the 1998 Sintra Ministerial Declaration. The Irish Government also seeks confirmation that the operation of the proposed MOX plant will not be authorized before such a revised environmental impact assessment procedure has been carried out.”⁹⁴

8.121. The United Kingdom’s letter of 9 March 2000⁹⁵ did not respond to this point at all. The United Kingdom has not responded to it since.

8.122. Ireland’s third request in its letter of 23 December 1999 concerned the impact of the discharges from the MOX plant into the marine environment, having regard to the obligation which the United Kingdom accepted in 1998 to reduce concentration of artificial radioactive substances in the Irish Sea to “close to zero” by 2020, as well as the precautionary principle. In this regard Ireland

“seeks the views of the UK Government as to the basis upon which the proposed authorization of discharges from the MOX plant into the marine environment would “meet all...international standards and legal requirements”, as the Environment Agency claims. The Irish Government further seeks confirmation that no authorization will be granted or put into effect pending resolution of these matters.”⁹⁶

8.123. The United Kingdom’s letter of 9 March 2000, purportedly in response, did not address Ireland’s request on this point. On the contrary, it makes it clear that the United Kingdom had not responded to any of Ireland’s enquiries, and could not be considered to have taken into account Ireland’s interests. The 9 March 2000 letter from the UK Minister for the Environment apologised for the delay in responding and stated:

“Whilst I am, of course, grateful to you for your further views and comments, I am sure that you understand why I cannot address these points in detail while we are still in the process of coming to a final decision on the full operation of the plant. I am also sure that you will appreciate that the implications of the data falsification incident at the Sellafield MOX Demonstration Facility will have some bearing on our decisions.

Whatever our final decision, we do plan to publish a decision document which will explain our reasons in full. I will ensure that you are sent a copy immediately it is published.”⁹⁷

8.124. The United Kingdom did not respond further to Ireland’s concerns. The decision document on the MOX plant and international movements was finally published on 3 October 2001.⁹⁸ It made no mention whatsoever of the concerns raised by Ireland in relation to the 1982 Convention.

⁹⁴ Vol 3(1), Annex 20, p 129 at p 133.

⁹⁵ Vol 3(1), Annex 22.

⁹⁶ Vol 3(1), Annex 20, p 129 at p 134.

⁹⁷ Vol 3(1), Annex 22.

⁹⁸ Vol 3(2), Annex 92.

8.125. Despite all of these representations, the United Kingdom has not yet produced a credible environmental impact assessment relating to the MOX plant and associated activities. That constitutes a breach of the United Kingdom's obligations under UNCLOS Article 206, as was explained above.

8.126. That same failure itself also amounts to a breach of the United Kingdom's obligations to co-operate with Ireland in order to protect the marine environment, in pursuance of UNCLOS Articles 123 and 192-194, 197, 206, 207, 211, 212, 213, 217 and 293. The duty to co-operate, as has been explained, obliges the United Kingdom to inform Ireland of the nature and extent of the threat to the Irish Sea resulting from the commissioning of the MOX plant and associated activities. The failure to provide full information plainly violates the duty to co-operate with Ireland. And the failure of the United Kingdom to inform itself of the true extent of the environmental risks prevents the United Kingdom from discharging properly its part of the responsibility that it shares with Ireland for co-operating in order to protect and preserve the marine environment of the Irish Sea.

*Non-cooperation over Protection and Preservation
of the Marine Environment*

8.127. The breaches by the United Kingdom of its duties to prevent and reduce pollution of the Irish Sea are explained in detail in chapter 9. Those details will not be rehearsed here. Like the failings regarding the environmental impact assessment, they amount *ipso facto* to a breach of the United Kingdom's obligation to co-operate with Ireland, its co-riparian on that sea.

8.128. Ireland and the United Kingdom, as co-riparians of the semi-enclosed Irish Sea, share responsibility for safeguarding its marine environment. The period of severe pollution of the Irish Sea by emissions from the Windscale / Sellafield plants may have drawn to a close; and personnel changes may have removed from the Sellafield those responsible for the more egregious violations of safe operating procedures. The fact remains that the Sellafield plant is constantly adding to the pollution of the Irish Sea and that the commissioning of the MOX plant will prolong that pollution, including that from the THORP plant.

8.129. In addition, the presence of nuclear material on the Sellafield site, which is extended in time and in volume as a result of the commissioning of the MOX plant, presents a further risk of non-operational pollution as a result of accident or sabotage. All this takes place at a time when the United Kingdom has chosen publicly to commit itself to a reduction of pollution from the Sellafield plant to levels "close to zero" by the year 2020 and to reconsider future reprocessing contracts.

8.130. As is explained in chapters 7 and 9, the United Kingdom has failed to conduct a proper appraisal of the environmental risk consequent upon the commissioning of the MOX plant; it has failed to apply the precautionary principle, and its present commitment to reduce emissions to "close to zero", in developing the Sellafield site; and it has failed to adopt the best available technology and make use of best environmental practice to reduce pollution. Ireland has made these points to the United Kingdom. Its communications have not succeeded in eliciting any substantive responses from the United Kingdom, nor even in enticing the United Kingdom into a meaningful dialogue on the matter.

8.131. In all these respects the United Kingdom has not only failed in its substantive obligations to protect the environment of the Irish Sea, it has failed also in its duty under

UNCLOS to co-operate with Ireland, as the co-riparian on the Irish Sea with whom the United Kingdom shares the responsibility for protecting and preserving the marine environment.

Non-cooperation in Bilateral Dealings

8.132. [REDACTED]

8.133. [REDACTED]

8.134. [REDACTED]

8.135. The ultimate withholding of the information that the United Kingdom had undertaken to seek from BNFL for transmission to Ireland is made more difficult to understand by the fact that BNFL used to publish information on the throughput at THORP. For example, a BNFL Press Release dated 30 August 1996 reported that “[a]ll throughput targets have been either achieved or exceeded and over 200 tonnes of fuel has been sheared and dissolved during the year. The plant is targeted to reprocess over 400 tonnes in its third year of operation, rising to an annual throughput of 900 tonnes by the fifth year.”¹⁰⁰

99 [REDACTED]

100 <http://www.bnfl.com/website.nsf/>. The Press Release appears under the headings ‘1996’, and then ‘30th August’. Site last visited on 20 July 2002.

8.136. Moreover, the information denied to Ireland appears to have been published on the internet in January 1999. A WISE news communiqué dated 22 January 1999 recorded that BNFL had stated that “throughput of THORP in financial year 1998/99, which runs to end March 1999, would be 900 tonnes of spent fuel, to make up for former lower-than- planned production rates. By December 15, throughput of THORP in 1998/99 was 400 tons.”¹⁰¹.

8.137. [REDACTED]

8.138. [REDACTED]

8.139. [REDACTED]

8.140. The withholding of information necessary for Ireland to develop its own appraisal of the risk from the Sellafield site and related shipments, and its responses to that risk, is a pattern that runs right through Ireland’s contacts with the United Kingdom.

8.141. For example, on 31 March 1998 Mr Joe Jacob, then Minister of State at the Irish Department of Public Enterprise, wrote to Mr John Battle, then British Minister of State for Science, Energy and Industry. The letter concerned the storage of high level waste at Sellafield. That waste comes in part from the THORP plant; and the commissioning of the MOX plant will, by extending the operational life of the THORP plant, extend the quantity and duration of the production of wastes at Sellafield. Writing of the High Level Waste (HLW) storage facilities at Sellafield, Minister Jacob said “I note the Health and Safety Executive (HSE) consider that the HLW storage arrangements are acceptably safe and that there is adequate provision to deal effectively and safely with all likely incidents and failures. I find it difficult to be convinced of this position without the release of

101 <http://www.antenna.nl/wise/505/4971.html>. Site last visited 20 July 2002.

102 [REDACTED]
103 [REDACTED]
104 [REDACTED]
105 [REDACTED]

information of a detailed technical nature including the contents of probability risk assessments.”¹⁰⁶

8.142. The reply dated 19 May 1998¹⁰⁷ simply referred back to an earlier letter, dated 1 December 1997,¹⁰⁸ in which Mr Battle stated that the HSE “is satisfied that the arrangements for HLW storage at Sellafield are acceptably safe”, and enclosed copies of a number of published reports on the matter.

8.143. Mr Jacob responded on 1 July 1998, noting that “[t]he ability of the Radiological Protection Institute of Ireland (RPII) to make its own judgement about the degree of risk associated with the HLW tanks has been limited by the non-availability of the Probability Risk Assessment (PRA). Access to this information has been requested a number of times at various levels of UK/Ireland contacts and has been consistently refused on grounds of commercial confidentiality.” He added that “the RPII have written to BNFL requesting that they reconsider their refusal to make this information available. The Institute have also indicated that they would be open to accepting any suggestions by BNFL to ensure that the commercial confidentiality of this material would not be compromised.”¹⁰⁹

8.144. A visit to Sellafield by RPII representatives was arranged¹¹⁰; but, while methodologies used in making regulatory decisions were discussed, the PRA was not released. No copy of the PRA (now known as the Continued Operation Safety Report (COSR) was provided, but the COSR was eventually made available for reading by Irish officials in February 2000. Ireland is grateful for that facility. The COSR provided detailed information on operational failures and natural disasters affecting the HASTs specifically, although not on the threat from terrorism.

8.145. A further example concerns the HSE reports on safety at Sellafield. On 17 February 2000, the Rt Hon. Helen Liddell, British Minister of State for Energy and Competitiveness in Europe, wrote to Minister Jacob informing him that on the following day she would announce to the House of Commons that three HSE reports concerning Sellafield would be published on the following day.¹¹¹ Those reports related to the falsification of data in the MOX Demonstration Facility (which led to the refusal of Japan to accept delivery of the pellets to which the data related), the storage of high level waste at Sellafield, and the supervision of operations at the BNFL site.

8.146. The details of those reports have been summarized in chapter 2.¹¹² They disclosed an alarming series of safety lapses. Irish Minister Jacob wrote at the time to the British Minister for the Environment, “there is an onus on the UK Government to demonstrate to my Government that your regulatory systems are adequate to deal with the shortcomings and that everything possible is being done to minimise the risk to Ireland. I should add that I find it disquieting that it has taken so long to highlight these safety issues given the length of time these facilities have operated.”¹¹³

¹⁰⁶ Vol 3(1), Annex 12.

¹⁰⁷ Vol 3(1), Annex 13.

¹⁰⁸ Vol 3(1), Annex 10.

¹⁰⁹ Vol 3(1), Annex 14.

¹¹⁰ Vol 3(1), See the letter from Mr Battle to Mr Jacob, 21 July 1998: Annex 15.

¹¹¹ Vol 3(1), Annex 21.

¹¹² See paragraphs 2.70 *et seq.*

¹¹³ See Confidential Annex.

Non-cooperation in the Context of the Present Legal Proceedings

8.147. There is another, specific aspect of co-operation that must be considered. Ireland's realisation that it would have to resort to litigation to obtain information to which it believes it is entitled has been known to the United Kingdom since at least June 2000. At the meeting of the UK-Ireland Contact Group held on 2 June 2000, Ireland pointed out that it might bring the question of the withholding of MOX information before the OSPAR Commission. As was explained above, that information was sought in order to enable Ireland to make a fully reasoned case in respect of the authorization of the MOX plant. The full history of the attempts to elicit this basic information from the United Kingdom is set out in chapter 4.

8.148. The issue remaining unresolved, OSPAR proceedings were initiated on 15 June 2001. On 27 August 2001 Ireland requested that the United Kingdom confirm that it would not authorise the operation of the MOX plant pending the conclusion of the OSPAR proceedings. By a letter of 5 September 2001, the United Kingdom refused to supply the information because "it would cause unreasonable damage ... to the economic case for the Sellafield MOX plant itself."¹¹⁴ By a letter of 13 September 2001, the United Kingdom refused to give an undertaking not to authorise the plant pending the conclusion of the OSPAR proceedings.¹¹⁵ While it is not a matter for this Tribunal, it is relevant to the background of the question of co-operation under the UNCLOS to note that the information sought might disclose that the "justification" for the MOX plant fails to meet the criteria which determine, as a matter of EU law, the right of the United Kingdom to establish such plants.

8.149. On 3 October 2001 the United Kingdom decided that the MOX plant is "economically justified",¹¹⁶ thus opening the way to the commissioning and operation of the plant.

8.150. On 5 October 2001, at a meeting in London, Ireland notified the United Kingdom that following the decision of 3 October, a dispute existed concerning the United Kingdom's duties under the UNCLOS, and that Ireland reserved its right to institute UNCLOS proceedings without further notice. Ireland indicated that it was available to exchange views on the matter with the United Kingdom.

8.151. On 25 October 2001, given that the United Kingdom had indicated on the previous day that it was unwilling to suspend the operation of the MOX plant pending resolution of the dispute, and Ireland having learned that the MOX plant could be operational as early as 23 November 2001, Ireland instituted proceedings under the UNCLOS.¹¹⁷ On the same day it transmitted to the United Kingdom a request for provisional measures.

8.152. On 30 October 2001, Ireland wrote to the British Department for Environment, Food and Rural Affairs (DEFRA) enquiring as to when the MOX plant was likely to be authorised and operational.¹¹⁸ No reply having been received, Ireland wrote again on 6 November.¹¹⁹ No reply having been received, Ireland submitted its Request for Provisional

¹¹⁴ Vol 3(1), Annex 31.

¹¹⁵ Vol 3(1), Annex 32.

¹¹⁶ See the Decision of 3 October 2001: vol 3(2), Annex 92.

¹¹⁷ Vol 3(1), Annex 1.

¹¹⁸ Vol 3(1), Annex 39.

¹¹⁹ Vol 3(1), Annex 40.

Measures to the ITLOS on 9 November. DEFRA eventually replied to Ireland's letters of 25th and 30th October a week later, on Thursday November 15th.¹²⁰ This was four days before the ITLOS hearings were scheduled to begin in Hamburg on Monday 19 November. In the meantime, Ireland, having been given a copy of a letter from BNFL to Friends of the Earth (dated 17 October 2001), learned that BNFL intended to commission the MOX plant on 23 November 2001.¹²¹ That letter had been copied to DEFRA, but the information was not passed on to Ireland, notwithstanding its request of 30 October 2001.

8.153. Ireland submits that the action of the United Kingdom in pressing ahead with the authorisation and operation of the MOX plant, despite Irish requests that such action be suspended pending the settlement of the disputes concerning the provision of information and the violations of the United Kingdom's duties under the UNCLOS, is a further instance of a failure to co-operate with Ireland as required by UNCLOS and in particular by UNCLOS Articles 123 and 197.

The Terrorist Threat

8.154. There is a further instance of substantive duties to which the duty of co-operation attaches in the context of the duty to protect and preserve the marine environment. That instance concerns the duty to assess and respond to the terrorist threat posed to the Sellafield site. That aspect is not explained in detail in chapter 9, and will be explained here.

8.155. Ireland is concerned both by planned and accidental emissions that are incidents of the operation of the Sellafield facilities, and by emissions that may result from deliberate attacks upon the facilities or nuclear materials being shipped to or from them (which are referred to here as the "Sellafield facilities and associated shipments").

8.156. The United Kingdom states that the security and safety precautions of the Sellafield site are kept under regular review by the Office for Civil Nuclear Security and the Health and Safety Executive. They state that the MOX Plant is one of many plants within a large industrial site and has no special features that would single it out for terrorist attack. Ireland disagrees.

8.157. There is a danger, months after the attacks of September 11th 2001 in the United States, of supposing that nothing of that kind could ever happen again. Those, including the Irish Government, whose public or professional responsibility it is to appraise the level of risk and to respond to it in an appropriate fashion, consider that there is a real risk of terrorist activity, demanding a considered response.

8.158. The September 11th attacks have heightened both the existence of the threat to the Sellafield facility, and the urgency with which Ireland has sought reassurance on the additional protective measures introduced by the British authorities. The increased concerns are not felt only by Ireland. The international community as a whole, and more especially the international organizations which carry a particular responsibility for nuclear and shipping matters, have made considered statements calling for action on the part of States to meet the changed circumstances brought about by the events of September 11.

¹²⁰ Vol 3(1), Annex 41.

¹²¹ See the letter of 17 October 2001 from BNFL to Friends of the Earth: vol 3(3), Annex 120.

International Concern at the Terrorist Threat

8.159. Increased safety precautions have been taken in respect of nuclear facilities around the world, now recognised as prime targets for terrorist attack.¹²² Japan is reported to have ordered round-the-clock patrols of the waters near its nuclear plants. France is reported to have severely restricted access to its nuclear facilities and deployed surface to air missiles and fighter aircraft to protect its nuclear waste processing plant. Authorities in the Czech Republic are reported to have tightened airspace restrictions over nuclear power stations. In the United States and elsewhere steps were immediately taken to prevent transports, both national and international, of movements of radioactive materials and wastes. On 12 September 2001 the United States Energy Secretary suspended shipments of US Department of Energy nuclear materials and atomic waste, acknowledging that such shipments constitute real targets. The moratorium on movements was re-imposed following the US military action in Afghanistan and the threat of additional terrorism in the United States. Ireland has also noted press reports stating that military planes were scrambled over the Sellafield site following credible reports of a threat to the site.¹²³

8.160. On the international plane, the IAEA held a special session on this question on 2 November 2001. Just before that session, the IAEA Director General stated that

“States need to recognise that safety and security of nuclear material is a legitimate concern of all States. Countries must demonstrate, not only to their own populations, but to their neighbours and the world that strong security systems are in place. The willingness of terrorists to commit suicide to achieve their evil aims makes the nuclear terrorism threat far more likely than it was before September 11.”¹²⁴

8.161. Similarly, the Summary Report of the Second Review Meeting of the Contracting Parties to the Convention on Nuclear Safety, dated 26 April 2002 records that:

“In the light of the events of 11 September 2001, the issue of assuring the security of nuclear installations from terrorist attacks was a matter of significant concern to Contracting Parties. However, noting that security in physical protection matters do not lie within the scope of the Convention, and that the sensitivity of information related to the issue would make it difficult to conduct meaningful discussion in this forum, the Review Meeting decided that consideration of this issue be excluded from the scope of the Country Group sessions. Contracting Parties were encouraged to address this issue in other appropriate international fora and in bilateral consultations.”¹²⁵

8.162. The importance of co-operation and communication was emphasised in that Summary Report. The section of the Report setting out “Observations on emergency preparedness” included the following passage:

“59. For several Contracting Parties without nuclear installations, the main focus of reporting was on emergency planning and on channels of communication with neighbouring countries operating nuclear installations and on active participation

¹²² See for example the Press Reports at vol 3(3), Annex 107.

¹²³ Lexis, The Express, 1 November 2001: vol 3(3), Annex 107 at p 321.

¹²⁴ IAEA Press Release, November 1, 2001: vol 3(3), Annex 111.

¹²⁵ IAEA Doc. CNS-RM-2002/02, paragraph 6. Emphasis added.

in international emergency exercises. Many of these countries have also developed extensive monitoring and response capabilities.

60. Several bilateral agreements and arrangements with neighbouring countries regarding emergency preparedness were concluded during the reporting period. Such agreements or arrangements would be welcomed in those cases where nuclear installations are located in the vicinity of national borders, and such a mechanism is not already in place.

61. In the next National Reports, information would be welcomed on improvements made in the area of the emergency preparedness, including the results of national and international exercises.”

8.163. In the concluding remarks set out in the same Report, it was reported that “the review process demonstrated the value of the comprehensive exchange of nuclear safety information between peers.”

8.164. This approach is not new. In May 2001, even before the attacks on the World Trade Centre, an International Conference on Security of Material – “Measures to Detect, Intercept and Respond to the Illicit Uses of Nuclear Materials and Radioactive Sources”, concluded that “improved methodology, improved information and improved co-operation with competent national and international organizations would contribute to improving threat assessments and developing security measures.”¹²⁶

THE DUTY TO CO-OPERATE OVER NUCLEAR SECURITY

8.165. The duty of the United Kingdom to co-operate over the terrorist threat to the United Kingdom arises from the UNCLOS, which imposes upon the United Kingdom a number of distinct duties in respect of the security of the Sellafield facilities. The principal obligations are as follows:

- a. the duty under Article 123 to co-operate and co-ordinate the exercise of its rights and performance of its UNCLOS duties, as a co-riparian with Ireland of the Irish Sea;
- b. the duty under Articles 193 and 194 to take all measures necessary to prevent pollution arising from terrorist attacks upon the Sellafield facilities and associated shipments;
- c. the duty under Article 206 to assess the potential effects of escapes of nuclear materials from the Sellafield facilities and associated shipments resulting from a terrorist attack; and
- d. the duty under Article 207 to take such measures as may be necessary to prevent pollution arising from terrorist attacks upon the Sellafield facilities and associated shipments, and to endeavour to harmonize its policies in this connection with Ireland as the other littoral State on the Irish Sea.

8.166. The United Kingdom is also bound by obligations set out in other agreements, notably the 1980 Convention on the Physical Protection of Nuclear Material (‘CPP’), and the IAEA Guidelines for Physical Protection of Nuclear Material and Nuclear Facilities (‘Guidelines’), the 1994 Convention on Nuclear Safety, and the 1997 Joint Convention on

¹²⁶ IAEA Doc. GOV/2001/37-GC(45)/20, paragraph 5, 14 August 2001.

the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management. (Some of these are primarily relevant to shipments, rather than to material on-site at Sellafield, and will be considered below.)

8.167. These instruments are relevant in two ways: first, as a guide to the interpretation of the duties imposed by UNCLOS; and second, as instances of what UNCLOS Article 293(1) refers to as the “other rules of international law not incompatible with this Convention,” which the present Tribunal is directed to apply to the case before it. Their significance is that they underline that the appraisal of the terrorist threat and the preparation of responses to it are not matters that are exempted from the duty to cooperate.

Duties under UNCLOS

8.168. It is convenient to consider first the obligations of the United Kingdom imposed by the UNCLOS in relation to the security of the Sellafield plant. The United Kingdom’s duties begin at the stage when the planning of operations at the Sellafield plant, and of shipments to and from that plant, is first undertaken. Article 206 of UNCLOS addresses that stage of the activity, imposing a duty to assess the effects of the MOX project on the marine environment.

8.169. UNCLOS Article 205, in turn, requires States either to publish reports or to provide them to the competent international organizations, which should make them available to all States. The essential obligation under Article 206, however, is the making of the assessment of the risk to the environment, rather than the communication of the report of the assessment. The application of UNCLOS Articles 205 and 206 in the circumstances of the present case has been explained above.¹²⁷

8.170. The final authorisation of the operation of the MOX plant was given after the events of 11th September 2001.¹²⁸ The authorisation entailed direct and indirect consequences. Directly, the MOX plant establishes another nuclear facility at Sellafield. Indirectly, associated facilities including the THORP plant and the waste management and storage facilities may, as result of the operation of the MOX plant, be required to hold more radioactive material. Ireland is concerned with the additional material, beyond that which would have been found on the site if the MOX had not been developed. The additional material is the material that would not have been present but for the development of MOX plant, including the material that may be expected to be found on the site at dates after the date at which the THORP plant and associated waste and storage facilities would have been expected to close down but for the development of the MOX plant.

8.171. As far as Ireland is aware, the United Kingdom made no attempt to assess the pollution risk arising from terrorist action before the MOX plant was authorised. It certainly did not inform Ireland of any such assessment, or attempt to so inform Ireland.

8.172. The risk-assessment obligation under Article 206 is supplemented by the obligation to take the steps that are necessary to prevent any pollution actually occurring.

¹²⁷ See paragraphs 7.7 *et seq.*

¹²⁸ See the decision of 3 October 2001: Annex 92.

8.173. UNCLOS Articles 193 and 194 impose upon States Parties duties concerning the protection and preservation of the marine environment. Article 193 stipulates that the right of States to exploit their natural resources is subject to a duty to “protect and preserve the marine environment.” Article 194 amplifies that obligation by stipulating *inter alia* that States must “take, individually or jointly as appropriate, all measures consistent with this Convention that are necessary to prevent, reduce and control pollution of the marine environment from any source, using for this purpose the best practicable means at their disposal” and “endeavour to harmonize their policies in this connection.” (Article 194 is discussed in greater detail in chapter 9.¹²⁹)

8.174. Articles 193 and 194 (and also Article 211, which contains comparable provisions relating to vessel-source pollution) build upon the base established by Article 206. The evident scheme is that a State, having made its assessment of the risk to the environment, should then take steps, individually or jointly with other States “as appropriate”, to prevent, reduce and control such pollution as might occur.

8.175. Article 207 is more specific. It deals with pollution from land-based sources. Again, States are obliged to take all necessary steps to prevent, reduce, and control pollution of the marine environment. Those steps include the adoption of legislation and taking of “other measures necessary to prevent” pollution, and endeavouring to harmonize policies at the appropriate regional level.

8.176. The application of these obligations to prevent pollution in the circumstances of the present case is discussed in detail in chapters 7 and 9.

8.177. All of these UNCLOS obligations are to be read in the light of the United Kingdom’s general obligation in Article 123 to co-operate and co-ordinate the exercise of its rights and performance of its duties with Ireland, as the co-riparian of the semi-enclosed Irish Sea.

Duties under Other International Instruments

8.178. The obligations under the UNCLOS are general in nature, but greater precision can be given to their meaning by looking to other international instruments.

8.179. These instruments are relevant because they demonstrate the need for co-operation, and specifically because they indicate what, in the context of the UNCLOS duty to take “necessary” measures for the protection of the marine environment, the international community regards as “necessary”. They are, it will be recalled, also relevant as what UNCLOS Article 293(1) refers to as the “other rules of international law not incompatible with this Convention,” which the present Tribunal is directed to apply to the case before it.

The 1994 Convention on Nuclear Safety

8.180. The duty to communicate and liaise with other States potentially affected by radiological emissions is a core element of international arrangements concerning nuclear materials. Thus, the 1994 Convention on Nuclear Safety,¹³⁰ concluded under the auspices of the IAEA, applies to “nuclear installations”, defined in Article 1 as “any land-based

¹²⁹ See paragraphs 9.10 *et seq.*

¹³⁰ IAEA INFCIRC/449; 33 ILM 1514 (1994).

civil nuclear power plant under its jurisdiction including such storage, handling and treatment facilities for radioactive materials as are on the same site and are directly related to the operation of the nuclear power plant.”

8.181. The 1994 Convention contains in Article 16 a provision concerning emergency preparedness. That provision reads, insofar as is material, as follows:

“1. Each Contracting Party shall take all the appropriate steps to ensure that there are on-site and off-site emergency plans that are routinely tested for nuclear installations and cover the activities to be carried out in the event of an emergency [...]

2. Each Contracting Party shall take the appropriate steps to ensure that, insofar as they are likely to be affected by radiological emergency, its own population and the competent authorities of the States in the vicinity of the nuclear installation are provided with appropriate information for emergency planning and response.

3. Contracting Parties which do not have a nuclear installation on their territory, insofar as they are likely to be affected in the event of a radiological emergency at a nuclear installation in the vicinity, shall take the appropriate steps for the preparation and testing of emergency plans for their territory that cover the activities to be carried out in the event of such an emergency.”

8.182. That provision makes explicit the duty to provide information to a neighbouring State. It is restated in general terms in the International Law Commission’s Draft Articles on the Prevention of Transboundary Harm from Hazardous Activities, which were discussed above.¹³¹ It cannot be supposed that the intention of the 1994 Convention was to provide only such information as would enable a neighbouring state to activate its own emergency plans only if it were possible to give that State notice of the emergency immediately before it occurred. Common sense dictates that if there are changes in the nature of the activities in or associated with the nuclear installation, which affect the nature or degree of the risk to which States in the vicinity are exposed, those State should be notified in advance in order that they might be able to make any necessary adjustments in their real, as opposed to their hypothetical, emergency plans. That fact is fully recognized and made explicit in the ILC Draft Articles.

*The 1997 Joint Convention on the Safety of Spent Fuel Management
and on the Safety of Radioactive Waste Management, 1997*

8.183. The Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, 1997 (the “Spent Fuel Convention”)¹³² applies to nuclear facilities, defined in Article 2(f) as “a civilian facility and its associated land, buildings and equipment in which radioactive materials are produced, processed, used, handled, stored or disposed of on such a scale that consideration of safety is required”. It also applies to radioactive waste management facilities, defined as “any facility or installation the primary purpose of which is radioactive waste management, including a nuclear facility in the process of being decommissioned only if it is designated by the Contracting Party as a radioactive waste management facility”¹³³, and also spent fuel

¹³¹ See paragraph 8.50 *et seq*, The Draft Articles and Commentary appear in vol 3(1), Annex 73.

¹³² IAEA Doc. INFCIRC/546; <http://www.iaea.or.at/worldatom/Documents/Legal/jointconv.shtml>.

¹³³ Article 2(j).

management facilities, defined as “any facility or installation the primary purpose of which is spent fuel management”.¹³⁴

8.184. The 1997 Convention contains a number of provisions that require co-operation and co-ordination between States. Article 25 of the Convention, entitled “Emergency Preparedness”, refers to the duties both of States where plants are located, and also of neighbouring States, to draw up emergency plans. It reads as follows:

“(1) Each Contracting Party shall ensure that before and during operation of a spent fuel or radioactive waste management facility there are appropriate on-site and, if necessary, off-site emergency plans. Such emergency plans should be tested at an appropriate frequency.

(2) Each Contracting Party shall take the appropriate steps for the preparation and testing of emergency plans for its territory insofar as it is likely to be affected in the event of a radiological emergency at a spent fuel or radioactive waste management facility in the vicinity of its territory.”

8.185. It cannot be supposed that the drafters of the provision intended that neighbouring States should draw up emergency plans in isolation from one another. A radiological emergency could be a public emergency of the utmost seriousness, affecting a very extensive area. The risk of unnecessary duplication of effort, of emergency services in neighbouring States adopting plans that cut across each other, or in some other way behaving in a manner that their neighbours had not anticipated, is something that cannot simply be ignored. A good faith attempt to devise and test meaningfully emergency plans must involve consultation and co-operation with neighbouring States.

8.186. Indeed, the 1997 Spent Fuel Convention affirms “the importance of international co-operation in enhancing the safety of spent fuel and radioactive waste management through bilateral and multilateral mechanisms,”¹³⁵ and obliges States proposing to establish spent fuel and waste management facilities to consult with other States in the vicinity of the facility “and to provide them, upon their request, with general data relating to the facility to enable them to evaluate the likely safety impact upon their territory.”¹³⁶

The Terrorist Threat Raised in Ireland-UK Meetings

8.187. The United Kingdom is bound to co-operate with Ireland in respect of the terrorist threat. But the United Kingdom has consistently refused to discuss that question with Ireland in any but the most vague and general of terms, expecting Ireland to rely solely upon British assurances that Ireland has nothing to worry about. That is not a satisfactory basis upon which Ireland can plan its practical responses; and it is not an appropriate manner in which to conduct State-to-State co-operation. It falls short of the United Kingdom’s obligations under the UNCLOS.

8.188. Ireland is of course aware that security questions may involve information of the highest sensitivity and confidentiality. It accepts, without hesitation or reservation, that States receiving such information are bound as a matter of law to respect the confidentiality that properly attaches to it.

¹³⁴ Article 2(p).

¹³⁵ Preamble, paragraph ix.

¹³⁶ Articles 6(1)(iv) and 13(1)(iv).

8.189. [REDACTED]

8.190. [REDACTED]

8.191. For example, Ireland naturally wishes to evaluate the risks of an attack upon the Sellafield plant and to make its own contingency plans. [REDACTED]

8.192. The HASTs house the liquid waste from the Thorp and Magnox plants. There are 21 such tanks, of two different types: the original tanks 1 to 8 and the later ones 9 to 21. Each of the original tanks is a horizontal cylinder made of a stainless steel, with a capacity of 70 cubic metres and a simple coil cooling system also made of stainless steel.

8.193. The eight original tanks are housed in pairs within four reinforced concrete cells which absorb the radiation from the liquid and so permit the operators to work close to the tanks without being exposed to radiation. The cells also protect the tank from external events, such as an accidental aircraft crash that could cause part, or all of the building in which the tanks are housed, to collapse on top of it. The cells also protect the environment: for example, should a tank leak, the cell will retain the liquid waste and so prevent leakage into the environment. It is understood that the concrete in each cell is reinforced. The thickness of the walls and roofs of the cells is thought to vary, between about 1 and 2 metres.

8.194. Tanks 9 to 21 are vertical stainless steel cylinders each with a capacity of 150 cubic metres and several complicated cooling systems, one of which is contained in a cooling jacket that surrounds the tank forming, in effect, a second tank and thus an extra containment barrier. The tanks are contained in individual concrete cells similar in design to those housing tanks 1 to 8. An additional feature of these later tanks is the agitation systems fitted to prevent solidification and/or plating out of suspended solids on surfaces.

8.195. Both sets of tanks have systems for transferring liquid from one tank to another, including steam ejectors. They also have ventilation systems which provide a permanent depression inside the tanks so that any leak which might occur will initially be from outside to inside. The ventilation clears the atmosphere above the liquid waste of any gases, such as hydrogen, that may be generated by radiolysis. The exhaust from the system

is ducted through sophisticated filters that prevent radioactive contamination of the environment.

8.196. High-level radioactive liquid waste, resulting from the dissolution of spent reactor fuel in nitric acid, comes from the nearby Thorp and Magnox plants. The decay of the radioactive liquid generates significant heat (several kilowatts per cubic metre in the case of fresh liquid), and so it must be constantly cooled to prevent the liquid from boiling. Eventually, after the liquid is sufficiently aged and producing less heat, it is discharged into a vitrification plant where it is transformed into glass blocks.

8.197. Six of the 21 tanks are meant usually to be empty and standing by to receive the contents of a tank in-use should there be a problem with it such as leakage or loss of cooling. The total contents of the tanks is thought not to have changed much over the past 5 years because the input from reprocessing plants has roughly equalled the discharge to the vitrification plant. If a fraction of this radioactive waste, say a tenth, were to be released then there would follow an environmental catastrophe on the scale of Chernobyl.

8.198. Ireland has attempted to calculate the extent of a risk of such a release arising from a hijacked airliner crashing on to the site. It is unable to reach any satisfactory conclusion, however, because of uncertainty of key variables. For example, Ireland does not know what security measures have been introduced post September 11, in order to prevent such an aircraft reaching the Sellafield site. It does not know the exact dimensions of the buildings in the vicinity of the HASTs: that affects the probability of an aircraft hitting that building, and also the possible angle (and hence the force) of impact. It does not know the thickness and condition of the concrete, or its ability to withstand prolonged exposure to extremely high temperatures. It does not know whether enhanced fire-fighting services, such as helicopter water dumping and equipment for fighting oil fires have been installed, and if so how long their deployment would take.

8.199. After any such crash, the cooling, ventilation and other safety systems in the building will be out of action. Although six tanks are assumed to be empty, and the contents of some others will not boil because they do not produce enough heat, some of the remaining ones (perhaps nine of them) can be expected to boil, the most radioactive of them after a period of some 14 to 18 hours. The liquid will then vaporize into the atmosphere through the damaged ventilation system. The plant operators and others have about 16 hours in these difficult circumstances to, extinguish the fire, clear the rubble, gain access to the damaged systems, diagnose faults in them, and restore cooling to the tanks if boiling and vapour discharge to the atmosphere is to be avoided. Ireland does not know whether the United Kingdom has plans capable of achieving these results.

8.200. Again, Ireland does not know what drainage routes and surface-waters routes would be taken from liquids spilling from HAST site or resulting from fire-fighting operations. Such liquids may run off directly into the Irish Sea, or run off into the River Calder and thence into the Irish Sea, or seep into the ground and then enter the Irish Sea directly or via the River Calder. (In addition, radioactive emissions may enter the Irish Sea via atmospheric dispersion.) Ireland does not know what interceptor facilities or storage pools there are to minimise such run-off, or what culverts, drains and hard surfaces might facilitate run off to the Irish Sea.

8.201. This example could be repeated for other components of the Sellafield site. The MOX plant has magnified and prolonged Ireland's exposure to these risks.

8.202. The practical need that Ireland has to make such an assessment is plainly reflected in the extent of public concern in Ireland about the risk from an attack on Sellafield.¹³⁸

8.203. The Government of Ireland has responsibilities to its own population, and to the international community as a whole, to put in place adequate, appropriate measures to guard against such risks. In order to do so, it submits that it is entitled to be given the necessary information by the United Kingdom. The scope of that duty to provide information was well expressed by the ILC Draft Articles, which oblige States to provide “not only what might be called raw data, namely fact sheets, statistics, etc., but also the analysis of the information which was used by the State of origin itself to make the determination regarding the risk of transboundary harm”, and also “other data which might become available later after transmitting the data which was initially available to the States likely to be affected.”¹³⁹ In short, the United Kingdom is under a duty of due diligence to provide whatever information would be useful for the purpose of prevention of risk of significant harm.¹⁴⁰

D. NON-COOPERATION OVER THE SHIPMENTS OF NUCLEAR MATERIALS ASSOCIATED WITH THE MOX PLANT

8.204. The third instance of the failure to co-operate is concerned with the international transports carrying materials to and from the Sellafield plant by sea (the “associated shipments”). The need for such security is extended, both in time and in scope, by the development and operation of the MOX plant. That plant is itself a new nuclear facility; it will prolong the life of the THORP plant and other activities at Sellafield; and it will also increase the number of shipments of nuclear material through Irish waters and the Irish Sea.

8.205. The essence of Ireland’s argument is, again, that the United Kingdom is not bound merely to take the steps that it regards as adequate to ensure the security of the Sellafield plant and the associated shipments. The United Kingdom is bound also to consult and co-operate with Ireland in the security matters, and in particular to share with Ireland information concerning the security measures that the United Kingdom has taken or proposes to take, so that Ireland may make its own plans in a manner that harmonises with the plans of the United Kingdom.

INTERNATIONAL CONCERN OVER NUCLEAR SHIPMENTS

8.206. The terrorist threat is a matter of particular importance in the context of the shipments of nuclear material. The IMO is currently focusing upon that issue. The Assembly of the IMO, at its 22nd meeting in November 2001, decided to review the existing legal and technical measures to prevent and suppress terrorist acts against ships.¹⁴¹ In May 2002 the IMO Maritime Safety Committee (‘MSC’) began preparations for a diplomatic conference on Maritime Security, to be held in December 2002. The MSC

¹³⁸ See the press material in vol 3(3), Annex 107. And see the STOA Report: vol 3(3), Annex 105.

¹³⁹ See above, paragraph 8.52.

¹⁴⁰ See paragraphs 8.50-54, above.

¹⁴¹ *IMO News*, No. 4 2001, p 5.

prepared, *inter alia*, a draft International Ship and Port Facility Security Code (“ISPS Code”), which would be implemented through SOLAS Chapter XI. The ISPS Code would require each ship to have a security plan, to deal with threats to the ship. The MSC also considered a draft functional requirement for a long-range tracking and identification system.¹⁴²

8.207. The Governments of the G-8 countries considered the terrorist threat in June 2002. They committed up to \$20 billion to co-operative anti-terrorist projects, and specifically urged co-operation “in order to improve the capability of governments to deter and prosecute terrorist attacks on maritime vessels or the use of such vessels to further terrorist activities.”¹⁴³ They also identified the 1980 Vienna Convention on the Physical Protection of Nuclear Material as one of the international conventions addressing counter-terrorism that States are urged to ratify.¹⁴⁴

8.208. It will be evident from the material set out below that there is a far-reaching and well-established international regime concerning the transportation of nuclear materials. That regime, as might be expected, depends crucially upon the active co-operation of all States involved and upon their willingness to exchange information, promptly and fully, which bears upon any threats to all risks from those installations and materials.

8.209. This dependence upon exchanges of information is generally recognised. For instance, the Summary Report of the Second Review Meeting of the Contracting Parties to the Convention on Nuclear Safety, dated 26 April 2002, noted (in paragraph 31) that “ the importance of international co-operation between regulatory bodies for the enhancement of nuclear safety through bilateral and multilateral mechanisms was emphasised by all Contracting Parties.”¹⁴⁵

DUTIES UNDER UNCLOS

8.210. The obligations of the United Kingdom imposed by the UNCLOS in relation to the security of the associated shipments arise from the same Articles as the obligations in relation to the security of the Sellafield site, discussed in the previous section.

DUTIES UNDER OTHER INTERNATIONAL INSTRUMENTS

8.211. The duty to co-operate that is established by the general obligations under the UNCLOS is underlined by other international instruments, relevant both as guides to the detailed interpretation of the UNCLOS provisions and as “other rules of international law” under UNCLOS Article 293(1).

¹⁴² Information concerning the MSC 75th session, 15-24 May 2002, from <http://www.imo.org/Newsroom>.

¹⁴³ G8 Recommendations On Counter-Terrorism, June 13, 2002, Section 6.5: http://www.iaea.org/worldatom/press/focus/radsources/g8_recomend.html.

¹⁴⁴ G8 Recommendations On Counter-Terrorism, June 13, 2002, Section 1.1: http://www.iaea.org/worldatom/press/focus/radsources/g8_recomend.html.

¹⁴⁵ IAEA Doc. CNS-RM-2002/02.

The 1980 Convention on the Physical Protection of Nuclear Material

8.212. The 1980 Convention on the Physical Protection of Nuclear Material ('CPPN')¹⁴⁶ applies to nuclear material used for peaceful purposes while in international nuclear transport. Article 4(1) of the CPPN requires that States Parties shall not export or authorize the export of nuclear material unless the State Party has received assurances that such material will be protected during the international nuclear transport at the levels described in Annex 1" of the Convention.

8.213. Annex 1, which is an integral part of the CPPN, in turn provides, in paragraph 2, that

“(a) For Category II and III materials, transportation 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;

(b) For Category I materials, transportation shall take place under special precautions identified above for transportation of Category II and III materials, and in addition, under constant surveillance by escorts and under conditions which assure close communication with appropriate response forces.”

8.214. CPPN Annex II stipulates that plutonium (except that with isotopic concentration exceeding 80% in plutonium-238) falls within Category I if it is in the amount of 2kg or more. If the amount is less than 2kg but more than 500g, plutonium falls in Category II; and if the amount is 500g or less but more than 15g, it falls in Category III.

8.215. Shipments of plutonium to Sellafield are expected to involve amounts in excess of 2kg. They will accordingly be Category I shipments. It is therefore required by Annex 1, paragraph 2(b) of the CPPN that they be transported “under constant surveillance by escorts and under conditions which assure close communication with appropriate response forces.”

8.216. It is Ireland's view that the essential characteristic of an escort is that it remains free to act independently to protect the carrier, if the carrier is under attack. Ireland does not regard an arrangement under which two armed commercial transport ships carrying nuclear material are said to escort each other as a satisfactory fulfilment of this obligation. It notes that in 1999 the Chairman of the US House of Representatives International Relations Committee wrote to the then Secretary of State Madeline Albright expressing concern about MOX deliveries to Japan by ship. He stated that “with a top speed of 13 Knots [the ships] would not appear to have sufficient defensive and deterrent ability much less the manoeuvrability or speed of military or coast guard escort ships”.¹⁴⁷ Similarly according to *Janes*, the recognised arms and naval authority, the ships are “capable of repelling only a light armed attack” and need to be protected by “at least one well-armed frigate.”¹⁴⁸

¹⁴⁶ IAEA Doc. INFCIRC/274/Rev.1;
<http://www.iaea.or.at/worldatom/Documents/Infcircs/Others/inf274r1.shtml>.

¹⁴⁷ Letter dated 11 February, 1999 at Annex 108.

¹⁴⁸ *Jane's Information Group Foreign Report*, May 13, 1999.

8.217. “Appropriate response forces” must include those forces that might be called upon to respond to any threats to the shipments. It must also include those States whose permission or co-operation might be needed for any response to an incident involving the shipment. Such obviously necessary forward planning is self-evidently an essential part of any reasonable scheme for the protection of the materials.

8.218. The measures described so far establish clearly that there is a duty on the United Kingdom to take steps to secure the shipments against the threat of terrorist attack. Indeed, it is not likely that the existence of that obligation is controversial.

8.219. It is clear that this obligation includes an obligation to consult and co-ordinate with Ireland. The United Kingdom’s duty to consult and coordinate with Ireland is in part a consequence of the more general duty of consultation and co-ordination that was discussed above in paragraphs 8.18-8.92. An attack upon the shipments would entail the risk of pollution of the waters around the Irish coast, and the general obligations that are incumbent upon the United Kingdom in relation to marine pollution are applicable in this context, too.

8.220. The CPPN also expressly imposes a duty to inform other States and to exchange information with other States concerning threats to nuclear material. The provision appears in Article 5, which reads in part as follows:

“1. States parties shall identify and make known to each other directly or through the International Atomic Energy Agency their central authority and point of contact having responsibility for physical protection of nuclear material and for co-ordinating recovery and response operations in the event of any unauthorised removal, use alteration of nuclear material, or in the event of credible threat thereof.

2. In the case of theft, robbery or any other unlawful taking of nuclear material or of credible threat thereof, States Parties shall, in accordance with their national law, provide co-operation and assistance to the maximum feasible extent in the recovery and protection of such material to any state that so requests. In particular:

a. a State Party shall take appropriate steps to inform as soon as possible other states, which appeared to it to be concerned, of any theft, robbery or other unlawful taking of nuclear material or credible threat thereof and to inform, where appropriate, international organisations;

b. as appropriate, the States Parties concerned shall exchange information with each other or international organisations with a view to protecting threatened nuclear material, verifying the integrity of the shipping container, or recovering unlawfully taken nuclear material and shall:

i. co-ordinate their efforts through diplomatic and other agreed channels;

ii. render assistance, if requested [...].”

8.221. The threat to nuclear materials at the present moment, including those being shipped to Sellafield, is evident, and has been reiterated forcefully on a number of occasions by States and by international organisations even during the time that these proceedings have been in train. There is a “credible threat”, international in scale, to those materials. The precondition for the operation of the duty under Article 5(2) is plainly met; and the United Kingdom is accordingly under a duty to co-operate and co-ordinate actions

with Ireland and to exchange information with a view to protecting threatened nuclear material.

The IAEA Guidelines on Physical Protection of Nuclear Material and Nuclear Facilities

8.222. The IAEA draws up Guidelines on the Physical Protection of Nuclear Material and Nuclear Facilities, which supplement the provisions of the 1980 Convention (the “IAEA Guidelines”). The current (May 1999) text, INFCIRC/225/Rev.4,¹⁴⁹ contains a number of provisions which specifically direct States to co-operate, consult, and exchange information on the physical protection of nuclear materials and facilities. The direction is given in general terms in the opening paragraphs. The material provisions read as follows:

“1.3 in implementing these recommendations, states are encouraged to co-operate and consult, and to exchange information on physical protection techniques and practices, either directly or through international organisations. States should aid each other in physical protection, and particularly in the recovery of nuclear material, in cases where such aid is requested.

...

1.5 States should inform each other, either directly or through the International Atomic Energy Agency, of appropriate points of contact for matters related to the physical protection of nuclear material and nuclear facilities.”

8.223. Those general provisions apply to nuclear materials located at land-based facilities and nuclear materials in shipment alike. They thus apply both to material stored or used at the Sellafield plant, and also to nuclear material in transit to or from the Sellafield plant.

8.224. There are further, more specific provisions concerning international shipments of nuclear materials. For example, it is stipulated in Paragraph 4.2.6.3 of the IAEA Guidelines that:

“When international shipments transit the territory of States other than the shipping State on the receiving State, the arrangements between the shipping and receiving States should identify the other States involved in such transit with a view to informing them and securing in advance their co-operation and assistance for adequate physical protection measures and for recovery actions for the territory of such States in case of loss of an international shipment thereon.”

8.225. This provision is not directed solely at transport across the land territory of States other than the shipping State and the receiving State, and at transit through the territorial seas of States. Even if it could be thought appropriate to construe in such a narrow and technical manner a provision that is designed to secure the safety of States and their populations in the face of risks arising from movements of ultra-hazardous materials, it is evident that the IAEA Guidelines were conceived as having a broader application.

8.226. Thus, paragraph 8.4.2 deals with “selection of mode of transport and routing”. It reads as follows:

“8.4.2.1 In choosing the route, consideration should be given to the security of passage, in particular, arranging the route in such a way as to avoid areas of natural disasters or civil disorders, and taking into consideration the capabilities

¹⁴⁹ http://www.iaea.or.at/worldatom/program/protection/inf225rev4/rev4_content.html.

of the response force. The transport method for any given consignment should be such as to keep to a minimum the number of cargo transfers and the length of time the cargo remains in transport. The co-operation of the carrier concerning the implementation of physical protection measures should be insured in advance.

8.4.2.2 Competent authorities should approve the route, including alternate routing as appropriate, stopping places, destination hand-over arrangements, identification of persons authorised to take delivery, accident procedures, and reporting procedures, both routine and emergency.”

8.227. Plainly, similar considerations will apply whether the transit is by land or by sea. It is not credible that those provisions should simply be inapplicable in the case of, for example, transit by sea in an area in which small vessels carrying armed terrorists are known to be operating. But if they apply to one sea transport, they must apply to all, although the lower the level of risk of an attack, the lower the level of precautionary measures that may be necessary.

8.228. This interpretation is confirmed by the IAEA Guidance and Considerations for Implementation of INFCIRC/225/Rev.3¹⁵⁰ (the predecessor of the current Guidelines), which refers explicitly to transits through international waters. That Guidance stipulates, in paragraph 452, that:

“For sea shipments through international waters, the competent authority will require to be satisfied that adequate arrangements have been made regarding maintenance of communications throughout voyage and that response forces have been designated for both international and foreign territorial waters. Close liaison will be necessary therefore with relevant overseas competent authorities before shipment, and relevant communication links established for use immediately prior to and during the shipment.”

The application of the Guidance in international waters is there made explicit. There is no reason whatever to suppose that the current Guidelines were intended to disapply their provisions to the vast areas of the seas that fall outside States’ territorial seas.

8.229. Far from informing Ireland and securing in advance its co-operation and assistance for adequate physical protection measures relating to the nuclear shipments, the United Kingdom is cutting Ireland out of plans and denying that Ireland has any interest in the protection of the shipments.

8.230. In the meantime, the international community continues to promote its consistent policy of urging co-operation. The continuing focus upon consultation and co-operation was made plain in 2000, when the IAEA adopted Resolution GC(44)/RES/17, which invited Member States shipping radioactive materials to provide “potentially affected States ...with relevant information relating to shipments of such materials.” The need for confidentiality was recognized. The statement added that “the information provided should in no case be contradictory to the measures of physical security and safety”.¹⁵¹

¹⁵⁰ <http://www.iaea.or.at/worldatom/program/protection/infcirc225/guidance/main.html>.

¹⁵¹ IAEA GC(44)/RES/17, September 2000, paragraph 7.
<http://www.iaea.or.at/worldatom/About/GC/GC44/Resolutions/gc44res17.pdf>.

IMO Instruments

8.231. The IMO has also adopted instruments relevant to the question of security. The IMO has adopted an International Code for the Safe Carriage of Packaged Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Waste on Board Ships (the “INF Code”). Chapter 10 of the INF Code stipulates that every ship carrying an INF cargo shall carry on board a Shipboard Emergency Plan (“SEP”) based on guidelines developed by the Organization.¹⁵² The Guidelines supporting the 1993 version of the Code define a “Shipboard Emergency Plan” and state that the Plan should provide for small and routine emergencies, and should include guidance to meet the demands of a large scale incident.¹⁵³ At a minimum, the plan is required to have a procedure to be followed to report an incident involving INF cargo;¹⁵⁴ the list of authorities or persons to be contacted in the event of an incident involving INF cargo; a detailed description of the action to be taken immediately by persons on board to prevent, reduce or control the release, and mitigate the consequences of the loss, and the procedures and points of contact on the ship for coordinating shipboard action with national and local authorities. Section 2 of the Guidelines stipulates the essential provisions of an SEP for ships carrying materials subject to the INF Code which includes a Report to the nearest coastal state whether there is a actual or probable release and in the event of damage, failure or breakdown of a ship carrying INF Code material, so that appropriate action maybe taken. The Plan should include a list of agencies and officials of the administration of the nearest coastal state.¹⁵⁵ These Guidelines concentrate on the safety of the crew and vessel. The Guidelines offer no advice on measures aimed at preventing contamination of the marine environment following an incident involving an INF cargo.

8.232. In IMO Resolution A.893(21), adopted on 25 November 1999, the IMO Assembly adopted the IMO Guidelines for Voyage Planning.¹⁵⁶ Those Guidelines call for the preparation of detailed voyage plans “on the basis of the fullest possible appraisal.”¹⁵⁷ It is stipulated that such plans should include

“contingency plans for alternative action to place the vessel in deep water or proceed to a port of refuge or safe anchorage in the event of any emergency necessitating abandonment of the plan, taking into account existing shore-based emergency response arrangements and equipment and the nature of the cargo and of the emergency itself.”¹⁵⁸

In the case of a ship with characteristics as exceptional, and a cargo as dangerous, as the PNTL ships serving the Sellafield site, those plans cannot be made without consultation between the ship and the coastal State. Once again, the paramount necessity for consultation is underlined.

¹⁵² This is a reference to the 1998 Guidelines For Developing Shipboard Emergency Plans for Ships Carrying Materials Subject to the INF Code adopted by the IMO by Resolution A.854(20 (the “1998 Guidelines”). Available at <http://www.info.gov.hk/mardep/msnote/msin9818.pdf>.

¹⁵³ 1998 Guidelines, Section 1.

¹⁵⁴ Chapter 11 of the INF Code stipulates the procedure to be followed in such an event.

¹⁵⁵ Section 2.3 – 2:13

¹⁵⁶ IMO Doc. A.2/Res. 893, 4 February 2000.

¹⁵⁷ Section 3.1.

¹⁵⁸ IMO Guidelines for Voyage Planning, Section 3.2.9.

Other Indications of International Concern

8.233. The need for information and consultation was underlined in the Declaration by Member States and Regional Groups, regarding Safety in the Maritime Transport of Radioactive Material, distributed in the IAEA on behalf of a considerable number of States.¹⁵⁹ That text recalls the provisions of Resolution GC(44)/RES/17 quoted above, and then set out a number of communiqués and declarations made by countries on the subject.

8.234. For example, in December 2000, the Governments of Argentina, Brazil, Chile and Uruguay issued a Joint Declaration on the Transport of Radioactive Waste stating the following:

“We reiterate our concern to the Governments of France, Japan and the United Kingdom that these shipments take the Cape Horn route. We note the need to continue working within the competent international organizations to strengthen regulations on safety in the transport of radioactive material. We believe that consideration should be given, *inter alia*, to assurances of non-contamination of the marine environment, exchange of information on selected routes, communication of emergency plans in the case of accident, the commitment to recover the radioactive material if the ships carrying it are involved in an accident, and the importance of having effective liability mechanisms in place”.¹⁶⁰

8.235. The cardinal importance of consultation and co-operation has been recognised in a number of very recent international meetings. What is striking about the conclusions of these meetings is not so much the importance that they attach to co-operation and exchanges of information, the need for which is glaringly obvious, but the singular absence of any inclination to regard the security of nuclear materials as a matter that can be left to the authorities of the States of origin or of destination of nuclear materials.

8.236. In April 2001 the UN Commission on Sustainable Development adopted a decision urging that Governments

“(h) Recalling paragraph 8 of the Governing Council of the International Atomic Energy Agency (IAEA) resolution GC (44)/RES/17 and taking into account the very serious potential for environment and human health impacts of radioactive wastes, make efforts to examine and further improve measures and internationally agreed regulations regarding safety, while stressing the importance of having effective liability mechanisms in place, relevant to international maritime transportation and other transboundary movement of radioactive material, radioactive waste and spent fuel, including, *inter alia*, arrangements for prior notification and consultations done in accordance with relevant international instruments.”¹⁶¹

Once more, prior notification and consultation are singled out as the key to securing the safe movement of radioactive materials.

¹⁵⁹ IAEA Document GC(45)/INF/18, 17 September 2001.
<http://www.iaea.or.at/worldatom/About/Policy/GC/GC45/Documents/gc45inf-18.pdf>

¹⁶⁰ See chapter 2, paras 2.43-49.

¹⁶¹ UN Doc. E/2001/29, E/CN.17/2001/19, Decision 9/1, paragraph 21(h).
<http://www.un.org/documents/ecosoc/docs/2001/e2001-29.pdf>

8.237. In September 2001 the IAEA plenary meeting adopted a Resolution entitled Measures to Strengthen International Co-operation in Nuclear, Radiation, Transport and Waste Safety.¹⁶² That Resolution, having recalled “that States have under international law the obligation to protect and preserve the marine environment”, and that IAEA Resolution GC(44)/RES/17 had invited Member States shipping radioactive materials to provide “potentially affected States ...with relevant information relating to shipments of such materials”, welcomed “the practice of some shipping States and operators of undertaking timely consultations with relevant coastal States in advance of shipments” and invited others to do so.

THE FAILURES REGARDING THE ASSOCIATED SHIPMENTS

8.238. The United Kingdom has failed to consult and co-ordinate with Ireland over the security of the shipments associated with the MOX plant. At the time of writing, Ireland still does not know the number of expected shipments, what routes shipments might take, what security arrangements are in place, or any other of the details that have been repeatedly sought from the United Kingdom over the past years.

8.239. As was explained in chapter 2, the shipments are carried on civil ships, specially constructed and equipped to carry nuclear cargoes, and owned and operated by PNTL, a consortium whose members are the British, French and Japanese nuclear operators.¹⁶³

8.240. There are three routes that may be taken by the nuclear transports carrying material between the British port of Barrow and Japan: the Panama canal route; the route around South America; and the route around South Africa. Whichever route is taken, the voyages begin or end in the Irish Sea, one of eight global High Risk Areas for shipping where wind and sea states of Force 7 or above occur for 20% to 30% of the year.¹⁶⁴

8.241. Irish authorities need to prepare for the arrival of the shipments. The Irish Coast Guard needs to develop a preparedness, response and co-operation framework, in order to respond if incident should take place. Moreover, as a matter of Irish (and of international) law, there is no absolute right for ships that are in a dangerous condition to enter the ports or internal waters of the State, even if they are in distress or need to seek refuge in order to save the ship or its cargo. To the extent that there is a possibility that any ship bound to or from Sellafield might need to seek refuge in Irish waters, that is a matter that prudence dictates should be addressed in advance.¹⁶⁵

8.242. Some of the necessary information is readily available. For instance, the IAEA standards applicable to the casks in which the nuclear material is carried on the PNTL ships. What is not, however, clear is whether those standards are adequate for casks carried on ships. For example, the IAEA standards require that a flask should be able to withstand an engulfing fire, at 800°C, for 30 minutes. In practice, fires on board ship may reach

¹⁶² IAEA Doc. GC(45)/RES/10, 21 September 2001.

¹⁶³ See chapter 2, paras 2.50-56.

¹⁶⁴ Lloyds of London defines the “Marine High Risk Areas” where weather conditions, sea states, vessel numbers and route congestion give rise to high shipping casualty numbers. See vol 3(3), Annex 106.

¹⁶⁵ See section 23, Sea Pollution Act, 1991: Annex 90; and *ACT Shipping (PTE) Ltd v. Minister for the Marine*, [1995] 3 I.R. 406. The statutory position is different if entry is necessary in order to save life. Further Irish legislation, establishing Ireland’s territorial sea and 200-mile zone, and providing for certain matters in relation to oil pollution incidents, is set out in Annexes 87, 88, 89 and 91.

1100°C, and last for many hours, or even days. Coastal States, such as Ireland, have an interest in knowing whether a nuclear flask on a ship in its waters could withstand such a fire, and the possible subsequent immersion of the super-heated flask into cold and deep sea-water. The information is relevant not only to the calculation of the risk of pollution, but also to the very practical question of the appropriate response to be made if such a fire should break out.

8.243. The United Kingdom is aware of Ireland's need for such information. Though it has in the past asserted that Ireland's assistance would not be needed in the event of an incident on a PNTL ship, BNFL and Irish agencies have participated in an exercise simulating just such an intervention by Ireland. Operation Sea Bird '99, held in November 1999, involved the airlifting of an injured crew member from a BNFL ship in the Irish Sea to an Irish hospital. That exercise revealed a number of deficiencies, some of them (now remedied) in Irish procedures, and others arising from a lack of information in Ireland as to the cargo on the ship, and by the status of the ship.

8.244. It also highlighted the importance of the ability of coastal authorities to instruct ships to change speed and course in order to facilitate, in this case, helicopter access to persons on board the ship. The details of the exercise are, however, of less significance than the fact that it was premised upon the participation of Irish authorities in a response to an incident on a BNFL ship off the Irish coast.¹⁶⁶

8.245. Nonetheless, far from seeking to coordinate security arrangements with Ireland, the United Kingdom appears to have been progressively reducing the amount of information shared with Ireland.

8.246. [REDACTED]

8.247. [REDACTED]

8.248. [REDACTED]

8.249. [REDACTED]

¹⁶⁶ See Confidential Annex, numbers 5 and 6.

[REDACTED]

8.250. [REDACTED]

8.251. [REDACTED]

8.252. [REDACTED]

8.253. [REDACTED]

8.254. [REDACTED]

8.255. [REDACTED]

8.256. Ireland observes that even when the United Kingdom does pass on information to Ireland, it seems sometimes to be couched in language that is designed more to mould itself around the contours of the United Kingdom's legal obligations than to communicate

facts. The recent exchanges over the shipment of nuclear material currently bound for the Irish Sea is a case in point.

8.257. During the ITLOS hearing and in response to a question as to the extent to which the commissioning of the MOX plant would increase the transport by sea of radioactive materials to and from Sellafield, – counsel for the United Kingdom gave *inter alia* the following undertaking before the ITLOS:

“... [b]efore summer 2002 (at the earliest) there will be no additional marine transports of radioactive material either to or from Sellafield as a result of the commissioning of the MOX plant. I shall revert to that subject in a moment in order to avoid any possibility of misunderstanding over the use of terms.”¹⁶⁷

8.258. Counsel for the United Kingdom also addressed the issue of the tainted MOX fuel to be returned from Japan. And stated that the returned fuel would not be returned to the MOX plant but to a storage pool. He went on to state that it was not to be returned till “some time late next year.”¹⁶⁸

8.259. The ITLOS placed on record these undertakings regarding marine transports. On 1 February 2002 Ireland asked the United Kingdom to provide, pursuant to the obligation to co-operate, *inter alia* complete information on all expected shipments of nuclear materials to Sellafield for reprocessing at the THORP plant in order that Ireland might be satisfied that such materials are not to be transformed into MOX fuel.¹⁶⁹ The United Kingdom’s response of 6 February 2002 provided no such information. The letter stated merely that:

“[f]or obvious security reasons, and in accordance with the terms of the International Convention on the Physical Protection of Nuclear Materials, the [UK] Government does not make public detailed information about the timing of transports of nuclear materials”.¹⁷⁰

8.260. In late March 2002, Ireland learned that the shipment of the Japanese MOX fuel that was scheduled to take place in the early summer, before October 2002, the date specified by the United Kingdom to the ITLOS. By its letter of 27 March 2002, Ireland reminded the United Kingdom of its undertaking before the ITLOS and requested the United Kingdom to confirm that the transportation of the said MOX fuel would not occur before “late” 2002 or October 2002. It also asked the United Kingdom of its plans for the subsequent use of this fuel.¹⁷¹

8.261. The United Kingdom’s reply confirmed that the tainted MOX fuel was to be returned before October 2002. With regard to the use to which the tainted fuel would be put, the letter stated that “On arrival, the [tainted MOX fuel from Japan] will be placed in a storage pond at Sellafield.”¹⁷²

8.262. By a subsequent letter, Ireland drew the United Kingdom’s attention to certain documents of the relevant US and EURATOM authorities that suggested that before the date of the ITLOS hearing the United Kingdom had been aware that the shipment from

¹⁶⁷ See ITLOS, 20 November 2001, 3:00PM, Verbatim Record, P. 21, lines 40 *et seq.*

¹⁶⁸ *Ibid.*, p 26, lines 22 *et seq.*

¹⁶⁹ Vol 3(1), Annex 48.

¹⁷⁰ Vol 3(1), Annex 49.

¹⁷¹ Vol 3(1), Annex 59.

¹⁷² Vol 3(1), Annex 61

Japan was to return to the United Kingdom before October 2002.¹⁷³ Ireland's letter also requested a specific assurance that the material would not arrive within British or Irish waters before October 2002.¹⁷⁴ On the issue of the subsequent use to which the tainted MOX fuel would be put, Ireland's letter referred to the same documents, which indicated clearly that the fuel would have to be returned to Japan as fresh MOX fuel. This appeared difficult to reconcile with the information provided by the United Kingdom in the letter dated 19 April 2002,¹⁷⁵ and with the United Kingdom's statements at ITLOS.¹⁷⁶

8.263. Ireland's letter pointed out that the only facility at Sellafield which is operational and capable of transforming the recovered plutonium into "fresh MOX assemblies" to be sent to Japan is the new MOX plant at Sellafield.

8.264. The United Kingdom's reply did not address a number of the specific issues which Ireland had raised. It did however, confirm that the tainted MOX fuel would arrive in the United Kingdom before October 2002.¹⁷⁷

8.265. A second letter of the same date from the United Kingdom related to the subsequent use of the tainted fuel on its return to the United Kingdom from Japan.¹⁷⁸ The letter stated that BNFL had still not finalised its precise plans for the management of the fuel. The letter did not address the question of the apparent discrepancies between this statement and the statement made before the ITLOS.

8.266. A third letter from the United Kingdom of the same date stated that the United Kingdom was willing to supply the estimated number of such transports, provided that Ireland undertook to respect the confidentiality of the information.¹⁷⁹ Ireland has given assurances regarding the confidentiality of the information, but these have, it seems, been insufficient to satisfy the United Kingdom. Ireland still has been given no idea of the expected number of shipments.

8.267. Ireland's need for information about the timing and routing of ships carrying nuclear materials, in order to prepare its own plans to meet the risks inherent in such transports, is a matter of practical necessity. It is also a matter of legal obligation. Ireland has a particular legal responsibility for the waters around its coasts.

8.268. That duty exists as a matter of international law. In the case of the territorial sea, the duty is extensive. As Judge Fitzmaurice observed in his separate opinion in the *Fisheries Jurisdiction* case:

"The territorial sea involves responsibilities as well as rights [...] for example policing and maintaining order; buoying and marking channels and reefs, sandbanks and other obstacles; keeping navigable channels clear and giving notice of danger of navigation; providing rescue services, lighthouses, lightships, bell-buoys, etc." [[1973] ICJ Rep. at 27 n.8. Cf., Judge McNair's dissenting

¹⁷³ Vol 3(3), Annex 119.

¹⁷⁴ Letter dated 9 May 2002. Annex 62.

¹⁷⁵ United Kingdom's letter dated 19 April 2002 at Annex 61.

¹⁷⁶ Mr Plender's statement to the ITLOS, that the tainted MOX fuel from Japan "will not be returned to the MOX plant but to a storage pool" (Verbatim Record, ITLOS/PV.01/09).

¹⁷⁷ United Kingdom's letter dated 17 May 2002 at Annex 64.

¹⁷⁸ United Kingdom's letter dated 17 May 2002 at Annex 65.

¹⁷⁹ United Kingdom's letter dated 17 May 2002 at Annex 63.

opinion in the *Anglo-Norwegian Fisheries* case: “International law does not say to a State: ‘You are entitled to claim territorial waters if you want them.’ No maritime State can refuse them. International law imposes upon a maritime State certain obligations and confers upon it certain rights arising out of the sovereignty which it exercises over its maritime territory. The possession of this territory is not optional, not dependent upon the will of the State, but compulsory.”¹⁸⁰

In order fully to discharge that duty, Ireland needs to know in advance and in sufficient detail of the passage of hazardous cargoes through its waters.

8.269. Beyond its territorial sea, Ireland has legal rights and responsibilities for the marine environment in its 200-mile zone. Ireland has plain responsibilities for the safety of life at sea. If a distress call is received from a ship near the Irish coast, the Irish coastguard cannot simply ignore it. As a party to the International Convention on Maritime Search and Rescue (“SAR”), 1979,¹⁸¹ (to which the United Kingdom is also a party) Ireland has particular responsibilities for search and rescue operations off its coasts. Those responsibilities extend throughout the Irish SAR zone, defined by international agreement, in which operations are controlled by the authorities in Shannon. That zone extends over the western part of the Irish Sea, and out into the Atlantic to the south and west of Ireland. The Irish SAR zone is indicated on **Plates 8 and 9**.

8.270. Similarly, Ireland has particular responsibilities as a party to the International Convention on Oil Pollution Preparedness, Response and Co-operation, 1990¹⁸² (to which the United Kingdom is also a party), the application of which will be extended to other forms of pollution by the Protocol on Preparedness, Response and Co-operation to pollution Incidents by Hazardous and Noxious Substances, 2000 (the “HNS Protocol”). The zone of Irish responsibility, which is defined by international agreement, extends over the western part of the Irish Sea, and out into the Atlantic to the south and west of Ireland. The Irish pollution response zone is shown on **Plate 9**.

8.271. Ireland also has the primary interest in, and rights and responsibilities regarding, the marine environment in its 200-mile fishery zone. That also extends over the western part of the Irish Sea, and out into the Atlantic to the south and west of Ireland. The Irish 200-mile fishery zone (and other Irish maritime zones) are shown on **Plates 9 and 12**.

8.272. Ireland’s particular responsibilities for these waters involve it in concrete situations in which lack of co-operation from the United Kingdom may impair Ireland’s ability to discharge its duties. If a distress call is received from a British PNTL ship, or another ship in the vicinity of a PNTL ship, off the Irish coast, Ireland will respond to it. If Irish police agents board such a ship, they need to know, for example, what the shipboard emergency plan for dealing with such incidents is, and what action the British law-enforcement agencies or special forces might be taking or intending to take in respect of the incident. The absurdity of having two sets of armed security forces responding independently to a single incident, perhaps covertly and at night and perhaps many miles from shore, is obvious. This is not simply a question of efficiency: it is a matter of taking proper precautions to safeguard life, and to safeguard the lives of the life-savers themselves.

¹⁸⁰ *ICJ Rep 1951*, 116 at 160.

¹⁸¹ See above, paragraph 8.47.

¹⁸² International Convention on Oil Pollution Preparedness, Response and Co-Operation, 1990. 1891 UNTS 51; 30 *ILM* 733 (1991); 18 *Law of the Sea Bulletin* 37 (1991).

8.273. While Ireland understands and accepts the concern of the United Kingdom to keep information concerning the shipments out of the hands of terrorists and saboteurs, it does not accept that this justifies the United Kingdom in keeping such information from the Irish Government, which shares with the United Kingdom the interest in, and responsibility for, avoiding incidents involving ships carrying nuclear materials in the Irish Sea and in Irish waters beyond the Irish Sea.

8.274. At the time of writing, and despite requests, the United Kingdom has not indicated even the probable approximate numbers of sea transports to and from the Sellafield site. Ireland does not know whether those shipments might be of the order of one a year, one a month, or one a week. Nor does it know what the projected dates of the anticipated shipments might be, or what emergency plans have already been made in respect of them by the United Kingdom, or BNFL or any other agencies. Ireland obtains more information from the daily newspapers, and from NGO websites, than it is able to obtain from the United Kingdom. Little or no progress has been made concerning fuller co-operation, such as would enable Ireland to make contingency plans for any incidents in Irish waters involving ships carrying nuclear materials. The United Kingdom's position appears to be that this is not a question that need concern Ireland at all. That is not a satisfactory fulfilment of a duty to co-operate.

E. THE UNITED KINGDOM'S DETERMINATIONS ARE REVIEWABLE

8.275. Ireland is fully aware that the United Kingdom believes that the Sellafield facility is, in general, operated within IAEA standards, and that the PNTL ships are also built and equipped so as to comply with IAEA standards and with the IMO's INF Code.

8.276. Ireland is also fully aware that those international standards represent the majority view as to the proper balance between safety and other factors, at the time that the standards were adopted.

8.277. Ireland's case is not that the United Kingdom was in breach of these international standards at the time that they were adopted. Ireland's case in this respect rests on two points.

8.278. First, those standards have evolved and continue to evolve, and the United Kingdom's practice must both (i) evolve in order to meet the changing standards as they arise, and (ii) not put the United Kingdom in a situation where it is impossible for it to meet future standards whose development may be reasonably foreseen.

8.279. Second, Ireland considers compliance with the international standards does not in any event relieve the United Kingdom of its obligations of co-operation and co-ordination with Ireland. Nor does it relieve the United Kingdom of its obligations under the UNCLOS, to the extent that those obligations are confined to the narrow duty to comply with international standards.

8.280. Moreover, whether or not the United Kingdom acts in conformity with the international standards, Ireland has the right and the responsibility to consider on the basis of accurate and detailed information and to decide for itself the nature and extent of the risk to Irish waters and their users and to Ireland itself, presented by the operation of the Sellafield site and the associated shipments.

8.281. The United Kingdom's determination that it has fulfilled all of its obligations cannot be conclusive. In the absence of express treaty language to the contrary, no State can be the sole judge of its compliance with its international obligations. This applies in relation to the obligations of environmental impact assessment and pollution prevention, as well as co-operation.

8.282. In this respect, the drawing up of emergency plans by the United Kingdom, and the co-operation and co-ordination of its activities with Ireland, is similar to the act of delimiting maritime boundaries by the drawing of baselines, of which the International Court said, in the *Anglo-Norwegian Fisheries case*,

“Although it is true that the act of delimitation is necessarily a unilateral act, because only the coastal State is competent to undertake it, the validity of the delimitation with regard to other States depends upon international law.”¹⁸³

8.283. It is not for the United Kingdom to decide unilaterally whether or not it has done enough to discharge its responsibilities. That is an elementary proposition of international (as of municipal) law.

8.284. The reasons for Ireland's reluctance to depend upon British assurances that all is in order will have emerged from the detailed account of events set out in this Memorial. It can be illustrated by one further example. The United Kingdom's 1999 national report to OSPAR contains the following paragraphs:

“6.1 Since the introduction of general legislation to regulate the use of radioactive substances (the Radioactive Substances Act 1960), the UK has consistently applied ... radiological protection principles and regulatory arrangements ... in order to reduce the levels of radioactive discharges and the doses of ionising radiation to both humans and the wider environment. Levels of radionuclides in the environment have been carefully monitored to ensure they remain within safe levels.

6.2 At no time has there been a significant risk that either humans or the wider environment would suffer harm from authorised UK radioactive discharges or emissions.”¹⁸⁴

8.285. It is instructive to compare that report with two other documents. In 1987 a distinguished British Study group published a report on the waters around the British Isles. It contained the following passages relating to the Windscale site, later renamed the Sellafield site, and its effects on the Irish Sea during the period to which the passage from the United Kingdom's 1999 OSPAR Report relates:

“As a result of the discharges from Windscale, levels of caesium-137 in the Irish Sea are now around 50 times those found in the Atlantic to the west of Ireland; and near the outfall they are several hundred times as high. Other radioisotopes discharged include caesium-135, ruthenium-106, zirconium-95, strontium-90, cerium-134 and niobium-95. The discharges mix with seawater and are transported through the Irish Sea in a westerly and northerly direction [...] Other nuclides discharged from Windscale are retained in the top few centimetres of sea-bed sediments within a few miles of the point of discharge. These include

¹⁸³ *ICJ Reports 1951*, 116, at 132.

¹⁸⁴ Report by the United Kingdom on intentions for action at the national level to implement the OSPAR strategy with regard to radioactive substances, paragraphs 6.1, 6.2, OSPAR 00/6/Info.1-E.

plutonium-241 and its decay products americium-241 and neptunium-237, which are among the most biologically hazardous of materials. Over the past decade increasingly large and uncontrolled (i.e. not subject to authorization) discharges of plutonium-241 have taken place, and it has been estimated that a total of 381,527 curies had been discharged into the Irish Sea by the end of 1980. This represents around a quarter of a tonne of material which will continue to be radioactive for a very long time. This cumulative amount represents an extremely serious yet relatively unknown problem, for there is very little information about the specific effects of these radionuclides.”¹⁸⁵

That picture is, as is shown in chapters 8 and 9, fully in accord with the scientific information available to Ireland.

8.286. Secondly, at a meeting of the Contact Group held at around the same time that the United Kingdom national report to OSPAR quoted above was prepared, Ireland raised the issue of reports that more than one-third – 35% – of all of the plutonium / americium discharged by the United Kingdom into the Irish Sea was unaccounted for.¹⁸⁶ The minutes record that Ireland asked the United Kingdom “if any work was planned to try to account for the missing 35%”. The United Kingdom replied “that there wasn’t but there may be a workshop. The important point was that levels in the environment and human food chain were very low and gave no cause for concern.”¹⁸⁷

F. CONCLUSIONS

8.287. The United Kingdom has violated Article 193 and 197 of UNCLOS. The United Kingdom has failed to fulfil the duty of co-operation imposed by UNCLOS. It has failed to provide Ireland with adequate information of the environmental consequences arising from the MOX project. It has failed to engage properly in consultations with Ireland, and to take into account Ireland’s rights and interests, when deciding whether and how to proceed with the implementation of the MOX project; and it has not co-operated with Ireland in the development of strategies for coping with the pollution and the risk of pollution arising from the MOX project. As is explained in chapter 10 below, Ireland does not consider it helpful in the context of these proceedings to try to fix the precise boundaries of what should be a developing relationship of co-operation. It is nonetheless evident that in order to bring itself into compliance with its UNCLOS obligations, the United Kingdom needs to repair the past omissions (which are described in more detail in chapters 7 and 9) and to co-operate with Ireland, in particular by providing more information to Ireland (on a timely and complete basis) and developing effective mechanisms for the transmission of information and for practical co-operation between the relevant authorities of the two States in regard to these matters, which takes due account of Ireland’s legitimate interests.

¹⁸⁵ R. B. Clark (ed), *The Waters Around the British Isles*, (OUP, 1987), p 238.

¹⁸⁶ Cf., Professor Brit Salbu, vol 2, Appendix 2.

¹⁸⁷ Confidential Annex: Contact Group Meeting 11 June 1999, Minute 9.

CHAPTER 9

PREVENTION OF POLLUTION

INTRODUCTION

9.1. The authorisation of the MOX plant will result in the discharge of radioactive substances directly into the Irish Sea, both from the MOX plant and from the increased and prolonged operation of the THORP plant. Radioactive substances will also reach the Irish Sea indirectly, through discharges of radioactive wastes into the atmosphere arising from the MOX and THORP plants. Further, the authorisation and operation of the MOX plant will lead to a greater risk of unintended discharges of radioactive substances as result of accidents or terrorist incident, as a result of increased international transports of radioactive materials through the Irish Sea, and the intensification of activity at the Sellafield site giving rise to solid wastes which will be stored at Sellafield. None of these points is in dispute. Where the parties disagree is on the compatibility of these consequences of the authorisation and operation of the MOX plant with the United Kingdom's obligations under the UNCLOS. Ireland submits that by permitting these consequences the United Kingdom is violating its obligations under the UNCLOS to prevent pollution of the Irish Sea.

9.2. Specifically, Ireland submits that the United Kingdom has failed to take all measures consistent with UNCLOS that are necessary to prevent, reduce and control pollution of the Irish Sea which results from discharges of radioactive substances arising from the authorisation and operation of the MOX plant. These violations arise because the United Kingdom has:

1. failed to "take all measures consistent with the 1982 Convention that are necessary" to prevent, reduce and control pollution of the Irish Sea (paras. 9.92-9.100);
2. failed to take "all measures necessary" to ensure that the MOX plant does not cause damage by pollution to Ireland and its environment (paras. 9.101-9.104);
3. failed to take "all measures necessary" to ensure that pollution from the MOX plant "does not spread beyond the areas" where it exercises sovereign rights (paras. 9.105-9.111);
4. failed to take measures designed to minimize "to the fullest extent possible" the release of radioactive substances arising from the authorisation of the MOX plant (paras. 9.112-9.126);
5. failed to implement applicable international rules and standards to prevent, reduce and control pollution of the Irish Sea arising from the authorisation of the MOX plant (paras. 9.127-9.145);
6. failed to take "all measures necessary" to "minimize to the fullest possible extent" pollution from vessels involved in transports of radioactive substances associated with the MOX plant (paras. 9.146-9.152);

7. failed to ensure compliance by vessels flying its flag or of its registry with applicable international rules and standards, and has failed to ensure that vessels associated with MOX transports are prohibited from sailing when not in compliance with those rules and standards (para. 9.153-9.156);
8. failed to take measures “designed to minimize to the fullest possible extent” the release into the atmosphere of radioactive substances arising from the authorisation of the MOX plant (paras. 9.157-9.166); and
9. failed to adopt laws and regulations and take other measures necessary “to implement applicable international rules and standards” to prevent, reduce and control pollution of the Irish Sea from or through the atmosphere (para. 9.167-9.169).

9.3. This Chapter describes the manner in which these UNCLOS violations have occurred. **Section A** describes in overview the relevant provisions of Part XII of UNCLOS which establish obligations for the United Kingdom to prevent pollution of the Irish Sea. **Section B** then moves on to identify the rules of international law arising outside UNCLOS which are aimed at preventing and eliminating radioactive pollution from the marine environment, and which inform the content of the United Kingdom’s obligations under the 1982 Convention. **Section C** explains the basis upon which Ireland considers that the radioactive discharges and releases constitute both “pollution” and “harmful” and “persistent” substances within the meaning of the 1982 Convention. **Section D** explains the way in which the authorisation and operation of the MOX plant has given rise to violations by the United Kingdom of specific provisions of UNCLOS. **Section E** provides a summary and conclusions.

9.4. In considering the consequences of the new planned discharges that will arise as a result of the authorisation of the MOX plant, it is important to recall that the Irish Sea is already amongst the most highly radioactive seas in the world, largely as a result of having been exposed to radioactive contamination arising from the activities which have taken place at the Sellafield site since the 1940’s.¹ The relatively high level of contamination explains Ireland’s particular concerns. In this regard Ireland notes that UNCLOS was adopted by the international community in large part to avoid pollution consequences of this kind – and to ensure their remediation.

¹ Chapter 1, paras 1.19-38.

A: THE UNCLOS OBLIGATIONS TO PREVENT RADIOACTIVE POLLUTION OF THE IRISH SEA

INTRODUCTION: THE GENERAL OBLIGATIONS

9.5. Part XII of UNCLOS establishes a “comprehensive environmental framework [...] relating to all sources of pollution in all marine areas”.² Part XII provides

“a legal basis for coordination of rules and standards with appropriate enforcement measures and sets forth the obligations of states to adopt laws and regulations to prevent, reduce, and control pollution of the marine environment that are no less effective than international rules and standards or conforming to and at least having the same effect as that of generally accepted international rules and standards.”³

In his transmittal letter of UNCLOS to the United States Senate, the President of the United States described the Convention as “the strongest comprehensive environmental treaty now in existence or likely to emerge for quite some time”.⁴ The commentary accompanying the President’s transmittal letter concludes that Part XII of UNCLOS “creates a positive and unprecedented framework for marine environmental protection and will encourage all parties to take their environmental obligations seriously”.⁵

9.6. Part XII of UNCLOS is entitled the “Protection and Preservation of the Marine Environment”. It is divided into 11 Sections. For the purposes of the present Chapter the relevant Sections are Section 1 (General Provisions) and Section 5 (International Rules and National Legislation to Prevent, Reduce and Control Pollution of the Marine Environment). The requirements of Section 2 (Global and regional Co-operation) are addressed in Chapter 8, and the requirements of Section 4 (Monitoring and Environmental assessment) are addressed in Chapter 7.

9.7. Section 1 of Part XII of UNCLOS sets forth the general obligations of the United Kingdom to prevent, reduce and control pollution of the Irish Sea. Article 192 provides:

“States have the obligation to protect and preserve the marine environment”.

Article 192 sets forth a general principle and has been described as an “essential component of the comprehensive approach in Part XII” which “announces the broad obligation to protect and preserve the marine environment”.⁶ It contains the first explicit statement, in a global treaty, of the general obligation to protect and preserve the marine environment.⁷ The Virginia Commentary notes the extent of the positive obligations which Article 192 imposes upon States:

² A. Yankov, *The Law of the Sea Convention and Agenda 21: Marine Environmental implications*, in A. Boyle and D. Freestone (eds), *International Law and Sustainable Development: Past Achievement and Future Challenges* (1999), 271 at 276.

³ *Ibid.*

⁴ 34 *ILM* 1397 (1995).

⁵ *Ibid.*, 1414.

⁶ *Virginia Commentary*, Part XII, p 36 (para 192.2) (1993).

⁷ *Ibid.*

“The thrust of Article 192 is not limited to the prevention of prospective damage to the marine environment but extends to the “preservation of the marine environment”. Preservation would seem to require active measures to maintain, or improve, the present condition of the marine environment.”⁸

The “active measures” required by Article 192 are reflected throughout Part XII of the 1982 Convention, although the precise extent of any obligation to prevent pollution is necessarily informed by the existing state of the marine environment. In the present case, involving the protection of the Irish Sea which is already amongst the most radioactively polluted seas in the world,⁹ the significance of the obligation to prevent further pollution – and to remediate the consequences of past pollution – becomes all the more pressing.

9.8. Article 193 of the UNCLOS provides:

“States have the sovereign right to exploit their natural resources pursuant to their environmental policies and in accordance with their duty to protect and preserve the marine environment.”

A leading treatise has described the significance of Article 193 in this way: the provision constitutes “a transformation of [1972 Stockholm Declaration] principles into the language of a binding treaty”.¹⁰ The approach reflected in Article 193 has been recognised by the International Court of Justice as reflecting a rule of customary international law.¹¹ Article 193 – and now general international law – recognise that the notion that a State has absolute sovereignty over the use of its territory is limited.

9.9. As the International Law Commission’s Articles on the Prevention of Transboundary Harm (2001) put it:

“The freedom of States to carry on or permit activities in their territory or otherwise under their jurisdiction or control is not unlimited.”¹²

The exercise of sovereignty – the authorisation of a nuclear facility such as the MOX plant – is tempered by the duty of the authorising state “to protect and preserve the marine environment”. The precise legal requirements of that duty (*obligation* in the French text, *obligación* in the Spanish text) are, as with Article 192, informed by the state of the marine environment in question.

9.10. Articles 192 and 193 are supplemented by the more detailed requirements of the general obligations of Article 194 of UNCLOS. These provisions are applicable to all marine areas but assume particular importance for a semi-enclosed sea like the Irish Sea.

⁸ *Ibid*, para 192.9.

⁹ Chapter 1, paras 1.19 *et seq.*

¹⁰ *Oppenheim’s International Law* (Sir R. Jennings and Sir A. Watts (eds), 9th edition, p 820. Principle 21 of the Stockholm Declaration states:

“States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.”

¹¹ ICJ, *Advisory Opinion on the Legality of the Use of Nuclear Weapons*, 1996 ICJ Reports, p 226 at 241-2 (para 29).

¹² Vol 3(1), Annex 73.

9.11. UNCLOS Article 194 (“Measures to prevent, reduce and control pollution of the marine environment”) sets forth a number of obligations of general application. It provides *inter alia* that:

- “1. States shall take, individually or jointly as appropriate, all measures consistent with this Convention that are necessary to prevent, reduce and control pollution of the marine environment from any source, using for this purpose the best practicable means at their disposal and in accordance with their capabilities, and they shall endeavour to harmonize their policies in this connection.
2. States shall take all measures necessary to ensure that activities under their jurisdiction or control are so conducted as not to cause damage by pollution to other States and their environment, and that pollution arising from incidents or activities under their jurisdiction or control does not spread beyond the areas where they exercise sovereign rights in accordance with this Convention.
3. The measures taken pursuant to this Part shall deal with all sources of pollution of the marine environment. These measures shall include, *inter alia*, those designed to minimize to the fullest possible extent:
 - (a) the release of toxic, harmful or noxious substances, especially those which are persistent, from land-based sources, from or through the atmosphere or by dumping;
 - (b) pollution from vessels, in particular measures for preventing accidents and dealing with emergencies, ensuring the safety of operations at sea, preventing intentional and unintentional discharges, and regulating the design, construction, equipment, operation and manning of vessels; [...]

9.12. Article 194 provides a link between the general provisions of Articles 192 and 193 and the detailed requirements set forth in Section 5 of Part XII. As the Virginia Commentary recognises, the scope of the provision set forth in Article 194(1) (“all measures ... that are necessary to prevent, reduce and control pollution of the marine environment from any source”) is wide.¹³ In relation to “toxic, harmful or noxious substances” (which are not defined by the 1982 Convention – see further below at paras. 9.59 *et seq.* – but which plainly include radioactive substances) the obligation to prevent pollution is even more stringent.

9.13. Article 194 sets forth a number of distinct obligations for the United Kingdom in respect of the MOX plant and its associated consequences:

First, it requires the United Kingdom to use “best practicable means at its disposal” to prevent, reduce and control pollution of the Irish Sea from the MOX plant (Art. 194(1));

Second, it requires the United Kingdom to take “all measures necessary” to ensure that the MOX plant does “not ... cause damage by pollution” to Ireland and its environment (Art. 194(2)); and

Third, it requires the United Kingdom to take “all measures necessary” to ensure that pollution from the MOX plant “does not spread beyond the areas where [it] exercises sovereign rights (Art. 194(2)).

¹³ *Virginia Commentary*, Part XII, page 64 (para 194.10(b)).

The United Kingdom's failure to comply with these obligations is addressed in detail in Section D below.

THE SPECIFIC OBLIGATIONS TO PREVENT POLLUTION
FROM LAND-BASED SOURCES

9.14. UNCLOS Articles 207 and 213 address pollution from land-based sources, and are directly relevant to the authorisation of the MOX plant. Article 207 ("Pollution from land-based sources") provides in relevant part:

- “1. States shall adopt laws and regulations to prevent, reduce and control pollution of the marine environment from land-based sources, including rivers, estuaries, pipelines and outfall structures, taking into account internationally agreed rules, standards and recommended practices and procedures.
2. States shall take other measures as may be necessary to prevent, reduce and control such pollution.
3. States shall endeavour to harmonize their policies in this connection at the appropriate regional level.
4. States, acting especially through competent international organizations or diplomatic conferences, shall endeavour to establish global and regional rules, standards and recommended practices and procedures to prevent, reduce and control pollution of the marine environment from land-based sources, taking into account characteristic regional features, the economic capacity of developing States and their need for economic development. Such rules, standards and recommended practices and procedures shall be re-examined from time to time as necessary.
5. Laws, regulations, measures, rules, standards and recommended practices and procedures referred to in paragraphs 1, 2 and 4 shall include those designed to minimize, to the fullest extent possible, the release of toxic, harmful or noxious substances, especially those which are persistent, into the marine environment.”

UNCLOS Article 213 provides:

“States shall enforce their laws and regulations adopted in accordance with article 207 and shall adopt laws and regulations and take other measures necessary to implement applicable international rules and standards established through competent international organizations or diplomatic conference to prevent, reduce and control pollution of the marine environment from land-based sources.”

9.15. UNCLOS Article 207 “restates and amplifies” the obligation enunciated in Article 194(3)(a).¹⁴ It, together with Article 213, sets forth a number of distinct obligations for the United Kingdom in respect of the MOX plant and its associated consequences. These include:

First, Article 207(1) and (2) require the United Kingdom to adopt laws and regulations and take other measures “as may be necessary” to prevent, reduce and control pollution of the Irish Sea as a result of the authorisation of the

¹⁴ *Ibid*, Part XII, page 132, para 207.7(a).

MOX plant, such laws and regulations “taking into account internationally agreed rules, standards and recommended practices and procedures”;

Second, Article 207(5) (together with Article 194(3)(a)) requires the United Kingdom to ensure that such laws, regulations and measures include “those designed to minimize, to the fullest extent possible” the release of radioactive substances into the Irish Sea;

Third, Article 213 requires the United Kingdom “to implement applicable international rules and standards” to prevent, reduce and control pollution of the Irish Sea.

It is to be noted that these provisions set three distinct standards, each of which is to be applied by the United Kingdom: (a) a standard of necessity to prevent, control and reduce pollution (having regard to the needs of the receiving environment); (2) a standard requiring minimisation of releases to the fullest extent possible (having regard to available technologies and practices); and (3) a standard requiring implementation of international rules and standards (having regard to international norms). In meeting its obligations the United Kingdom is thereby required to have regard to the quality of the Irish Sea, to all available technologies and practices, and to applicable and relevant international norms. As will be shown below, in relation to the MOX plant the United Kingdom does not appear to have had regard to any of these requirements.¹⁵

9.16. The content of the three distinct obligations arising under Article 207 and 213 are informed by international rules and standards, as well as recommended practices and procedures. In this case those rules, standards and recommended practices and procedures are informed by the requirements of the 1992 OSPAR Convention and the 1998 Sintra Ministerial Declaration, as described further below at paragraphs 9.43-9.52.

THE OBLIGATION TO PREVENT POLLUTION FROM VESSELS

9.17. The relevant rules governing pollution from vessels are set forth in Article 211 (“Pollution from vessels”) and Article 217 (“Enforcement by flag States”) of UNCLOS. Article 211 provides in relevant part:

“1. States, acting through the competent international organization or general diplomatic conference, shall establish international rules and standards to prevent, reduce and control pollution of the marine environment from vessels and promote the adoption, in the same manner, wherever appropriate, of routing systems designed to minimize the threat of accidents which might cause pollution of the marine environment, including the coastline, and pollution damage to the related interests of coastal States. Such rules and standards shall, in the same manner, be re-examined from time to time as necessary.

2. States shall adopt laws and regulations for the prevention, reduction and control of pollution of the marine environment from vessels flying their flag or of their registry. Such laws and regulations shall at least have the same effect as that of generally accepted international rules and standards established through the competent international organization or general diplomatic conference. [...]

7. The international rules and standards referred to in this article should include inter alia those relating to prompt notification to coastal States, whose coastline or

¹⁵ See Section D below, paras 9.92-9.169.

related interests may be affected by incidents, including maritime casualties, which involve discharges or probability of discharges.”

Article 217 provides in relevant part:

“1. States shall ensure compliance by vessels flying their flag or of their registry with applicable international rules and standards, established through the competent international organization or general diplomatic conference, and with their laws and regulations adopted in accordance with this Convention for the prevention, reduction and control of pollution of the marine environment from vessels and shall accordingly adopt laws and regulations and take other measures necessary for their implementation. Flag States shall provide for the effective enforcement of such rules, standards, laws and regulations, irrespective of where a violation occurs.

2. States shall, in particular, take appropriate measures in order to ensure that vessels flying their flag or of their registry are prohibited from sailing, until they can proceed to sea in compliance with the requirements of the international rules and standards referred to in paragraph 1, including requirements in respect of design, construction, equipment and manning of vessels.”

9.18. Article 211 and 217 of UNCLOS, together with Article 194(2) and (3)(b), set forth specific obligations for the United Kingdom in respect of international transports of radioactive materials in and around the Irish Sea – both to and from the Sellafield plant – which are associated with the authorisation of the MOX plant (including transports to the THORP plant of nuclear materials to be reprocessed into “feedstock” for the MOX plant).

First, Article 194(2) and (3)(b) require the United Kingdom to take all measures necessary to minimize to the fullest possible extent pollution from vessels, including in particular measures for preventing accidents and dealing with emergencies, preventing unintentional discharges, and regulating the design, construction, equipment, operation and manning of vessels;

Second, Article 211(2) and (7) require the United Kingdom to adopt laws and regulations for the “prevention, reduction and control of pollution” of the Irish Sea from vessels flying their flag or their registry, which “shall at least have the same effect as that of “generally accepted international rules and standards”, including in relation to prompt notification of Ireland;

Third, Article 217(1) requires the United Kingdom to ensure compliance by vessels flying its flag or of its registry with applicable international rules and standards for the prevention, reduction and control of pollution of the marine environment;

Fourth, Article 217(2) requires the United Kingdom to take appropriate measures to ensure that vessels flying its flag or of its registry are prohibited from sailing unless they are in compliance the requirements of these international rules and standards.

THE OBLIGATION TO PREVENT POLLUTION THROUGH THE ATMOSPHERE

9.19. Pollution from or through the atmosphere is governed by Article 212 (“Pollution from or through the atmosphere”) and Article 222 (“Enforcement with respect to pollution from or through the atmosphere”) of UNCLOS. Article 212 provides in relevant part:

“1. States shall adopt laws and regulations to prevent, reduce and control pollution of the marine environment from or through the atmosphere, applicable to the air space under their sovereignty and to vessels flying their flag or vessels or aircraft of their registry, taking into account internationally agreed rules, standards and recommended practices and procedures and the safety of air navigation.

2. States shall take other measures as may be necessary to prevent, reduce and control such pollution.”

Article 222 provides in relevant part:

“States shall enforce, within the air space under their sovereignty or with regard to vessels flying their flag or vessels or aircraft of their registry, their laws and regulations adopted in accordance with article 212, paragraph 1, and with other provisions of this Convention and shall adopt laws and regulations and take other measures necessary to implement applicable international rules and standards established through competent international organizations or diplomatic conference to prevent, reduce and control pollution of the marine environment from or through the atmosphere, in conformity with all relevant international rules and standards concerning the safety of air navigation.”

9.20. Article 212 also “restates and amplifies” the obligation enunciated in Article 194(3)(a).¹⁶ It, together with Article 222, sets forth *inter alia* three distinct obligations for the United Kingdom in respect of the MOX plant and its associated consequences. These are:

First, Article 212(1) requires the United Kingdom to adopt laws and regulations “as may be necessary” to prevent, reduce and control pollution of the Irish Sea from or through the atmosphere, such laws and regulations “taking into account internationally agreed rules, standards and recommended practices and procedures”;

Second, Article 212(2) requires the United Kingdom to take other measures “as may be necessary” to prevent, reduce and control pollution of the Irish Sea from or through the atmosphere;

Third, Article 222 requires the United Kingdom to adopt laws and regulations and to take other measures necessary “to implement applicable international rules and standards” to prevent, reduce and control pollution of the Irish Sea from or through the atmosphere.

9.21. Part XII of UNCLOS may therefore be seen to impose a number of distinct obligations on the United Kingdom. Each stands alone, and each is addressed in further detail in Section D below (paras. 9.92-9.169). To understand the extent of each obligation, it is necessary to have regard to obligations arising outside UNCLOS.

¹⁶ Virginia Commentary, Part XII, page 132, para 207.7(a).

B: INTERNATIONAL LAW AND THE PREVENTION OF RADIOACTIVE POLLUTION OF THE MARINE ENVIRONMENT

9.22. As will be clear from Section A of this Chapter, the precise content of many of the obligations imposed by the UNCLOS is to a significant extent informed by the international rules and standards, and recommended practices and procedures which arise outside the UNCLOS. This is reflected in general terms in the Convention's direction (in Article 293) that the Annex VII Tribunal "shall apply [UNCLOS] and other rules of international law not incompatible with [the] Convention". This requirement is elaborated in Chapter 6 of this Memorial.

9.23. Various provisions of Part XII of the UNCLOS draw connections between the obligations under the Convention and these other relevant rules and standards, and recommended practices and procedures.

9.24. In relation to pollution from land-based sources Article 207 requires States to "take into account" internationally agreed rules, standards and recommended practices and procedures, and Article 213 requires States to "implement" internationally applicable rules and standards.

9.25. In relation to pollution through the atmosphere, Article 212 requires States to "take into account" internationally agreed rules, standards and recommended practices and procedures, and Article 222 requires States to "implement" internationally applicable rules and standards.

9.26. In relation to pollution from vessels, Article 211 requires States to adopt laws and regulations which are to have "at least the same effect as that of generally accepted international rules and standards", and Article 217 requires States to "ensure compliance by vessels flying their flag or of their registry with applicable international rules and standards".

9.27. In assessing the content of these and other obligations under Part XII of UNCLOS, regard must therefore be had to other rules and standards of international law, as well as to internationally recommended practices and procedures. This section of Chapter 9 identifies those international rules, standards, practices and procedures which contribute to a determination of the legality of the United Kingdom's authorisation and operation of the MOX plant. It first summaries the general background (I) and then considers specific legal instruments (II).

9.28. Even though UNCLOS was the first global treaty to codify the international rules for the protection of the marine environment, it is plain that it did so on the basis of certain very well-established and generally accepted international principles. These include principles relating to pollution of the marine environment by radioactive substances. As will be clear, both Ireland and the United Kingdom have contributed their support to the development of these international rules.

GENERAL BACKGROUND

9.29. International law has long recognised that radioactive pollution is amongst the most serious threats to human health and the environment, and that States are under a stringent obligation to prevent such pollution. As early as 1955, by its resolution 913(X), the UN General Assembly established the United Nations Scientific Committee on the

Effects of Atomic Radiation (UNSCEAR). The first preambular paragraph to that resolution has informed the subsequent work of the Committee. It emphasises the recognition by all members of the United Nations of

“the importance of, and the widespread attention being given to, problems relating to the effects of ionizing radiation upon man and his environment”.

The resolution is significant in a number of respects, including its recognition that the impacts of radiation are to be assessed not only by reference to impacts on human health but also on the natural environment. These are quite distinct issues. In this way resolution 913(X) reflects the approach subsequently taken by UNCLOS and its definition of “pollution”, which encompasses consequences on the environment independently of effects on human health.

9.30. Three years later, in 1958, the Geneva Convention on the High Seas committed every State “to take measures to prevent pollution of the seas from the dumping of radioactive waste” and to co-operate with the competent international organizations in taking measures for the prevention of pollution of the seas or air space above, resulting from any activities with radio-active materials”.¹⁷ This followed shortly after the nuclear accident at Sellafield (which was known as Windscale at the time)¹⁸ and which released large quantities of radiation into the atmosphere and the marine environment, significant proportions of which reached the territory of Ireland .

9.31. In 1963 the United Nations adopted its Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water. The Treaty expressed the parties’ desire

“to put an end to the contamination of man’s environment by radioactive substances” (Preamble).

It is noteworthy that the commitments in the Treaty are not limited to contamination by nuclear testing alone. By the 1963 Treaty each party undertook to prohibit and prevent the carrying out of any nuclear weapon test explosion or any other nuclear explosion at any place under its jurisdiction or control “if such explosion causes radioactive debris to be present outside the territorial limits of the State under whose jurisdiction or control such explosion is conducted” (Art. I(1)).

9.32. The prohibition is absolute, premised on the belief that any transboundary movement of radioactive debris in any quantities is considered to be unacceptable. There is here no *de minimis* standard.

9.33. The extent of that commitment was underscored by UN General Assembly resolution 3154(XXVIII), adopted in 1973. It requested UNSCEAR to continue its work to increase knowledge of the levels and effects of atomic radiation from all sources, and emphasizes that each member of the United Nations

“*Deplores* environmental pollution by ionizing radiation from the testing of nuclear weapons”.

At around the same time, in 1972 the United Nations Conference on the Human Environment (Stockholm Conference) adopted its Declaration, including Recommendation 86(f), which called for a strengthening of national controls over land-based sources of

¹⁷ 450 UNTS 82, Article 25(1) and (2).

¹⁸ Chapter 1, paras 1.40-42.

marine pollution, in particular in enclosed and semi-enclosed seas. It expressly recognised that in some circumstances “the discharge of residual heat from nuclear and other power-stations may constitute a potential hazard to marine ecosystems.”

9.34. The 1986 accident at the Chernobyl nuclear power plant resulted in the release of radioactive materials across Europe. The accident underscored the fact that radioactive pollution does not respect national boundaries. It also made clear the steps that States considered to be necessary following such releases: following the accident the United Kingdom took steps to restrict farming activities in Cumbria and Northern Ireland.¹⁹ Some of those restrictions remained in place for many years after the accident. And the former USSR never paid compensation to any affected States, emphasizing the importance of preventing such pollution rather than cleaning it up.

9.35. The Chernobyl accident catalysed new international efforts to take steps to prevent radioactive pollution. The commitment of States to eliminate the threat of radioactive contamination was an important aspect of the 1992 UN Conference on Environment and Development. At UNCED, 176 States (including Ireland and the United Kingdom) adopted Agenda 21 without dissent. Its Chapter 22 is entitled “Safe and Environmentally Sound Management of Radioactive Waste”. It affirms the need for “very stringent radiological protection measures”²⁰ and, recognising the potentially devastating impact of radioactive pollution on the marine environment requires States not to

“promote or allow the storage or disposal of high-level, intermediate level and low-level radioactive wastes near the marine environment unless they determine that scientific evidence ... shows that such storage or disposal poses no unacceptable risk to people and the marine environment or does not interfere with other legitimate uses of the sea, making, in the process of consideration, appropriate use of the concept of the precautionary approach.”²¹

This prohibition applies to all types of radioactive wastes. It establishes a powerful presumption against the authorisation of new nuclear activities – including the production of MOX fuel – in coastal areas. The provision adds flesh to the content of Articles 194 and 207 of UNCLOS. It has been taken into consideration by the United Kingdom authorities in reaching the decision to refuse authorisation of permission to construct and operate a Rock Characterisation Facility for the storage of high-level radioactive waste next to the Irish Sea at Sellafield.²² That view was endorsed by the United Kingdom Secretary of State for the Environment in upholding the recommendation of the Planning Inspector.²³

9.36. The United Nations’ 1995 Global Plan of Action for the Protection of the Marine Environment from Land-Based Activities addresses radioactive substances that “have entered and/or are entering the marine and coastal environment, directly or indirectly, as a result of a variety of human activities and practices”, including reprocessing of spent fuel and operations associated with the management and disposal of radioactive wastes.²⁴ The Global Plan of action expressly recognises that

¹⁹ See P. Sands, *Chernobyl: Law and Communication* (1987), pp 17-18.

²⁰ Vol 3(2), Annex 82, Chapter 22, para 22.2.

²¹ *Ibid*, para 22.5(c).

²² See Sheate Report, vol 2, Appendix 6, pp 210-11 (paras 4.2-4.9).

²³ Vol 3(3), Annex 118.

²⁴ Vol 3(2), Annex 83, para 107.

“Other activities, such as the transport of radioactive material, pose risks of such releases.”²⁵

9.37. The Global Programme of Action is important because it recognises that “[r]adioactive materials can present hazards to human health and to the environment”. But it is also important because it recognises that with respect to radiation it is not only actual radiation but also perceptions which are important: “[s]uspected radioactive contamination of foodstuffs can also have negative effects on marketing of such foodstuffs.”²⁶

9.38. That means economic injury must also be taken into account among the effects of radioactive pollution. With those consequences in mind the Global Programme of Action commits States to the following objective and proposed target:

“to reduce and/or eliminate emissions and discharges of radioactive substances in order to prevent, reduce and eliminate pollution of the marine and coastal environment by human-enhanced levels of radioactive substances.”

It is to be noted that the objective includes the total elimination of radioactive pollution from these sources.

9.39. To this end the Global Programme of Action commits States to take a number of actions at the national level, including:

- setting “targets and timetables to minimize and limit the generation of radioactive wastes and provide for their safe processing, storage, conditioning, transportation and disposal”;
- ensuring “the safe storage, transportation and disposal of radioactive wastes, as well as spent radiation sources and spent fuel from nuclear reactors destined for final disposal, in accordance with international regulations or guidelines”;
- ensuring “proper planning, including environmental impact assessment, of safe and environmentally sound management of radioactive waste, including emergency procedures, storage, transportation and disposal, prior to and after activities that generate such waste”;
- using “best available techniques and best environmental practice, for the reduction and/or elimination of inputs of radioactive substances to the marine and coastal environment for the purpose of preventing and eliminating pollution of the marine and coastal environment”.²⁷

The Global Programme of Action also reaffirms the obligation set out in paragraph 22.5(c) of Agenda 21 not to promote or allow the storage or disposal of radioactive wastes near the marine and coastal environment.²⁸

9.40. As described below, these general obligations have not been taken into account by the United Kingdom in the authorisation of the MOX plant.

²⁵ *Ibid.*

²⁶ *Ibid.*, para 108.

²⁷ *Ibid.*, para 110.

²⁸ *Ibid.*, para 111.

SPECIFIC LEGAL INSTRUMENTS AND OBLIGATIONS IMPOSING RULES AND STANDARDS
AND RECOMMENDING PRACTICES AND PROCEDURES

9.41. Against this sustained expression of international concern about the impacts on human health and the environment of radioactive pollution of the marine environment, States have adopted specific treaty obligations – at the global and regional levels – to limit or prohibit altogether actions which might lead to the introduction of radioactive substances into the marine environment.

9.42. The dumping of any radioactive substances into the marine environment, in any quantities and however miniscule or negligible in their effects – has been the subject of global ban for more than 15 years. In 1985 the parties to the 1972 London Dumping Convention adopted a resolution (LDC 21(9)) establishing an indefinite moratorium on the dumping of radioactive wastes at sea. In 1993 the Parties agreed to amend the Annexes I and II to the 1972 London Convention to ban the dumping of all radioactive wastes, and this legally binding prohibition entered into force on 20 February 1994.²⁹ The prohibition on the dumping of any radioactive wastes into the marine environment is also reflected in 1992 OSPAR Convention, Article 3(3) of Annex II of which expressly prohibits dumping of all radioactive substances.³⁰

9.43. The 1992 OSPAR Convention regulates the discharge of radioactive substances into the marine environment from land-based sources, including the MOX plant. The Preamble to the OSPAR Convention expressly refers to Part XII of UNCLOS, indicating the close relationship between the two treaties (“Recalling the relevant provisions of customary international law reflected in Part XII of UNCLOS and, in particular, Article 197 on global and regional co-operation for the protection and preservation of the marine environment.”).

9.44. Article 2(1)(a) of the 1992 OSPAR Convention commits parties to “take all possible steps to prevent and eliminate pollution” and to “restore marine areas which have been adversely affected”. To that end parties are to apply the precautionary principle (Art. 2(2)) and apply “best available techniques” and “best environmental practices”, in accordance with the criteria set forth in Appendix 1 of the Convention. Article 3 of the Convention commits parties to “take, individually and jointly, all possible steps to prevent and eliminate pollution from land-based sources in accordance with the provisions of the Convention”, as provided by Annex I.

9.45. Annex I commits parties to:

- Use best available techniques and best environmental practices, including clean technology where appropriate;
- Take preventive measures to minimise the risk of pollution caused by accidents.

²⁹ Resolution LDC 51(16) Concerning Disposal at Sea of Radioactive Wastes and Other Radioactive Matter. The resolution was adopted with 37 votes in favour, 0 against, and 7 abstentions. The United Kingdom and France were the last States to prohibit dumping of all radioactive wastes at sea.

³⁰ Article 3(3)(b) of Annex II allowed the United Kingdom and France to retain an option to return to dumping of low-and intermediate level wastes after 2008: however, at Sintra in 1998 both States have now confirmed that they will not retain this option and abandoned once and for all any claimed right to dump radioactive wastes or other materials into the marine environment: see *infra*. para 9.49.

This applies to pollution from radioactive substances: see Appendix 2, para 3(g). Appendix 1 of the 1992 Convention provides detailed definitions of “best available techniques” and “best environmental practices”. These definitions are to be taken into account and applied by the United Kingdom in giving effect to the requirements of Articles 194 and 207 of UNCLOS.

9.46. Of particular note is the provision common to the definitions of both “best available techniques”³¹ and “best environmental practices”³² to the effect that they are

³¹ “Best available techniques” means:

1. The use of the best available techniques shall emphasise the use of non-waste technology, if available.
2. The term “best available techniques” means the latest stage of development (state of the art) of processes, of facilities or of methods of operation which indicate the practical suitability of a particular measure for limiting discharges, emissions and waste. In determining whether a set of processes, facilities and methods of operation constitute the best available techniques in general or individual cases, special consideration shall be given to:
 - a. comparable processes, facilities or methods of operation which have recently been successfully tried out;
 - b. technological advances and changes in scientific knowledge and understanding;
 - c. the economic feasibility of such techniques;
 - d. time limits for installation in both new and existing plants;
 - e. the nature and volume of the discharges and emissions concerned.
3. It therefore follows that what is “best available techniques” for a particular process will change with time in the light of technological advances, economic and social factors, as well as changes in scientific knowledge and understanding.
4. If the reduction of discharges and emissions resulting from the use of best available techniques does not lead to environmentally acceptable results, additional measures have to be applied.
5. “Techniques” include both the technology used and the way in which the installation is designed, built, maintained, operated and dismantled.”

³² “Best environmental practices” means:

6. The term “best environmental practice” means the application of the most appropriate combination of environmental control measures and strategies. In making a selection for individual cases, at least the following graduated range of measures should be considered:
 - a. the provision of information and education to the public and to users about the environmental consequences of choice of particular activities and choice of products, their use and ultimate disposal;
 - b. the development and application of codes of good environmental practice which covers all aspect of the activity in the product’s life;
 - c. the mandatory application of labels informing users of environmental risks related to a product, its use and ultimate disposal;
 - d. saving resources, including energy;
 - e. making collection and disposal systems available to the public;
 - f. avoiding the use of hazardous substances or products and the generation of hazardous waste;
 - g. recycling, recovery and re-use;
 - h. the application of economic instruments to activities, products or groups of products;
 - i. establishing a system of licensing, involving a range of restrictions or a ban.
7. In determining what combination of measures constitute best environmental practice, in general or individual cases, particular consideration should be given to:
 - a. the environmental hazard of the product and its production, use and ultimate disposal;
 - b. the substitution by less polluting activities or substances;
 - c. the scale of use;
 - d. the potential environmental benefit or penalty of substitute materials or activities;
 - e. advances and changes in scientific knowledge and understanding;
 - f. time limits for implementation;
 - g. social and economic implications.

concepts which are not static and set in time but which, in relation to the operation of the MOX plant, “will change in time in light of technological advances, economic and social factors, as well as changes in scientific knowledge and understanding” (Appendix 1, paras. 3 and 8). As explained below, it is a central part of Ireland’s case that the United Kingdom has taken no account of this requirement, by authorising in 2001 (and without reference to these requirements) a MOX project which was inadequately assessed in 1993 in an assessment exercise which applied the outmoded technologies and environmental standards of 1993.

9.47. Since the 1992 OSPAR Convention came into force in 1998 the States which are parties have adopted further commitments, including in relation to radioactive discharges and pollution. These take into account the growing concerns about the potential impacts of radioactive pollution, even at the lowest levels, on the marine environment: see Chapter 3, paras. 3.54-3.60.³³

9.48. In 1998 the United Kingdom and Ireland joined other European States in adopting the Sintra Ministerial Declaration on future action to ensure the protection of the marine environment of the North-East Atlantic. The Declaration imposes significant new constraints on North-East Atlantic States. It imposes clear and immediate constraints on the United Kingdom, in particular in relation to activities at Sellafield, including in relation to the MOX and THORP plants. The importance of the Sintra Declaration has been recognised by The Royal Society³⁴ and by the United Kingdom’s Radioactive Waste Management Advisory Committee,³⁵ as well as other independent authorities.³⁶

9.49. At Sintra the Ministers from Ireland and the United Kingdom and other States emphasised their

“commitment to take all possible steps to achieve our overall objective for the protection of the marine environment of the North East Atlantic of preventing and eliminating pollution, protecting human health and ensuring sound and healthy marine ecosystems” (Preamble).

The Ministers also re-emphasised their

“clear commitments to the application of the precautionary principle and the polluter-pays principle and to the identification of best available techniques (BAT) and best environmental practice (BEP), including, where appropriate, clean technology” (Preamble)

8. It therefore follows that best environmental practice for a particular source will change with time in the light of technological advances, economic and social factors, as well as changes in scientific knowledge and understanding.

9. If the reduction of inputs resulting from the use of best environmental practice does not lead to environmentally acceptable results, additional measures have to be applied and best environmental practice redefined.

³³ See also the Mothersill Report, vol 2, Appendix 3, and the Liber Report, vol 2, Appendix 5.

³⁴ Vol 3(2), Annex 99, p 525 (“The ever more stringent targets imposed under the North Atlantic (OSPAR) Convention make passivisation [of radioactive wastes] increasingly difficult and expensive”).

³⁵ Vol 3(2), Annex 100, p 542 (“The 1995 Cm 2929 Government policy statement, which covered all aspects of radioactive waste management, is increasingly being overtaken by developments (such as the collapse of the Nirex repository programme and the 1998 OSPAR Sintra agreement”).

³⁶ STOA Report, November 2001, vol 3(3), Annex 105, p 175 (“The [Sintra] commitments are more onerous than appear at first sight. Ministers have committed themselves to achieving concentrations **in the environment** close to zero; not concentrations **in discharges**.”)

With respect to radioactive substances, the Ministers welcomed the announcements by the French and United Kingdom Governments that they were giving up their possible future exemptions from the ban on the dumping of low-level and intermediate-level radioactive wastes and welcomed the announcement of the United Kingdom Government that no new commercial contracts would be accepted for reprocessing spent fuel at Dounreay, with the result that there would be future reductions in radioactive discharges to the maritime area from that plant.³⁷ The Ministers declared:

“WE AGREE, in addition, to prevent pollution of the maritime area from ionising radiation through progressive and substantial reductions of discharges, emissions and losses of radioactive substances, with the ultimate aim of concentrations in the environment near background values for naturally occurring radioactive substances and close to zero for artificial radioactive substances. [...]

WE SHALL ENSURE that discharges, emissions and losses of radioactive substances are reduced by the year 2020 to levels where the additional concentrations in the marine environment above historic levels, resulting from such discharges, emissions and losses, are close to zero.”

It is to be noted that the emphasis as to result is on concentrations, and it is these that are to be reduced. The fulfilment of this obligation requires – at the very least – significant and immediate reductions in discharges of all radionuclides from all sources. It is a central part of Ireland’s case that the decision to authorise the MOX plant and to extend the life of the THORP plant is wholly inconsistent with the commitment undertaken by the United Kingdom just three years earlier. The Ministers also committed the OSPAR Commission to:

- “undertake the development of environmental quality criteria for the protection of the marine environment from adverse effects of radioactive substances and report on progress by the year 2003” and
- “continue to reduce radioactive discharges from nuclear installations to the marine environment by applying [Best Available Technology]”³⁸

9.50. At the same time, the Ministerial Meeting of the OSPAR Commission adopted a Strategy with Regard to Radioactive Substances, to guide the work of the Commission. The Strategy identified the following objective for the OSPAR Commission:

“the objective of the Commission with regard to radioactive substances, including waste, is to prevent pollution of the maritime area from ionising radiation through progressive and substantial reductions of discharges, emissions and losses of radioactive substances, with the ultimate aim of concentrations in the environment near background values for naturally occurring radioactive substances and close to zero for artificial radioactive substances.”³⁹

The Commission’s Strategy is “to develop programmes and measures to identify, prioritise, monitor and control (i.e. to prevent and/or reduce and/or eliminate) the emissions, discharges and losses of radioactive substances caused by human activities which reach, or could reach, the marine environment and which could cause pollution

³⁷ Sintra Ministerial Declaration, 23 July 1998; vol 3(1), Annex 76.

³⁸ *Ibid.*

³⁹ Vol 3(1), Annex 75, para 1.1.

through ionising radiation” (para. 3.1). The time frame for the implementation of the Commission’s strategy is:

By the year 2000: “the Commission will, for the whole maritime area, work towards achieving further substantial reductions or elimination of discharges, emissions and losses of radioactive substances”

By the year 2020: “the Commission will ensure that discharges, emissions and losses of radioactive substances are reduced to levels where the additional concentrations in the marine environment above historic levels, resulting from such discharges, emissions and losses, are close to zero.”

9.51. Beyond the general commitments and the specific undertaking to “continue” to apply best-available technologies, the consequences for the United Kingdom of the Ministerial Declaration and the Commission’s Strategy on Radioactive Substances are two-fold:

First, the United Kingdom commits itself with immediate effect to “progressive and substantial reductions of discharges of radioactive substances”, and

Second, the United Kingdom commits itself to the attainment of concentrations of artificial radionuclides in the environment of the Irish Sea at a level which are “close to zero” by 2020.

9.52. These commitments inform the United Kingdom’s obligations under Articles 194 and 207 of UNCLOS. If the United Kingdom is not meeting its Sintra Declaration commitment it cannot meet its obligations under UNCLOS. The commitments provides a baseline for assessing the substantive legality of the decision-making process relating to the MOX plant, as well as its operation and the consequences of its operation for other facilities at Sellafield, including THORP and the storage of radioactive wastes.

9.53. In June 2000 the OSPAR Commission adopted Decision 2000/1 on *Substantial Reductions and Elimination of Discharges, Emissions and Losses of Radioactive Substances, with Special Emphasis on Nuclear Reprocessing*. It entered into force on 16 January 2001 for those states supporting it.⁴⁰ The Decision sought to implement the commitment set forth in the 1998 Sintra Ministerial declaration and:

- Noted “that a study of the alternative nuclear fuel cycles has now been carried out by the Nuclear Energy Agency (NEA) of the Organisation for Economic Co-operation and Development (OECD)”;
- Noted “that the NEA-study has demonstrated that implementing the non-reprocessing option (dry storage) for spent fuel would eliminate the discharges and emissions of radioactive substances that currently arise from reprocessing it”;
- Noted “that discharges from nuclear reprocessing facilities can be traced through the Irish Sea, the North Sea, along the Norwegian coast into the Arctic and Atlantic Oceans giving rise to elevated levels [of radioactivity] in biota”;
- Recognised “that the reduction of discharges and emissions of radioactive substances from nuclear reprocessing facilities would be beneficial for the

⁴⁰ Vol 3(1), Annex 78. No party objected to Decision 2000/1: France and the United Kingdom abstained.

legitimate uses of the sea, technically feasible, and would diminish the radiological impacts of radioactive substances on man and biota”;

- Expressed concern “that nuclear reprocessing facilities in the North-East Atlantic area are the dominant sources of discharges, emissions and losses of radioactive substances and that implementing the non-reprocessing option for spent nuclear fuel would, therefore, produce substantial reductions of discharges, emissions and losses of radioactive substances into the North-East Atlantic”;
- Encouraged “relevant Contracting Parties to immediately begin negotiations with regard to all existing contracts for the reprocessing of spent nuclear fuel, with the aim of implementing the non-reprocessing option for spent nuclear fuel;” and
- Encouraged “Contracting Parties not to authorise new nuclear reprocessing facilities or substantial increases of capacity of existing nuclear reprocessing facilities.”

9.54. The operative part of the Decision stipulated:

“The current authorisations for discharges or releases of radioactive substances from nuclear reprocessing facilities shall be reviewed as a matter of priority by their competent national authorities, with a view to, *inter alia*:

- implementing the non-reprocessing option (for example dry storage) for spent nuclear fuel management at appropriate facilities;
- taking preventive measures to minimise the risk of pollution by accidents.”

9.55. In June 2001 the parties to the OSPAR Commission adopted Decision 2001/1 on the Review of Authorisations for Discharges or Releases of Radioactive Substances from Nuclear Reprocessing Facilities.⁴¹ The Decision also sought to implement the commitment set forth in the 1998 Sintra Ministerial Declaration and:

- Recognised “that in order to act in compliance with the time frame, laid down in Paragraphs 4.1(a) and (b) of the OSPAR Strategy with regard to Radioactive Substances, there is an urgent need to achieve further substantial reductions or elimination of discharges, emissions and losses of radioactive substances”;
- Noted “that OSPAR 2000 decided that the current authorisations for discharges or releases of radioactive substances from nuclear reprocessing facilities shall be reviewed as a matter of priority by the competent national authorities of the Contracting Parties to the OSPAR Convention”; and
- Recognised “that nuclear spent fuel reprocessing activities represent the dominant source of radioactive contamination of the marine environment of the North-East Atlantic”.

The operative part of the Decision stipulated that:

⁴¹ Vol 3(1), Annex 79. France, United Kingdom and Switzerland abstained.

“The current review of authorisations for discharges or releases of radioactive substances from nuclear reprocessing facilities shall be completed as a matter of urgency.”

9.56. In March 2002 the United Kingdom joined in support of the Bergen North Sea Declaration, which encouraged “relevant North Sea States to evaluate the options for spent fuel management after current reprocessing contracts have come to an end”.⁴² France was alone in opposing that commitment, indicating that it could not endorse this commitment.⁴³ In contrast to France’s position, the United Kingdom is now formally committed to review options other than reprocessing.

9.57. Notwithstanding these commitments adopted in 1998, 2000 and 2001, the United Kingdom appears to have taken no account of them in the decisions to authorise the MOX plant and, in so doing, to commit to additional reprocessing contracts and activity at the THORP plant. The United Kingdom’s October 2001 Decision authorising the MOX plant makes no reference to any of these commitments, and makes no effort to explain how the authorisation of the MOX plant and the consequential increase in reprocessing activity at the THORP plant can be reconciled with a strategy on the part of the United Kingdom to meet the targets to which it had committed itself.

SUMMARY ON INTERNATIONAL RULES AND STANDARDS

9.58. In summary, these rules of international law, which are consistent with UNCLOS and which the Annex VII Tribunal is required by UNCLOS Article 293 to apply (see Chapter 6) reflect the following:

- The recognition by the whole of the international community that the discharge of radioactive substances into the marine environment is *per se* harmful;
- The general commitment of the international community to prevent and eliminate pollution of the marine environment by radioactive substances;
- The specific and express commitment of Ireland, the United Kingdom and all other members of the United Nations (pursuant to paragraph 22.5(b) of Agenda 21) not to authorise or allow the storage or disposal of radioactive wastes near the marine environment, unless they determine that the scientific evidence shows that such storage or disposal poses no unacceptable risk to people and the marine environment or does not interfere with other legitimate uses of the sea, making, in the process of consideration, appropriate use of the concept of the precautionary approach;
- The specific and express commitment of Ireland and the United Kingdom, and other parties to the 1992 OSPAR Convention, to apply the precautionary principle in considering the authorisation of discharges of all polluting substances into the marine environment;
- The specific and express commitment of the United Kingdom, and other parties to the 1992 OSPAR Convention, to require the use of best available

⁴² Vol 3(2), Annex 86, p 162 (para 68(iv)).

⁴³ *Ibid.*

technologies and best environmental practices in respect of all activities that might cause pollution of the marine environment;

- The specific and express commitment of the United Kingdom, and other parties to the OSPAR Convention, to achieve “progressive and substantial reductions of discharges of radioactive substances” into the Irish Sea and to ensure that additional concentrations above historic levels of artificial radionuclides in the environment of the Irish Sea are at a level which are “close to zero” by 2020;
- The specific and express commitment of States Parties to the OSPAR Convention to consider alternatives to reprocessing and to implement a “non-reprocessing option for spent nuclear fuel”, and to that end to review discharge authorisations.

These commitments are in addition to the specific obligations of the United Kingdom to carry out a full and proper assessment of the direct and indirect impacts of the MOX plant prior to its authorisation (see Chapter 7) and to co-operate fully with Ireland in relation to the possible impacts of the MOX plant (see Chapter 8).

**C: THE DISCHARGE AND RELEASE OF RADIOACTIVE SUBSTANCES
ASSOCIATED WITH THE AUTHORISATION OF THE MOX PLANT
IS “POLLUTION” AND CONSTITUTE “TOXIC, HARMFUL AND
PERSISTENT SUBSTANCES”**

9.59. The radioactive substances which will be discharged into the Irish Sea and into the atmosphere as a result of the authorisation of the MOX plant – including from the MOX plant and the THORP plant – are pollution within the meaning of UNCLOS. They are also recognised to be toxic, harmful and persistent, within the meaning of UNCLOS.

9.60. The especially hazardous characteristics of radiation are widely recognised, as is the need for special measures of precaution. In its 1996 *Advisory Opinion on the Legality of the Use of Nuclear Weapons* the International Court of Justice stated:

“[i]onizing radiation has the potential to damage the future environment, food and marine ecosystem, and to cause genetic defects and illness in future generations”.⁴⁴

POLLUTION

9.61. Article 1(4) of UNCLOS defines “pollution of the marine environment” as:

“the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities.”

⁴⁴ 1996 ICJ Reports, p 226 at 244 (para 35).

9.62. This is a broad definition. It applies to all substances that are introduced by man into the marine environment. It plainly encompasses radioactive substances, including all the radioactive substances which will reach the Irish Sea directly as a result of the authorisation of the MOX plant (see Chapter 3). The definition also includes radioactive substances that reach the marine environment by indirect means, for example by release into the atmosphere (see UNCLOS Article 212).

9.63. The definition also encompasses any unplanned release or releases which might occur as a result of accident or terrorist act at the MOX plant and associated activities, including in the course of international transport to and from the MOX plant and at the THORP plant and in relation to any waste storage facilities associated with the MOX or THORP plants.

9.64. It cannot be claimed, in respect of any of the planned or unplanned discharges arising from the authorisation of the MOX plant, that they will not or could not result in or be likely to result in “such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities”. These words are to be interpreted and applied in the light of the precautionary principle.⁴⁵ As one leading commentator has put it:

“Il est à remarquer que la définition de la pollution marine a évolué sous l’influence du principe de précaution. Les conventions relatives à la protection du milieu marin adoptées dans le courant des années 1970 définissaient la pollution marine de façon plus restrictive, en considérant qu’il ne pouvait être question de “pollution” que lorsqu’il était démontré que l’introduction de substances ou d’énergie dans la mer avait des effets préjudiciables.”⁴⁶

9.65. In the Provisional Measures phase of these proceedings, before ITLOS, the United Kingdom asserted that “the radiological detriments that would arise from the manufacture of MOX fuel would be very small and that any effects on wildlife would be negligible”.⁴⁷ But it did not challenge Ireland’s assertion that these discharges were pollution within the meaning of UNCLOS.

9.66. Indeed, it is now accepted that even at the lowest levels, the possibility of radioactive pollution causing harm to human health and to other living resources cannot be excluded. As the United Kingdom’s National Radiological Protection Board puts it:

“There is very strong scientific evidence that the energy from radioactive material affects the cells of the body, mainly because of the damage it can cause to cellular genetic material known as DNA. DNA controls the way in which each individual cell behaves. At high doses enough cells may be killed by damage to DNA and other parts of the cell to cause great injury to the body and even rapid death. At lower doses there will be no obvious injury but a number of the cells that survive will have incorrectly repaired the DNA damage so that they carry mutations. Some specific mutations leave the cell at greater risk of being triggered to become

⁴⁵ Supra, para 9.61.

⁴⁶ J. Salmon (ed.), *Dictionnaire de droit international public* (Brussels, 2001), p 847 (“It is to be noted that the definition of pollution has evolved under the influence of the precautionary principle. Treaties addressing the protection of the marine environment which were adopted in the 1970’s defined pollution in a more restrictive manner, considering that “pollution” could only occur if it had been shown that the introduction of substances or energy into the sea had caused harmful effects”: unofficial translation).

⁴⁷ United Kingdom, *Written Response*, 15 November 2001, para 60.

cancerous in the future. The body will already carry cells with these mutations from other causes but the ionising radiation exposure increases the number of these mutant cells. It therefore increases the chance of cancer development, usually after many years.

The scientific information that has been obtained worldwide leads NRPB to believe that even the lowest dose of ionising radiation, whether natural or man-made, has a chance of causing cancer. The extra cancer risk from very low doses will be extremely small and, in practice, undetectable in the population. However the extra cancer risk at higher doses may be detectable using statistical methods. Even after high dose exposure it is rarely possible to be certain that radiation was directly responsible for a cancer arising in an individual.”⁴⁸ (emphasis added)

9.67. The introduction of radioactive substances into the marine environment – even in the smallest quantities – has the potential to harm life and the environment and hinder marine activities, to impair the quality for use of sea-water, and to reduce amenities.

9.68. This is confirmed also by the independent reports commissioned by Ireland for the purpose of these proceedings, in particular the Mothersill Report⁴⁹ and the Salbu Report.⁵⁰

RADIOACTIVE SUBSTANCES ARE “TOXIC”,
“HARMFUL” AND “PERSISTENT”

9.69. Article 194 of UNCLOS requires particular measures of protection to be applied where a State is dealing with releases – or potential releases – of substances which are toxic, harmful or noxious, especially those which are persistent.⁵¹ It is self-evident that radioactive substances in the quantities which are planned to be discharged from the MOX plant and from the THORP plant are “toxic”, “harmful” and “persistent”.

9.70. The radioactivity in plutonium dioxide – one of the products of THORP reprocessing and one of the ingredients in the manufacture of MOX fuel – makes it a highly toxic material. If a person inhales into the lungs less than a 100 micrograms of plutonium dioxide (which is too small a quantity to be visible to the human eye), it is highly probable that he or she will develop lung cancer. If a few milligrams are ingested there is a high probability of developing liver or bone cancer.

9.71. By any standard, potential consequences of this kind necessarily mean that plutonium dioxides and the other radioactive substances produced by the THORP plant and used in the manufacture of MOX fuel, as well as the radioactive waste products arising from both plants, are “harmful” within the meaning of Article 194 of UNCLOS.

9.72. Radionuclides may not be “noxious” within the meaning of UNCLOS, at least in the sense that they cannot be seen or felt or tasted or smelt. This is one of the reasons they are so feared.

⁴⁸ http://www.nrp.org/radiation_topics/risks/damage.htm (web site last visited on 10 June 2002).

⁴⁹ Vol 2, Appendix 3.

⁵⁰ Vol 2, Appendix 2.

⁵¹ *Supra.*, paras 9.11.

9.73. The radioactive substances produced by the THORP plant and used in the manufacture of MOX fuel, as well as the radioactive waste products arising from both plants, are also “persistent” within the meaning of Article 194 of UNCLOS. Many of them will have half-lives of tens or hundreds of years, and in some cases thousands of years (plutonium-239 has a half life of 24,400 years).

9.74. The potential dangers of these radioactive substances is graphically illustrated by the events around the Dounreay reprocessing plant. Since 1984 individual particles have been found on the beaches and in the waters around the Dounreay plant (which is not part of the Sellafield site). This has led to beach closures and legal action by a local landowner.⁵²

D: THE UNITED KINGDOM HAS VIOLATED UNCLOS

9.75. By authorising the MOX plant and allowing it to be brought into operation the United Kingdom has violated general obligations of the 1982 Convention concerning the obligation to prevent pollution and protect the marine environment, as set forth in Article 194 of UNCLOS. The United Kingdom has also violated other provisions of the UNCLOS which establish specific obligations to prevent pollution from land-based sources (Articles 207 and 213 UNCLOS), to prevent pollution through the atmosphere (Articles 212 and 222) and to take steps to prevent pollution from vessels (Article 211 and 217 UNCLOS).

9.76. In summary terms these obligations, when taken together, require the United Kingdom “to take all necessary measures” to prevent, reduce and control pollution of the Irish Sea, and to protect the marine environment of the Irish Sea. To meet this general obligation two pre-requisites must be satisfied: first, the United Kingdom should have assessed the potential effects of the authorisation and operation of the MOX plant on the marine environment of the Irish Sea, and second, the United Kingdom should have applied the precautionary principle. It has done neither, and on this basis alone cannot be said to have met its general obligations to protect and preserve the marine environment of the Irish Sea.

ENVIRONMENTAL IMPACT ASSESSMENT

9.77. Chapter 7 has described the manner which in the United Kingdom has failed to meet its obligations under Article 206 of the 1982 Conventions. The failings are manifest. As set out in Chapter 7, the United Kingdom should have assessed the current environmental conditions of the Irish Sea (radioactive contamination), with a view to

⁵² See The Times, 5 July 2002 (“A landowner who says that his beach has been contaminated by radioactive particles from Dounreay nuclear power station began legal action against the UK Atomic Energy Authority yesterday. Geoffrey Minter, who owns Sandside Bay next the power station in Caithness, said that he launched a private lawsuit after failing to reach a solution during a five-year campaign to get the Dounreay authorities to clean up their waste. In his petition Mr Minter states that the first radioactive particle was washed up on the beach in 1984, seven years before he bought the Sandside House which includes the bay, a harbour and golf course. [...] Two more radioactive particles were found in 1997 and since the introduction of improved monitoring a further 17 particles have been detected. The Atomic Energy Authority said that it would consider the issues raised by the petition before issuing a formal response. It said its monitoring procedure met specifications regulated by the Scottish Environment Protection Agency.”)

assessing the impacts of additional discharges arising from the authorisation and operation of the MOX plant. It should have identified the discharges from the MOX plant and those from the THORP plant which would not have occurred but for the authorisation and operation of the MOX plant. It should have identified the generation of solid radioactive wastes arising from the MOX plant and from the THORP plant (including the EARP plant), and assessed their impacts on current waste storage facilities at Sellafield. It should have assessed the possibility of accidents (or incidents) arising from transports associated with the MOX plant both to and from Sellafield. The United Kingdom has done none of these things. Having failed to carry out a proper environmental assessment, the United Kingdom cannot claim to know what will be the impact of the authorisation and operation of the MOX plant on the Irish Sea.

9.78. These failures become all the more material in light of the commitment which the United Kingdom accepted, in the summer of 1998, to reduce to “close to zero” the concentrations of artificial radionuclides in the Irish Sea, by 2020. The environmental impacts of the authorisation and operation of the MOX plant does not appear to have been assessed by the United Kingdom by reference to that standard. If there has been such an assessment it has not been made public, and it has not been shared with Ireland. No such assessment was identified in the United Kingdom’s document explaining the October 2001 Decision to authorise the MOX plant (the communication of the results of any assessment is an essential part of the process of being seen to have taken account of its 1998 undertaking). In these circumstances the United Kingdom cannot reasonably claim to have taken all measures necessary to protect the marine environment of the Irish Sea.

PRECAUTIONARY PRINCIPLE

9.79. As described in more detail in Chapter 6,⁵³ in this case the application of the precautionary principle means that

“preventive measures are to be taken when there are reasonable grounds for concern that substances or energy introduced, directly or indirectly, into the marine environment may bring about hazards to human health, harm living resources and marine ecosystems, damage amenities or interfere with other legitimate uses of the sea, even when there is no conclusive evidence of a causal relationship between the inputs and the effects”.⁵⁴

This language, in Article 2(2)(a) of the 1992 OSPAR Convention, is binding on the United Kingdom and directly applicable to the authorisation of the MOX plant. It reflects in treaty language the customary rule reflected in Agenda 21, whereby Ireland and the United Kingdom joined more than 170 other states in expressly undertaking to

“Not promote or allow the storage or disposal of high-level, intermediate-level and low-level radioactive wastes near the marine environment unless they determine that scientific evidence, consistent with the applicable internationally agreed principles and guidelines, shows that such storage or disposal poses no unacceptable risk to people and the marine environment or does not interfere with

⁵³ See Paras 6.22 *et seq.*

⁵⁴ *Ibid*, para 6.22.

other legitimate uses of the sea, making, in the process of consideration, appropriate use of the concept of the precautionary approach.”⁵⁵

The applicability of the precautionary principle to this case does not appear to be in dispute.⁵⁶

9.80. What does the precautionary principle mean in the present case? Guidance may be found in a Communication from the European Commission on the precautionary principle, adopted in February 2000.⁵⁷ The Communication recognises that recourse to the precautionary principle is relevant “only in the event of a potential risk, even if this cannot be fully demonstrated or quantified”.⁵⁸ That requirement is plainly satisfied in the case of the discharge of radioactive substances directly into the environment, as in this case.⁵⁹

9.81. In determining whether to apply the precautionary principle, the Commission Communication recommends (as Step 1) that there be a prior “identification of the potentially negative effects of a phenomenon”, and (Step 2) that “the scientific data relevant to the risks [...] be evaluated”.⁶⁰ In respect of the MOX plant the authorisation process does not appear to have identified the potentially negative effects on the marine environment of discharges of the relevant quantities of radioactive materials, in particular those arising from the THORP plant which would not otherwise have occurred. And the MOX authorisation process (in particular the Environment Impact Report) has not generated the “scientific data relevant to the risks”, because it has not accurately determined what those risks are. It has omitted the vast majority of the radioactive discharges which will result from the authorization of the MOX plant. Neither Step 1 nor Step 2 appears to have occurred.

9.82. The Commission Communication then recommends (Step 3) that a “scientific evaluation of the potential adverse effects should be undertaken based on available data when considering whether measures are necessary to protect the environment, the human, animal or plant health”, including by means of risk assessment.⁶¹ The Communication states that this requires

“reliable scientific data and logical reasoning, leading to a conclusion which expresses the possibility of occurrence and the severity of a hazard’s impact on the environment, [...] including the extent of possible damage, persistency, reversibility and delayed effect. [...]

⁵⁵ Agenda 21, paragraph 22.5(2), 14 June 1992, A/CONF.151/26/Rev.1 (vol 3(2), Annex 82) .See also Agenda 21, Chapter 17, para 17.5(d) (“Coastal states commit themselves to ... [a]pply preventive and precautionary approaches in project planning and implementation, including prior assessment and systematic observation of the impacts of major projects”), para 17.22. See also para 111(a) of the Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities (1995), vol 3(2), Annex 83.

⁵⁶ During the course of the provisional measures phase of proceedings before the International Tribunal for the Law of the Sea the United Kingdom did not challenge Ireland’s characterisation of the precautionary principle as having the status of customary international law. In prescribing its measure the International Tribunal applied “prudence and caution”: Order of 3 December 2001, vol 3(1), Annex 3.

⁵⁷ Vol 3(2), Annex 84.

⁵⁸ *Ibid*, p 13.

⁵⁹ See Chapter 3, paras 3.50-60.

⁶⁰ *Ibid*, p 14.

⁶¹ *Ibid*.

Where possible, a report should be made which indicates the assessment of the existing knowledge and the available information, providing the views of the scientists on the reliability of the assessment as well as on the remaining uncertainties. If necessary, it should also contain the identification of topics for further research.”⁶²

The Commission Communication therefore makes it clear that risk assessment comprises four elements, namely hazard identification, hazard characterisation, appraisal of exposure and risk characterisation.⁶³ Not one of the decision documents relating to the authorisation of the MOX plant indicate that the consequences of the discharges from the MOX plant – both direct and indirect, and taking account of their cumulative consequences – have been subject to this scrutiny. As the Communication makes clear:

“An attempt to complete these four steps should be performed before a decision to act is taken.”⁶⁴

Ireland is not aware of any available material which indicates that the United Kingdom subjected the consequences of the authorisation of the MOX plant to hazard identification, to hazard characterisation, to appraisal of exposure or to risk characterisation, either before or after the plant was authorised. There is nothing in the Environmental Impact Statement⁶⁵ or the October 2001 Decision⁶⁶ which indicates that this step (Step 3) has been complied with. If there has been such an assessment it has not been published. All the United Kingdom did was to assess whether the MOX plant discharges could be accommodated within existing (1996) discharge authorisations. It is apparent, therefore, that the United Kingdom has not made, in the process of consideration of the MOX plant, appropriate (or indeed any) use of the concept of the precautionary approach, as international law requires.

9.83. Once these three steps have taken place, and the decision-maker becomes aware of “a risk to the environment or human, animal or plant health that in the event of non-action may have serious consequences”, the decision-maker should (according to the Commission) obtain “through a structured approach, a scientific evaluation, as complete as possible, of the risk to the environment, or health, in order to select the most appropriate course of action”.⁶⁷ This is, in effect, Step 4, but it only comes into play once the earlier three steps have been performed. Since this did not occur in the case of the MOX plant, the UK decision-makers never reached Step 4. If they had, they should have sought to obtain “as objective and complete as possible scientific evaluation” which would cast light on the existing objective evidence, the gaps in knowledge and the scientific uncertainties.”⁶⁸

9.84. This would lead to Step 5: a basis for triggering a decision to invoke the precautionary principle, having regard to the scientific evaluation, on the basis that the desired level of protection for the environment “could be jeopardised”.⁶⁹ In this case the

⁶² *Ibid.*

⁶³ *Ibid.*

⁶⁴ *Ibid* (emphasis added).

⁶⁵ Vol 3(3), Annex 103.

⁶⁶ Vol 3(2), Annex 92.

⁶⁷ *Ibid* p 16. And of course the decision-maker is bound to apply current environmental standards, not old standards: see ICJ, *Case Concerning the Gabčíkovo-Nagymaros Project*, 1997 ICJ Reps, p 7, para 140.

⁶⁸ *Ibid.*

⁶⁹ *Ibid.*

desired level of protection is that reflected in the 1998 Sintra Ministerial decision requiring the United Kingdom and Ireland to take steps to reduce anthropogenic concentrations of radionuclides in the Irish Sea to “close to zero” by 2020. The documents relating to the authorisation of the MOX plant make no mention of this objective. The 1993 Environmental Impact Statement predated the Sintra commitment by five years. The October 2001 Decision referred to the discharge authorisation approved by the Environment Agency in 1996 – two years before the Sintra commitment. So even if the United Kingdom had reached Step 5, it would have failed to have properly applied the Commission’s criteria for deciding whether to apply precautionary protective measures.

9.85. If the United Kingdom had reached that point, the following aspects should, according to the Commission’s guidelines, be taken into account:

- the views of scientific advice, even if the views are supported only by a credible and reputable minority fraction of the scientific community;⁷⁰
- The absence of scientific proof of the existence of a cause-effect relationship, a quantifiable dose/response relationship or a quantitative evaluation of the probability of the emergence of adverse effects should not be used to justify a failure to take additional protective measures;⁷¹
- Risk reduction measures other than a total ban should be considered, including appropriate treatment, reduction of exposure, tightening of controls, and adoption of provisional limits;⁷²
- Long-term effects must be taken into account in evaluating the proportionality of measures whose effects will not surface until ten or twenty years later or will affect future generations, in particular where effects on the eco-system are concerned;⁷³ and
- Requirements linked to the protection of public health should undoubtedly be given greater weight than economic considerations.⁷⁴

9.86. In summary, environmental impact assessment requirements, and the need to apply the precautionary principle, must be applied to the decision-making procedures associated with the authorisation of the MOX plant. Properly applied, either would have generated a more significant quantity of scientific material relating to the consequences of the authorisation and operation of the MOX plant and associated activities at THORP. The failure to prepare a proper environmental impact statement, and the absence of consideration of the precautionary principle, mean that the decision to authorise the MOX plant was taken on the basis of an insufficient baseline of information.

9.87. These manifest and early failures contribute materially to the United Kingdom’s violation of its obligations under the UNCLOS. Having failed properly to identify all the consequences of the authorisation of the MOX plant, and then to assess those consequences by reference to (1) their impacts on the marine environment of the Irish Sea, and (2) the United Kingdom’s specific legal obligations (in particular the commitment to reduce concentrations above historic levels of radionuclides in the Irish Sea to “close to

⁷⁰ *Ibid*, p 17.

⁷¹ *Ibid*.

⁷² *Ibid*, p 18.

⁷³ *Ibid*.

⁷⁴ *Ibid*, p 21

zero” by 2020), there is no basis upon which the United Kingdom can claim to have taken “all steps necessary” to prevent pollution, or to have applied “best environment practices” or “best available technologies”, or to have minimized “to the fullest extent possible” the release of radioactive substances into the Irish Sea.

9.88. Ireland’s case is not only that the discharges flowing from the authorisation of the MOX plant will necessarily cause quantifiable environmental damage to the Irish Sea, and that they will necessarily result in a failure to reach the objectives of the Sintra Ministerial Declaration.

9.89. Rather, it is also that the omissions and failures in the decision-making process – the procedural violations – have prevented the United Kingdom from properly directing itself as to the substantive standards which are to be met.

9.90. As a consequence of its inactions and omissions the United Kingdom has proceeded to the decision to authorise the MOX plant (together with additional and prolonged discharges from the THORP plant, the increased risks arising from more international transports, and the consequences of additional waste streams for storage) in the absence of a proper information base. To this day, none of the United Kingdom’s decision-making documents which are in the public domain or have been made available to Ireland properly and completely quantify the environmental consequences of the MOX plant.

9.91. It is against the background of these general observations that the United Kingdom’s violations of the substantive obligations of UNCLOS fall to be assessed. Those violations fall into four categories (although there will necessarily be a degree of overlap between them), and it is appropriate to consider the authorisation process as a whole and not only reference to specific sectoral requirements. The four categories are:

- Violations of general obligations to prevent pollution (paragraphs 9.92-9.111);
- Violations relating to obligations to prevent pollution from land-based sources (paragraphs 9.112-9.145);
- Violations relating to obligations to prevent pollution from vessels (paragraphs 9.146-9.156); and
- Violations relating to obligations to prevent pollution through the atmosphere (paragraphs 9.157-9.169).

VIOLATIONS OF THE GENERAL OBLIGATION TO PREVENT POLLUTION

1. The United Kingdom has failed to “take all measures consistent with UNCLOS that are necessary” to prevent, reduce and control pollution of the Irish Sea

9.92. Article 194(1) requires the United Kingdom to “take ... all measures consistent with [the 1982] Convention that are necessary to prevent reduce and control pollution of the marine environment” resulting from the authorisation of the MOX plant. Such measures are to make use of “best practicable means” at the disposal of the United Kingdom.

9.93. The authorisation of the MOX plant will lead to intended and unintended discharges directly to the marine environment from the MOX plant, as well as through the atmosphere.⁷⁵ The intended discharges from the MOX plant are identified (in very general terms) in the 1993 Environmental Statement.⁷⁶ The intended discharges from the THORP plant which will arise as a direct result of the authorisation of the MOX plant have not been identified or quantified.⁷⁷ The unintended discharges – including from transports and waste facilities, whether by reason of accident or terrorist incident – do not appear to have been identified by the United Kingdom or subject to a risk assessment in accordance with the precautionary principle. All of these discharges – intended or unintended, assessed and not assessed – constitute “pollution” within the meaning of UNCLOS.⁷⁸

9.94. As set out above (Chapter 3, para. 3.16), the United Kingdom has not identified all the consequences of the authorisation and operation of the MOX plant. Such identification is a necessary pre-requisite. The omissions relate to the failure to carry out a proper environmental impact assessment and the failure to apply the precautionary principle in deciding to locate the MOX plant next to the marine environment, with the result that no risk assessment was carried out properly or indeed at all.

9.95. Without the benefit of a proper base of information to assess all the environmental impacts of the MOX plant it is difficult to see how the United Kingdom could have been in a position to decide what was necessary, and hence to “take all the measures necessary” to prevent, control and reduce pollution of the Irish Sea.

9.96. Having failed to direct itself to the discharges which would occur from the THORP plant as a result of the authorisation and operation of the MOX plant, the United Kingdom could not be in a position to identify what the consequences of discharges from the THORP plant would be. Without the benefit of that information a State cannot determine what measures (if any) might be necessary to reduce or control the consequences to comply with the requirements of the Convention.

9.97. These failures become all the more material as a result of the fact that the THORP plant has never been subject to an environmental impact assessment.⁷⁹

9.98. The decision to authorise the MOX plant is, in effect, a decision to extend the operating life of the THORP plant, but without the benefit of having subjected that increased activity to any environmental impact assessment procedure. In the circumstances the United Kingdom has not taken “all measures necessary” to prevent, control or reduce pollution of the Irish Sea.

9.99. Article 194(1) also requires the United Kingdom to make use of the “best practicable means” at its disposal, in taking the “necessary” measures. The words “best practicable means” direct states towards what is essentially a question of fact. “Best practicable means” requires, at the very least, use of “best available technologies” and “best environmental practices”.

⁷⁵ See Chapter 3, paras 316-42.

⁷⁶ See Chapter 7, paras 7.43-48.

⁷⁷ See Chapter 3, paras, 3.50 *et seq.*

⁷⁸ *Supra.*, para 9.61-68.

⁷⁹ Chapter 4, para 4.6.

9.100. By failing to carry out a proper environmental impact assessment on the discharges from the MOX plant, and any environmental impact assessment at all in respect of the THORP discharges and the potential environment consequences of international transports and the storage of additional quantities of radioactive wastes, the United Kingdom cannot claim to have made use of “best environmental practices”. As set out below (paragraphs 9.118-9.121), the United Kingdom has authorised the operation of the MOX plant, and the continued and increased operation of the THORP plant, on the basis of technologies which are not the “best available technologies”. For these reasons also the United Kingdom has violated Article 194(1) of the UNCLOS.

2. The United Kingdom has failed to take “all measures necessary” to ensure that MOX plant does not cause damage by pollution to Ireland and its environment

9.101. The first part of Article 194(2) of UNCLOS requires the United Kingdom to take “all measures necessary” to ensure that the authorisation and operation of the MOX plant (together with the consequential increase and prolongation in the operation of THORP, increased transports and the storage at Sellafield of additional quantities of radioactive wastes) does not cause “damage by pollution” to Ireland and its environment.

9.102. It is important to note that the obligation here relates to “damage by pollution”, and not pollution *per se*. The term “damage” is not defined in UNCLOS, but plainly refers to something other than the mere presence of “pollution”. In general international law the term includes both material and other damage: see Article 31 of the ILC Articles on Responsibility of States for internationally wrongful acts.⁸⁰ “Damage” would therefore include material damage to habitats and species, to human health and to the environment, as well as economic losses (for example in the tourism and fisheries industries) arising as result of radioactive contamination of the environment. Damage may also occur where the steady and constant discharge of radioactive wastes into Irish waters – even at low levels – can cause Ireland to take preventive measures, for example additional monitoring of radioactive pollution of the marine environment, or enhanced emergency preparedness plans, including their preparation and testing. There would also be “damage by pollution” where concentrations of radionuclides in the Irish Sea were above the level of “close to zero” after 2020. Any act by the United Kingdom – such as the authorisation of the MOX plant – which contributed to such a situation would not be in conformity with the United Kingdom’s obligation to reduce discharges of radioactive substances into the marine environment so as to meet the commitment to reduce concentrations of radioactive substances to “close to zero” by 2020, would give rise to “damage by pollution”, and would violate the first part of Article 194(2) of UNCLOS.

9.103. However, Ireland is not required to show that it has suffered – or even that it will suffer – “damage by pollution” in order to establish that the United Kingdom has violated this part of Article 194(2). It is sufficient for present purposes – as for the obligations under Article 194(1) – to show that the United Kingdom has failed to take “all measures necessary” to prevent “damage by pollution”. It is sufficient for these purposes to establish that the United Kingdom has failed to take all necessary measures to ensure that the authorisation of the MOX plant is consistent with the commitment to reduce concentrations of radionuclides in the Irish Sea to “close to zero” by 2020.

⁸⁰ UN doc. A/56/10 (2001), p 43.

9.104. The word “all” indicates the full extent of this obligation. “All necessary measures” must include measures which will allow the United Kingdom to properly identify and then assess the consequences of the authorisation and operation of the MOX plant. For the reasons set out in the preceding section, the United Kingdom has failed to take such measures. It has failed to prepare – or to cause the developer of the MOX facility to prepare – a proper and complete base of information against which it can assess all the consequences of the MOX plant as against the “close to zero” obligation. In taking the decision to authorise the MOX plant on the basis of inadequate and incomplete information it cannot be said that the United Kingdom has taken “all the measures necessary” to prevent “damage by pollution” to Ireland.

3. The United Kingdom has failed to take “all measures necessary” to ensure that pollution from the MOX plant “does not spread beyond the areas” where it exercises sovereign rights

9.105. The second part of Article 194(2) requires the United Kingdom to take “all measures necessary” to ensure that pollution arising from the authorisation of the MOX plant (and including consequential discharges from THORP) “does not spread beyond the areas” where the United Kingdom exercises sovereign rights. It is apparent that this is a separate, distinct and additional obligation to that set forth in the first part of Article 194(2).

9.106. Moreover, this obligation does not require any claim relating to the existence of “damage”: a claim is well-founded if it can be shown that (1) pollution will be caused as a result of the authorisation and operation of the MOX plant, and (2) such pollution enters the Irish Sea, (3) it is transported beyond the waters over which the United Kingdom has jurisdiction or sovereign rights and enters Irish waters, and (4) the United Kingdom has failed to take “all necessary measures” to ensure that this does not occur.

9.107. As to (1), there can be no dispute that the discharges of radioactive substances into the Irish Sea (as well as indirect arisings through the atmosphere) which are intended to result from the operation of the MOX and THORP plants constitute “pollution”. What is not known are the amounts, as the United Kingdom has not published – or apparently sought to obtain – information as to the volume of discharges which will arise from activities at the THORP plant for the purposes of producing plutonium oxides for use in the MOX plant.⁸¹ It has not even published estimates.

9.108. As to (2), there can be no dispute that these discharges will enter the Irish Sea.

9.109. As to (3), the evidence tendered by Ireland confirms that at least some of the radionuclides which are discharged from the MOX and THORP plants will reach Irish waters. This is apparent from the Nies Report⁸² and the Salbu Report.⁸³ Some of these radionuclides will be deposited in the sediment at the bottom of the Irish Sea where they can remain for many years, or be reintroduced into the marine environment and transported over significant distances, through remobilisation.

⁸¹ For Ireland’s estimates see Chapter 3, paras 3.50 *et seq.*

⁸² Vol 2, Appendix 4.

⁸³ Vol 2, Appendix 2.

9.110. As to (4), the analysis which has been applied to the other obligations under Article 194 of UNCLOS applies equally to this obligation. The United Kingdom has not put itself in a position to be informed as to the totality of radioactive discharges from the MOX and THORP plants which will occur as a consequence of its decision of 3 December 2001, authorising the operation of the MOX plant. It has not informed itself how much “pollution” will be caused by the authorisation of the MOX plant. A State which has failed to inform itself as to how much pollution its authorisation of an activity will cause cannot be said to have taken “all measures necessary” to ensure that such pollution does not reach another State.

9.111. It should be added, once again, that it can be no defence for the United Kingdom to take refuge in the Opinion it obtained in 1997 from the European Commission pursuant to Article 37 of EURATOM.⁸⁴ First, that Opinion was concerned only with impacts on human health, not with impacts on the marine environment of the Irish Sea. Second, the Opinion was based on an incomplete dossier, since the information provided by the United Kingdom did not include the additional discharges arising from THORP as a result of the authorisation of the MOX plant.⁸⁵ It should be recalled again that the THORP plant was never subject to an environmental impact assessment. Ireland invites the United Kingdom to provide the Tribunal with a copy of the Article 37 dossier in respect of the THORP Opinion. And third, the MOX Article 37 Opinion pre-dated the 1998 Sintra Ministerial Declaration, and therefore can have taken no account of the United Kingdom’s commitment to reduce concentrations of radionuclides in the Irish Sea to “close to zero”.

VIOLATIONS OF THE OBLIGATIONS TO PREVENT POLLUTION FROM LAND-BASED SOURCES

4. The United Kingdom has failed to take measures “designed to minimize to the fullest possible extent” the release of radioactive substances arising from the authorisation of the MOX plant

9.112. Article 194(3)(a) of UNCLOS requires that the measures to be taken by the United Kingdom to prevent pollution from land-based sources “shall include ... those designed to minimize to the fullest possible extent” the release of “toxic, harmful or noxious substances, especially those which are persistent”, from land-based sources. To succeed on this claim Ireland must show that the radioactive substances which will be discharged into the Irish Sea from the MOX plant (and those discharges from the THORP plant which are related to the MOX plant) are (1) toxic or harmful or noxious, and (2) that the United Kingdom has not taken measures which are designed to minimize to the fullest possible extent such releases.

9.113. As to (1), there can be no question but that radioactive substances fall within that category of substances which are toxic, harmful and persistent.⁸⁶

9.114. As to (2), the approach applied to the other obligations arising under Article 194 of UNCLOS is equally applicable to this obligation: a State which has failed to inform itself

⁸⁴ See Chapter 7, paras 7.58.

⁸⁵ The materials are set out in this Memorial, vol 3(3), Annex 123. It does not address discharges from THORP.

⁸⁶ *Supra*. Para 9.59-74.

as to the volume of radioactive substances which will be released into the Irish Sea as a result of the authorization of the MOX plant – in this case from the THORP and EARP plants as well as the MOX plant itself – cannot easily claim to have taken measures which are designed to “minimize to the fullest possible extent” the release of such substances, because it does not know the extent of that release. On this basis alone the United Kingdom has failed to meet the requirements of Article 194(3)(a) of UNCLOS.

9.115. A further point arises in respect of the volume of radioactive substances which can be predicted as being likely to be released into the Irish Sea as a result of the authorisation of the MOX plant: could they have been further reduced? This raises the question of whether alternative technologies or practices exist which would permit a reduction of releases of radioactive substances from the THORP and MOX plant, such as to permit the conclusion that releases have been “minimized” within the meaning of Article 194(3)(a).

9.116. The United Kingdom has provided very little information – pursuant to the 1993 Environmental Statement – as to the technologies and practices that are being used in the MOX plant. The 1993 Environmental Statement makes no mention of alternative technologies.⁸⁷ And in the MOX authorisation process no information has been made available as to the THORP technologies and practices. Nevertheless, the evidence put forward by Ireland demonstrates that alternative technologies and practices appear to be available and that releases from the MOX and THORP plants could be further reduced, and significantly so.⁸⁸

9.117. In relation to the MOX plant, the Environmental Statement that has been prepared for a MOX facility in the United States allows comparison to be made. In respect of liquid discharges the US-MOX Environmental Report states that

“Liquid and solid wastes produced in the [US MOX facility] will be transferred to the appropriate SRS facility for waste processing. Consequently, there are no liquid effluents from the MFF.”⁸⁹

If liquid discharges can be avoided for a MOX production facility in the United States they can also be avoided at the MOX plant at Sellafield. It cannot be said that it is not technically possible to reduce liquid discharges to zero. In such circumstances it cannot be claimed by the United Kingdom that it has taken measures “to minimize to the fullest possible extent” the liquid discharges from the MOX plant. The same applies in respect of discharges to the atmosphere (see *infra* paragraphs 9.157-169).

9.118. In relation to the THORP plant, the question of abatement technologies has been addressed by the United Kingdom’s Radioactive Waste Management Advisory Committee in its Advice to UK Ministers on the Radioactive Waste Implications of Reprocessing, provided in November 2000. The Executive Summary concludes:

“[I]n terms of seeking to reduce the activity of discharges, the situation is somewhat more complex. Again, it is difficult to see how any significantly extended reprocessing programme could be compliant with the Government’s

⁸⁷ See Chapter 7, para 7.66. See also Sheate Report, vol 2, Appendix 6.

⁸⁸ See Barnaby Report, vol 2, Appendix 8.

⁸⁹ See vol 4, 2000 Environmental Report, page 3-14 and Figure 3-6. See also Report of Dr Frank Barnaby, vol 2, Appendix 8.

proposed OSPAR objectives unless substantial advances in abatement technology can be achieved.”⁹⁰

Notwithstanding this advice, within a year the United Kingdom decided in its October 2001 Decision to proceed to the authorisation of the MOX plant, and the consequential extended reprocessing activity at THORP plants. In reaching that Decision no consideration appears to have been given to the use of abatement technologies, or other retentive technologies.⁹¹

9.119. In April 2002 the Royal Society, in its submissions to the United Kingdom Government on “Managing Radioactive Waste Safely”, provided the following advice:

“The problem of disposal of existing radioactive waste is serious and urgent [...].

Changes are essential [...].

The ever more stringent targets imposed under the North Atlantic (OSPAR) Convention makes passivisation increasingly difficult and expensive.

During the last 50 years the nuclear industry has assumed that passivisation of nuclear waste is a simple matter of engineering, based on straightforward scientific principles. It also seems to have been assumed that such solutions could be implemented rapidly while nuclear waste was being produced. The industry therefore seems to have regarded treatment of waste as of secondary importance, and to have focused its efforts on countering what it saw as unfounded hostile public opinion and on economic concerns. [...]

We conclude:

- Changes in waste management are essential regardless of whether a new generation of nuclear power stations generates fresh volumes of wastes;
- Industry and government have placed insufficient emphasis on continued technical developments as a basis for improved waste management [...];
- The current waste management regime falls short of that which could be achieved through the use of currently available technologies;
- In this interim period, BATNEEC (best available technologies not entailing excessive cost) should be adopted;”⁹²

9.120. As The Royal Society appears to recognise, alternative technologies exist. The Report of Dr Frank Barnaby indicates a range of technologies which are available to reduce liquid discharges and aerial emissions from THORP.⁹³ In relation to abatement technologies for liquid discharges the Report states:

Tritium: “Possible abatement technologies to reduce the amount of tritium discharged to sea from THORP are immobilisation of tritium in a solid waste form. Low active liquid effluent from THORP would be encapsulated in cement. Alternatively, the low active liquid waste from THORP could be put through an enrichment process that would reduce the volume of liquid waste. The enriched tritium liquid waste could then be encapsulated in cement and stored. Possible

⁹⁰ Vol 3(2), Annex 98.

⁹¹ See *infra.*, para 9.157-165.

⁹² Vol 3(2), Annex, 99, pp 524-5.

⁹³ Vol 2, Appendix 8.

enrichment techniques are: distillation of water; cryogenic distillation; electrolysis; and hydrogen/water chemical exchange.”⁹⁴

Carbon-14: “Carbon-14 is removed from spent caustic scrubber liquor as a barium carbonate precipitate that is forwarded to the Waste Encapsulation Plant for encapsulation in cement grout and stored until ultimately disposed of. The process could be improved by increasing the efficiency of the barium carbonate plant by introducing an ultra-filtration stage.”⁹⁵

Cobalt-60: “Abatement of the discharge of cobalt-60 in liquid discharges from THORP could be achieved by re-routing purge water from the fuel ponds to the Site Ion Exchange Plant (SIXEP) via the Fuel Handling Plant. Another possibility is to use in the pond an ion exchange pre-coat material on an existing particulate filter.”⁹⁶

Ruthenium-106: “Ruthenium-106 has a half-life of 1 year. The amounts of ruthenium-106 discharged to sea could be reduced by storing spent fuel for longer times in the THORP storage ponds and storing medium active concentrates for longer periods.”⁹⁷

Iodine-129: “Iodine-129 in liquid discharges could be reduced by precipitating it as a metal iodide from the caustic scrubber liquor by adding a silver salt. The silver iodide precipitate could then be separated from the liquor by filtration, encapsulated in cement and stored for eventual disposal.”⁹⁸

Strontium-90: “Improving the effectiveness of the EARP plant would reduce the amounts of strontium-90 discharged into the sea.”⁹⁹

Caesium-137: “Improving the effectiveness of the EARP plant would reduce the amounts of caesium-137 discharged into the sea. Caesium-137 in the THORP spent fuel pond water could be removed by ion exchange methods. An ion exchange material could be added to the filters that are currently used in the pond to remove solid material; ion exchange units could be installed in the pond; or a new ion exchange plant could be built to treat the water from the pond. The ion exchange material containing the caesium-137 could then be encapsulated in cement grout. Transferring the THORP spent fuel pond water to SIXEP could reduce the amount of caesium-137 discharged to the sea.”¹⁰⁰

Plutonium and americium-241: “Improving the efficiency of the EARP plant can best reduce the discharges of plutonium isotopes and americium-241 from THORP.”¹⁰¹

Similar conclusions are reached in relation to aerial discharges from THORP. Dr Barnaby concludes:

94 *Ibid*, p 418-9.

95 *Ibid*, p 419.

96 *Ibid*.

97 *Ibid*.

98 *Ibid*, pp 419-20.

99 *Ibid*, p 420.

100 *Ibid*.

101 *Ibid*, para .

“In conclusion, liquid and aerial discharges are considerably higher than necessary if the best available knowledge and technology were used. The best available knowledge and technology are not being used because of cost, including the costs of installing available technology and of conducting the required research and development to develop new technology.”¹⁰²

9.121. In relation to the question of cost, two points may be made. The first is that Article 194(3)(a) of UNCLOS does not state that the obligation to minimize “releases to the fullest possible extent” is limited by cost considerations.

9.122. The second point is that it is not sufficient merely to allege cost considerations as a reason for not applying more environmentally beneficial technologies. As the European Commission’s 2000 Communication on the precautionary principle states:

“The measures envisaged must produce an overall advantage as regards reducing risks to an acceptable level. Examination of the pros and cons cannot be reduced to an economic cost-benefit analysis. It is wider in scope and includes non-economic considerations.”¹⁰³

9.123. The United Kingdom does not appear to have required that alternative technologies be considered, or required that a cost-benefit analysis in relation to the use of alternative technologies that would reduce releases to the marine environment. Neither the Environment Agency’s Proposed Decision on MOX Justification¹⁰⁴ nor the Ministers’ Decision of 3 October 2001¹⁰⁵ address the question of alternative technologies or indicate that any consideration was given to the possible use of any such technologies. Amongst its 55 Questions addressed to the United Kingdom following the ITLOS Order of 3 December 2001, Question 49 asked:

“What technical options have been considered to reduce discharges from the MOX and THORP plants to zero? Why have these options not been put in place?”¹⁰⁶

The two questions posed were not answered.

9.124. Question 50 asked *inter alia*:

“Why is BNFL not using (or proposing to use) all the retention technologies planned for Rokkasho-Mura [the proposed Japanese MOX production facility]?”

The United Kingdom answered:

“The technologies and arrangements to be in place for the reprocessing facility currently under construction at Rokkasho Mura in Japan are a matter for the operator of the plant and the relevant regulators in Japan. Some of the retention technologies used at the plant will be similar to those used at SMP.”¹⁰⁷

¹⁰² *Ibid.*, p 421.

¹⁰³ Vol 3(2), Annex 84, p, 121-2 (para 6.3.4).

¹⁰⁴ Vol 3(2), Annex 95.

¹⁰⁵ Vol 3(2), Annex 92.

¹⁰⁶ Vol 3(1), Annex 7, pp 83-4.

¹⁰⁷ *Ibid.*

Once again, the question posed by Ireland is not answered in any meaningful way. It is reasonable to conclude from these two answers that no consideration was given to the use of alternative technologies which could reduce discharges to the Irish Sea and to the atmosphere to zero, or close to zero.

9.125. The PA Report and the ADL Report which were prepared for the purposes of “justifying” the MOX plant do not constitute a cost-benefit analysis as to the possibility of alternative technologies.¹⁰⁸ Moreover, those reports have not been made available in a form which permits the reader to determine whether all the costs, including all the environmental costs, have been taken into account in reaching the conclusion that the MOX plant is economically justified. Ireland notes here that in its own documents the United Kingdom accepts that the MOX plant will never recoup the £470 million cost of its construction. This may now explain why BNFL (and the United Kingdom) are unwilling to address alternative technologies.

9.126. In sum, the United Kingdom has authorised the MOX plant on the basis of obsolete technologies designed in 1993 which do not meet current environmental standards. In so doing the United Kingdom has failed to meet its obligations under Article 194(3)(a) of UNCLOS.

5. The United Kingdom has failed to implement applicable international rules and standards to prevent, reduce and control pollution of the Irish Sea arising from the authorisation of the MOX plant

9.127. Article 213 of UNCLOS requires the United Kingdom to take measures “necessary to implement applicable international rules and standards established through competent international organisations or diplomatic conferences to prevent, reduce and control pollution of the marine environment from land-based sources”. In pursuing this claim Ireland must demonstrate that (1) there are international rules and standards which are applicable to prevent, reduce and control marine pollution which could arise from land-based sources of pollution associated with the authorisation of the MOX plant, and (2) that the United Kingdom has failed to implement those rules and standards.

9.128. As to (1), the earlier section of this Chapter has shown that there are a number of international rules and standards which are applicable to the MOX and THORP plants, which are the relevant land-based sources of pollution.

9.129. The applicable international rules include those set forth in the 1992 OSPAR Convention, together with decisions and recommendations adopted by the OSPAR Commission, and the requirements of the 1998 Sintra Ministerial Declaration. The applicable international rules upon which Ireland relies include:

- a. The United Kingdom’s obligation pursuant to Article 2(1)(a) of the 1992 OSPAR Convention to “take all possible steps to prevent and eliminate pollution” and to “restore marine areas which have been adversely affected”.
- b. The United Kingdom’s obligation under Article 2(2) of the 1992 OSPAR Convention to apply the precautionary principle and “best available techniques” and “best environmental practices”, in accordance with the criteria set forth in Appendix 1 of the Convention.

¹⁰⁸ See Chapter 4, paras 4.11 *et seq.*

- c. The United Kingdom's obligation under Article 3 of the 1992 OSPAR Convention to take "all possible steps to prevent and eliminate pollution from land-based sources in accordance with the provisions of the Convention", including the requirements of Annex I of the Convention (1) to use best available techniques and best environmental practices, including clean technology where appropriate, and (2) to take preventive measures to minimise the risk of pollution caused by accidents.
 - d. The United Kingdom's obligation pursuant to the 1998 Sintra Ministerial Declaration (1) to achieve "progressive and substantial reductions of discharges, emissions and losses of radioactive substances", and (2) to ensure "that discharges, emissions and losses of radioactive substances are reduced by the year 2020 to levels where the additional concentrations in the marine environment above historic levels, resulting from such discharges, emissions and losses, are close to zero."
 - e. The United Kingdom's obligation pursuant to OSPAR Commission Decision 2000/1 to review as a matter of priority current authorisations for discharges or releases of radioactive substances from nuclear reprocessing facilities with a view *inter alia* (1) to implement the non-reprocessing option (for example dry storage) for spent nuclear fuel management at appropriate facilities, and (2) to take preventive measures to minimise the risk of pollution by accidents."
 - f. The United Kingdom's obligation pursuant to OSPAR Commission Decision 2001/1 to complete its "current review of authorisations for discharges or releases of radioactive substances from nuclear reprocessing facilities ... as a matter of urgency".
 - g. The United Kingdom's obligation to provide certain information on the MOX plant pursuant to Article 9 of the 1992 OSPAR Convention;
 - h. The United Kingdom's obligations under customary law, including in particular the obligation to co-operate with and provide information to Ireland, and to participate in good faith consultations.
- 9.130. The applicable international standards include:
- a. The United Kingdom's commitment under paragraph 22.5(c) of Agenda 21 not to "promote or allow the storage or disposal of high-level, intermediate level and low-level radioactive wastes near the marine environment" unless it has determined that "scientific evidence ... shows that such storage or disposal poses no unacceptable risk to people and the marine environment or does not interfere with other legitimate uses of the sea, making, in the process of consideration, appropriate use of the concept of the precautionary approach".¹⁰⁹
 - b. The United Kingdom's commitment under the 1995 Global Programme of Action (1) to ensure "proper planning, including environmental impact assessment, of safe and environmentally sound management of radioactive waste, including emergency procedures, storage, transportation and disposal, prior to and after activities that generate such waste", and (2) to use "best available techniques and best environmental practice, for the reduction and/or

¹⁰⁹ The commitment is restated in the 1995 Global Programme of Action, at para 111, vol 3(2), Annex 83.

elimination of inputs of radioactive substances to the marine and coastal environment for the purpose of preventing and eliminating pollution of the marine and coastal environment”.¹¹⁰

9.131. As to (2), the United Kingdom has failed to implement the international standards and rules in the following ways. With respect to Article 2(1)(a) of the 1992 OSPAR Convention (para 9.129, point (a)), the acts and omissions leading to the failure to “take all possible steps to prevent and eliminate pollution” are set out above, and are repeated here. Additionally, this provision requires the United Kingdom to take all possible steps to “restore marine areas which have been adversely affected”.

9.132. In the case of the Irish Sea, which is amongst the most radioactively contaminated marine environments any where in the world, the United Kingdom has, in authorising the MOX plant and extending the life of the THORP plant (without the benefit of a prior environmental impact assessment of the THORP plant), committed itself to further material discharges of radioactive substances, contrary to its commitment to significantly and progressively reduce discharges and to reduce concentrations. Such actions are not consistent with the obligation to “restore” the marine environment, which means to return to something resembling its original condition.

9.133. With regard to Article 2(2) of the 1992 OSPAR Convention (para. 9.129(b) above), the acts and omissions leading to the failure to “apply the precautionary principle and “best available techniques” and “best environmental practices” are set out in paragraphs 9.115-126 above. They apply equally in this respect, and give rise to a further violation of UNCLOS.

9.134. With regard to Article 3 and Appendix 1 of the 1992 OSPAR Convention (para. 9.129(c) above), the acts and omissions leading to the failure to require the use of best available techniques and best environmental practices are set out in paragraphs 9.115-126 above. They apply equally here, and give rise to a further violation of UNCLOS. With regard to the obligation to take preventive measures to minimise the risk of pollution caused by accidents, the relevant acts and omissions of the United Kingdom are set out in paragraphs 9.92 to 9.104, above, and apply equally here.

9.135. With regard to the obligation pursuant to the 1998 Sintra Ministerial Declaration (para. 9.129(d) above), the acts and omissions leading to the failure to ensure that concentrations of radionuclides are reduced to “close to zero” by 2020 are set out above. They apply equally here, and give rise to a further violation of UNCLOS.

9.136. With regard to the obligation pursuant to OSPAR Commission Decision 2000/1 (para. 9.129(e) above), the United Kingdom has, in authorising the MOX plant, in effect extended the life and operation of the THORP plant. This has occurred without the benefit of any environmental impact assessment as to the consequences of additional or prolonged discharges from THORP (arising as a result of the authorisation of the MOX plant).

9.137. There is no material publicly available that indicates that the United Kingdom has reviewed current authorisations for discharges or releases of radioactive substances from THORP with a view to implement the non-reprocessing option and moving to dry storage. This is notwithstanding the fact that the United Kingdom enterprise which is contractually committed to reprocessing at THORP has called for an end to reprocessing at THORP and

¹¹⁰ *Ibid*, Annex 83, para 110.

a move to dry storage, which it considers to entail less than a quarter of the cost of reprocessing.¹¹¹

9.138. Ireland invites the United Kingdom to make available to the Annex VII tribunal evidence demonstrating that it has properly and genuinely considered alternatives to nuclear reprocessing at THORP. This aspect is material to the MOX plant because without the THORP plant there could be no MOX plant.¹¹² And without the MOX plant, the THORP plant would close earlier than it would with the MOX plant.

9.139. With regard to the obligation pursuant to OSPAR Commission Decision 2001/1 (para. 9.129(f) above), to complete its “current review of authorisations for discharges or releases of radioactive substances from nuclear reprocessing facilities ... as a matter of urgency”. Ireland notes that as at the date of submission of this Memorial (13 months after the adoption of Decision 2001/1) the United Kingdom does not appear to have completed its review.

9.140. Ireland further notes that the decision to authorise the MOX plant (with consequential implications for new and additional discharges from the THORP facility) was taken prior to the completion of the review, or indeed the adoption of new discharge authorisations. It is therefore apparent that any new discharge authorisations will be premised upon, and established at such a level as to permit, the operation of the MOX plant and the extended operation of the THORP plant. This does not constitute “best environmental practise”. The proper approach, it is submitted, would have been to establish new discharge authorisations on the basis of a full and proper (and prior) assessment of the state of the Irish Sea and taking into account the need to give effect to the commitment to reduce concentrations of radionuclides in the Irish Sea to levels which are “close to zero” by 2020.

9.141. What the United Kingdom has instead done is to proceed to the authorisation of a new activity (the MOX plant) and an extended operation of an existing activity (the THORP plant), and to then proceed to the adoption of new authorisations of discharges which will be set at a level so as to permit the operation of both the MOX and THORP plant. This is plainly inconsistent with the requirements of UNCLOS, including in particular the requirement to take all necessary measures to reduce and control pollution, and to make use of best environmental practices.

9.142. With regard to the obligation in Article 9 of the OSPAR Convention (para. 9.129(g) above), the acts and omissions leading to the failure to provide environmental information requested by Ireland are set out in Chapter 4¹¹³ and in Ireland’s Statement of Claim and Memorial in the proceedings initiated under OSPAR in June 2001.¹¹⁴ Such acts and omissions are applicable here too, and give rise to a further violation of UNCLOS.

9.143. With regard to the United Kingdom’s obligations under other rules of international law (para. 9.129(h) above), the acts and omissions constituting a failure to co-operate with and provide information to Ireland, and to participate in good faith consultations, are set out in Chapter 8. They are here repeated, and give rise to a further violation of UNCLOS.

¹¹¹ See Second Report of Gordon Mackerron, vol 2, Appendix 11.

¹¹² See Chapter 2, para 2.63; Chapter 3, paras 3.3-6.

¹¹³ Paras 4.27 *et seq.*

¹¹⁴ Vol 3(1), Annex 72.

9.144. With regards to the failure to implement applicable international standards (para. 9.130(a) and (b) above), the acts and omissions giving amounting to a failure to implement the requirements of paragraph 22.5(c) of Agenda 21 are set out above. Those acts and omissions demonstrate that notwithstanding the standard set by Agenda 21, the United Kingdom has promoted and/or allowed the further storage and disposal of radioactive wastes near the marine environment without having first determined that “scientific evidence ... shows that such storage or disposal poses no unacceptable risk to people and the marine environment or does not interfere with other legitimate uses of the sea” and, in so acting, has made no use of “the precautionary approach”.

9.145. With regard to the standards reflected in the 1995 Global Programme of Action, the United Kingdom has failed to ensure “proper planning”, in particular by failing to carry out a proper environmental impact assessment of the MOX plant, and no environmental impact assessment whatsoever of the consequences of the additional operation of the THORP plant, or the management of radioactive waste (arising from MOX and THORP), or the international transports which are related to the authorisation of the MOX plant. Moreover, the United Kingdom has failed to implement the standards relating to the use of “best available techniques and best environmental practice”.

VIOLATIONS OF THE OBLIGATION TO PREVENT POLLUTION FROM VESSELS

6. The United Kingdom has failed to take “all measures necessary” to “minimize to the fullest possible extent” pollution from vessels involved in transports of radioactive substances associated with the MOX plant

9.146. Article 194(3)(b) of UNCLOS requires the United Kingdom to take “all measures necessary” to minimize “to the fullest possible extent” pollution from vessels involved in the international transportation of radioactive substances associated with the operation of the MOX plant. It requires, in particular, measures for *inter alia* (a) preventing accidents, (b) dealing with emergencies, and (c) preventing unintentional discharges, and (d) regulating the design, construction, equipment, operation and manning of vessels.

9.147. For Ireland’s claim to succeed it needs to be shown that the measures applied by the United Kingdom to international transports of radioactive substances which are associated with or arise from the authorisation of the MOX plant are inadequate because they will not minimize pollution to “the fullest possible extent”.

9.148. The conditions under which international transports associated with the MOX plant are to take place are described in Chapter 2, at paragraphs 2.36 *et seq.* These international transports have attracted widespread concern, from a very large number of States.¹¹⁵ Ireland’s concerns relate to the measures which the United Kingdom may (or may not) have in place for dealing with an accident or other incident which may lead to a radiological release in the Irish Sea. Since Ireland has little information as to the measures which the United Kingdom has in place, in view of the United Kingdom’s persistent refusal to share such information with Ireland, or to involve Ireland in its planning, it is not in a position to offer any detailed comment on the adequacy of the United Kingdom’s arrangements.

¹¹⁵ Chapter 2, paras 2.43-9.

9.149. Indeed, it is the very failure of the United Kingdom to provide information to Ireland which gives rise to violations of Article 194(3)(b). In relation to measures for preventing accidents in and around the Irish Sea, Ireland would note that the United Kingdom has consistently refused to provide details of routings of ships carrying nuclear materials, even on a confidential basis. In order that Ireland may be able to take appropriate measures to ensure that additional steps are taken to avoid accidents involving such hazardous cargoes it requires the United Kingdom to provide routing and timetabling information beyond that which is presently provided. Ireland understands the need to ensure maximum confidentiality as to such information, and undertakes to take all steps necessary to protect confidentiality of such security-related matters.

9.150. In relation to measures for dealing with emergencies in and around the Irish Sea, the United Kingdom has failed to meet the standards required by UNCLOS because it has not engaged with Ireland in such a manner as to permit it to take precautionary and preventive steps to “minimize to the fullest possible extent” the radiological pollution which might arise from an emergency involving a vessel which is transporting nuclear materials in consequence of the authorisation of the MOX plant. These matters are addressed in further detail in Chapter 8¹¹⁶ and in the Statements of Captain Liam Kirwan¹¹⁷ and Mr Seamus McLoughlin.¹¹⁸

9.151. In relation to measures for preventing unintentional discharges in and around the Irish Sea, including from sabotage and terrorism, the United Kingdom has refused to provide details as to the conditions under which transports are taking place. This is described in further detail in Chapter 8. Ireland is therefore not in a position to know whether the United Kingdom is complying with, and will in future comply with, all measures required pursuant to the 1980 Convention on the Physical Protection of Nuclear Materials and other international instruments. It is not sufficient, in this regard, for the United Kingdom simply to declare that it is so complying. In view of the risks, which are recognised as being considerably heightened since the events of 11 September 2001, Ireland is entitled to know (under appropriate conditions of confidentiality) the conditions under which these escorts are taking place in and around the Irish Sea.

9.152. Similar considerations apply in relation to measures for regulating the design, construction, equipment, operation and manning of vessels involved in MOX and related transports in and around the Irish Sea. It is not sufficient, in this regard, for the United Kingdom simply to declare that it is complying with applicable international standards. Ireland is entitled to know (under appropriate conditions of confidentiality) the conditions of the vessels and manning under which these shipments are taking place in and around the Irish Sea.

¹¹⁶ Chapter 8, paras 8.238 *et seq.* and 8.110 *et seq.*

¹¹⁷ Vol 2, Appendix 8.

¹¹⁸ Vol 2, Appendix 12.

7. The United Kingdom has failed to ensure compliance by vessels flying its flag or of its registry with applicable international rules and standards, and has failed to ensure that vessels associated with MOX transports are prohibited from sailing were not in compliance with those rules and standards

9.153. Article 217(1) of UNCLOS requires the United Kingdom to ensure compliance by vessels flying its flag or of its registry with applicable international rules and standards for the “prevention, reduction and control of pollution” of the Irish Sea from vessels. Article 217(2) requires the United Kingdom to prohibit any such vessel from sailing if it would not be in compliance with such international rules and standards. To succeed in a claim relating to Article 217, Ireland must show (1) that there exist applicable international rules and standards for the prevention, reduction and control of pollution of the Irish Sea from vessels transporting radioactive substances in relation to the MOX plant, (2) such rules and standards are not being complied with by vessels involved in transports associated with the MOX plant, and (3) the United Kingdom has not prevented such vessels from sailing.

9.154. With regard to (1), the applicable international rules and standards for present purposes have been referred to in Chapter 8.

9.155. With regard to (2), in view of the United Kingdom’s refusal to share information with Ireland (even on a confidential basis), Ireland is not in a position to know whether the vessels involved in the transportation of MOX fuels and feedstocks are complying with applicable international rules and standards. The principles described above apply equally in respect of the obligations under Article 217 of UNCLOS, and the failure to share information with Ireland gives rise to a violation of these provisions.

9.156. With regard to (3), Ireland is similarly not in a position to know whether any vessels have sailed, and if so under what conditions. The United Kingdom has refused to provide information.

VIOLATIONS OF THE OBLIGATION TO PREVENT POLLUTION THROUGH THE ATMOSPHERE

8. The United Kingdom has failed to take measures “designed to minimize to the fullest possible extent” the release into the atmosphere of radioactive substances arising from the authorisation of the MOX plant

9.157. Article 194(3)(a) of UNCLOS requires that the measures to be taken by the United Kingdom to prevent pollution of the Irish Sea by releases into the atmosphere “shall include ... those designed to minimize to the fullest possible extent” the release of “toxic, harmful or noxious substances, especially those which are persistent”, from land-based sources.

9.158. To succeed on this claim Ireland must show that the radioactive substances which will be released into the atmosphere from the MOX plant (and those discharges from the THORP plant which are related to the MOX plant) are (1) toxic or harmful or noxious, and (2) that the United Kingdom has not taken measures which are designed to minimize to the fullest possible extent such releases.

9.159. As to (1), there is no question but that radioactive substances fall within that category of substances which are toxic, harmful or noxious.¹¹⁹

9.160. As to (2), the approach set forth in relation to discharges directly to the marine environment from the MOX plant applies equally to releases into the atmosphere which may reach the Irish Sea.¹²⁰ For the same reason, a State which has failed to inform itself as to the quantities of radioactive substances which will be released into the atmosphere (and which will in whole or in part reach the Irish Sea) as a result of the authorization of the MOX plant, cannot claim to have taken measures which are designed to “minimize to the fullest possible extent” the release of such substances. On this basis alone the United Kingdom has failed to meet the requirements of Article 194(3)(a) of UNCLOS.

9.161. The same analysis applied at paragraphs 9.116 *et seq.* above (in relation to pollution from land-based sources) applies here, and it is appropriate to enquire whether the releases could they have been further reduced.

9.162. The United Kingdom has provided very little information – pursuant to the 1993 Environmental Statement – as to the technologies and practices that are being used in the MOX plant. The 1993 Environmental Statement makes no mention of alternative technologies.¹²¹ And in the MOX authorisation process, no information has been made available as to the THORP technologies and practices, and their implications for releases into the atmosphere.

9.163. Here again, the evidence put forward by Ireland demonstrates that alternative technologies and practices are available and that aerial releases from the MOX and THORP plants could be further reduced, and significantly so.

9.164. In relation to the MOX plant, the Environmental Statement that has been prepared for a MOX facility in the United States allows comparison to be made. The Report by Dr Frank Barnaby compares the aerial discharges from the MOX plant at Sellafield with aerial discharges from the proposed US MOX facility. His conclusion is that on a comparative basis – per ton of MOX fuel produced – discharges from the MOX plant at Sellafield are 3.5 times greater than those of the proposed US facility. He concludes, on the basis of the figures provided in the respective environmental reports, that:

“On these figures, the [US plant] is, per ton of MOX produced, much less polluting than [the Sellafield MOX plant].”¹²²

9.165. In relation to the THORP plant, the Report of Dr Frank Barnaby indicates a range of technologies which are available to reduce aerial discharges from THORP. His Report identifies the annual aerial emissions from THORP.¹²³ In relation to abatement technologies for aerial discharges the Report states:

Tritium: “Abatement of aerial discharges of tritium could be achieved by absorption of tritium on metals; thermal oxidation; or the use of a catalyst followed by condensation to a liquid or by absorption on a solid absorber.

¹¹⁹ *Supra*, paras 9.69 *et seq.*

¹²⁰ *Supra.*, paras 9.112 *et seq.*

¹²¹ See Chapter 7, paras 7.66. Also Sheate Report, vol 2, Appendix 6.

¹²² Barnaby Report, vol 2, Appendix 8, p 422.

¹²³ *Ibid*, p, 420-1.

Thermal/catalytic oxidation produces tritiated water vapour that could be removed by dehumidification using a condenser or solid absorber.”

Iodine-129: “The amount of iodine-129 discharged into the air from THORP could be reduced installing a new scrubber plant; adding iodic acid to the fuel dissolvers; modifying the plant to re-route discharges from the THORP vessel ventilation system to the Dissolver Off-Gas scrubber; and providing solid absorbers to remove iodine-129 from THORP aerial discharges.”

Krypton-85: Krypton-85 is given off when spent fuel is dissolved in THORP and is discharged into air without abatement. The gas could be separated from the aerial discharges by cryogenic separation in which krypton-85 is first separated from other gases in the aerial waste stream. The aerial waste stream is then cooled to low temperatures and liquefied. Krypton-85 is then separated from other inert gases, like argon and xenon, by cryogenic distillation. Krypton-85 could also be removed from the aerial waste stream by adsorption on to a solid matrix, like carbon or silica zeolites. Alternatively, an organic solvent could be used to separate krypton-85 from aerial waste streams.”

Dr Barnaby concludes:

“[...] aerial discharges are considerably higher than necessary if the best available knowledge and technology were used. The best available knowledge and technology are not being used because of cost, including the costs of installing available technology and of conducting the required research and development to develop new technology.”¹²⁴

9.166. In sum, the United Kingdom has authorised the MOX plant on the basis of obsolete technologies designed in 1993 which do not meet current environmental standards. In so doing the United Kingdom has failed to meet its obligations under Article 194(3)(a) of UNCLOS.

9. The United Kingdom has failed to adopt laws and regulations and take other measures necessary “to implement applicable international rules and standards” to prevent, reduce and control pollution of the Irish Sea from or through the atmosphere

9.167. Article 222 of UNCLOS requires the United Kingdom to adopt laws and regulations and take other measures necessary to implement applicable international rules and standards established through competent international organisations or diplomatic conferences to prevent, reduce or control pollution of the marine environment from or through the atmosphere. It develops the requirements of Article 212 of UNCLOS.

9.168. As with the claim in relation to Article 213 (pollution from land-based sources), Ireland must show that (1) there are international rules and standards which are applicable to prevent, reduce and control pollution of the Irish Sea as a result of releases into the atmosphere from the MOX plant and from the THORP plant (in relation to MOX), and (2) that the United Kingdom has failed to implement those rules and standards.

9.169. The same analysis applies as in respect of Article 213, and the same conclusions are reached. There are a number of international rules and standards which are applicable to the MOX and THORP plants which relate to atmospheric releases, and the United

¹²⁴ *Ibid*, p 421.

Kingdom has not implemented them, either properly or at all. The approach applied to Article 213 is equally applicable to Article 222 (in respect of aerial discharges). It includes the United Kingdom's failure to implement Articles 2(1)(a), 2(2), 3 and 9 of the 1992 OSPAR Convention, as well as the commitments reflected in the 1998 Sintra Ministerial Declaration, Agenda 21 and the 1995 Global Programme of Action, and the requirements of OSPAR Commission Decisions 2000/1 and 2001/1, as well as the rules of customary law relating to co-operation, information exchange and consultation.¹²⁵ On this approach the United Kingdom has failed to comply with its obligations under Article 222 of UNCLOS.

E. SUMMARY AND CONCLUSIONS

9.170. The violations by the United Kingdom of the substantive requirements of UNCLOS are summarised at paragraph 9.2 of this Chapter.

9.171. The relief sought by Ireland is set out in Chapter 10. Ireland is seeking from the Tribunal an order that the operation of the MOX plant and the international movement of radioactive materials into and out of the United Kingdom related to the operation of the MOX plant (including those parts of THORP operations related to the MOX plant) be prohibited until the United Kingdom has brought itself into compliance with the substantive requirements of UNCLOS, as set forth in this Chapter. This is in addition to compliance with requirements relating to environmental impact assessment (chapter 7) and co-operation (chapter 8). The continued operation of the MOX plant is internationally unlawful, and will continue to be internationally unlawful until such time as the United Kingdom brings itself into compliance. Ireland is calling upon the Tribunal to order the suspension of the operation of the MOX plant.

9.172. The relief sought necessarily encompasses a request to the Tribunal to order that no reprocessing be undertaken at the THORP plant (which is intended to prepare feedstock for the operation of the MOX plant, or which would otherwise not occur but for the authorisation of the MOX plant), until the United Kingdom is in compliance with its obligations, as identified in this chapter and in Chapters 7 and 8.

9.173. To bring itself into compliance with the substantive provisions of UNCLOS, the United Kingdom must first cause to be prepared a proper environmental impact assessment, satisfying all the requirements identified in Chapter 7.¹²⁶ Until such an environmental impact assessment has been prepared the United Kingdom cannot be said to have taken all measures necessary to prevent pollution of the Irish Sea, or to cause damage to Ireland, or to ensure that pollution arising from the MOX plant does not spread beyond the areas over which it exercises sovereign rights, or to minimize to the fullest possible extent pollution from the MOX and THORP plants, or to have implemented applicable international rules and standards to prevent such pollution.

9.174. Once it has ensured the preparation of an adequate environmental impact assessment – and placed itself in a position to know what the environmental consequences associated with the authorisation of the MOX plant will be – the United Kingdom will then

¹²⁵ See Chapter 8, paras 8.42 *et seq.*

¹²⁶ See Chapter 7, para 7.81.

be in a position to meet its substantive UNCLOS obligations. Those require it to demonstrate that it has:

1. “taken all measures consistent with the 1982 Convention that are necessary” to prevent, reduce and control pollution of the Irish Sea;
2. taken “all measures necessary” to ensure that the MOX plant does not cause damage by pollution to Ireland and its environment;
3. taken “all measures necessary” to ensure that pollution from the MOX plant “does not spread beyond the areas” where the United Kingdom exercises sovereign rights;
4. taken measures designed to minimize “to the fullest extent possible” the release of radioactive substances arising from the authorisation of the MOX plant, including by the use of best available technologies and best environmental practices;
5. implemented applicable international rules and standards to prevent, reduce and control pollution of the Irish Sea arising from the authorisation of the MOX plant, including the commitment to reduce concentrations of radionuclides in the Irish Sea to “close to zero”;
6. taken “all measures necessary” to “minimize to the fullest possible extent” pollution from vessels involved in transports of radioactive substances associated with the MOX plant;
7. ensured compliance by vessels flying its flag or of its registry with applicable international rules and standards, and ensuring that vessels associated with MOX transports are prohibited from sailing when not in compliance with those rules and standards;
8. taken measures “designed to minimize to the fullest possible extent” the release into the atmosphere of radioactive substances arising from the authorisation of the MOX plant; and
9. adopted laws and regulations and take other measures necessary “to implement applicable international rules and standards” to prevent, reduce and control pollution of the Irish Sea from or through the atmosphere.