THE MOX PLANT CASE

IRELAND

v.

UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND

COUNTER-MEMORIAL OF THE UNITED KINGDOM

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CHAPTER 1

INTRODUCTION

1.1 This Counter-Memorial is submitted by the United Kingdom of Great Britain and Northern Ireland ("the United Kingdom") in accordance with Article 10(2) of the Rules of Procedure approved by the Tribunal on 2 July 2002 and Order No. 2 of 10 December 2002. It responds to the Memorial submitted by Ireland on 26 July 2002.

1.2 It is appropriate at the outset to emphasise the importance of the correct application of the provisions of the United Nations Convention on the Law of the Sea ("UNCLOS") concerning the settlement of disputes. As the President of the Third United Nations Conference on the Law of the Sea, Ambassador Hamilton Shirley Amerasinghe, said when introducing in 1976 a text on the settlement of disputes:

> "Dispute settlement procedures will be the pivot upon which the delicate equilibrium of the compromise must be balanced. Otherwise the compromise [embodied in the whole UNCLOS text] will disintegrate rapidly and permanently. I should hope that it is the will of all concerned that the prospective convention should be fruitful and permanent. Effective dispute settlement would also be the guarantee that the substance and intention within the legislative language of a treaty will be interpreted both consistently and equitably."[1]

1.3 Universal participation in UNCLOS is an important goal. To that end, the correct application of the provisions of Part XV on the settlement of disputes could be crucial. The present Tribunal is only the second to be constituted under Annex VII of UNCLOS. Its Award may well come to be seen as an important element in the interpretation and application of Part XV with important implications for States not yet parties to the Convention as well as for those that are.

A. OUTLINE OF THE COUNTER-MEMORIAL

1.4 After setting out briefly the present state of the proceedings (Section B), this Chapter contains sections on the Dispute submitted for the Tribunal's determination (Section C); the law applicable to the Dispute (Section D); the temporal element defining

[1] A/CONF.62/WP.9/Add.1, 31 March 1976, paragraph 6; V Off. Rec., p. 122.

the Dispute (Section E); and the importance of scientific and technical evidence to the determination of the Dispute (Section F). An addendum briefly explains certain units of measurement. It is followed by two chapters dealing with questions of fact and five containing submissions on the law.

1.5 Chapters 2 and 3 deal with the facts. *Chapter 2* sets out a brief history of the Sellafield site, dealing in particular with the conception of THORP in the mid-1970s and its commencement of operations, and the more recent conception and development of the MOX Plant. It gives an account of the regulatory stages preceding the commencement of operation of the MOX Plant and describes the extensive regulations relevant to the operation of the MOX Plant and the Sellafield site as a whole, and the international transportation of nuclear materials, at the levels of international law, European Community law and national law.

1.6 *Chapter 3* first sets out the radiological impacts of the MOX Plant in the context of the applicable limits. It demonstrates that, contrary to Ireland's claim, there is no inextricable linkage between the operation of the MOX Plant and the operation of THORP. It also shows that in any event the radioactive discharges from THORP and the Sellafield site as a whole are well within applicable limits, are subject to an extended monitoring programme, and are not harmful. The Chapter then addresses Ireland's arguments on abatement. Finally it shows that there are no risks of significant harm arising from the marine transportation of MOX fuel and that there will be no increase in maritime transports as a consequence to the operation of the MOX Plant.

1.7 *Chapter 4* addresses jurisdiction. It begins by noting that Ireland addresses questions of jurisdiction and applicable law separately; on the first, contending that this dispute concerns "the interpretation or application of UNCLOS and no other agreement"; on the second, contending that UNCLOS incorporates and requires the application of all other international law not inconsistent with the Convention. On this basis, Ireland relies on more than 20 other international agreements and instruments. In response, the United Kingdom observes that the jurisdiction of the Tribunal is determined by article 288 of UNCLOS; paragraph 1 of which establishes jurisdiction over disputes concerning "the interpretation or application of this Convention", while paragraph 2 indicates that the Tribunal will only have jurisdiction in respect of the interpretation or application of other agreements if those agreements so provide. As the other agreements relied upon by Ireland do not provide for UNCLOS jurisdiction, the United Kingdom contends that the Tribunal's jurisdiction in this case is confined to the interpretation and application of

UNCLOS and does not embrace any other agreement or instrument. This includes measures of Community law as well as the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention)[2] and related instruments. The Chapter concludes by addressing the meaning of article 293(1) of UNCLOS on applicable law, noting that this permits the Tribunal to refer to secondary rules of international law, and other rules incidental to its interpretation of UNCLOS, but that it cannot be relied upon to incorporate into UNCLOS, and require the application, of other primary rules of international law, whether conventional or customary.

1.8 *Chapter 5* responds to Ireland's complaints under article 206 of UNCLOS, which deals with the assessment of the potential effects of planned activities. It demonstrates, first of all, that in the case of the MOX Plant the conditions for the application of article 206 are not met: the United Kingdom does not have reasonable grounds for believing that planned activities under its jurisdiction or control may cause substantial pollution of the marine environment or significant and harmful changes to it. It then shows that, in any event, article 206 does not require that the assessment of potential effects take the specific form alleged by Ireland. Next, it sets out the history of the assessment of the discharges from the MOX Plant, which is one of compliance with the applicable legal provisions including Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment.[3] Finally it explains that even if the United Kingdom had been in breach of article 206, the consequence would not be an order requiring the cessation of operations at the MOX Plant. Rather, the appropriate course would be the monitoring of actual impacts, which is in any event taking place as the Plant has been operating for over a year.

1.9 *Chapter 6* addresses the contention that the United Kingdom has failed to co-operate with Ireland as required by articles 123 and 197 of UNCLOS. It first explains that article 123, which deals with semi-enclosed seas, is hortatory; and that article 197, which provides for co-operation in formulating and elaborating international rules, standards and recommended practices and procedures, prescribes precisely the types of activity in which the United Kingdom has been engaged for many years, through the European Community, the European Atomic Energy Community ("Euratom"), the International Maritime Organisation ("IMO"), the International Atomic Energy Agency ("IAEA"), the OSPAR Commission and other global and regional institutions. It then

[2] 32 ILM (1993) 1072; Memorial, Volume III, Part One, p.419.
[3] OJ 1985 L 175/40.

gives an account of the extensive co-operation in which the United Kingdom has been engaged, over a number of years, in relation to the MOX Plant (and, to set the record straight, in relation to Sellafield more generally). Apart from active participation in competent international organisations and the European Communities, this includes the supply of information to Ireland, and consideration of the views of Ireland, through embassies and direct ministerial contacts and through various bilateral *fora* including the UK-Ireland Contact Group on Radioactivity Matters, the British-Irish Council and the British-Irish Inter-Parliamentary Body; and co-operation with Ireland through arrangements in force involving the two States' coastguards and their relevant competent authorities concerned with radiological protection and nuclear safety regulation.

1.10 *Chapter 7* addresses Ireland's allegations on pollution. It begins by addressing the meaning of "pollution of the marine environment" under UNCLOS and contends that there is no risk of pollution from radioactive discharges resulting from the commissioning and operation of the MOX Plant. The Chapter deals with the application and relevance of the OSPAR Convention and the precautionary principle, on which Ireland relies. In response to Ireland's specific allegations on pollution, the Chapter first identifies the legal base in UNCLOS and the specific allegations of fact that underlie each of Ireland's claims. The United Kingdom then points out that a number of Ireland's allegations do not have any foundation in UNCLOS; that in others, the central component of the claim is the alleged breach of a non-UNCLOS commitment; and that in yet others, no allegations of fact are made. In response, the United Kingdom contends that the absence of any risk of pollution is fully supported by detailed scientific evidence; that the United Kingdom has in any event adopted a precautionary approach to the authorisation, commissioning and operation of the MOX Plant; that this approach is on-going through a continuous process of monitoring; and that, in consequence, the United Kingdom is fully in compliance with its UNCLOS commitments.

1.11 *Chapter 8* responds briefly, and for completeness only, to Ireland's submissions on remedies. It observes *inter alia* that the orders and declarations requested by Ireland in respect of alleged past breaches are imprecise and that, in a number of cases, no allegations are advanced by Ireland in respect of certain provisions of UNCLOS on which a remedy is sought. In the case of Ireland's claim for an order restraining the future operation of the MOX Plant, the United Kingdom notes that this would be both contrary to precedent and inappropriate in the absence of any evidence of harm resulting from the operation of the MOX Plant. The Chapter also notes that proportionality would require the Tribunal to consider the cost to the United Kingdom of any order of cessation.

It concludes by noting the observation of the International Court of Justice in the *Northern Cameroons*[4] and *Haya de la Torre*[5] cases to the effect that it is not for the Court to address how a State will give effect to its obligation to comply with a binding decision of the Court. This Chapter is followed by the United Kingdom's Concluding Submissions.

1.12 This Counter-Memorial includes four Witness Statements and eight Expert Reports. Other annexes are included but have been kept to a minimum. References are thought sufficient in many cases; where possible these have been made to the annexes to Ireland's Memorial to avoid duplication. Full texts will of course be supplied should Members of the Tribunal so indicate.

1.13 The pleadings contain a number of small-scale maps. The fact that the United Kingdom does not challenge the depiction of boundaries, etc should not be taken as acquiescence on its part.

B. THE PRESENT STATE OF THE PROCEEDINGS

1.14 Before describing the present state of these proceedings, it is appropriate to mention two other international proceedings, pending or potential.

1.15 On 15 June 2001 Ireland commenced arbitral proceedings against the United Kingdom under Article 32 of the OSPAR Convention. Ireland's claim in those proceedings concerns access to information under Article 9 of the OSPAR Convention. Following the exchange of written pleadings, an oral hearing took place in The Hague from 21 October to 25 October 2002. The OSPAR Tribunal's Award is now awaited.[6]

1.16 Ireland has from time to time threatened proceedings against the United Kingdom in the European Court of Justice.[7] Such proceedings have not so far materialised.

1.17 The present arbitral proceedings commenced on 25 October 2001. At a meeting concerning the OSPAR arbitration, held in London on 5 October 2001, Ireland informed

[4] ICJ Reports 1963, p. 15.
[5] ICJ Reports 1951, p. 71.
[6] The written and oral pleadings have been made public and can be found on the PCA website (www.pca-cpa.org).
[7] See, eg, press release from Mr Joe Jacob (then) Minister with responsibility for Nuclear Safety, dated 4 October 2001 (http://www.irlgov.ie/tec/press01/october4th01.htm).

the United Kingdom of its intention to institute the present proceedings. Ireland's intention was recalled in a letter of 16 October 2001, which stated that:

> "following the decision of the United Kingdom to proceed with the authorisation of the MOX plant, [the Irish Government] considers the United Kingdom to have acted in violation of the provisions of various international instruments, including the 1982 United Nations Convention on the Law of the Sea (UNCLOS), the 1992 OSPAR Convention, Directive 85/337/EEC (amended) and Directives 80/836/EURATOM and/or Directive 96/239/EURATOM."[8]

The letter concluded by referring to the exchange of views required by article 283 of UNCLOS and signalling Ireland's availability to proceed to such an exchange.

1.18 However, when the United Kingdom indicated its wish to engage in just such an exchange of views,[9] the Irish Government responded on 23 October 2001 that no settlement would be possible so long as the MOX Plant remained authorised.[10] Two days later Ireland sent to the United Kingdom its Statement of Claim and Grounds dated 25 October 2001, together with a Notification under article 287 and Annex VII, article 1 of UNCLOS and its Request for Provisional Measures.

1.19 On 9 November 2001, Ireland submitted to the International Tribunal for the Law of the Sea ("ITLOS") its Request for the Prescription of Provisional Measures. The United Kingdom filed its Written Response on 15 November 2001. Following an oral hearing on 19 and 20 November 2001, ITLOS made its Order of 3 December 2001 in which it declined to accede to Ireland's Request but prescribed that Ireland and the United Kingdom should enter into consultations forthwith.[11]

1.20 On 5 December 2001, Ireland submitted to the United Kingdom a list of 55 questions (going well beyond the scope of the Dispute),[12] to which the United Kingdom responded by letters dated 17 December 2001, 1 February 2002 and 21 March 2002.[13] By letter dated 7 December 2001 and at a meeting in Dublin Castle on 11 December 2001

[8] Memorial, Volume III, Part One, p. 165. The final reference should probably be to Directive 96/29/Euratom of 13 May 1996.
[9] Memorial, Volume III, Part One, p. 169.
[10] Memorial, Volume III, Part One, p. 171.
[11] Memorial, Volume III, Part One, p. 29 at 46-48 (paragraphs 81 and 89 of the Order). The full ITLOS Order (with a declaration and separate opinions) may be found on the ITLOS website at www.itlos.org/cgi-bin/cases/case_detail.pl?id=10&lang=en#order and in 41 ILM 405 (2002).
[12] Memorial, Volume III, Part One, p. 67.
[13] Memorial, Volume III, Part One, pp. 221, 233 and 269.

the United Kingdom offered to review the existing co-operation arrangements with a view to making any improvements that might appear useful.[14] Ireland has yet to accept that offer. As required by its Order, both Ireland and the United Kingdom submitted reports to ITLOS by 17 December 2001.[15]

1.21 In accordance with article 3 of Annex VII to UNCLOS, the Parties appointed the five Members of the present Tribunal. By letter dated 8 April 2002 the United Kingdom notified ITLOS that the Tribunal had been constituted. Ireland made a similar notification by letter dated 17 April 2002.

1.22 On 2 July 2002 the Tribunal prescribed the Rules of Procedure. Pursuant to those Rules, the Tribunal on the same date gave Ireland leave to amend its Claim as proposed in the Amended Statement of Claim and

> "Decide[d] that the Amended Statement of Claim, together with the Explanatory Note of 21 March 2002, constitutes Ireland's Statement of Claim and Grounds on which it is Based in accordance with Annex VII to the Convention".

C. THE DISPUTE SUBMITTED TO THIS TRIBUNAL

1.23 The present proceedings are part of a series of actions instituted by Ireland against the United Kingdom in respect of the civil nuclear site operated by British Nuclear Fuels plc ("BNFL") at Sellafield in Cumbria, in the north-west of England. This is a large industrial complex with numerous facilities of various types. Ireland has repeatedly made clear that its object in instituting the series of actions is to secure the closure of the Sellafield site as a whole. For example, on 16 December 2001 Mr Joe Jacob, Ireland's Minister with responsibility for nuclear safety, reiterated Ireland's "determination to have Sellafield shut down" and "the importance of the legal actions and avenues currently being pursued by the Irish Government".[16] On 15 March 2002 Mary O'Rourke, Ireland's Minister for Public Enterprise, stated:

> "We want Sellafield shut and we are determined to continue our legal actions to secure that outcome".[17]

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[14] Letter dated 7 December 2001, Memorial, Volume III, Part One, p. 219; Ireland's minutes of meeting of 11 December 2001, Memorial, Volume III, Part One, p. 51 paragraph 5.
[15] The United Kingdom's Interim Report to ITLOS (which includes the United Kingdom's record of the Dublin Castle meeting) is attached at **Annex 13**.
[16] Press Release: http://www.irlgov.ie/tec/press01/december16th01.htm.
[17] Press Release: http://www.gov.ie/tec/press02/March15th2002.htm.

By his statement of 5 July 2002, Mr Martin Cullen, Ireland's Minister for the Environment and Local Government confirmed:

> "The Irish Government remains steadfastly opposed to the Sellafield operations and will continue to press for the cessation of all operations at the plant".[18]

1.24 The subject of the present proceedings is not the Sellafield site as a whole. The subject of these proceedings is the MOX Plant.

1.25 Subject to the provisions of Part XV of UNCLOS, this Tribunal's jurisdiction is determined by Ireland's Amended Statement of Claim, together with Ireland's Explanatory Note of 21 March 2002. In its original Statement of Claim Ireland requested the submission to arbitration of "its dispute with the United Kingdom concerning *the authorisation of the MOX plant at Sellafield and international movements of radioactive substances associated with the MOX plant* (emphasis added)". The proposed amendment of the Statement of Claim inserted certain references to a separate plant at the Sellafield site: the thermal oxide reprocessing plant ("THORP"). The amendment was accompanied by an Explanatory Note, which declared, so far as relevant, that:

> "**Para 1**: ... Ireland's amendments … are intended to clarify the original Statement of Claim. *The amendments are not intended to introduce any new claim or claims, or address any matters that are not associated, directly or indirectly, with the authorisation, commissioning and operation of the MOX Plant*.
>
> "**Para 2**: The amendment clarifies that the dispute concerns marine pollution arising from increased discharges of radioactive wastes arising both directly and indirectly from the operation of the MOX Plant. It seeks to make clear that the dispute comprises not only discharges from the MOX Plant but also *additional discharges from the THORP plant which would not have arisen if the MOX Plant had not been authorised and put into operation*".[19]

1.26 Ireland elaborated on those words at the meeting of the Tribunal on 25 March 2002, when applying for leave to amend the Statement of Claim. It explained that the amendments were intended to be "minor" and were intended merely to make it clear that "it was the *necessary consequences* of the SMP [the MOX Plant] that were covered by the amendments".[20] The United Kingdom consented to the amendments on that basis.

[18] Press Release: http://www.environ.ie/press/sellafield.html.
[19] Memorial, Volume III, Part One, p. 27, emphasis added.
[20] Paragraph 3 of the Official (PCA) Minutes, emphasis added.

Giving Ireland permission to amend its Statement of Claim, the Tribunal noted in its Order No. 1 that the amendment should be read with the Explanatory Note.[21]

1.27 Ireland's public statements about its objectives, and the amendment of the Statement of Claim, make it particularly important to identify with precision what is meant by the Dispute concerning "the authorisation of the MOX Plant at Sellafield and international movements of radioactive substances associated with the MOX Plant".

1.28 In the Amended Statement of Claim, Ireland requests the Tribunal to adjudge and declare that the United Kingdom breached various provisions of UNCLOS "in relation to the authorisation of the MOX Plant".[22] In its Memorial Ireland states that the Dispute crystallised in October 2001 with the "Decision by the United Kingdom to recognise that the MOX Plant was 'justified' and to proceed to authorise its commissioning and operation".[23]

1.29 Plutonium commissioning of the MOX Plant commenced in December 2001 following two regulatory decisions. The first was a Decision taken on 3 October 2001 by the Secretary of State for Environment, Food and Rural Affairs and the Secretary of State for Health pursuant to a Euratom Directive[24] which provides that:

> "Member States shall ensure that all new classes or types of practice resulting in exposure to ionizing radiation are justified in advance of being first adopted or first approved by their economic, social or other benefits in relation to the health detriment they may cause".

By that Decision the Secretaries of State concluded "that the manufacture of MOX fuel is justified in accordance with the requirements of Article 6(1) of Directive 96/29/Euratom".[25] The second Decision was taken on 19 December 2001 by the United Kingdom's Health and Safety Executive ("HSE"). It authorised plutonium commissioning of the MOX Plant in accordance with BNFL's nuclear site licence for Sellafield issued by the HSE under powers granted by the Nuclear Installations Act 1965, as amended.

[21] Memorial, Volume III, Part One, p. 65.
[22] Memorial, Volume III, Part One, pp. 22-24 (paragraph 41(1),(2),(3),(4)).
[23] Memorial, paragraphs 4.1 to 4.3.
[24] Directive 96/29/Euratom of 13 May 1996 laying down basic safety standards, OJ 1996 L 159/1.
[25] Memorial, Volume III, Part Two, p. 219 at 244.

1.30 The United Kingdom has on several occasions made it clear to Ireland that the decisions taken in October and December 2001 are not (as Ireland appeared to believe) decisions to authorise additional reprocessing at THORP. This is recorded in Ireland's minutes of the meeting held on 11 December 2001.[26] Ireland raised the question of increased activities at THORP, and therefore increased discharges as a consequence of the operation of the MOX Plant. In response:

> "Mr Richard Wood (UK) stated that the Secretary of State's decision of 3 October was based on existing contracts and that further contracts would require further Government approval and would have to comply with the discharge strategy. Ms Helen Leiser (UK) reiterated this, and referred to Secretary of State Margaret Beckett's speech of the 28/11/01".

1.31 In its White Paper, *Managing the Nuclear Legacy*, the United Kingdom confirms that existing THORP contracts will require the approval of the Secretary of State acting on advice from the Liabilities Management Authority ("LMA").[27] It continues:

> "Any proposals for new contracts will similarly require approval by the Secretary of State. In the event that any such proposal was received, the Government would look in detail not just at the circumstances of the specific case but, in the light of the Bergen Declaration[28], would also review the range of issues which would be involved in increasing the current volume of fuel to be reprocessed through THORP. Decisions would be taken in the best interests of the UK as a whole, in the light of advice from the LMA and on the basis that approval would only be given if the contract were:
>
> - consistent with clean up plans for Sellafield and, in the LMA's view, would not cut across implementation of those plans;
> - was expected to make a positive return to the taxpayer after allowing for operational costs, business risks and other costs which might be incurred as a result of the contract, including any additional clean up costs; and
> - consistent with the UK's environmental objectives and international obligations.
>
> The same principles will be applied in the interim period leading up to the establishment of the LMA."[29]

[26] Memorial, Volume III, Part One, p. 51at 53.
[27] Memorial, Volume III, Part Two, p 324, paragraph 5.18.
[28] Memorial, Volume III Part Two, p. 147.
[29] Memorial, Volume III, Part Two, p. 324, paragraph 5.19.

1.32 The White Paper also makes it clear that major decisions will be taken only in the light of full consultation[30] and that the LMA will be required to publish information about its strategies for clean-up and will be subject to existing laws requiring openness and transparency, including the Freedom of Information Act 2000, the Environmental Information Regulations 1992 and any extension to those requirements pursuant to the Aarhus Convention, when implemented.[31]

1.33 These facts are essential when evaluating Ireland's claim that the operation of the MOX Plant will result in longer or more intensive use of THORP. The point is made explicitly in paragraph 1.2 of the Memorial, where Ireland states:

> "The operation of the MOX plant will result in even larger amounts of new and additional discharges of radioactive wastes to be discharged directly and indirectly into the Irish Sea from the THORP reprocessing plant, which will reprocess spent nuclear fuel into plutonium oxides for use in the manufacture of MOX fuel. The operation of the MOX plant will also lead to a significant increase in international transports of radioactive substances through the Irish Sea, in close proximity to Ireland. And the operation of the MOX plant will cause significant new and additional volumes of radioactive wastes to be stored at the Sellafield site."

Ireland repeats that mantra thereafter;[32] and on the premise that "the MOX Plant and THORP are inextricably linked"[33] Ireland makes complaints against THORP and against the reprocessing industry more generally.[34]

1.34 Not only is this contrary to the evidence adduced by Ireland in the proceedings before the OSPAR Tribunal, in which Ireland argued that BNFL was unlikely to win any further reprocessing contracts,[35] and contrary to what was said at the meeting on 11 December 2001 and in the White Paper, but it is based on a misreading of the Decision of

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[30] Memorial, Volume III, Part Two, p 309, paragraph 3.24.
[31] Memorial, Volume III, Part Two, p 309, paragraph 3.25.
[32] See for instance Memorial, paragraphs 1.51, 2.25, 3.16, 3.27-3.29, 3.32-3.42, 8.128, 8.129, 8.141, 8.170, 8.201, 9.93, 9.101, 9.107 and 9.128.
[33] Memorial, paragraphs 3.4-3.15
[34] See for instance Memorial, paragraphs 1.16, 1.19, 1.30, 1.51, 1.53 to 1.60; 3.4 to 3.42.
[35] Second Report of Mr Gordon MacKerron in the OSPAR case, Memorial, Volume II, p. 528, paragraphs 1.4.1 and 1.4.2: "Reprocessing … is a declining industry … An economic comparison of reprocessing and long-term fuel storage, together with the observation that companies are no longer able to engage in activities that deliver a financial return at an acceptable risk, lead to the observation that there no longer is an underlying economic rationale for reprocessing. NERA analysis shows that it is not possible to construct credible future market scenarios which accommodate more than a very limited number of reprocessing contracts with Japanese utilities and even here the prospects are slight".

3 October 2001. The authorisation currently given to BNFL is to produce MOX fuel from the plutonium which, pursuant to the economic reference case for the MOX Plant, has already been or will be separated at THORP in fulfilment of existing reprocessing contracts. The evidence from BNFL is that "at this point in time, it is uncertain whether THORP will secure additional reprocessing contracts".[36]

1.35 As the International Court of Justice put it in the *Headquarters Agreement* case, "the existence of a dispute does presuppose a claim arising out of the behaviour of or a decision by one of the parties".[37] It is only if such a decision on new reprocessing contracts were to be taken that Ireland's allegations on THORP may become justiciable.

1.36 Elsewhere in the Memorial the assertion is made that:

> "If the MOX plant were not to operate, the economic justification for the continued operation of the THORP plant would disappear, and the contributions of the liquid and aerial discharges from the THORP plant to the total liquid and aerial discharges from Sellafield would eventually become zero".[38]

There is no basis for that assertion. The MOX Plant and THORP are separate, operationally and commercially.[39] If the MOX Plant were not in operation, THORP would continue to operate to fulfil existing signed reprocessing contracts, as it did before the Decision of 3 October 2001 and has now done for eight years.

1.37 THORP was conceived in the early 1970s to reprocess spent fuel from the United Kingdom's second generation of advanced gas cooled nuclear reactors ("AGRs"). It was then thought that the plutonium derived from reprocessing could be used in a new type of fast-breeder reactor. It was also decided that THORP could be used to reprocess spent fuel from overseas reactors. At this time it was not conceived that plutonium from THORP would be used to manufacture MOX fuel. This is acknowledged in Ireland's

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[36] Witness Statement of Jeremy Rycroft, paragraph 17 (**Annex 10**).

[37] *Applicability of the Obligation to Arbitrate under Section 21 of the United Headquarters Agreement of 26 June 1947*, ICJ Reports 1988, p. 12 at 30. The Court said: "While the existence of a dispute does presuppose a claim arising out of the behaviour of or a decision by one of the parties, this in no way requires that any contested decision must already have been carried into effect."

[38] Memorial, paragraph 3.31.

[39] Although Ireland attributes some significance to the fact that THORP and the MOX Plant are physically linked (Memorial, paragraph 2.62) there is no operational necessity for this. The MOX plant of one of BNFL's competitors, COGEMA is located at its site in Marcoule: it is not proximate to COGEMA's reprocessing plant at La Hague.

evidence.[40]

1.38 Performance of those existing contractual obligations is expected to occupy THORP for several years from now. BNFL would remain under a legal obligation to discharge those contracts whether or not the MOX Plant had been constructed. As is made clear in the Decision of 3 October 2001, if the MOX Plant were not in operation, THORP would continue to reprocess fuel in accordance with existing contracts.[41]

D. THE LAW APPLICABLE TO THE DISPUTE

1.39 In accordance with article 288(1) of UNCLOS, this Tribunal has jurisdiction "over any dispute concerning the interpretation or application of this Convention which is submitted to it in accordance with this Part". By article 286 "any dispute concerning the interpretation or application of this Convention shall ... be submitted … to the court or tribunal having jurisdiction under this section". In the circumstances of the case presented by Ireland, it is necessary to emphasise the words "*this Convention*".

1.40 The necessity for emphasising the point arises because, in the course of its Memorial, Ireland relies upon a wide range of international instruments and alleges that the United Kingdom has failed to comply with them. Ireland justifies recourse to the various instruments by contending that "[t]hese instruments are relevant as a guide to the interpretation of the duties imposed by article 206 of UNCLOS and as instances of the 'other rules of international law not incompatible with this Convention," which the present Tribunal is directed to apply to the case before it by article 293(1) of UNCLOS."[42] This is a reference to the statement, in article 293, that a court or tribunal having jurisdiction under section 2 of Part XV shall apply the Convention and "other rules of international law not incompatible with this Convention".

1.41 As the United Kingdom explains in Chapter 4 of this Counter-Memorial, article 293 cannot enlarge the jurisdiction of the present Tribunal to review and apply all manner of obligations, statements and principles which are not incompatible with UNCLOS. Jurisdiction is governed by article 288, which provides that "a court or tribunal referred to in article 287 shall have jurisdiction over any dispute *concerning the interpretation or application of this Convention* which is submitted to it in accordance with this Part."

[40] See the first MacKerron Report, Memorial, Volume II, p. 444 at paragraph 1.1.4.
[41] Memorial, Volume III, Part Two, p. 219 at 239, 253.
[42] Memorial, paragraph 7.6.

E. THE TEMPORAL ELEMENT

1.42 Following the United Kingdom's accession, UNCLOS entered into force for the United Kingdom on 24 August 1997. (It had been in force for Ireland since 22 June 1996.) The provisions of UNCLOS did not bind the United Kingdom in relation to any act or fact which took place before 24 August 1997 or any situation which ceased to exist before that date.[43]

1.43 The Dispute before the Tribunal crystallised at the latest on the date of the institution of proceedings, that is, 25 October 2001 when the Statement of Claim was lodged.[44]

1.44 Many of the episodes and events on which Ireland relies fall well outside the period relevant for the purposes of this case. For instance, no breach of UNCLOS could arise from the fact that THORP was not the subject of an environmental impact assessment, for the reason, among others, that even if UNCLOS had imposed an obligation to make such an assessment (beyond the assessment that was carried out) the United Kingdom would not have been subject to that obligation when the relevant decisions were taken in December 1993.[45] Since the Environmental Statement for the MOX Plant, dated October 1993,[46] preceded the entry into force of UNCLOS in relation to the United Kingdom, no breach of the Convention could have arisen when that Statement was prepared and published.

F. THE IMPORTANCE OF SCIENTIFIC AND TECHNICAL EVIDENCE

1.45 It might appear superfluous to emphasise the centrality of the scientific and technical evidence in this case; for it is a case in which Ireland asserts that the operation of the MOX Plant will produce certain consequences and the United Kingdom denies this. The centrality of the scientific and technical evidence needs to be underscored only because Ireland asserts that "this case is not a dispute over science".[47] The opposite is the case. It is the position of the United Kingdom that there is no sound scientific basis for

[43] See article 28 of the Vienna Convention on the Law of Treaties.
[44] Ireland states that the Dispute crystallised in October 2001; Memorial, paragraph 4.1.
[45] The complaint has in any event already been considered and rejected in *R v Secretary of State for the Environment and Others, ex p Greenpeace Ltd and Another* [1994] 4 All ER 352 at 377 e-g and 384h.
[46] Memorial, Volume III, Part Three, p. 3.
[47] Memorial, paragraphs 1.3 and 3.1.

the claims made by Ireland.

1.46 The assertion that the United Kingdom has failed to take the necessary measures to prevent, control and reduce pollution from land-based sources and from vessels must be tested against evidence showing that the MOX Plant is not liable to result in significant radioactive contamination of the water, soil or airspace; and that the marine transportation of MOX fuel is carried to very high standards of safety and may have certain advantages over the alternative (the marine transportation of plutonium dioxide).[48]

1.47 Nothing could give greater emphasis to the need for scientific evidence than Ireland's assertion that "[t]he 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".[49] It is the United Kingdom's case that discharges from the MOX Plant are and will continue to be insignificant. The manufacture of MOX fuel is a well-established process. It is conducted at MOX plants in other countries. It is a dry process, involving the mixing of powders. It does not lead to significant discharges of radioactive gases or liquids.[50] No decision has been taken which would intensify or prolong the operation of THORP, but the current discharges from THORP are in any event very small and well within the applicable limits.

[48] Memorial, Volume III, Part Two, p. 256, paragraph 30.
[49] Memorial, paragraph 9.1.
[50] See Witness Statement of John Clarke, paragraphs 95, 115 and 120 (**Annex 2**).

Addendum: Note on Units of Measurement

1. In the course of this Counter-Memorial, reference will be made to units of measurement of radioactivity and radiation dose.

2. The unit of measurement of the radioactivity of any material (solid, liquid or gas) is the *becquerel* (Bq). Radiation is produced by the disintegration of atoms of radioactive isotopes of elements, or radionuclides. The activity of a given amount of a radionuclide is expressed by the rate at which these disintegrations occur, measured in becquerels. One becquerel equals one atomic disintegration every second. Becquerels are usually expressed as terabecqerels (TBq), i.e. 1×10^{12} becquerels, or gigabecquerels (GBq), i.e. 1×10^{9} becquerels. The numbers involved are necessarily large given the very small size of the atom, and the very large numbers of atoms in any substance.

3. The unit of measurement for the effective dose of radiation, which is the measure of the risk to human health posed by a particular level of exposure, is the *sievert* ("Sv"). It is estimated that, on average, a radiation dose to one person of 1 millisievert ("mSv") (i.e. one thousandth of a sievert) results in an additional risk of one in twenty thousand of that person developing a fatal cancer over his or her lifetime. A radiation dose of 1 microsievert ("μSv") (i.e. one millionth of a sievert) results in a one in twenty million additional risk of developing a fatal cancer. As discussed further in paragraphs 2.43 to 2.45 below, the International Commission on Radiological Protection ("ICRP") has made recommendations on limits on radiation doses received by members of the public from man-made sources of radiation, and these have been adopted in European and domestic legislation.

4. The amount of radiation absorbed by any material (the absorbed dose) is measured by reference to the *gray* (Gy), which is equivalent to the absorption of one joule of energy per kilogram of material. The absorbed dose can be that received by human tissue, by tissue of other animals or plants, or by inanimate material. In humans, there is usually a straightforward relationship between the absorbed dose and the effective dose. In human radiation protection, emphasis is generally placed on limiting the annual effective dose. However, the period of one year is longer than the lifespan of some aquatic and terrestrial biota, and is longer than key stages in the life cycle of many others. For this reason, in assessments of the possible effects of radiation on aquatic and terrestrial biota, it is conventional to estimate the absorbed dose rate in milligrays per day (or micrograys per hour). A milligray is an absorbed dose of one thousandth of a gray, and a microgray is one millionth of a gray.

CHAPTER 2

FACTUAL AND REGULATORY BACKGROUND

2.1 This Chapter is divided into two Parts. Part 1 sets out a brief history of the Sellafield site, focusing in particular on the conception of THORP in the mid-1970s and its subsequent development, and the more recent conception (in the late 1980s) and development of the MOX Plant. It will immediately be seen that the construction and authorisation of each plant has at all stages been the subject of close enquiry pursuant to domestic and European regulations. Part 2 describes the regulatory background relevant to the operations at the Sellafield site. Ireland's Memorial gives the impression that the United Kingdom has allowed the authorisation and operation of THORP and the MOX Plant to take place in a legal vacuum. The Tribunal is invited by Ireland to fill this vacuum with a legal order to be imposed by way of the provisions of UNCLOS. The impression given could not, however, be further from the truth. The reprocessing, manufacture and transport of nuclear fuel is subject to the most stringent regulation at international, European and domestic levels.

PART 1. DEVELOPMENT OF THE SELLAFIELD SITE

2.2 The Sellafield site has been used as a nuclear facility since the early 1950s. The main activities undertaken at Sellafield are: Magnox fuel reprocessing; oxide fuel reprocessing; MOX fuel manufacture; nuclear waste management and decommissioning; and electricity generation by means of a Magnox power station called Calder Hall (although electricity generation will cease in March 2003).[1]

2.3 As has already been explained in Chapter 1, the Tribunal is not concerned with the greater part of the activities at the Sellafield site. However, in the light of Ireland's declared aim to have the site closed, the Tribunal should know that a significant part of the activity at Sellafield (involving approximately half the workforce) consists of remedial work dealing with legacy wastes and facilities from the United Kingdom's

[1] See Witness Statement of John Clarke, paragraph 9 (**Annex 2**).

historic nuclear programme as opposed to commercial activities.[2] Such remedial work cannot simply be ignored and will continue for many years, well beyond the point at which commercial activities at the site have ceased, and it is responsible for by far the greater part of the radioactive discharges from Sellafield.[3]

A. THORP

2.4 During the operation of a nuclear reactor, a small quantity of the uranium fuel is converted into plutonium and some waste products are produced. Over time (three to five years) the fuel becomes less efficient because of the build-up of waste products. Spent nuclear fuel may, however, be sent for reprocessing which separates the waste products, allowing much of the uranium and plutonium (about 97 per cent of the spent fuel) to be reclaimed. The primary function of THORP is to manage irradiated (spent) oxide fuel by providing stable waste forms and recovering uranium and plutonium for re-use. Further details as to the nature and workings of the plant are to be found at paragraphs 143 to 190 of the Statement of Mr Clarke, BNFL's Head of Environment, Health, Safety and Quality at the Sellafield site.

(i) The Planning Phase

2.5 BNFL first announced its plans for the building of THORP in 1974. In March 1977, BNFL submitted its application for outline planning permission. The application was made to the relevant planning authority, Copeland Borough Council, but was called in by the Secretary of State for the Environment pursuant to powers under section 35 of the Town and Country Planning Act 1971. After a local inquiry conducted by a High Court judge, Mr Justice Parker, from June to November 1977, a report (the Windscale Inquiry Report) was presented to the Secretary of State in January 1978, and in turn put before and debated in Parliament. The parliamentary debate on 15 May 1978 approved a Special Development Order permitting construction of THORP.

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[2] Sellafield is the home to plants dating back to the earliest development of the United Kingdom's military and civil nuclear programmes. Residual waste associated with these programmes must now be converted into safe and stable waste forms; and redundant plants must be decommissioned. Witness Statement of John Clarke at paragraph 16.

[3] Witness Statement of John Clarke, paragraph 16. Further, despite the marked downward trend in discharges from the Sellafield site, the treatment of the legacy of stored wastes may on occasion lead to short-term increases in the discharge of some radionuclides. For example, increased discharges of technetium-99 resulted from the treatment of a historic backlog of liquid waste. See the UK strategy for radioactive discharges 2001-2020, paragraph 7.3.8 (**Annex 14**). See further at paragraph 2.66-2.70 below. See also "Making Sense of Sellafield", published by the Royal Irish Academy, 2002 (**Annex 18**).

(ii) The Article 37 Opinion

2.6 On 7 October 1991, in accordance with its obligations under Article 37 of the Euratom Treaty, the United Kingdom provided the Commission of the European Communities with data relating to the disposal of radioactive wastes from THORP. The European Commission examined whether the plan for the disposal of radioactive waste (in whatever form) from THORP was likely to give rise to significant contamination of the territory of another Member State. The procedure followed by the Commission under Article 37 of the Euratom Treaty is rigorous, entailing consultation by "highly qualified groups of experts" capable of assisting the Commission in giving its "unique overview of developments in the nuclear power industry".[4]

2.7 The Opinion of the Commission was published on 30 April 1992 and concluded that:

> "the Commission is of the opinion that the implementation of the plan for the disposal of radioactive waste from Thorp at the Sellafield establishment is not liable, either in normal operation or in the case of an accident of the type and magnitude considered in the general data, to result in radioactive contamination, significant from the point of view of health, of the water, soil or airspace of another Member State."[5]

(iii) Application for Authorisation to Operate

2.8 In April 1992, in order to operate THORP, BNFL applied to the then concerned regulatory bodies, Her Majesty's Inspectorate for Pollution ("HMIP") and the Ministry of Agriculture, Fisheries and Food ("MAFF") for new authorisations for discharges of radioactive waste to sea and air from the Sellafield site. Draft authorisations were prepared by these authorities and made available for public consultation.

2.9 The first round of public consultation began on 16 November 1992. In May 1993, HMIP and MAFF reported to the Secretary of State for the Environment and the Minister of Agriculture, Fisheries and Food, and concluded that no points had been raised by the consultation and the responses thereto to cause them to reconsider the terms of their draft

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[4] Case 187/87, *Saarland v Minister for Industry* [1988] ECR 5013 at 5041, paragraph 13.

[5] Memorial, Volume III, Part Three, p. 405.

authorisations. However, they noted that a number of wider policy issues had been raised in the public consultation process which they had not addressed. In June 1993, the Ministers announced that a further round of consultation would be undertaken to provide an opportunity for the wider issues to be considered, including the question of the justification of the practice of oxide fuel reprocessing at THORP under Directives 80/836/Euratom and 84/467/Euratom.[6] The second round of public consultation began on 4 August 1993 and was completed on 15 December 1993. At this juncture, the Ministers declined to "call in" the application for THORP authorisation or to commence a local inquiry into the authorisation. HMIP and MAFF granted BNFL new discharge authorisations for the Sellafield site, including THORP, to take effect in January 1994.

2.10 The new discharge authorisations were challenged in the High Court *inter alia* on the basis of an alleged failure to carry out an environmental impact assessment in accordance with Directive 85/337/EEC.[7] This challenge failed. To state, as Ireland does,[8] that the United Kingdom permitted the THORP plant to operate without ever having been the subject of an environmental assessment is merely to repeat an allegation that has already been subject to adjudication. In *R v Secretary of State for the Environment and Others, ex parte Greenpeace Ltd and Another*, Mr Justice Potts concluded that a formal environmental impact assessment was inappropriate for THORP since Directive 85/337/EEC did not apply to it;[9] nevertheless the information provided and made available for consultation by the inspectorates and the Ministers met the substantive requirements of that Directive.[10]

(iv) The Baseload and Post-Baseload Contracts

2.11 As already noted in Chapter 1, THORP was funded largely by advance payments

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[6] Directive 80/836/Euratom of 15 July 1980 amending the directives laying down basic safety standards for the health and the protection of the general public and workers against ionising radiation, OJ 1980 L 246/1; Directive 84/467/Euratom of 3 September 1984 amending Directive 80/835/Euratom, OJ 1984 L 265/4. In *R v Secretary of State for the Environment and Others, ex parte Greenpeace Ltd and Another* [1994] 4 All ER 352 at 368, Mr Justice Potts held that the justification test prescribed by Article 6 of Directive 80/836 as amended applied to each activity and not to each type of activity. This decision would no longer hold good in relation to Directive 96/29/Euratom of 13 May 1996 laying down basic safety standards for the health and the protection of the general public and workers against ionising radiation, OJ 1996 L 314/20.

[7] Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment, OJ 1985 L 175/40.

[8] E.g., Memorial, paragraph 1.48.

[9] As to the substantive requirements of Directive 85/337/EEC, see further at paragraphs 5.36-5.40 below.

[10] *R v Secretary of State for the Environment and Others, ex parte Greenpeace Ltd and Another* [1994] 4 All ER 352 at 377.

from so-called baseload customers (i.e. various utilities in the United Kingdom, Europe and Japan that committed sufficient reprocessing business to occupy THORP fully for a period of operation estimated to last approximately ten years). BNFL initially planned that THORP would reprocess 6,000 tU (tonnes of uranium) of spent fuel in the first ten years of its operation. Contracts with the baseload customers were concluded in the mid to late 1970s and 1980s. By the end of 1986 very nearly all of this capacity had been committed and THORP construction was underway. In 1989 BNFL declared a further 1,000 tU of capacity in THORP, raising the THORP baseload to 7,000 tU, and further contracts were signed in 1989.

2.12 So-called post-baseload contracts for business beyond the first 7,000 tU of reprocessing were signed with German utilities in 1990. British Energy also signed new contracts for post-baseload reprocessing in 1995 and 1997 for 2,600 tU of spent fuel.[11]

(v) Commencement of Operations

2.13 Operations at THORP commenced in 1994. The existing contractual commitments at THORP are currently estimated to require operation of THORP for several years to come.

B. THE MOX PLANT

2.14 Both the uranium and the plutonium that is recovered in the reprocessing process can be used to manufacture new nuclear fuel. In particular, the recovered plutonium can be used in the manufacture of MOX fuel, which has been successfully utilised worldwide for over 30 years.[12] The manufacture of MOX fuel is a well-established process, involving the mixing and processing of uranium oxide and plutonium oxide powders to

[11] It has also been agreed that spent fuel arising from British Energy's AGR reactors over their operational lifetime (possibly a further 2,000 to 3,000 tU) will be delivered to Sellafield with a decision on whether to reprocess or store this spent fuel to be made at a later date.

[12] MOX fuel is currently used in light water reactors ("LWRs") by utilities in Belgium, Germany, France and Switzerland. It has been used in countries such as the Netherlands, Japan, Sweden, the United States of America and Italy. The main international suppliers of MOX fuel are at present BNFL, COGEMA (which is part of the French State-controlled AREVA group) and Belgonucléaire. COGEMA currently operates two MOX manufacturing plants, one of which produces MOX rods which are transported to the FBFC facility at Dessel in Belgium owned by Framatome Advanced Nuclear Power, which is part of the same group as COGEMA. In addition, Belgonucléaire operates another facility at Dessel producing MOX rods, which are transported to the adjacent FBFC fuel assembly plant. There is a MOX plant planned in Japan (at Rokkashomura) and there are plans to construct MOX fabrication facilities in the United States and in the Russian Federation.

produce small ceramic pellets which are then loaded into fuel rods.

2.15 In the late 1980s, BNFL recognised a potential market for the large-scale commercial production of MOX fuel. As a result, BNFL planned the construction of a full-scale MOX fuel manufacturing plant at its Sellafield site – the MOX Plant. Further details as to the nature and workings of the Plant are to be found at paragraphs 73 to 114 of the Statement of Mr Clarke.

(i) The Planning Phase

2.16 The regulatory process applied in respect of the MOX Plant extended over a period of nine years. It involved the participation of Ireland as well as experts from the Commission of the European Communities.

2.17 The regulatory process commenced with BNFL's submission of the MOX Plant planning application on 2 October 1992 to the relevant local planning authority, Copeland Borough Council. Following extensive discussions between BNFL, Copeland Borough Council and the Department for the Environment, BNFL voluntarily prepared an Environmental Statement[13] concerning the MOX Plant with reference to the Town and Country Planning (Assessment of Environmental Effects) Regulations 1988, which implement Directive 85/337/EEC in the United Kingdom. This Statement was submitted to Copeland Borough Council on 22 October 1993. The Statement, and its compliance with the applicable European and domestic regulations, are considered further in Chapter 5 below. As to its substance, the Statement showed that the radioactive discharges from the MOX Plant would be negligible.

2.18 Copeland Borough Council received and considered a number of representations. More were in favour of the MOX Plant than opposed to it. Ireland was in the latter group, but did not dispute the discharge figures quoted in the Environmental Statement. Ireland did complain that the Statement was insufficiently detailed and declared that it was "opposed in principle to any extension to present operations at Sellafield".[14] Following requests by Copeland Borough Council, in January and February 1994 BNFL provided two tranches of further information to supplement the Environmental

[13] Memorial, Volume III, Part Three, p. 3.
[14] Memorial, Volume III, Part One, p. 94.

Statement.[15] On 23 February 1994, Copeland Borough Council granted outline planning permission for the construction of the MOX Plant.

2.19 The construction of the MOX Plant commenced in April 1994 and was completed in August 1995.

(ii) The Article 37 Opinion

2.20 In 1996, the United Kingdom submitted its plan relating to the disposal of radioactive waste from the MOX Plant to the Commission of the European Communities in accordance with Article 37 of the Euratom Treaty. In February 1997, the Commission gave its Opinion as follows:

> "(a) the distance between the plant and the nearest point on the territory of another Member State, in this case Ireland, is 184 km;
>
> (b) under normal operating conditions, the discharges of liquid and gaseous effluents will be small fractions of present authorized limits and will produce an exposure of the population in other Member States that is negligible from the health point of view;
>
> (c) low-level solid radioactive waste is to be disposed to the authorized Drigg site operated by BNF plc. Intermediate level wastes are to be stored at the Sellafield site, pending disposal to an appropriate authorized facility;
>
> (d) in the event of unplanned discharges of radioactive waste which may follow an accident on the scale considered in the general data, the doses likely to be received by the population in other Member States would not be significant from the health point of view.
>
> In conclusion, the Commission is of the opinion that the implementation of the plan for the disposal of radioactive wastes arising from the operation of the BNFL Sellafield mixed oxide fuel plant, both in normal operation and in the event of an accident of the magnitude considered in the general data, is not liable to result in radioactive contamination significant from the point of view of health, of the water, soil or airspace of another Member State."[16]

[15] See further at paragraph 5.48 below.
[16] OJ 1997 C 68/03; Memorial, Volume III, Part Three, p. 473.

2.21 The Opinion and the related Submission that the United Kingdom was required to make pursuant to Article 37 of the Euratom Treaty are discussed further in Chapter 5 below. For present purposes, it is sufficient to note that Ireland did not challenge the conduct of the United Kingdom, or of the Commission, leading to the Opinion, as it could have done under Article 142[17] or Article 148[18] of the Euratom Treaty if it had considered that either had failed to act appropriately.

2.22 Indeed, the United Kingdom is not aware that Ireland has ever stated that it considers the Opinion to be wrong.

(iii) The Justification Exercise

2.23 In November 1996, BNFL applied to the United Kingdom Environment Agency for variations to the gaseous and liquid discharge authorisations granted under the Radioactive Substances Act 1993 for the Sellafield site. Although the radioactive discharges from the MOX Plant would be so low as not to require any variation to the then existing limits in the discharge authorisations for the Sellafield site, the application to vary the limits in respect of other discharges on the site included information on the MOX Plant. As the manufacture of MOX fuel was an activity resulting in exposure to ionising radiation, the Environment Agency was under a duty to consider whether it was justified under the terms of the then applicable Euratom Directives (Directives 80/836 and 84/467). The process of justification requires a consideration of whether the benefits of the practice outweigh the detriments it may cause. To this end, the Environment Agency requested BNFL to provide information specifically relating to the MOX Plant in a separate application. BNFL provided the information requested in January 1997 and a public consultation was then held, in which Ireland participated.[19]

2.24 In response to concerns expressed by Ireland and others that there was insufficient information on the economic case for the MOX Plant, the Environment Agency appointed independent consultants, PA Consulting Group, to assess BNFL's business case. A second public consultation took place, ending in March 1998. Ireland again

[17] "A Member State which considers that another Member State has failed to fulfil an obligation under this Treaty may bring the matter before the Court of Justice".
[18] "Should the Council or the Commission, in infringement of this Treaty, fail to act, the Member States and the other institutions of the Community may bring an action in the Court of Justice…"
[19] As to Ireland's participation in four of the five rounds of public consultation concerning the MOX Plant, see Chapter 6, Section E, below.

participated, stating that:

> "The operation of the SMP [the MOX Plant] will result in additional radioactive discharges into the Irish Sea. These discharges, however small they may be, are objectionable and unacceptable to the Irish Government".[20]

2.25 Subsequent to the conclusion of this second round of consultation, the Environment Agency in October 1998 forwarded to the relevant Ministers two proposed decisions: one in respect of justification for the uranium commissioning of the MOX Plant and the other in respect of justification for the plutonium commissioning and full operation of the MOX Plant.[21] The decisions were substantial and fully reasoned, and contained detailed estimates of radiation exposure to members of the public arising from the MOX Plant. These showed (once again) that the radiation doses from the MOX Plant would be of negligible radiological significance.

2.26 Ireland complained that some information had been wrongly excised from the PA Consulting Group report (information which had been redacted on the grounds of commercial confidentiality).[22] A fuller version of the PA Consulting Group report was released in June 1999[23] and a further consultation took place. Again Ireland made representations; again it did not challenge the information given in relation to discharges.

2.27 A decision on the justification of MOX manufacture was delayed following the MOX data falsification incident at the MOX Demonstration Facility. As explained in the Statement of Mr Clarke:

> "In this incident, internal checks within the BNFL MOX Demonstration Facility (MDF), the manufacturing plant at Sellafield, discovered that the Quality Assurance of a small number of pellets were inadequate. This related to the manual confirmation of automated checks during the manufacturing process. The MOX pellets were loaded into fuel rods used to make the eight MOX fuel assemblies delivered to Takahama in Japan. In this regard, it should be noted that the MOX Plant is a completely different plant from the MDF. In the MOX Plant, there is no manual data entry for any verification checks. The MOX Plant was subject to rigorous customer/regulator audit following the MDF incident and BNFL implemented all recommendations. Although Ireland attempts to place great importance on the above incident in its Memorial, it is apparent that there

[20] Memorial, Volume III, Part One, p. 103.
[21] Memorial, Volume III, Part Two, p. 363 (for the plutonium commissioning decision).
[22] The redactions form part of the subject-matter of the dispute before the OSPAR Tribunal.
[23] Memorial, Volume III, Part Two, p. 419.

was and is no safety implication flowing from the incident. While the incident was, obviously, regrettable, it was, essentially a Quality issue (which has been addressed) and has no impact to the operation of the MOX Plant."[24]

2.28 In the light of the data falsification incident, and its potential impact on Japan as a MOX customer, BNFL submitted a revised economic case for the MOX Plant in January 2001. A consultation document was published in March 2001 and a fourth round of public consultation took place (in which Ireland participated). Another firm of consultants, Arthur D. Little ("ADL") was commissioned to review BNFL's economic case. ADL reported that the economic case was robust.[25] A fifth round of public consultation then took place. Ireland did not participate on this occasion (although it could have done).

(iv) The Decisions of 3 October and 19 December 2001

2.29 Following the conclusion of the fifth round of public consultation in August 2001, the Secretaries of State adopted a Decision on 3 October 2001 in which they concluded "that the manufacture of MOX fuel is justified in accordance with the requirements of Article 6(1) of Directive 96/29/Euratom".[26] This was not (as Ireland states at paragraph 1.2 of the Memorial) "a Decision that the Mixed Oxide fuel plant at Sellafield … was 'justified', that its benefits outweighed its costs", but a decision that MOX fuel production as a practice was justified by its economic, social and other benefits in relation to the health detriment it may cause.

2.30 The Decision of 3 October 2001 was the subject of an application for judicial review to the High Court in London by two environmental organisations, Friends of the Earth Ltd and Greenpeace Ltd, on the basis that there had been a failure to take the sunk costs of constructing the MOX Plant into account. By a judgment dated 15 November 2001, Mr Justice Collins dismissed the application, upholding as lawful the Decision of the Secretaries of State. Leave to appeal was given, but the appeal was rejected by the Court of Appeal on 7 December 2001.[27]

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[24] Witness Statement of John Clarke, paragraph 72(c), footnote 31 (**Annex 2**).
[25] The public domain version of the ADL report (without appendices) is at Memorial, Volume III, Part Two, p. 473. The redactions form part of the dispute before the OSPAR Tribunal.
[26] Memorial, Volume III, Part Two, p. 219 (excluding annexes).
[27] *R. v. (1) Secretary of State for Environment, Food and Rural Affairs (2) Secretary of State for Health, ex parte (1) Friends of the Earth Ltd (2) Greenpeace Ltd* (2001) 50 EG 91. The Court of Appeal found that the essential purpose of Article 6 of Directive 96/29/Euratom was to deter radiation-producing practices unless sufficient net benefits would result. That was not to say that, when taking decisions in individual cases,

2.31 Finally, on 19 December 2001, the Decision was taken by the United Kingdom's Health and Safety Executive ("HSE") to authorise plutonium commissioning of the MOX Plant in accordance with the Nuclear Installations Act 1965.[28]

PART 2. THE REGULATORY BACKGROUND

2.32 This Part of Chapter 2 contains a brief introduction to the relevant international, European and domestic bodies and an overview of the regulations that these have brought into effect. It is not suggested that the Tribunal has jurisdiction in respect of the application of such regulations. The Tribunal's jurisdiction is confined to the interpretation or application of UNCLOS, as explained in Chapter 4 below. However, in assessing Ireland's allegations of breaches of UNCLOS, including Ireland's interpretation of the various provisions of UNCLOS, it is vital that the Tribunal appreciate that (i) this is an exceptionally heavily regulated area, and (ii) the United Kingdom meets in all cases the applicable regulations. This Part addresses the first of these two matters. The second matter (*inter alia*) is dealt with in Chapters 3 and 5 to 7.

A. INTERNATIONAL ORGANISATIONS AND REGULATIONS

(i) The International Atomic Energy Agency

2.33 The International Atomic Energy Agency ("IAEA") was established by Statute dated 23 October 1956.[29] Ireland and the United Kingdom are both Members. Through the IAEA, Member States participate in the formulation and elaboration of principles, guidelines, standards and regulations covering the safety of nuclear installations, radiation protection, the management of radioactive waste, transport safety, the physical

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Member States were required to assess economic benefit otherwise than by reference to classic economic principles, including that of ignoring sunk costs. The fact that Article 6 required a generic assessment of justification did not affect the approach to sunk costs in the case of the MOX Plant. It could not be said that the Secretaries of State were bound to take into account costs that had already been incurred in constructing the MOX Plant that could not be recovered and were not going to be incurred anywhere else.

[28] Memorial, paragraphs 4.1 and 4.3. It is also to be noted that the uranium commissioning of the MOX Plant was not authorised by the Decision of 3 October 2001. It was the subject of a decision taken by Ministers on 11 June 1999 by which they decided not to exercise their powers of direction under section 23 of the Radioactive Substances Act 1993.

[29] The IAEA now has over 130 Member States.

protection of nuclear material and safeguards measures for nuclear materials. There are permanent IAEA committees and working groups on all the key aspects of activities in the nuclear industry referred to above.[30]

2.34 The IAEA has established internationally agreed basic principles and standards that are applied almost universally in the civil nuclear industry. These standards and principles are kept under regular review and updated as necessary. The IAEA provides States that have nuclear power programmes, and also those that do not, with the means to participate fully in this process. It ensures that all have access to detailed technical information, and can raise any relevant issue within the appropriate expert forum and have it properly addressed. The IAEA has also helped to develop and provides secretariat functions for the Convention on Nuclear Safety; the Convention on the Physical Protection of Nuclear Material; the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management. It has also developed the IAEA Regulations for the Safe Transport of Radioactive Material (the "IAEA Transport Regulations").

(a) *Convention on Nuclear Safety*

2.35 The United Kingdom, Ireland and Euratom are Parties to the 1994 Convention on Nuclear Safety.[31] The objectives of the Convention, as set out in its Article 1, are as follows:

> "i. to achieve and maintain a high level of nuclear safety worldwide through the enhancement of national measures and international co-operation including, where appropriate, safety-related technical co-operation;
> ii. to establish and maintain effective defences in nuclear installations against potential radiological hazards in order to protect individuals, society and the environment from harmful effects of ionizing radiation from such installations;
> iii. to prevent accidents with radiological consequences and to mitigate such consequences should they occur."

2.36 Article 5 of the Convention requires each Contracting Party to report on the

[30] Within these, experts are able to review all relevant issues in detail and to establish, review and revise as necessary standards, guidelines, regulations and recommendations. All IAEA Member States are able to participate in these committees. Each committee and working group has its own annual programme of work including schedules of meetings.

[31] 33 ILM 1518 (1994). The text of the Convention is also on the IAEA website at http://www.iaea.org/worldatom/Documents/Legal/nukesafety.shtml. The Convention entered into force on 24 October 1996.

measures it has taken to implement each of the obligations under the Convention, whilst pursuant to Article 20 such reports are subject to peer review at regular meetings of the Contracting Parties. The first round of reporting took place in 1998. The second round of reports took place in 2001. The United Kingdom's report, which considers each of the Convention's obligations and explains how the United Kingdom complies with these, was submitted in September 2001.[32]

(b) *Convention on the Physical Protection of Nuclear Material*

2.37 The Convention on the Physical Protection of Nuclear Material entered into force for the United Kingdom, Ireland and Euratom in 1991.[33] It obliges States Parties to ensure the protection of nuclear material within their territory or on board their ships or aircraft and to render assistance to one another if required and identifies the levels of protection necessary for different categories of nuclear material.

(c) *Joint Convention on Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management*

2.38 The Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management was adopted at Vienna on 5 September 1997 and entered into force on 18 June 2001.[34] The objectives of the Convention, as set down in Article 1, are:

> "(i) To achieve and maintain a high level of safety worldwide in spent fuel and radioactive waste management, through the enhancement of national measures and international co-operation, including where appropriate, safety-related technical co-operation;
>
> (ii) To ensure that, during all stages of spent fuel and radioactive waste management, there are effective defences against potential hazards so that individuals, society and the environment are protected from harmful effects of ionizing radiation, now and in the future, in such a way that the needs and aspirations of the present generation are met without compromising the ability of future generations to meet their needs and aspirations; and

[32] It is to be found at http://www.hse.gov.uk/nsd/cns2.pdf.
[33] 18 ILM 1419 (1979). The text of the Convention is also on the IAEA website at http://www.iaea.org/worldatom/Documents/Legal/cppn.shtml.
[34] 36 ILM 1436 (1997). The text of the Convention is also on the IAEA website at http://www.iaea.org/worldatom/Documents/Legal/jointconv.shtml. The United Kingdom ratified on 12 March 2001, Ireland on 20 March 2001, so it entered into force for both States on 18 June 2001.

(iii) To prevent accidents with radiological consequences and to mitigate their consequences should they occur during any stage of spent fuel or radioactive waste management."

2.39 The Convention obliges Parties to submit reports on the implementation of their obligations under the Convention for peer review.[35]

(d) *The IAEA Regulations for the Safe Transport of Radioactive Material*

2.40 The IAEA Transport Regulations contain rules designed to ensure that the packages containing the radioactive material shall protect that material, whatever the mode of transport.[36] The IAEA Transport Regulations, and their implementation in the United Kingdom, are discussed further at Section D below with particular reference to the independent appraisal ("the TranSAS Appraisal") carried out by IAEA experts in 2002.[37]

(ii) The International Maritime Organisation

2.41 Both the United Kingdom and Ireland are Members of the International Maritime Organisation ("IMO"), whose object is "to provide machinery for cooperation among Governments in the field of governmental regulation and practices relating to technical matters of all kinds affecting shipping engaged in international trade; to encourage and facilitate the general adoption of the highest practicable standards in matters concerning maritime safety, efficiency of navigation and prevention and control of marine pollution from ships". [38]

2.42 Among the principal achievements of the IMO is the revised International Convention for the Safety of Life at Sea ("the SOLAS Convention") 1974, which entered into force on 25 May 1980.[39] The SOLAS Convention has been ratified by 146 States and applies to some 98.5% of the world merchant gross tonnage. Insofar as the maritime transport of radioactive materials is concerned, recent amendments to the SOLAS

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[35] Articles 30 and 32. In addition, the reports are to address policy and practices in respect of spent fuel management and radioactive waste management as well as, *inter alia*, listing spent fuel management and radioactive waste management facilities and an inventory of spent fuel and of radioactive waste.
[36] 1996 Edition (Revised) No. TS-R-1 (ST-1, Revised).
[37] Appraisal for the United Kingdom of the Safety of the Transport of Radioactive Material, IAEA, Vienna, September 2002 (**Annex 15**).
[38] Convention on the Intergovernmental Maritime Consultative Organisation 1948, Article 1(a), 289 UNTS 3.
[39] 1184 UNTS (1980), No 18961 or at www.imo.org/Conventions/contents.asp?topic_id=257&doc_id=647

Convention have made mandatory:

1. Parts of the International Maritime Dangerous Goods Code ("the IMDG Code"), with effect from 1 January 2004.[40] The IMDG Code makes provision for a uniform international code for the transport of dangerous goods by sea. The Code was drafted by a working group of the IMO's Maritime Safety Committee, in close co-operation with the United Nations Committee of Experts on the Transport of Dangerous Goods, and has been subjected to regular update and development since its first adoption.[41] The IAEA Transport Regulations form those parts of the IMDG Code applicable to the safe packaging of radioactive materials.

2. The Code for the Safe Carriage of Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Wastes in Flasks on board Ships ("the INF Code"), with effect from 1 January 2001[42]. The INF Code, and its implementation in the United Kingdom, is discussed further at Section D below.

(iii) The International Commission on Radiological Protection

2.43 The International Commission on Radiological Protection ("ICRP") was founded in 1928, and works in close cooperation with the World Health Organisation, the IAEA, the United Nations Scientific Committee on the Effects of Atomic Radiation, the United Nations Environment Programme ("UNEP") and others. Its aim is to advance for public benefit the science of radiological protection, in particular by providing recommendations and guidance on all aspects of protection against ionising radiation.[43] The ICRP reports periodically on questions of radiological protection, in the form of "ICRP Publications", issuing recommendations on particular aspects thereof. These recommendations have

[40] See the report of Richard Rawl, paragraphs 3.52 to 3.57 (**Annex 9**).
[41] Since its adoption by the fourth IMO Assembly in 1965, the IMDG Code has undergone several changes. Amendments to the IMDG Code originate primarily from two sources; proposals submitted directly to IMO by Member States and amendments required to take account of changes to the United Nations Recommendations on the Transport of Dangerous Goods which sets the basic requirements for all the transport modes. Amendments to the provisions of the United Nations Recommendations are made on a two-yearly cycle and approximately two years after their approval, they are adopted by the authorities responsible for regulating the various transport modes. In that way a basic set of requirements applicable to all modes of transport is established and implemented.
[42] **Annex 29**.
[43] See the website at http://www.icrp.org. The ICRP is composed of a Main Commission and four standing Committees: on Radiation effects, on Doses from radiation exposure, on Protection in medicine, and on the Application of ICRP recommendations, all served by a small Scientific Secretariat.

helped to provide a consistent basis for national and regional regulatory standards. The aim of the recommendations is to provide guidance on the fundamental principles on which appropriate radiological protection can be based.

2.44 The principal ICRP recommendation on radiation protection is ICRP Publication 60 of November 1990 ("ICRP 60").[44] ICRP 60 recommended that the limit on exposures to members of the public from man-made sources of radiation (other than from medical exposure) should be set at 1 millisievert per year.[45] The limit of 1 millisievert per year may be compared with an average radiation dose to members of the United Kingdom population of 2.2 millisieverts per year from natural background sources.

2.45 The recommendations of the ICRP are reflected in Euratom Directives. The recommendation in ICRP 60 referred to above was implemented in Directive 96/29/Euratom of 13 May 1996 laying down Basic Safety Standards. The United Kingdom National Radiation Protection Board ("NRPB") has also recommended that the exposure to members of the public from a single new source of ionising radiation should not exceed 0.3 millisieverts.[46] This recommendation was adopted by the United Kingdom Government in 1995.[47]

B. REGIONAL ORGANISATIONS AND REGULATIONS

(i) The European Community and Euratom

2.46 The European Community and Euratom are of obvious and central importance to the regulation of *inter alia* discharges of radioactivity and the assessment of environmental impacts that might result from such discharges. The brief outline of the background facts set out in Part 1 of this Chapter has already shown how, in relation to

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[44] ICRP Publication 60, *1990 Recommendations of the International Commission on Radiological Protection*, November 1990 (**Annex 15**). See further paragraphs 7.61-7.64 below.

[45] This was a reduction from the previous limit of 5 millisieverts per year. While the ICRP has no formal power to impose its proposals, in fact legislation in most countries adheres closely to ICRP recommendations. See the website at http://www.icrp.org. As to further details on the "millisievert", see the Note on Units of Measurement at p. 16 above.

[46] National Radiological Protection Board (NRPB) Statement on the 1990 Recommendations of the ICRP, 1993. See the Proposed Decision of the Environment Agency of October 1998, paragraph A1.15, at Memorial, Volume III, Part Two, p. 379.

[47] Cm 2919, Review of Radioactive Waste Management Policy: Final Conclusions (1995). See the Proposed Decision of the Environment Agency of October 1998, paragraphs A1.8 and A1.15: Memorial, Volume III, Part Two, pp. 378-379.

the construction and operation of the MOX Plant, the following have been brought into play:

1. Directive 85/337/EEC on assessment of environmental impacts, which is implemented into United Kingdom legislation by the Town and Country Planning (Assessment of Environmental Effects) Regulations 1988. Both are considered in some detail in Chapter 5 below in the context of the United Kingdom's response to the allegation that it has breached article 206 of UNCLOS by a failure to assess the potential effects of the MOX Plant on the marine environment.

2. Article 37 of the Euratom Treaty, concerning the disposal of radioactive wastes and whether the plan for their disposal is likely to give rise to significant contamination of the territory of another Member State.

3. Article 6(1) of Directive 96/29/Euratom, concerning whether a practice giving rise to ionising radiation is justified by its economic social and other benefits in relation to the health detriment it may cause.

2.47 Further, as already noted in paragraph 2.45, Directive 96/29/Euratom establishes (*inter alia*) limits on exposure to man-made sources of radiation that were originally recommended in ICRP 60.

(ii) The OSPAR Convention and the OSPAR Commission

2.48 The United Kingdom and Ireland are parties to the Convention for the Protection of the Marine Environment of the North-East Atlantic (the "OSPAR Convention").[48] The OSPAR Convention is of importance for the prevention, reduction and control of pollution in (*inter alia*) the Irish Sea. Pursuant to Article 2(1)(a):

> "The Contracting Parties shall, in accordance with the provisions of the Convention, take all possible steps to prevent and eliminate pollution and shall take all necessary measures to protect the maritime area against the adverse effects of human activities so as to safeguard human health and to conserve marine ecosystems and, when practicable, restore marine areas which have been adversely affected."[49]

[48] Memorial, Volume III, Part One, p. 419.
[49] The OSPAR Convention has its own definition of pollution (Article 1(d)), its own means for addressing transboundary pollution (Article 21), and its own dispute resolution mechanism (Article 32).

2.49 The OSPAR Commission is constituted pursuant to Article 10 of the OSPAR Convention. In 2000, the OSPAR Commission prepared a Quality Status Report ("QSR") for the North-East Atlantic, as well as Quality Status Reports for the five OSPAR sub-regions: the Arctic (Region 1), the Greater North Sea (Region II), the Celtic Seas (Region III), the Bay of Biscay (Region IV), and the Wider Atlantic (Region V).[50] The considerable weight that Ireland places on selective extracts from the Quality Status Reports (in Chapter 1 of its Memorial) is referred to at paragraph 3.50 below.

2.50 The Ministerial Meeting of the OSPAR Commission in Sintra, Portugal, on 22-23 July 1998, adopted the OSPAR Strategy with regard to Radioactive Substances. The OSPAR Strategy contains the objective, frequently referred to by Ireland, 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."[51] It is stressed that this is not the same as saying that discharges are close to zero, or that the radioactivity in them is close to zero.

C. DOMESTIC REGULATORY AUTHORITIES AND REGULATIONS

2.51 The ongoing operations at Sellafield, including the operation of the MOX Plant and THORP, are subject to a highly developed domestic regulatory regime, which is designed to ensure the effective management of the safety of nuclear installations and ensure that all radioactive discharges and/or radiation doses are kept within domestic, European and international limits.[52] This section provides an outline of this regime, and shows how the regulatory authorities in the United Kingdom continue to update and improve that regime.

(i) The Principal United Kingdom Regulatory Authorities: the Environment Agency and the Nuclear Installations Inspectorate

[50] Ireland and the United Kingdom collaborate in preparing Quality Status Reports for the Celtic Seas encompassing areas to the north of Ireland and the west of Scotland (Malin Shelf, the Irish Sea, the Celtic Seas (out to the 200m depth contour of the Atlantic seaboard) and the Bristol Channel).
[51] Memorial, Volume III, Part One, p.453 at 457, paragraph 4.1.b.
[52] The domestic limits are at least as stringent as the international standards or European limits. As already noted at paragraph 2.45 above, the international standard on radiation dose has been reflected in European and domestic law.

2.52 The two regulatory authorities principally concerned with the control of radioactive emissions and the discharge of radioactive waste are the United Kingdom's Environment Agency and its Nuclear Installations Inspectorate (which is part of the Health and Safety Executive):

1. The disposal of radioactive waste on or from all nuclear sites in England and Wales is regulated by the Environment Agency under the Radioactive Substances Act 1993, as amended. Section 16 of the 1993 Act empowers the Environment Agency to grant authorisations for the disposal of radioactive waste from any premises, including nuclear installations, subject to limitations and conditions as the Agency thinks fit. Once an authorisation has been granted, the Agency keeps under review both the limitations and conditions and the nuclear site operator's ability to comply with them. Pursuant to section 17 of the 1993 Act, the Environment Agency has the power to revoke an authorisation at any time.

2. The safe operation of nuclear installations, which encompasses the storage of radioactive waste on nuclear sites, is regulated by the Health and Safety Executive ("HSE") through the Nuclear Installations Inspectorate (part of the HSE's Nuclear Safety Directorate). The Nuclear Installations Inspectorate is responsible for implementing the United Kingdom's civil nuclear site licensing system (established under the Nuclear Installations Act 1965) through which it exercises regulatory control over operations at civil nuclear sites. The Environment Agency does not regulate the accumulation of radioactive waste on licensed nuclear sites.

2.53 The roles of the two main regulators are set out in a Statement of Intent agreed in 2001.[53] Both regulators have a regulatory interest in the operators' organisational and management arrangements. A Memorandum of Understanding sets out how the regulatory activities of the Health and Safety Executive and the Environment Agency on licensed nuclear sites are co-ordinated.[54] The objectives are to facilitate effective and consistent regulation by ensuring that: activities of the Environment Agency and the Health and Safety Executive are consistent, coordinated and comprehensive; the

[53] Report of Ian Parker, paragraph 3.5 (**Annex 7**).
[54] Memorandum of Understanding between the Health and Safety Executive and the Environment Agency on Matters of Mutual Concern at Licensed Nuclear Sites in England and Wales, 23 April 2002. Available on the HSE website at www.hse.gov.uk/nsd/eamou.htm. Report of Ian Parker, paragraph 3.6 (**Annex 7**).

possibility of conflicting requirements being placed on licensees is avoided and the appropriate balance of precautions is attained; duplication of activity is minimised; and public confidence in the regulatory system is maintained.

(a) *The Environment Agency*

2.54 The Environment Agency was created by the Environment Act 1995. Pursuant to section 4(1) of that Act, the Environment Agency has the following principal aim:

> "It shall be the principal aim of the Agency (subject to and in accordance with the provisions of this Act or any other enactment and taking into account any likely costs) in discharging its functions so to protect or enhance the environment, taken as a whole, as to make the contribution towards attaining the objective of achieving sustainable development …".

2.55 Further definition has been given to that objective by means of Ministerial guidance, namely "The Environment Agency and Sustainable Development", November 1996, 96EP189/1.[55] Chapter 4 of that guidance provides, *inter alia*, that:

> "the Environment Agency should take a holistic approach to the protection and enhancement of the environment, striving to optimise benefit to the environment as a whole, taking proper account of all likely costs and benefits; it should take into account long-term implications and effects, especially those which appear likely to be irreversible or which would raise issues of inter-generational equity; it should where possible discharge its regulatory functions in partnership with regulated organisations in ways which maximise the scope for cost-effective investment in improved technologies and management techniques."

2.56 Section 5 of the Environment Act 1995 sets out the statutory purpose for which the Environment Agency's pollution control powers – including those under the Radioactive Substances Act 1993 – must be exercised, namely "preventing or minimising, or remedying or mitigating the effects of, pollution of the environment".

2.57 In exercising its functions under the Radioactive Substances Act 1993, the Environment Agency has regard to Government policy on radioactive waste and the United Kingdom's international commitments. When carrying out reviews of authorisations for the disposal of radioactive waste from nuclear sites or when determining an application for a new or varied authorisation the Agency addresses all

[55] Available from the Environment Agency website at http://www.environment-agency.gov.uk/.

relevant Government policy and international commitments.

(b) *The Health and Safety Executive*

2.58 The Health and Safety Executive is an independent body with a duty to make arrangements for the enforcement of health and safety legislation. The Health and Safety Executive is the licensing authority for civil nuclear sites, and its Nuclear Safety Directorate, of which the Nuclear Installations Inspectorate is part, has responsibility for regulating the safety of the nuclear industry. The Nuclear Installations Inspectorate has wide powers to enforce relevant legislation at nuclear installations, and does not hesitate to use these. The Nuclear Installations Inspectorate also carries out inspections at nuclear installations to ensure licensees are complying with other health and safety regulations. As a regulator, the Nuclear Installations Inspectorate acts independently of the United Kingdom Government. The essential philosophy underlying the safety of nuclear plants in the United Kingdom is to establish a safe design and then monitor the manufacture, construction, commissioning, operation and eventual decommissioning to ensure that the safe design intent is not prejudiced.[56]

2.59 Pursuant to the Nuclear Installations Act 1965, no site can be used for the purpose of installing or operating a nuclear installation unless a nuclear site licence is currently in force, granted by the Health and Safety Executive. Before a site can be licensed, a prospective operator must show that the plant to be used will be safe and that the operator can manage the site and deal with any liabilities remaining when the nuclear installation is finally shut down. The onus is on the applicant to prove the safety of the site and its own viability before the Health and Safety Executive will grant a licence: without a licence the applicant cannot build or operate a nuclear installation.

2.60 The Health and Safety Executive may grant a nuclear site licence if it accepts the licence applicant's proposals and if the applicant has obtained all other relevant consents. The Health and Safety Executive's powers allow it to draw up this licence with any conditions attached to it that may have a bearing on safety at the site. In addition, it may vary or revoke the licence and can amend, add or revoke licence conditions at any time. It consults with the Environment Agency when considering whether to grant a licence, or to

[56] Information about the work of the HSE Nuclear Safety Division can be found on their website (www.hse.gov.uk/nsd/); of particular interest are the Safety Assessment principles (www.hse.gov.uk/nsd/asaps.htm)

vary a licence insofar as this relates to or affects creation, accumulation or disposal of radioactive wastes.

(ii) Recent Statements of Government Policy/International Commitments accepted by the United Kingdom and applied by the Environment Agency

2.61 In July 1998, the United Kingdom accepted the commitments contained in the OSPAR Strategy (referred to in paragraph 2.50 above). In October 1998, the United Kingdom Government reiterated to the Environment Agency that there should be progressive reductions in discharges and discharge limits, and that it expected the Environment Agency to seek such reductions where practicable.[57] In November 1999, the Government indicated to the Environment Agency that any headroom allowed between actual discharges and discharge limits should be kept to the absolute minimum.[58] Limits should be set that are no more than strictly necessary for the normal operation of the plant, whilst at the same time achieving progressive reductions in those limits over time in accordance with established Government policy.[59]

2.62 In October 2000, the (then) Department for the Environment, Transport and the Regions ("DETR") and the Department of Health issued for public consultation draft Statutory Guidance to the Environment Agency on the "Regulation of Radioactive Discharges into the Environment from Nuclear Licensed Sites".[60] The draft Guidance identified several specific principles:

1. Waste minimisation.

2. The Best Practicable Environmental Option ("BPEO"), i.e. the outcome of a systematic consultative and decision-making procedure that emphasises the protection of the environment across land, air and water. The BPEO procedure establishes, for a given set of objectives, the option that provides the most benefit or least damage to the environment as a whole, at acceptable cost, in the long as

[57] It was also made clear that any increases in discharges should only be permitted in exceptional circumstances, and a strong case would have to be made by the operator.
[58] Headroom is the difference between a numerical limit and the actual amount of a radionuclide discharged under normal operations.
[59] Report of Ian Parker, paragraph 3.13.4 (**Annex 7**).
[60] Ibid., paragraph 3.13.5 (**Annex 7**). The DETR is now, in respect of radioactive waste matters, the Department for Environment, Food and Rural Affairs (Defra). The consultation period ended on 31 January 2001.

well as the short term.

3. Radiological impact on members of the public (critical group, dose limit, dose constraint, collective dose), Community Food Intervention Levels (CFIL), and impact on other species.[61]

4. Environmental protection.

5. Health and safety (exposure of workers, risks of accidents).

6. Limits and conditions in discharge authorisations (site and plant limits, limits on individual radionuclides, headroom, notification levels, capping discharge limits at design levels).

7. Other conditions applied to discharge authorisations (monitoring, research and development, record keeping).

2.63 Also in 2000, the United Kingdom adopted the Radioactive Substances (Basic Safety Standards) (England and Wales) Direction 2000 (the "BSS Direction 2000") to implement parts of Directive 96/29/Euratom.[62] The BSS Direction 2000 requires the Environment Agency to ensure, when discharging its functions under the Radioactive Substances Act 1993, that certain provisions of Directive 96/29/Euratom, and notably dose limits, are complied with. In particular, the BSS Direction 2000 provides that the dose from a single new source of radiation must not exceed 0.3 millisieverts per year and the dose from a single site must not exceed 0.5 millisieverts per year. BSS Direction 2000 also requires the Environment Agency to ensure that exposures of members of the public and the population as a whole resulting from the disposal of radioactive waste are kept as low as reasonably achievable, economic and social factors being taken into account.

2.64 In June 2001, the IAEA Joint Convention on Safety of Spent Fuel Management

[61] CFIL – Levels laid down in Euratom Council Regulation 3954/87 as being the maximum permitted levels of radioactive contamination of foodstuffs and feeding stuffs following a nuclear accident or any other case of radiological emergency.
[62] Directive 96/29/Euratom is also implemented in the United Kingdom by the Ionising Radiation Regulations 1999 (S.I. 1999 No. 3232).

and on the Safety of Radioactive Waste Management came into force.[63] As already noted at paragraph 2.38 above, its objectives include ensuring that during all stages of radioactive waste management there are effective defences against potential hazards so that individuals, society and the environment are protected from harmful effects of ionising radiation, now and in the future, in such a way that the needs and aspirations of the present generation are met without compromising the ability of future generations to meet their needs and aspirations.

The United Kingdom's Strategy for Radioactive Discharges 2001-2020

2.65 In July 2002, the United Kingdom's Strategy for Radioactive Discharges 2001-2020 ("the Strategy 2001-2020") was published by the Department for Environment, Food and Rural Affairs (Defra). This constitutes the United Kingdom's national plan for implementing the OSPAR Strategy referred to at paragraph 2.50 above.

2.66 The Strategy 2001-2020 records how concepts such as "best practical means" ("BPM")[64] and "as low as reasonably achievable" ("ALARA") have long been applied by the United Kingdom in terms of its strategy for reducing radioactive discharges.

2.67 With respect to BPM, the Strategy 2001-2020 states:

> "3. It is the Government's view that the unnecessary introduction of radioactivity into the environment is undesirable, even at levels where the doses to both human and non-human species are low and, on the basis of current knowledge, are unlikely to cause harm. The progressive reduction of discharge limits, and of actual discharges, having regard to the application of Best Practical Means (BPM) is a central tenet of the way in which radioactive discharges should be controlled and has been a feature of the United Kingdom's policy since 1993.

[63] This is being implemented (principally) through amendments to the Health and Safety at Work Act 1974, the Nuclear Installations Act 1965, the Environment Act 1995, the Radioactive Substances Act 1993 and the Radioactive Material (Road Transport) Act 1991.

[64] BPM is a term used by the Environment Agency and the Scottish Environment Protection Agency in authorisations issued under the Radioactive Substances Act. Essentially, it requires operators to take all reasonably practicable measures in the design and operational management of their facilities to minimise discharges and disposals of radioactive waste, so as to achieve a high standard of protection for the public and the environment. BPM is applied to such aspects as minimising waste creation, abating discharges, and monitoring plant, discharges and the environment. It takes account of such factors as the availability and cost of relevant measures, operator safety and the benefits of reduced discharges and disposals. As to BNFL's use of BPM, see the Witness Statement of John Clarke at paragraph 23(b) (**Annex 2**).

4. Through the effective application of BPM, radioactive discharges (and particularly discharges of the most radiotoxic radionuclides) in the UK have been reduced very considerably. For instance, total discharges of beta activity from the British Nuclear Fuels plc (BNFL) site at Sellafield have already been reduced to less than 1% of their peak levels in the 1970s and alpha discharges to just 0.06% of peak levels. …"[65]

2.68 With respect to "ALARA", the Strategy 2001-2020 states:

"Application of the 'As Low As Reasonably Achievable' (ALARA) principle, is a requirement in UK and European law, whereby radiological doses and risks are kept ALARA and are reduced to a level that represents a balance between radiological and other factors, including social and economic factors. The Government intends to take costs fully into account in determining how to achieve the objective of the OSPAR Strategy [footnote omitted]. The Government considers that applying the ALARA principle will reduce discharges sufficiently to achieve that objective. In the unlikely event that it appeared that the application of ALARA/BPM would not deliver the objective of the OSPAR Strategy, the Government would urgently review this strategy."[66]

2.69 The Strategy 2001-2020 lays down a strategic framework for radioactive discharges from United Kingdom installations up to 2020. Its aims are:

1. The "progressive and substantial reduction of radioactive discharges and discharge limits".

2. The "progressive reduction of human exposure to ionising radiation arising from radioactive discharges, as a consequence of reductions in discharges, such that a representative member of a critical group of the general public will be exposed to an estimated mean dose of no more that 0.02 mSv [millisieverts] a year from liquid radioactive discharges to the marine environment made from 2020 onwards". This level of exposure is less than 1% of natural background radiation.

3. The "progressive reduction of concentrations of radionuclides in the

[65] UK strategy for radioactive discharges 2001-2020, paragraphs 3-4 (Executive Summary) and paragraphs 2.4-2.6 (**Annex 14**). In its Memorial, Ireland focuses on the increase in the discharge of technetium-99. This increase (from 1994) results from the treatment of a historic backlog of liquid waste by the Enhanced Actinide Removal Plant (EARP). **Annex 14**, paragraphs 7.3.8-7.3.9. The increase is not related to the operation of the MOX Plant or THORP.

[66] **Annex 14**, paragraph 5 (Executive Summary).

marine environment resulting from radioactive discharges, such that by 2020 they add close to zero to historic levels".[67]

(iii) Authorisations in respect of the Sellafield Site

2.70 There are currently six authorisations granted to BNFL in respect of the Sellafield site under the Radioactive Substances Act 1993 and the Radioactive Substances Act 1960 (its predecessor). The majority of radioactive waste disposal from Sellafield is regulated by two authorisations: (i) for the disposal of liquid waste to sea and (ii) for the disposal of waste gases, mists and dusts.[68] These authorisations contain limits, conditions, improvement requirements and information requirements.

2.71 Condition 2 of these authorisations requires BNFL to use BPM (Best Practicable Means) to limit the activity of relevant waste discharged. The BPM condition operates in all plants and for all activities carried out by BNFL and is not satisfied merely by adhering to specified discharge limits. Schedule 10 of the liquid discharge authorisation and schedule 12 of the gaseous discharge authorisation (and subsequent variations of these) require BNFL to provide information to demonstrate it is employing BPM. There are further information requirements relating to specific radionuclides and operations at Sellafield. The information derived from these reports informs future decisions on BPM and, in particular, identifies areas where improved technology and techniques could be used to reduce discharges of radioactive waste.

2.72 Schedule 13 to the gaseous discharge authorisation and subsequent variations contain improvement requirements requiring BNFL to install new equipment to reduce the quantity of radioactivity discharged to air and to improve the monitoring of discharges from THORP. The BPM condition and specific improvement requirements are the main regulatory drivers for BNFL to reduce the amount of radioactivity it discharges to the environment.

2.73 The Environment Agency re-examines on a regular basis authorisations for the disposal of radioactive waste from nuclear sites. This is to ensure that radiation doses to members of the public meet the ALARA principle and are within national and international limits and constraints, and that United Kingdom policy requirements are

[67] **Annex 14**, paragraph 2 (Executive Summary) and paragraph 2.7.
[68] Report of Ian Parker, paragraph 3.8 (**Annex 7**).

implemented and existing limitations and conditions remain appropriate. In the period 2000-2002, the Environment Agency has been carrying out a detailed review of the authorisations granted with respect to the Sellafield site. This has covered:

1. The six authorisations granted to BNFL under the Radioactive Substances Acts of 1993 and 1960 and other authorisations, consents and licences issued under other relevant legislation;

2. Past operations and disposals made from the Sellafield site for the years 1994-1999 inclusive and BNFL's future plans for operations and discharges up to 2008;

3. Whether it would be practicable to use uranium oxide fuel (so called 'Magrox') in place of Magnox fuel in Magnox reactors as a means of phasing out the operation of the Magnox reprocessing plant;

4. The current situation with regard to the possible use of THORP for reprocessing spent Magnox fuel as a means of phasing out the operation of the Magnox Reprocessing Plant; and

5. Statutory requirements on the Environment Agency and Government policy and commitments (including draft policy).[69]

2.74 In November 2000, the Environment Agency published an explanatory document setting out and explaining the issues it assessed and proposals for the future regulation of technetium-99 discharges from Sellafield.[70] The proposals detailed four options for future discharge limits for technetium-99. The proposals were subject to a wide-ranging public consultation lasting three months and, in September 2001, the Environment Agency published a Proposed Decision on the future regulation of technetium-99 discharges from Sellafield into the Irish Sea.[71] This Proposed Decision was submitted to the Secretary of State for Health and the Secretary of State for Environment, Food and

[69] The Environment Agency specified the information that BNFL was to provide for the review to ensure that it took account of all relevant factors, and that the final decision on the future regulation of radioactive waste disposals from Sellafield was in line with the legal and Government policy framework in which it operates.
[70] Report of Ian Parker, paragraph 4.5 (**Annex 7**).
[71] Ibid., paragraph 4.6.

Rural Affairs, who made their Decision on 11 December 2002. This Decision noted that the radiation dose to the critical group of technetium-99 was already very small and would be virtually eradicated after 2006 by implementation of the Agency's proposals.[72] The Proposed Decision was accepted, although the Secretary of State for Environment, Food and Rural Affairs has also invited representations from interested parties on whether she should use her powers to direct the Environment Agency to undertake a consultation on whether it would be possible to impose a moratorium on the discharge of technetium-99 from the Sellafield site pending the introduction of TPP technology.[73]

2.75 In July 2001, the Environment Agency published an explanatory document detailing its overall proposals for the future regulation of disposals of radioactive waste from Sellafield, excluding those for technetium-99.[74] The proposals were subject to a public consultation lasting from 30 July to 30 December 2001. The Environment Agency's approach to this review has been to examine the existing structure of discharge limits and the numerical values of individual limits and to assess whether any changes were necessary for the future regulation of waste disposals from the site. In addition, the Environment Agency required BNFL to review current practices used on the site for disposing of radioactive wastes and to assess whether they represented the best practicable environmental option ("BPEO"). The Environment Agency assessed BNFL's current practices against other potential disposal options for principal radionuclides, and whether they represented BPEO, and whether BPM is currently applied to minimise the radioactivity of waste being disposed of.

2.76 The aims of the review as set out in the explanatory document were:

1. To strengthen the requirements of the authorisations for the Sellafield site, particularly with respect to the use of BPEO for the disposal of radioactive waste

[72] At paragraph 35. The Decision may be found at http://www.defra.gov.uk/environment/radioactivity/discharge/sellafield/technetium.htm.

[73] TPP is tetraphenylphosphoniumbromide, which could be used in EARP to produce a solid waste form containing technetium-99, which could then be encapsulated in cement. As the Decision (paragraph 22) makes clear, only a small proportion of the discharges of technetium-99 from the Sellafield site come from THORP. The Decision also noted (paragraph 33) that: "at current discharge levels, radiation doses to a range of flora and fauna in close proximity to the Sellafield site, including those such as lobster that are known to concentrate technetium, are low and substantially below the levels at which harm is expected to occur to plant or animal populations. Effects on flora and fauna further from the Sellafield site can reasonably be expected to be less than those close to the site of the discharge". See also Report of Ian Parker, paragraph 4.6 (**Annex 7**).

[74] Report of Ian Parker, paragraph 4.7 (**Annex 7**).

and the use of BPM for minimising the activity of radioactive waste that will require disposal;

2. To check that BPEO was being used for the disposal of wastes and that the BPM are being applied to minimise the radioactivity in waste being disposed of;

3. To tighten the regulation of discharges from the site by introducing discharges limits at source for individual major plants;

4. Where appropriate, to introduce new waste disposal limits for the site;

5. To ensure that any headroom between actual discharges and proposed limits was minimised;

6. To ensure that any proposed limits would enable BNFL to continue the treatment of the legacy of stored liquid wastes and thereby reducing the hazard and potential risk from such wastes; and

7. To require the implementation of discharge reduction schemes, where reasonably practicable.

2.77 In August 2002, after considering all representations made, the Environment Agency published its Proposed Decision for the future regulation of disposals of radioactive waste from the Sellafield site.[75] The proposals make an important contribution to the Government's policy and commitments for reductions in discharges from the United Kingdom's nuclear industry and in modernising radioactive waste regulation. The key elements of the final proposals are:

1. Reductions to 80% of aerial and 50 % of liquid discharge limits;

2. Significant reduction in 'headroom' between limits and expected discharge levels;

[75] **Annex 17** (Executive Summary only), August 2002. The full document can be downloaded from www.environment-agency.gov.uk/yourenv/consultations/145908/322084/?lang=_e&region=. See also Report of Ian Parker, paragraph 4.10 (**Annex 7**).

3. No increases in discharge limits above the current limits;

4. The new framework of individual plant limits and overall site limits will control discharges from individual plants as well as the site as a whole;

5. A revised BPM condition to be introduced into the authorisation (see below) requiring best practicable means to be used to minimise the activity of the radioactive waste produced that will require disposal under the authorisation;

6. A new integrated authorisation for regulating disposals to air, sea and land;

7. A new condition requiring BNFL to have a management system, organisational structure and resources sufficient to achieve compliance with the limitations and conditions of the new authorisation (the new condition will require BNFL to have written arrangements specifying how compliance with each limitation and condition is to be achieved); and

8. A range of improvement and additional information requirements, including a requirement to carry out BPEO and BPM assessments on all new waste streams requiring disposal, a comprehensive review of whether current disposal routes continue to represent BPEO, the possible introduction of cobalt-60 abatement and iodine-129 abatement technologies at THORP, the possible re-routing of some fuel storage pond water to the Site Ion Exchange Plant (SIXEP) to remove strontium-90 and caesium-137, and a significant programme of environmental improvements.

2.78 There is nothing in these proposals that calls into question the continued operation of the MOX Plant. As explained in Chapter 3 below, the discharges from the MOX Plant represent only a tiny fraction of discharges from the Sellafield site and fall within all European and domestic limits by several orders of magnitude. Similarly, there is nothing in these proposals that calls into question the operation of THORP.[76] The United Kingdom treats the regulation of its nuclear industry as a matter of the utmost seriousness, and has demanded, and will continue to demand, compliance with stringent

[76] This is expressly noted in the Proposed Decision of August 2002 (at p. 24): "The Agency considers that its decisions will … not constrain the operation of THORP".

regulations that go well beyond what is required as a matter of international and European law.

D. OVERVIEW OF THE REGULATIONS RELATING TO THE TRANSPORT OF NUCLEAR FUELS

2.79 The transport of radioactive materials, including nuclear fuels, is stringently regulated by the United Kingdom's competent regulatory bodies up to and beyond the requirements of the relevant international organisations.[77] It is convenient to consider these regulations by reference to (i) regulations specific to the packaging of radioactive materials for transport, notably the IAEA Transport Regulations, (ii) regulations specific to the vessels on which such material is carried, notably the INF Code, and (iii) the security of such material in transport. These are considered below in sub-sections (i) to (iii). Also, in subsection (iv), the United Kingdom considers the independent assessment by the IAEA of its implementation of applicable international regulations. Since late 1998, the IAEA has offered a service for carrying out, at the request of any Member State, an appraisal of that State's implementation of the IAEA Transport Regulations. This is known as the Transport Safety Appraisal Service ("TranSAS"). A request for a TranSAS appraisal was made by the United Kingdom in July 2001. The IAEA issued its report in response to that request in September 2002.[78] Its conclusions are summarised in sub-section (iv) below.

(i) Packaging: the IAEA Transport Regulations

2.80 The IAEA Transport Regulations form the basis of many of the international and national regulations governing the transport of radioactive material. These Regulations have been implemented in the United Kingdom by way of statutory instrument, and into the legislation of 129 other countries (including Ireland) throughout the world.

2.81 The IAEA Transport Regulations are subject to a two-year review cycle in line with the UN Recommendations for the Transport of Dangerous Goods (the UN Orange

[77] Reference has already been made to the IAEA and the IMO in section A above.
[78] Appraisal for the United Kingdom of the Safety of the Transport of Radioactive Material, IAEA, Vienna, 2002 (**Annex 15**).

Book).[79] The Regulations apply to the transport of radioactive material by all modes (on land, water or in the air). "Transport" comprises all operations and conditions associated with and involved in the movement of radioactive material. This includes the design, manufacture, maintenance and repair of empty packages, and the preparation, consigning, loading, carriage (including in-transit storage), unloading and receipt at the final destination of loads of radioactive material and packages. Package designs are required to meet certain performance standards which are graded according to the radioactive contents of the material carried. In this case, the Tribunal is concerned only with Type B packages, which are designed to carry irradiated nuclear fuel, high-level nuclear wastes and MOX fuel, and which must meet stringent performance requirements that represent severe accident conditions.[80] Designs for Type B packages have the following features:

1. The design and manufacturing techniques used for the packages must be in accordance with national and international standards, or other requirements, acceptable to the respective Government branch which has been given the role of approving package design.

2. The design of the package must include a containment system. This system is intended to retain the radioactive material within the package during transport. The containment system must be securely closed by a positive fastening device (indicating that the package is closed, when this is the case) which cannot be opened unintentionally or by pressure which may arise within the package.

3. The design of the package must prevent the loss or dispersal of the package's radioactive contents and a loss of any shielding material which would result in more than a 20% increase in radiation levels at any external surface of the package.

4. There are also prescribed tests involving a water spray test, stacking test, drop test and penetration tests designed to simulate normal conditions of transport.

[79] In 1953 the Economic and Social Council (ECOSOC) of the UN appointed a Committee of Experts on the Transport of Dangerous Goods, which completed its report, the so-called UN Orange Book, in 1956. In the UN Orange Book all types of dangerous goods are assigned a classification number. The classification number for radioactive material is 7.

[80] Report of Richard Rawl, paragraphs 4.5(4) and 6.2 (**Annex 9**).

5. The package must be able to satisfy impact, thermal and submersion tests. The impact tests comprise a free drop of the package from a height of nine metres onto an unyielding target (i.e. a solid target which would not itself distort under the impact), followed by an engulfing fire of 800°C for a duration of 30 minutes. The design also has to demonstrate its ability to withstand immersion to a depth of 200 metres.[81]

2.82 A large number of technical studies have been published addressing various aspects of the Type B package performance requirements and the levels of safety provided. As noted in the report of Mr Rawl, the vast majority of these studies have illustrated the rigorous nature of the requirements and the resulting high levels of safety.[82]

2.83 The package that will be used for the transport of fuel from the MOX Plant to Europe is typically 5.3 metres in length, 1 metre in cross-section, and weighs approximately 6 tonnes. Each package would contain approximately 0.5 tonnes of MOX fuel.[83] The European package is smaller and lighter than the package used for transporting MOX fuel to Japan as it is transported by road as well as sea/rail, and the package design must comply with European road regulations. The package that will be used for the transport of fuel from the MOX Plant to Japan is typically 5.5 metres in length, 2.5 metres in cross-section, and weighs approximately 100 tonnes. It would carry approximately 4 tonnes of MOX fuel.[84]

2.84 The design of the packages used by BNFL/PNTL to transport spent fuel, MOX fuel, and vitrified waste have been independently approved and assessed by the United Kingdom's Department of Transport. The Governments of all other States through or into which the package is transported also have independently to assess and approve the package.

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[81] See the Witness Statement of Captain Malcolm Miller at paragraphs 30-31 (**Annex 6**). These requirements are the minimum performance requirements prescribed by the IAEA Transport Regulations. It does not follow that a package would necessarily fail as soon as the conditions prescribed by the IAEA Transport Regulations were exceeded.
[82] Report of Richard Rawl, paragraph 4.10 and section 6 (**Annex 9**).
[83] Witness Statement of Captain Malcolm Miller, paragraphs 34-36, including photograph, and paragraph 41, figure 1 (**Annex 6**).
[84] Ibid., paragraphs 37-39, including photograph (**Annex 6**).

(ii) Maritime Transport: the IMDG Code and the INF Code

2.85 For transports by sea, the relevant requirements are those of the IMO, in particular the IMDG Code. In the United Kingdom, the Merchant Shipping (Dangerous Goods and Marine Pollutants) Regulations 1997[85] require that carriage of dangerous goods is in accordance with the IMDG Code. As the IMDG Code is updated every two years, to ensure the application of up to date regulations, a Merchant Shipping Notice is issued by the Maritime and Coastguard Agency, which is an executive agency of the United Kingdom Department of Transport.

2.86 The IMDG Code incorporates the IAEA Transport Regulations and the INF (irradiated nuclear fuel) Code states that the provisions of the IMDG Code apply to the carriage of INF cargo. The INF Code[86] sets out mandatory requirements concerning the carriage of radioactive materials (INF cargo, which includes packaged irradiated nuclear fuel and also plutonium and high-level radioactive wastes). The INF Code applies to all new and existing ships engaged in the transport of INF code materials. Specific regulations in the Code cover a range of issues including damage stability, fire protection, temperature control of cargo spaces, structural considerations, cargo securing arrangements, electrical supplies radiological protection equipment and emergency planning. Ships carrying INF cargo are assigned to one of three classes:

1. The "Class INF 1 ship", i.e. certified to carry INF cargo with an aggregate activity less than 4,000 TBq.

2. The "Class INF 2 ship", i.e. certified to carry irradiated nuclear fuel or high-level radioactive wastes with an aggregate activity less than 2×10^6 TBq, or are certified to carry plutonium with an aggregate activity less than 2×10^5 TBq.

3. The "Class INF 3 ship", i.e. certified to carry irradiated nuclear fuel, high-level radioactive wastes and/or plutonium with no restriction of the maximum aggregate activity of the materials.

2.87 Any ship intended to carry INF cargo is subject to an initial survey, which includes a complete examination of its structure, equipment, fittings, arrangements and material. If the vessel is compliant with the requirements of the INF Code it will be

[85] SI 1997 No. 2367.
[86] **Annex 29**.

issued with an "International Certificate of Fitness for the Carriage of INF Cargo". The vessel will then be subject to inspections and surveys so as to ensure continual compliance with the INF Code.[87]

2.88 BNFL uses seven vessels to carry nuclear fuels. Of these, two are owned by BNFL (the *European Shearwater* and the *Atlantic Osprey*) and five are owned by Pacific Nuclear Transport Ltd ("PNTL") (the *Pacific Pintail*, *Pacific Crane*, *Pacific Sandpiper*, *Pacific Swan*, and *Pacific Teal*). BNFL is the main shareholder of PNTL.[88] All seven vessels have been granted Class INF 3 certificates save for the *Atlantic Osprey*, which has been acquired to transport only cargoes falling within the requirements of INF 2 and holds a Class INF 2 certificate. Although Class INF 3 vessels will be used for shipments of MOX fuel to Japan, under the INF Code MOX fuel can be transported on INF 2 vessels, provided that the aggregate activity of the plutonium contained within the MOX fuel is within the permissible limits set out in the INF Code for a Class INF 2 vessel.[89] The BNFL/PNTL vessels are subject to regular inspection by classification societies and the Maritime and Coastguard Agency.[90]

(iii) Transport Security

2.89 The IAEA and Euratom have given special attention to ensuring the security of the use, storage and transport of nuclear material. The basic guidelines for physical protection systems have been developed by the IAEA and are contained in its Recommendations for the Physical Protection of Nuclear Material (referred to below as the IAEA Recommendations on Physical Protection).[91] The Convention on the Physical Protection of Nuclear Material, which entered into force in 1987, obliges State parties to make specific arrangements and meet defined standards of physical protection for

[87] See further the Witness Statement of Captain Malcolm Miller, paragraph 75 (**Annex 6**).
[88] BNFL holds 62.5% of shares. The other shareholders are COGEMA, three Japanese nuclear power plant operators and three Japanese trading companies. See further the Witness Statement of Captain Malcolm Miller, paragraph 9 (**Annex 6**).
[89] Ibid., paragraphs 19-21 (**Annex 6**).
[90] Ibid., paragraphs 22-24 (**Annex 6**).
[91] IAEA INFCIRC/225/Rev.4 (**Annex 30**). First published in 1972, the guidelines have since been revised a number of times. They cover physical protection of nuclear material in use, storage, and during transport and physical protection of nuclear facilities. See further the Witness Statement of Captain Malcolm Miller, paragraphs 84-87 (**Annex 6**).

international shipments of nuclear material.[92]

2.90 At the domestic level, the Department of Trade and Industry's Office for Civil Nuclear Security ("OCNS") is responsible for regulating civil nuclear security including security of transport of nuclear material. Civil nuclear operators are required to have a security plan both for nuclear sites and for transports of nuclear materials. That plan is subject to approval by OCNS. Approval would be subject to OCNS being satisfied that the plan provided for security to the required standards. As is stated in the Director for Civil Nuclear Security's report: "The security standards and procedures specified by OCNS are confidential but reflect the guidance on *the Physical Protection of Nuclear Material and Nuclear Facilities* issued by the IAEA".[93]

2.91 The IAEA Recommendations on Physical Protection categorise certain nuclear materials (plutonium - unirradiated, uranium 235 and uranium 233 at various enrichment levels, and irradiated fuel) into one of three categories, namely Category I, II or III, depending upon the quantity and form of the material. The physical protection measures applicable to each category are set out in the regulations. In general, MOX fuel is Category I, spent fuel is Category II and high-level radioactive waste is either Category II or Category III depending upon its composition.

2.92 As far as security at ports and harbours is concerned, statutory obligations are placed on the relevant port authority to meet security standards laid down and administered by the Transport Security Division (TRANSEC) of the Department of Transport. During movements of nuclear materials through United Kingdom ports, security is enhanced, where necessary, in line with the specific transport security plan which is approved by OCNS.

2.93 Ireland's Memorial refers[94] to a letter from Senator Benjamin Gilman to the

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[92] Euratom is considering and in some cases has published proposed measures which *inter alia* concern this issue. In addition, there are bilateral treaties which impose their own standards. In particular, for the voyages to and from Japan, PNTL seeks to meet the requirements laid down by the Agreement between the United States and Japan for Co-operation in the Peaceful Uses of Atomic Energy. See further the Witness Statement of Captain Malcolm Miller, paragraph 91 (**Annex 6**).

[93] *The State Of Security In The Civil Nuclear Industry And The Effectivesness Of Security Regulation: A Report To The Secretary Of State For Trade And Industry* by the Director of Civil Nuclear Security, October 2000 – March 2002 ("the DCNS Report"), at paragraph 14 (**Annex 22**). (Regulations are being introduced to update the current framework under which civil nuclear security. The United Kingdom Government's Consultation Document can be found at www.dti.gov.uk/nuclear/condocregsfinal.pdf).

[94] Memorial, paragraph 8.216.

United States Secretary of State[95] expressing concern about whether the arrangements for transports of MOX from Europe to Japan properly meet the provisions concerning security contained in the bilateral agreement between the United States and Japan on co-operation in the field of civil nuclear energy. Ireland does not include the response that Senator Gilman received from the State Department. The response addresses in considerable detail the concerns raised by Senator Gilman and confirms *inter alia* that:

> "U.S. experts have carefully scrutinized successive drafts of the [transportation] plan over a period of years and have made significant contributions to it. In addition, the responsible U.S. Executive Branch agencies have formally reviewed the final plan. They have concluded that it fully satisfies all requirements of the U.S. - Japan Agreement, including the requirement of adequate physical protection"[96].

(iv) Independent Assessment: the TranSAS Appraisal

2.94 The IAEA's Appraisal for the United Kingdom of the Safety of the Transport of Radioactive Material ("the TranSAS Appraisal") was carried out in 2002 by a team of eleven independent experts from the IAEA and three independent experts from the IMO/ICAO.[97] The TranSAS Appraisal addressed all modes of transport of radioactive material in the United Kingdom, with an emphasis on maritime transport. All relevant aspects of the regulation of the transport of radioactive material were considered with regard to the IAEA Transport Regulations and other relevant transport safety related international regulatory documents.[98] It is, thus, a very recent and detailed independent assessment.

2.95 The Appraisal resulted in three recommendations (none of which were safety critical), twenty-one suggestions, and also highlighted fifteen areas of good practice "that can serve as a model for other competent authorities in the radioactive material transport sector". The Appraisal noted that the good practices in the maritime and air transport operational areas were "especially noteworthy".[99] With specific regard to maritime transport:

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[95] Memorial, Volume III, Part Three, p. 329.
[96] Letter of 27 April 1999 from Barbara Larkin (US Department of State) to Senator Gilman (**Annex 31**).
[97] **Annex 15**, paragraph S04. The details of the various experts are contained in Appendix III to the TranSAS Appraisal.
[98] **Annex 15**, paragraph S03. Issues of physical protection were not addressed as these fall outside the scope of a TranSAS appraisal.
[99] **Annex 15**, paragraph S08.

"it was determined that the UK has gone well beyond what has been and is currently required in the area of the maritime transport of radioactive material covered in the IMO IMDG, INF and ISM [International Safety Management] codes, implementing recommendations that have since or are later anticipated to become mandatory, and often adopting additional measures beyond those specified in these codes to enhance the actual or perceived level of safety for the maritime transport of these materials."[100]

2.96 It is useful by way of summary to set out the TranSAS Appraisal's final remarks (omitting remarks of a procedural nature).

"5.2. By commissioning this international appraisal of its radioactive material transport regulatory programme the UK has demonstrated a commendable openness with regard to this vital regulatory activity. As has been noted, the findings of the appraisal, which are documented in detail in Section 4 of this report, each has a basis in international standards and/or regulatory documents.

5.3. The appraisal showed that the regulatory framework in the UK for the transport of radioactive material is well developed; that the UK is committed to a sound safety culture in its transport regulations; that, in general, the regulation of this transport is handled well; and that the competent authority and the other involved regulatory bodies should be commended for their efforts. In all of these areas, and in other associated areas, the appraisal found much to praise.

5.4. Specifically, the appraisal did not find any issues that were safety critical. However, there were a number of areas identified in which improvements could be made. The appraisal resulted in three recommendations and 21 suggestions; it also identified 15 areas of good practice that can serve as a model for other transport competent authorities to emulate. The good practices identified in the maritime and air transport operational areas are especially noteworthy.

5.5. The appraisal team takes note that the appraisal was intended to provide independent constructive criticism as an aid to guiding the UK's future developments in regulating its domestic and international radioactive material transport activities. The appraisal acknowledges that the UK competent authority and the other UK regulatory bodies associated with the transport of radioactive material are best positioned to determine, within their national context and specific regulatory priorities, the value of and priority to be placed on the findings of the appraisal as documented in this report. Thus the decisions on whether and how to implement changes, and on the priority of implementing any changes, rest with the UK authorities."[101]

[100] **Annex 15**, paragraph 4.127.
[101] **Annex 15**.

2.97 Ireland's allegations of risk relating to maritime transports and breach of international legal obligations in that respect must be weighed in light of the fact that, insofar as the maritime transport of radioactive materials is concerned, (i) the United Kingdom has gone well beyond what has been and is currently required by the applicable international regulations, and (ii) its implementation of such regulations constitutes good practice that can serve as a model for the competent authorities of other States. Such good practice constitutes an unlikely basis for an allegation of breach of UNCLOS.

CHAPTER 3

SCIENTIFIC AND TECHNICAL FACTS

3.1 As has been explained in Chapter 1, Ireland's legal case is predicated on the existence of some form of significant environmental impact arising as a result of the MOX Plant. Ireland does not deal with the basic scientific and technical facts that must be at the forefront of a Dispute concerning environmental impacts of the MOX Plant. Chapter 3 of Ireland's Memorial ("Environmental Implications of the MOX Authorisation") does not speak of environmental impacts or effects in its title, but merely of "implications". Although the concept of an "environmental implication" is not to be found anywhere in UNCLOS, or indeed in any international instrument concerning the environment, Ireland must of necessity put forward a test that is less stringent than the traditional test of "impact" or "effect". This is because, as this Chapter will demonstrate, the MOX Plant has no meaningful impact or effect – direct or indirect – on the marine environment, or on Ireland.

3.2 Before turning to the scientific and technical facts (which are in large parts undisputed), it is important to look briefly at how Ireland's case on "environmental implications" is constructed, as this of itself demonstrates the fundamental weakness in Ireland's claim:

(i) Ireland opens what should be the key chapter of its case with an attempt to justify a very significant omission, repeating that: "This case is not a dispute over science".[1] The statement reflects Ireland's acute awareness that any examination of the scientific and technical facts will not support its case.

(ii) It is then said that the MOX Plant and THORP are inextricably linked.[2] This immediate leap away from the MOX Plant to THORP highlights the impossibility faced by Ireland in relation to its case on the direct impacts of the MOX Plant. As recorded in the United Kingdom Environment Agency's Proposed Decision of October 1998, "the assessed dose due to gaseous and liquid discharges from the

[1] Memorial, paragraph 3.1; see also paragraph 1.3.
[2] Memorial, paragraphs 3.4-3.12.

MOX plant is less than one millionth of that due to natural background radiation".[3] Ireland has never challenged, and does not now challenge, the figures for the radioactive discharges from the MOX Plant, and it has never suggested that the MOX Plant could have any impact on the marine environment other than through the radioactive discharges from the Plant. It follows that Ireland must look elsewhere for environmental impact, and it therefore looks to THORP.

(iii) Ireland then goes further, and broadens its enquiry to cover the whole Sellafield site.[4] The aim is evidently to find some sort of meaningful radioactive discharge to put before the Tribunal, regardless of whether this falls within the ambit of the Dispute submitted to the Tribunal.

(iv) Ireland then examines "the effects of the MOX development on the amounts of the discharges from Sellafield",[5] coining the phrase the "MOX development" in an attempt to justify including all the impacts of THORP and the Enhanced Actinide Removal Plant ("EARP").

(v) Finally, Ireland has two short and general sections dealing, first, with discharges and the uncertainty of alleged radiological impacts (focusing, significantly, on the impacts of low dose radiation) and, second, with the use of abatement technologies, and then there is nothing more.[6]

3.3 Ireland's brief exposition avoids any engagement with the scientific and technical facts that the United Kingdom has submitted in various forms including (i) its Submission to the European Commission under Article 37 of the Euratom Treaty, (ii) the Decision on justification of 3 October 2001 (annexing the United Kingdom Environment Agency's Proposed Decision of October 1998), and (iii) submissions before ITLOS in the context of the Provisional Measures phase of this case. Also, despite the central importance to Ireland's case of showing that operation of the MOX Plant must lead to further reprocessing at THORP, it has brought forward no evidence to show that this is so. And there is no attempt to show what the radioactive discharges from the MOX Plant or THORP are relative to the limits set as a matter of European and domestic law. In a vacuum, the figures are near meaningless.

[3] At paragraph A3.14: Memorial, Volume III, Part Two, p. 385.
[4] Memorial, paragraphs 3.13-3.15.
[5] Memorial, paragraphs 3.16-3.42.
[6] Memorial, paragraphs 3.43-3.73.

3.4 The issues are addressed below as follows. Section A sets out the radiological impacts of the MOX Plant in the context of the applicable limits. In Section B, it is shown that there is no inextricable linkage between operation of the MOX Plant and operation of THORP, whilst Section C shows that in any event the radioactive discharge from THORP and other plants referred to by Ireland is subject to stringent regulatory control and an extended monitoring programme, is not harmful, and is well within the applicable European and domestic limits. Section D addresses Ireland's allegations in respect of abatement, whilst Section E shows that there are no risks of significant harm arising from the marine transport of MOX fuel and that there will be no increased transports as a consequence of the operation of the MOX Plant.

3.5 The United Kingdom's case on the scientific and technical facts is supported by detailed and extensive evidence. In addition to existing materials, the United Kingdom has commissioned reports from the following experts for the purposes of this Counter-Memorial:

1. Dr Colin Bannister of the United Kingdom's Centre for Environment, Fisheries and Aquaculture Science ("CEFAS"), expert on fisheries.

2. Dr Edward Hill, Director of the Natural Environment Research Council's Proudman Oceanographic Laboratory, expert in oceanography.

3. Dr John Hunt of CEFAS, expert on impacts of radioactivity on the marine environment.

4. Mr John Lillie of the Salvage Association, ship surveyor.

5. Mr Ian Parker of the United Kingdom Environment Agency, expert on environmental regulation and radioactivity from the Sellafield site.

6. Dr Julian Preston, United States Environmental Protection Agency, expert on the health risks of radiation (giving evidence in his personal capacity).

7. Mr Richard Rawl, Oak Ridge National Laboratory, Tennessee, expert on the transportation of radioactive materials.

8. Dr Dennis Woodhead, CEFAS, expert on impacts of radioactivity on marine biota.

3.6 Evidence is also given by four witnesses:

1. Mr John Clarke, BNFL's Head of Environment, Health, Safety and Quality at the Sellafield site.

2. Captain Malcolm Miller, BNFL's Head of International Transport.

3. Mr Jeremy Rycroft, Director of BNFL's Spent Fuel Services Business Unit.

4. Mr Clive Young, the United Kingdom's senior expert on the safety of transport of radioactive materials and Head of the Radioactive Materials Transport Division of the United Kingdom Department for Transport.

A. RADIOACTIVE DISCHARGES FROM THE MOX PLANT

(i) Routine Discharges

3.7 The mixing and processing of uranium oxide and plutonium oxide powders to produce small ceramic pellets at the MOX Plant is a dry process and does not, of itself, generate any radioactive liquid discharge. The operation of the MOX Plant does, however, give rise to some liquid discharges (for instance, of water used in washing of floors) and some atmospheric discharges (for instance, release of air circulating in the Plant)[7]. Such discharges are treated in accordance with best practicable means ("BPM"). Mr Parker of the United Kingdom Environment Agency explains as follows in his report:

> "The MOX process is almost entirely a dry mechanical one and therefore does not lead to significant discharges of gases or liquids. The air discharged from the plant and its various facilities is subjected to filtration using high efficiency particulate in air filters. This type of filtration, when supported by appropriate management and maintenance systems is considered by the Agency to be BPM. The small amount of liquid waste derived from the plant is treated through existing effluent plants, mainly SETP and this is considered by the Agency to be

[7] Witness Statement of John Clarke, paragraphs 120-121 and 125-126 (**Annex 2**).

BPM."[8]

3.8 The result is that the radioactive discharges from the MOX Plant are negligible.[9] This is shown by the liquid and aerial discharge figures (GBq (billions of bequerels)/year) set out at tables 3 and 4 under paragraph 3.25 of Ireland's Memorial. The discharge figures at tables 3 and 4 are accurate insofar as the MOX Plant is concerned.[10] Ireland merely fails to deduce from the figures the only available conclusion, which is that insofar as such discharges are concerned the MOX Plant will have no environmental impact.

3.9 This is confirmed by the impact of such discharges in terms of radiological dose and by reference to the limits imposed as a matter of European and domestic law. In the United Kingdom, the Radioactive Substances (Basic Safety Standards) (England and Wales) Direction 2000 (the "BSS Direction 2000") provides that the dose from a single new source of radiation must not exceed 0.3 millisieverts per year (i.e. three ten-thousandths of a sievert per year). As noted in the Environment Agency's Proposed Decision of October 1998, the United Kingdom Ministry of Agriculture, Fisheries and Food estimated the dose to the most exposed UK group (the "critical group")[11] to gaseous discharges from the MOX Plant to be 0.000002 millisieverts per year (two thousandths of a millionth of a sievert). It estimated that the dose to the critical group in relation to liquid discharges from the Plant is 0.000000003 millisieverts per year (three millionths of a millionth of a sievert).[12] As noted at paragraph 2.44 above, the average radiation dose to members of the United Kingdom population is 2.2 millisieverts per year from natural background sources.

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[8] Report of Ian Parker, paragraph 5.38 (**Annex 7**). SETP is the segregated effluent treatment plant, which provides filtration for coarse particles and pH adjustment to a large volume low activity effluent stream.

[9] Report of Ian Parker, paragraph 5.33; the discharges fit easily within the existing Sellafield authorisations, paragraph 5.26 (**Annex 7**). The Environment Agency, in its Proposed Decision on plutonium commissioning and full operation of the MOX plant, noted that BNFL's estimate was that aerial emissions from the MOX plant would contribute less than 1% to the total discharges to air from the Sellafield site and less than 0.0001% to Sellafield's total liquid discharges: Proposed Decision, paragraph A3.2. Memorial, Volume III, Part Two, p. 363 at 383.

[10] These two tables have columns for discharges from the MOX Plant and also from THORP. Given that the table in each case purports to set out the annual discharges for the MOX Plant, this is misleading.

[11] A critical group is a representative group of people living near a nuclear facility or source, whose lifestyle means that they are typical of those most exposed to that source. Witness Statement of John Clarke, paragraph 38 (**Annex 2**).

[12] Appendix 4 to the Proposed Decision at paragraphs A4.95-A4.97: Memorial, Volume III, Part Two, pp. 397-398. The MAFF figures are slightly lower than, although consistent with, the estimates that were submitted by BNFL. Witness Statement of John Clarke, paragraph 130 (**Annex 2**).

3.10 As noted by the Environment Agency, these doses from the MOX Plant are of negligible radiological significance. The Environment Agency further noted that the MOX Plant would make a very small contribution to the critical group dose for the Sellafield site as a whole. This conclusion is entirely consistent with the conclusions of BNFL's Environmental Statement[13] and the European Commission's Opinion of 11 February 1997 under Article 37 of the Euratom Treaty.[14]

3.11 As part of its Article 37 Submission to the European Commission, the United Kingdom had calculated the aerial discharges from the MOX Plant affecting a critical group at the nearest point to Sellafield in Ireland. It noted:

> "The closest of other member states is the Republic of Ireland. The effect of aerial discharges has been evaluated using the same methodology for a member of an equivalent critical group assumed to be located at the nearest part of the coast to Sellafield (180 km). For a member of the local critical group long term average depletion of the plume over a distance of 1.5 km is negligible but, for a member of the most exposed group in the Republic of Ireland, the plume becomes depleted.
>
> The dose to a member of the critical group in Eire owing to discharges to the atmosphere which are attributable to SMP is estimated to be 2.4×10^{-5} µSv / yr [microsieverts per year] in the most restrictive age group, which in this case is the inhalation route by adults."[15]

3.12 The exposure of the critical group in Ireland to gaseous discharges from the MOX Plant is thus 0.000000024 millisieverts per year (2.4 hundred thousandths of a millionth of a sievert). The Submission also noted that potential environmental impact would be minimal and that there were "no fault sequences identified that lead to a release into the marine environment". As to the exposure of the critical group in Ireland to liquid discharges from the MOX Plant, these would be "considerably less" than the exposure to the United Kingdom critical group of 0.000000003 millisieverts (three millionths of a millionth of a sievert) per year.[16]

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[13] According to the Environmental Statement, the dose to the critical group in relation to liquid discharges was less than 0.00001 microsievert per year, whilst the dose to the critical group in relation to gaseous discharges was less that 0.01 microsievert per year. A microsievert is one thousandth of a millisievert. Memorial, Volume III, Part Three, pp. 42-43.

[14] See paragraphs 2.6 and 2.20 above.

[15] General Data Relating to the Arrangements for Disposal of Radioactive Wastes as Called for under Article 37 of the Euratom Treaty, May 1996 (UK Submission to the European Commission), section 3.4.2. Memorial, Volume III, Part Three, p. 407, at 433.

[16] Ibid., sections 2.1.8 and 4.2.1. Memorial, Volume III, Part Three, p. 407, at 426 and 434.

3.13 There are two conclusions to be drawn from the above:

1. Ireland has no case in relation to the routine discharges from the MOX Plant.

2. The United Kingdom Secretaries of State were safe to conclude at paragraph 60 of the Decision of 3 October 2001 that the radiological detriments that would arise from the manufacture of MOX fuel would be very small.[17]

(ii) Unplanned Discharges

3.14 As part of its Article 37 Submission, the United Kingdom considered in some detail the issue of unplanned releases of radioactive discharges by reference to the reference accident – "the worst case potential fault condition (having the greatest release of radioactive material) which is considered credible". This reference accident resulted in "a committed effective dose (CED) to the most restrictive age group within the most exposed group in the Republic of Ireland of 1.98 µSv [microsieverts] (all pathways)".[18] As the European Commission concluded in its Article 37 Opinion:

> "… in the event of unplanned discharges of radioactive waste which may follow an accident on the scale considered in the general data, the doses likely to be received by the population in other Member States would not be significant from the health point of view."[19]

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[17] This paragraph of the Decision of 3 October 2001 also recorded that impacts on wildlife would be negligible. At paragraph 59, the Decision recorded the fact that the total volume of plutonium contaminated solid waste arising from operation of the MOX Plant is predicted to be around 120 cubic metres per year, and that this can be safely stored for many years under the regulatory overview of the Health and Safety Executive and the Environment Agency. It is misleading to claim that the operation of the MOX Plant will increase significantly the volumes of radioactive wastes to be stored at Sellafield. In the first place, the MOX Plant does not generate High Level Waste ("HLW"). This is significant since Ireland refers to HLW stored at Sellafield. The MOX Plant will produce some Intermediate Level Waste ("ILW") in the form of Plutonium Contaminated Material (PCM) but the volume will be small. The Environment Agency calculated that the total volume will be around 2% of the amount stored at the Sellafield Site. See paragraph A4.110 of the Agency's Proposed Decision of October 1998. Memorial, Volume III, Part Two, p. 407, at 399.

[18] General Data Relating to the Arrangements for Disposal of Radioactive Wastes as Called for under Article 37 of the Euratom Treaty, May 1996 (UK submission to the European Commission), section 6.3.1. Memorial, Volume III, Part Three, p. 407, at 443. The worst case potential fault condition involved a release to the atmosphere rather than a release to the marine environment.

[19] Memorial, Volume III, Part Three, p. 473.

3.15 It is important to stress, however, that very considerable attention has been given to safe operations in the design and manufacture of the MOX Plant. As explained by Mr Clarke in his statement:

> "BNFL has formulated its own set of standards and criteria regarding the design of plants to meet this policy. The MOX Plant has been designed and built, and is being commissioned and operated, in such a manner to ensure that it meets these standards and criteria so as to minimise the risk of any harm being caused to any person on or off site as a result of its operations. BNFL has developed a Code of Practice underpinning design safety principles which will ultimately be applied to all new projects. These principles adhere to the NII [Nuclear Installations Inspectorate] Safety Assessment Principles. The Code of Practice was developed and formally approved by the NII during the design phase of the MOX Plant."[20]

3.16 In particular, the MOX Plant has been constructed with the principle of "containment" firmly in mind, i.e. the means by which radioactive substances are contained within specific confines to prevent uncontrolled releases into other areas. In addition, it has been designed so as to avoid a "criticality incident", that is when conditions exist that allow a certain critical mass to be exceeded, resulting in an uncontrolled neutron chain reaction and a localised flash of radiation. As Mr Clarke explains:

> "To prevent a criticality occurring in the MOX Plant, the safety philosophy regarding criticality has been to make the plant "safe by design" wherever reasonably practicable to ensure that a critical mass cannot form. This has been achieved by physically restricting the mass and shape of material in plutonium handling process vessels and ensuring that, where necessary, other pertinent conditions (such as the potential for the ingress of water into the fissile material) do not arise."[21]

3.17 Mr Clarke describes in some detail the safety measures that guide the operation of the MOX Plant.[22]

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[20] Witness Statement of John Clarke, paragraph 97 (**Annex 2**). See also paragraph 98: "The overall activity containment system for SMP relies on the use of physical barriers (for example process equipment gloveboxes, drums, fuel rods, building fabric etc) reinforced by airflow patterns provided by the building and glovebox ventilation systems, which ensure the flow of air from areas of lower contamination (for example C1 areas) to those of potentially higher contamination (for example C5 areas)."

[21] Ibid., paragraph 109 (**Annex 2**). See also at paragraph 110: "If there are areas of the process which cannot be made "safe by design", then protective measures of appropriate integrity have been incorporated to ensure that the potential frequency for a criticality incident is acceptably low."

[22] Ibid., paragraphs 96-114 (**Annex 2**).

3.18 It follows that not only would a reference accident at the MOX Plant have insignificant impacts so far as Ireland is concerned, but also all reasonable steps have been taken to avoid such an accident. Ireland's contention that "there is an evident risk that unplanned discharges may occur" is meaningless.[23] This is, of course, correct on a simple level. If there were no risk, there would have been no need to consider the reference accident. The point is that the issue of unplanned discharge has been (i) considered, (ii) quantified, (iii) addressed at both the design and operational stages.

3.19 Ireland also places great weight on alleged risks arising as a result of a planned attack on the MOX Plant.[24] There is a series of observations to be made:

1. Security issues were expressly treated in the Decision of 3 October 2001 (at paragraphs 65-70). As noted at paragraph 69 of the Decision, the advice of the Office for Civil Nuclear Security is that the manufacture of MOX fuel presents negligible security risks. The Office for Civil Nuclear Security was asked to review its views in the light of the events of 11 September 2001 and has confirmed that its view remains unchanged.[25]

2. A report on the "State of Security in the Civil Nuclear Industry and the Effectiveness of Security Regulation" has recently been prepared by the Director for Civil Nuclear Security. This reviews security in the period October 2000 to March 2002. With respect to the MOX Plant, the report notes that the Office for Civil Nuclear Security has been closely involved for over eight years in the design of the security arrangements for the MOX Plant. Regular inspections during construction served to ensure that stringent security measures were being implemented (and adapted as necessary) to reflect changes in design and operation. Immediately prior to the commissioning of the MOX Plant, further inspections were carried out by the Office for Civil Nuclear Security, including full tests of all security systems and a re-validation of security procedures.[26]

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[23] Memorial, paragraph 3.38.
[24] Memorial, paragraph 3.39; also Chapter 8 thereof.
[25] See, also, *Summary of the main issues raised by interested organisations and individuals and the Secretaries of State's views on those issues* (Annex 1 to the MOX Justification Decision of 3 October 2001) at paragraphs 25-31 (**Annex 28**).
[26] *The State Of Security In The Civil Nuclear Industry And The Effectivesness Of Security Regulation: A Report To The Secretary Of State For Trade And Industry* by the Director of Civil Nuclear Security, October 2000 – March 2002 ("the DCNS Report"), at paragraph 27. See also paragraphs 39-42 (**Annex 22**).

3. There is nothing that singles out the MOX Plant as a likely object for terrorist or other malicious intent. The MOX Plant is an inconspicuous building within the Sellafield site. This is readily apparent from the plan at Figure 10 of the 1993 Environmental Statement.[27] The existence and operation of the MOX Plant does not increase the security risk of the Sellafield site in any way.

4. The report of the Director for Civil Nuclear Security also deals with the security issues arising in the transport of nuclear material. The report notes in particular the return shipment of MOX fuel (manufactured at the MOX demonstration facility) from Japan to the Sellafield site. The Director states: "My Office has reviewed all security arrangements in the context of the terrorist attacks last September in the United States, as have the United States and Japanese regulatory authorities. All the authorities concerned are satisfied that the security arrangements to be taken are amply robust to deal with any potential threats".[28] The shipment was made without incident.

3.20 The United Kingdom takes its responsibilities in this field extremely seriously. Major centres of population in the United Kingdom are a good deal closer to Sellafield than are those in Ireland. Again, the United Kingdom is fully cognisant of the risks that Ireland alleges, and has taken the appropriate steps to assess and to respond to such risks.

B. THE ALLEGED LINKAGE BETWEEN THE MOX PLANT AND THORP

3.21 One of the prime aims of Ireland's case is to introduce impacts of THORP as if they were related to the MOX Plant. At paragraphs 3.30 to 3.37 of its Memorial, Ireland goes so far as to compare the radioactive discharges in respect of three operational scenarios, the first of which is based on the assertion that "if the MOX plant were not to operate, the economic justification for the continued operation of the THORP plant would disappear".[29] This is wrong.

3.22 The facts, which cannot be contested, are as follows:

1. THORP was conceived in the early 1970s. THORP was funded largely by advance payments from the so-called baseload customers. The majority of the

[27] Memorial, Volume III, Part Three, p. 46.
[28] The DCNS Report, at paragraph 30 (**Annex 22**).

THORP baseload contracts were signed before the MOX Plant was even envisaged. These baseload contracts have to be fulfilled regardless of the existence of the MOX Plant.

2. Further "post-baseload" contracts were concluded in 1990 with German utilities. The post-baseload contracts that BNFL has with German utilities have to be fulfilled regardless of the existence of the MOX Plant.

3. Reprocessing at THORP commenced in 1994.

4. Transports of spent nuclear fuel to THORP for reprocessing have taken place and will continue to take place pursuant to the baseload and post-baseload contracts – regardless of the operation of the MOX Plant. Pursuant to the THORP baseload and post-baseload contracts, plutonium, which is separated as a result of reprocessing, belongs to the customer. The customer retains responsibility for this plutonium.[30]

5. Performance of the baseload and post-baseload contracts is expected to occupy THORP for several years from now. No new contracts for the reprocessing of spent fuel have been concluded since 1997.[31]

6. Since 1993, contracts for the manufacture of MOX fuel have been entered into in respect of the MOX Plant. The contracts for the reprocessing of the THORP baseload and post-baseload are independent of those for MOX fuel manufacture at the MOX Plant.[32]

3.23 In short, THORP was conceived and built as an independent, economically self-standing project – before the MOX Plant was even envisaged. It is also operated on the

[29] Memorial, paragraph 3.31.
[30] United Kingdom Civil Nuclear Policy Including Plutonium, November 1997, section 10: "With regard to stocks held on behalf of foreign customers, this is material owned by BNFL's customers and held by BNFL to their order. All reprocessing customers are contractually required to demonstrate an acceptable end use before delivery of plutonium. The customers may opt to store the plutonium for a period of time or to convert it to MOX fuel. However, the plutonium remains the property of BNFL's customers, and so the UK Government considers that these customers (or in the last resort, their Governments) bear ultimate responsibility for the plutonium." Available at www.iaea.org/worldatom/Documents/Infcircs/1998/infcirc549a8.pdf .
[31] Memorial, paragraph 2.21.
[32] Witness Statement of Jeremy Rycroft, paragraphs 11-16 and 25 (**Annex 10**).

same basis, as is explained in the Statement of Mr Clarke.[33] Further, the commercial independence of the two plants is demonstrated by the fact that the activities of spent oxide fuel reprocessing (at THORP) and MOX fuel manufacture (at the MOX Plant) were justified in the United Kingdom separately.

3.24 It follows that there is no factual basis for the first of Ireland's three operational scenarios: "if the MOX plant does not operate and the THORP Plant closes down".[34] If the MOX Plant were not to operate, this would have no impact on fulfilment of the THORP baseload and post-baseload contracts. For this reason, there would be no significant reduction in terms of discharges from the Sellafield site if the MOX Plant were not to operate.[35]

3.25 Ireland's remaining operational scenarios may then be dealt with quite briefly:

1. The second operational scenario envisages the continued operation of the MOX Plant and THORP until some time between 2007 and 2010.[36] The discharges from the MOX Plant have already been considered in Section A above. These are negligible. The discharges from THORP are considered in Section C below. It will be seen (i) that these are very small and easily within all applicable limits, and (ii) account for a small portion of overall discharges and the radiation dose received from the Sellafield site.

2. The third operational scenario envisages the continued operation of the MOX Plant and THORP for a further ten-year period, i.e. up until around 2018.[37] As already explained in paragraph 1.34 above, it is uncertain whether there will be further reprocessing contracts for THORP. Ireland asserts that the prospects for concluding such further contracts is expected to be improved by authorisation of the MOX Plant.[38] Possible additional reprocessing business was excluded from any consideration of the economic case for the MOX Plant.[39] In the event that

[33] Witness Statement of John Clarke, paragraphs 204-213 (**Annex 2**). See also the Report of Ian Parker, paragraph 5.32 (**Annex 7**).
[34] Memorial, paragraph 3.30.
[35] See also the Report of Ian Parker, paragraphs 5.32-5.33 (**Annex 7**). As explained at paragraphs 3.27-3.37 below, Ireland exaggerates the significance of discharges from THORP relative to the Sellafield site as a whole.
[36] Memorial, paragraphs 3.33-3.34.
[37] Memorial, paragraphs 3.35-3.37.
[38] Memorial, paragraph 3.35.
[39] See the ADL report, p.30: Memorial, Volume III, Part Two, p. 505.

there were to be any proposals for such new reprocessing contracts, this would be subject to a separate review and decision by the United Kingdom Government. It follows that this case is not concerned with the question of whether or not such hypothetical future reprocessing contracts would have implications for Ireland. This is not a matter that arises as a consequence of manufacturing MOX fuel at the MOX Plant using plutonium arising from fuel reprocessed under existing reprocessing contracts.

C. RADIOACTIVE DISCHARGES FROM THORP AND THE SELLAFIELD SITE GENERALLY

3.26 Insistence on the discrete nature of the operation of the MOX Plant and the operation of THORP should not be mistaken for defensiveness on the part of the United Kingdom. The radiation doses from THORP are well within international, European and domestic limits.[40] The same is true for radiation from the Sellafield site generally.

(i) Discharges from THORP

3.27 Ireland has set out data for the liquid and aerial discharges from THORP at tables 3 and 4 under paragraph 3.25 of its Memorial. It is said that the data are based on independent advice, and it appears that this advice has come from Ireland's expert, Dr Barnaby. The figures are wrong by one or two orders of magnitude, or more.

3.28 Tables 1 and 2 below compare THORP annual discharges collated from statutory returns available to the public (column 2), with the data from paragraph 3.25 of the Memorial of Ireland (column 3).

[40] See paragraph 2.45 for the applicable international, European and domestic limits.

Table 1: THORP annual *liquid* discharges in 2001 compared with annual limits and data in Ireland's Memorial under paragraph 3.25

Radionuclide	THORP Annual Liquid Discharges in 2001 (GBq)	Data from Ireland's Table 3 (Liquid Discharges from THORP) (GBq)
Plutonium-241	55 (27,000)[41]	4000
Plutonium alpha	1.65 (700)	700
Americium-241	0.62 (300)	300

Table 2: THORP annual *aerial* discharges in 2001 compared with annual limits and data in Ireland's Memorial under paragraph 3.25

Radionuclide	THORP Annual Aerial Discharges in 2001 (GBq)	Data from Ireland's Table 4 (Aerial Discharges from THORP) (GBq)
Plutonium-241	0.000 (13)	6.8
Plutonium alpha	0.0007 (0.5)	0.272
Americium-241/ curium-242	0.004 (0.39)	0.197

3.29 The figures put forward by Ireland are in all cases very significantly wrong. The actual discharge figures are significantly lower than those relied on by Ireland, and are within the applicable limits by several orders of magnitude.

3.30 So far as Ireland's table 3 is concerned:

1. Plutonium-241: Ireland's figure of 4000 GBq is around 2 orders of magnitude greater than the actual annual discharge from THORP of 55 GBq in 2001. It does compare reasonably well with BNFL's reported discharge of 4584 GBq for the Sellafield site as whole in 2001, and this may be the origin of the

[41] Current limits are given in parentheses. No current limits apply to THORP liquid discharges other than Sellafield site limits. The Sellafield site aerial limits are aggregates of individual stack and groups of stacks limits (i.e. described as Schedule limits in the authorisation). Note also that the discharge figures for THORP do not include discharges from THORP downstream plants.

error. The data used by Ireland indicate that THORP operations are responsible for 87% of plutonium-241 discharges, which is completely different from the true value of 1.2% derived from the annual statutory returns which BNFL is required to submit to the Environment Agency.

2. Plutonium alpha (i.e. other plutonium) and americium-241: It appears that Ireland has used the current Sellafield site annual limits of 700 and 300 GBq respectively for these radionuclides rather than THORP discharge data. Ireland's figures are well over two orders of magnitude greater than the reported annual discharges for the Sellafield site as a whole (see table 1 above) and give a very misleading picture of the impact of THORP operations. The significance of these errors is even greater when the relative radiotoxicity of the particular nuclides is considered.[42]

3.31 So far as Ireland's table 4 is concerned:

1. Plutonium-241: Ireland's figure of 6.8 GBq is to be contrasted with the reported annual discharge of 0 (zero) GBq for THORP for 2001, and it is around 40 times greater than the 2001 reported annual discharge of around 0.18 GBq from the Sellafield site as a whole.[43] There is no obvious reason for the discrepancies between Ireland's data and the statutory return data. Ireland's data indicate significantly higher discharges from THORP and this is very misleading as to the environmental impact from the Plant.

2. Plutonium-alpha (other plutonium) and americium-241/curium-242: Ireland's figures are significantly greater than the reported annual discharges in 2001 from THORP, and for the Sellafield site as a whole.[44] This again gives a misleading picture of the environmental impact of THORP operations.

3. In each case, the significance of the discrepancies is greater if the radiological impact is assessed**.**[45]

3.32 It is stressed that the data referred to above are available as a matter of public

[42] Report of Ian Parker, paragraphs 5.1 to 5.3 and 5.29 (**Annex 7**).
[43] Ibid., table 2 and paragraph 5.30 (**Annex 7**).
[44] Ibid., table 2 and paragraph 5.30 (**Annex 7**).
[45] Ibid., paragraphs 5.1 to 5.3 (**Annex 7**).

record.[46]

3.33 Further, Ireland's calculations in terms of the reduction in radioactive discharges from the Sellafield site if THORP and the MOX Plant were to stop operating are inaccurate.[47] As explained in the Statement of Mr Clarke:

> "Discharge impacts to the critical group from THORP liquids have been consistently around 0.002 mSv and the impact of aerial discharges to the critical group has been about 0.01 mSv per year. The dose impact of the MOX Plant discharge is negligible. Hence, even if THORP and the MOX Plant ceased to operate tomorrow, there would be a very minor change in the doses received by critical groups at Sellafield, and an imperceptible change in the doses received by critical groups in Ireland."[48]

3.34 Similarly, the United Kingdom's expert, Dr Hunt, concludes in his report that:

> "… the discharges from THORP and especially the Sellafield MOX Plant will only have a very small effect on the doses to the critical group, which will be dominated by the effects due to historic discharges from Sellafield and discharges from magnox plants."[49]

3.35 To this it should be added that the impression given at paragraph 2.24 of Ireland's Memorial that a "significant proportion" of radioactive wastes from THORP are "discharged directly or indirectly into the Irish Sea or into the atmosphere" is misleading and wrong. As explained by Mr Parker:

> "Most of the radioactivity derived from reprocessing is contained in the liquid highly active waste stream, which is concentrated by evaporation and then

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[46] Cf. Memorial, paragraph 3.26; also paragraph 1.48. Ireland makes great play of the fact that THORP was not subjected to an environmental impact assessment. This is simply because it predated the relevant European and domestic legislation, which was not retrospective. This has been confirmed in the English courts. *R v Secretary of State for the Environment and others, ex parte Greenpeace Ltd and Another* [1994] 4 All ER 352 at 377. Mr Justice Potts found as follows: "Thus I conclude that on a true construction of the directive [Directive 85/337/EEC], the construction of THORP and the bringing into operation of THORP and consequent discharges were and are one project. That project predated the directive. The directive does not apply to the project. The ministers were therefore not under a legal duty to provide and make available an environmental impact assessment complying with the provisions and standards laid down in the directive before the grant of the authorisations. The applicants' submissions in this regard therefore fail. In any event, although no formal environmental impact assessment took place, I am satisfied that the information provided and made available for consultation by the inspectorates and the ministers met the substantive requirements of the directive … ."

[47] Memorial, paragraph 3.32.

[48] Witness Statement of John Clarke, paragraph 50 (**Annex 2**).

[49] Report of Dr John Hunt, paragraph 53, and also at paragraphs 45-46 (**Annex 4**).

converted to glass blocks contained in stainless steel containers for storage. This stream contains typically >99.5% of the fission products from the spent fuel. Much of the remaining radioactive waste is contained in the liquid medium active effluent. This is concentrated by evaporation, stored in tanks and then converted to a cementiteous solid for storage. For example, >99.999% of plutonium, > 99% of caesium-137, ruthenium-106 and strontium-90 in waste streams at Sellafield are converted into solid waste. All of the remaining liquid and aerial wastes are low level wastes and subjected to a range of abatement techniques to reduce further the amount of radioactivity discharged to the environment. Again as an example, THORP contributes about 10.5% to the site discharge to sea of caesium-137, which equates to <0.1% of the caesium-137 resulting from all the activities on the Sellafield site."[50]

3.36 In terms of the radiation dose from the THORP discharges, it has already been noted that the dose to the critical group in respect of liquid discharges has been estimated at 0.002 millisieverts per year for each of 2000 and 2001, whilst the dose in respect of aerial discharges has been estimated at 0.010 millisieverts in those years. These doses are less than one half of one per cent of the average annual dose attributable to natural background radiation in the United Kingdom and less than one third of one percent of the average dose attributable to natural background radiation in Ireland.[51]

3.37 The following conclusions may safely be drawn from the above. First, the discharges from THORP are very small and are far lower than specific or site limits, which have been set in accordance with domestic and European regulations. Second, the data and calculations put forward by Ireland are inaccurate and unreliable. Even if the Tribunal had jurisdiction to consider the direct impacts of THORP, which it does not, the outcome would be the same: Ireland does not even get close to establishing the scientific and technical facts necessary to show any breach of any of the provisions of UNCLOS.

(ii) Discharges from the Sellafield Site as a Whole

3.38 Precisely the same point may be made in relation to the radioactive discharges from the Sellafield site as a whole. The annual liquid and gaseous discharges for the Sellafield site (year 2001) are as follows:

[50] Report of Ian Parker, paragraph 5.17 (**Annex 7**).
[51] Witness Statement of John Clarke, paragraph 195 (**Annex 2**).

Table 3: Site annual *liquid* discharges in 2001 compared with annual limits

Radionuclide	Sellafield site annual liquid discharges in 2001 (GBq)	Sellafield site annual liquid discharges: site limits (GBq)
Plutonium-241	4584	27,000
Plutonium alpha	155	700
Americium-241	38	300

Table 4: Site annual *aerial* discharges in 2001 compared with annual limits

Radionuclide	Sellafield site annual aerial discharges in 2001 (GBq)	Sellafield site annual aerial discharges: site limits (GBq)
Plutonium-241	0.178	17.4
Plutonium alpha	0.035	1.22
Americium-241/ curium-242	0.036	0.74

3.39 Tables 3 and 4 show that the discharges from the Sellafield site are far lower than the site limits, which have been set in accordance with domestic and European standards.

3.40 With respect to radiation doses, in the context of the recent review of Sellafield discharge authorisations by the United Kingdom Environment Agency, a number of radiological impact assessments have been carried out to test compliance with BSS Direction 2000. As Mr Parker records:

> "The radiation dose to the critical group was assessed for Sellafield discharges**.** This group is in the close proximity of the Sellafield site. The highest annual future dose (including possible dose from future discharges and possible dose due to residual radioactivity in the environment from historical discharges from all sources including Sellafield) was calculated by the Agency as 0.459 mSv/year. A significant proportion of the dose from historical discharges is derived from the now defunct phosphate industry which operated near Whitehaven. The assessed dose is well within the dose limit of 1.0 mSv/year (from all man made sources of radiation other than from medical exposure) imposed by the Basic Safety Standards Directive (96/29 Euratom)."

This assessment includes contributions from gaseous discharges (0.074 mSv/year), from liquid discharges (0.014 mSv/year) and direct radiation (0.15 mSv/year). This is lower than the source constraint value of 0.3 mSv/year, for new facilities, applied by the BSS Direction. The contribution from THORP to the predicted dose of 0.074 mSvv/year from gaseous discharges is estimated to be 0.0108 mSv/year."[52]

3.41 Mr Parker continues:

"BSS Direction 2000 imposes a site constraint of 0.5 mSv/year on discharges from the entire site (cf. the 300 mSv/year constraint for new facilities). The site constraint includes the radiological impact of current discharges but excludes the impact of direct radiation and historical discharges. If direct radiation is excluded the predicted dose to the critical group for discharges made at the proposed limits from the entire site is 0.19 mSv/year. This is well below the site constraint of 0.5 mSv/year. Furthermore, there is a clear national strategy to reduce discharges from nuclear facilities which will lead to even lower radiological impacts and has as one of its aims that no member of a critical group of the general public will be exposed to an estimated mean dose of more than 0.02 mSv/year (20 µ/Sv/year), excluding doses from historic discharges. The UK Strategy for Radioactive Discharges 2001-2020 was published in July 2002.

The assessed radiation dose from modelling using values for discharges at the authorised limits is a bounding case and indicates the maximum environmental impact that could occur if all radionuclides were discharged at the limit for a year … In practice this does not occur and actual discharges are less than the limit values. The radiation dose resulting from actual discharges is always lower than the calculated prospective dose."[53]

3.42 Three points follow from the above:

1. The radiological impacts have been estimated so as to indicate maximum environmental impact.

2. The radiological impacts of Sellafield nonetheless fall well within United Kingdom and European dose limits.

3. The United Kingdom's stated policy is nonetheless to reduce still further the discharges from Sellafield.

[52] Report of Ian Parker, paragraphs 5.22-5.23 (**Annex 7**). Footnote and references omitted.

3.43 The radiation doses from the Sellafield site for 2001, including the MOX Plant and THORP (and their impact as a percentage of the overall radiological impact of the Sellafield site), are set out in tabular form below:

Table 5: Radiological impact of Sellafield, THORP and the MOX Plant, 2001[54]

	Sellafield (total)	THORP	The MOX Plant	% THORP contribution to Sellafield[55]	% MOX Plant contribution to Sellafield[56]
Marine Critical Group Dose (mSv)	0.15	0.002	0.00000001	1.33%	0.0000067%
Aerial/ Terrestrial Critical Group Dose (mSv)	0.058	0.010	0.00001	17.2%	0.017%

3.44 The radiation dose from Sellafield of 0.15 millisieverts per year is to be compared to the average natural background dose of radiation to residents of the United Kingdom of 2.2 millisieverts per year. In certain parts of the United Kingdom (and other countries, including Ireland) these natural background doses can be much higher, owing to the geological composition of the area – for example in Cornwall in the south-west of the United Kingdom the average annual background dose is over 7 millisieverts. In Ireland the average annual natural background dose is over 3 millisieverts.[57] Passengers and crew in airliners at typical cruising altitude are exposed to an additional rate of about

[53] Ibid., paragraphs 5.24-5.25 (**Annex 7**). References omitted.
[54] Witness Statement of John Clarke, paragraph 195 (**Annex 2**).
[55] This is the element of the total Sellafield marine and aerial/terrestrial critical group dose that can be attributed to THORP.
[56] This is the element of the total Sellafield marine and aerial/terrestrial critical group dose that can be attributed to the MOX Plant.
[57] The United Kingdom Department of Environment, Food and Rural Affairs does not recommend action to reduce radon exposure in houses (a common source of exposure to background radiation) until individuals are receiving doses of about 10 millisieverts per year.

0.005 millisieverts *per hour* above normal background levels.[58]

3.45 Further, the Radiological Protection Institute of Ireland ("RPII") has consistently confirmed that radiation doses to Irish people from all of Sellafield's past and present activities continue to fall each year and do not pose significant health risks. The Annual Report of the RPII for 2001 states as follows:

> "The consumption of seafood remains the most important exposure pathway for the Irish public. …
>
> The dose to consumers who eat substantial quantities of seafood each day (20g shellfish, 200g of fish) was estimated to be less than 2 microsieverts (μSv) which is similar to that in both 2000 and 1999. A small additional dose is incurred through recreational activities such as swimming, walking on beaches or fishing. The size of these doses may be put in context by comparing them to the annual dose to a member of the Irish public from all sources of radiation which can range from about 2000 μSv to 20,000 μSv, or even higher in cases of exceptional exposure to radon gas.
>
> The doses incurred by people living in Ireland today as a result of the routine operations at Sellafield are now very small and do not constitute a significant health risk."[59]

3.46 In other words, the maximum dose to the most exposed person in Ireland from Sellafield discharges amounts to one thousandth or less of their total dose. There are two further points:

> 1. There is no element of uncertainty in the conclusion that doses incurred at the present time by people living in Ireland as a result of the routine operations at Sellafield are now very small and do not constitute a significant health risk.

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[58] Witness Statement of John Clarke, paragraphs 53 to 56 (**Annex 2**). Fossil fuels contain naturally occurring radionuclides and the combustion of fossil fuels leads to the discharge of radioactivity and radiation doses to people close to this combustion. For example, the dose to residents who live close to coal fired power stations (0.0004 millisieverts per year) is comparable to the dose received from normal operations by residents living close to a nuclear power station.

[59] **Annex 27**, at page 12. The OSPAR Commission's Quality Status Report for Region III states at paragraph 4.8.8 (in respect of man-made sources of radioactivity): "In Ireland, the radiation dose in 1997 to a heavy consumer of seafood (73 kg of fish; 7.3 kg of shellfish) from the north-eastern Irish Sea was estimated to be 1.4 μSv whereas the corresponding figure for the early 1980s was 70 μSv. […] These figures may be contrasted with average doses from all sources of radiation received by members of the public. For example, the average annual dose to a person in Ireland currently stands at about 3000 μSv". Memorial, Volume III, Part Two, p. 146.

2. If the RPII considers that the whole of Sellafield's discharges do not pose significant health risks, then it necessarily follows that neither will discharges from the MOX Plant, which are many orders of magnitude less.

3.47 With respect to general impacts of radiological discharges on the marine environment, attention is also drawn to the "Update of the MARINA Project on the radiological exposure of the European Community from radioactivity in North European marine waters" ("the MARINA II study") undertaken for the Directorate-General for Environment of the European Commission. The purpose of this substantial study, published in August 2002, was "to provide information on radionuclide discharges into North European marine waters and on radioactivity concentrations in the environment, and to provide an assessment of their impact".[60]

3.48 Annex D to the MARINA II study (Radiological Impact on EU Member States of Radioactivity in North European Waters) records the decline in radiation doses to the population (collective doses) insofar as man-made sources are concerned:

> "Collective dose rates to the population of the European Union from anthropogenic sources of radioactivity in North European waters have reduced from a peak of about 760 man Sv/yr in 1984 to just under 220 man Sv/yr in 2000. … These values can be compared with an annual collective dose to the population of the European Union from natural radionuclides in the marine environment of 17 000 man Sv and an annual collective dose of 844 000 man Sv from all sources of natural background radiation."[61]

3.49 The Group D report notes: "The biggest contributor to the collective doses is discharges from the NORM (naturally occurring radioactive materials) industries, particularly the phosphate industry. As discharges from the phosphate industry into North European waters have fallen, discharges of radionuclides with produced water from the oil and gas industry have become more important".[62] As the study concludes in

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[60] Foreword to Executive Summary by S. Kaiser, **Annex 19** (Executive Summary and Annexes D and F only).

[61] **Annex 19** (Annex D p. 18). A "man Sv" is a unit of dose to a population.

[62] **Annex 19** (Annex D, p. 18). Cf. the report prepared by World Information Service on Energy ("WISE"), which is referred to by Ireland as the STOA Report at paragraphs 1.34-1.35 of its Memorial. The WISE report is unreliable. Concerns as to the objectivity of the report have been expressed by independent reviewers: (i) Dr P.I. Mitchell of the National University of Ireland, Dublin, who is a member of an expert group that advises the European Commission within the framework of Article 37 of the Euratom Treaty, (ii) Professor Ian Croudance and Dr Phillip Warwick of the Southampton Oceanography Centre, and (iii)

its Executive Summary, oil production is currently the major contributor to the collective dose to the population of the European Union from industrial activities.[63] Under the heading "Main findings related to discharges from the nuclear industry", the Executive Summary notes:

> "Since 1986, the **radiological impact on the most exposed groups of populations** (effective dose to members of the critical group) in the vicinity of the major nuclear sites, such as Sellafield and Cap de la Hague was consistently and significantly below the ICRP and EU Basic Safety Standard limit of 1 mSv [millisievert] per year to members of the general public."[64]

3.50 It is noted that Ireland relies heavily on extracts from the OSPAR Quality Status Report 2000 to support its case on environmental harm from the Sellafield site.[65] The extracts are selective and misleading. Five examples should suffice:

1. Ireland quotes the Quality Status Report 2000 in pointing out that technetium-99 discharges increased in 1994 and 1995.[66] However, it omits the last sentence of the paragraph, which says "Discharges of technetium-99 from Sellafield have decreased since 1997".[67]

2. Ireland relies on the Quality Status Report for 2000 with respect to radiation doses.[68] However, it omits the text (italicised below) which puts the dose from artificial sources in context with that from natural background. The Report states:

> "*Radiation exposures from unenhanced sources of natural radioactivity are in most cases higher than those from anthropogenically derived sources. An estimate of the maximum likely individual dose to man from natural radionuclides amounts to about 2 mSv/yr. Most of the dose that humans obtain by consuming marine food is due to polonium-210 (naturally occurring), which was found to be more strongly incorporated*

John Cooper of the United Kingdom's National Radiological Protection Board. The EC Commissioner for the Environment has described to the European Parliament certain key differences in approach followed by WISE. See the Statement of John Clarke at paragraphs 60-68, and the Report of Dr Hunt at paragraph 52.

[63] **Annex 19**, at p.4, paragraph 13.

[64] **Annex 19**, at p. 2, paragraph 3 .

[65] Memorial, paragraphs 1.24-1.33.

[66] Memorial, paragraph 1.26, quoting paragraph 4.9.4 of the Quality Status Report 2000.

[67] In any event, technetium-99 discharges arise almost exclusively from the reprocessing of Magnox fuel. THORP contributes less than 0.05% of current discharges of technetium-99 and the MOX Plant generates no discharge of technetium-99 whatsever". Witness Statement of John Clarke, paragraph 199.

[68] Memorial, paragraph 1.28, quoting paragraph 4.9.5 of the Quality Status Report 2000.

> *into several marine organisms than the other radionuclides.* With regard to individual exposure from artificial radionuclides, generally caesium-137 has by far the greatest significance. *However, the dose to man is at least two orders of magnitude less than the dose from natural radionuclides indicated above*".

3. Ireland relies on the overall assessment of the Quality Status Report for Region III which states: "The question of radioactive contamination, particularly that arising from the Sellafield nuclear fuel reprocessing plant, is a matter of concern to the public".[69] Ireland's Memorial omits the text which follows this sentence, which reads:

> "This concern stems from the higher levels of radioactivity discharged in the past, that sophisticated systems can detect the signal [of] far from the source and recent increases in the discharges of certain radionuclides, particularly technetium-99. However, technetium is of low radiological significance and there have been substantial net reductions in the levels of many other more harmful radionuclides over the last decade. Recent OSPAR commitments indicate this process (including reductions in technetium) is likely to continue and that radioactivity levels will continue to decline."

4. Ireland refers to a statement in the overall assessment of the Quality Status Report for Region III that "there are a number of topics about which our understanding is relatively poor".[70] However, this section of the Quality Status Report makes no reference to radioactive substances.

5. Ireland states that the Quality Status Report for Region III recognises that the west coast of Ireland is relatively un-impacted by contamination from within the (Celtic Seas) region.[71] Ireland's Memorial takes this to indicate the comparatively higher impact of Sellafield discharges on the east coast of Ireland. These comments in the Quality Status Report do not relate to radioactivity.[72]

3.51 Even if the Tribunal had jurisdiction to consider the direct impacts of the

[69] Memorial, paragraph 1.33, quoting paragraph 6.2.3 of the Quality Status Report 2000.
[70] Memorial, paragraph 1.33, quoting paragraph 6.3 of the Quality Status Report 2000.
[71] Memorial, paragraph 1.33, quoting paragraph 6.4 of the Quality Status Report 2000.
[72] In fact, this section goes on to say "Ecosystem effects due to pollution are for the most part confined to urbanised areas such as inner Cork Harbour, the Liffey Estuary and inner Dublin Bay, Belfast Lough, the upper reaches of the Bristol Channel, the Mersey Estuary and Liverpool Bay, and the upper Clyde estuary." This is not a reference to radioactive substances.

Sellafield site as a whole, which it does not, the outcome would be as follows: Ireland does not even get close to establishing the scientific and technical facts necessary to show any breach of any of the provisions of UNCLOS.

3.52 Ireland relies heavily on "uncertainty". It says that (i) the discharges add deliberately to existing contamination, (ii) degradation is irreversible, (iii) consequences are unforeseeable, and (iv) the fact that consequences are unforeseeable does not mean that they can be ignored.[73] It is as if the stringent European and domestic regulations, and bodies like the European Commission and the United Kingdom Environment Agency, and the RPII, simply did not exist. Of course, there are levels of uncertainty involved in any assessment of impact, radiological or otherwise. But Ireland's case on uncertainty is a legal construct that fails to take account of (i) the care that is expended in terms of the creation of binding regulations, including limits on dose figures, (ii) the care that is exercised by regulatory authorities, including in terms of research into impacts of radiation, laying down appropriate and stringent regulations, and ensuring that these are complied with, and (iii) the available information in terms of radioactive discharge figures and radiation dose.

3.53 Further, at its highest the uncertainty on which Ireland relies is that harm might result from very low radiation doses, which is accepted even by Ireland to be a "controversial" question, a matter of "suggestions", "not readily evident from research".[74] In reality, it is contending for the application of standards in a heavily regulated area that are (i) unspecified but (ii) infinitely more stringent than internationally agreed regulations.

3.54 The United Kingdom's expert reports include the reports of Dr Woodhead of CEFAS and Dr Preston of the United States Environmental Protection Agency. These show that there is no substance to Ireland's contentions on the impacts of very low dose radiation. In particular:

1. Ireland accepts that there is a decrease in harmful effects on human health as the radiation dose decreases, but suggests that this does not continue at very low doses of radiation (i.e. when it comes to very low doses of radiation, it does

[73] Memorial, paragraphs 3.61-3.66.
[74] Memorial, paragraphs 3.61-3.66.

not follow that the lower the dose, the lower the risk).[75] Neither of Ireland's experts, Dr Mothersill and Professor Liber, provides data to support such a claim and instead rely on speculation.[76]

2. The biological mechanisms on which Dr Mothersill and Professor Liber speculate have been comprehensively reviewed by a committee of the United States National Council for Radiation Protection and Measurements ("NCRP"). This committee recently concluded that no alternative dose/response relationship appeared more plausible than the linear non-threshold model (i.e. the lower the dose, the lower the risk).[77]

3. Adverse effects to the populations of marine organisms due to radioactive discharges from the Sellafield site into the Irish Sea would not be expected even during the periods of highest contamination. Therefore, such effects would not be expected at the lower levels of contamination now prevailing or projected for the future.[78]

(iii) Environmental Monitoring of Sellafield and Impact on Biota

3.55 The assessment of impacts from the Sellafield site is not of course confined to calculating discharges and radiation doses. Independent monitoring of the environment local to Sellafield is carried out by the Environment Agency (and the Scottish Environment Protection Agency in Scotland) as well as the Food Standards Agency, all of which publish annual summaries of their environmental monitoring programmes.

3.56 The Food Standards Agency has the responsibility for running the radioactivity monitoring programmes for England and Wales and producing the annual report, Radioactivity in Food and the Environment (known as the RIFE Report). The Food Standards Agency monitoring programmes rely on frequent and regular sampling of fish, shellfish, agricultural products and other environmental indicators as follows:

1. Aquatic pathways are assessed by: collections of seafood, freshwater fish, indicator species and selected direct measurements of external dose (e.g. on

[75] Memorial, paragraph 3.62.
[76] Report of Dr Julian Preston, paragraph 40 (**Annex 8**).
[77] Report of Dr Julian Preston, paragraph 13, referring to NCRP report 136 of June 2001 (**Annex 8**).
[78] Report of Dr Dennis Woodhead, paragraph 4.4.1 (**Annex 11**). See also paragraph 2.31.

beaches, marshes). The frequency of collections varies from a week to a year; and

2. Terrestrial pathways are assessed by the collection of weekly milk samples from 15 farms and one dairy, together with up to 40 other foodstuffs covering a range of food groups including animal products. A small number of grass and soil samples are also taken as environmental indicators. Gamma spectrometry is conducted on the majority of samples as well as a wide variety of radiochemical analyses.[79]

3.57 Additionally, BNFL is required by some of the discharge authorisations applicable to the Sellafield site to carry out monitoring. Monitoring extends over a wide geographical area, including south-west Scotland and the Isle of Man where several hundred samples are taken, and several thousand analyses are carried out every year. BNFL's own environmental monitoring programme involves the sampling and analysis of a wide range of environmental materials and the carrying out of other environmental measurements. In particular:

1. Gamma radiation dose rates are measured routinely along extensive stretches of the West Cumbrian coastline, with several measurements made in each area allowing temporal or geographical trends to be observed;

2. Beta/gamma ground level contamination monitoring is undertaken just above the surface on local beaches, concentrating on recently deposited tidal debris and wind blown debris on the upper beach. Monitoring is also carried out at several locations close to the Sellafield site perimeter and at 18 locations inland to the north, east and south of the Sellafield site;

3. Quarterly external gamma dose rates are measured around the Sellafield site perimeter, and bi-annually at the District Emergency monitoring points close to Sellafield. Beta/gamma ground level measurements are carried out quarterly on designated grass plots on the Sellafield site;

[79] Full details of the methods used can be found in Section 2 of the report 'Radioactivity in Food and the Environment 2001' (RIFE-7), published in September 2002 (available at the Food Standards Agency website: www.foodstandards.gov.uk/multimedia/pdfs/rife7).

4. High volume air samplers are situated at the site boundary and at populous locations 2 - 17 km from the site. These samplers operate continuously;

5. Monthly or quarterly samples are taken of drinking water, and water from springs, rivers and lakes local to the site;

6. Quarterly samples of grass are collected from six locations close to the Sellafield site and from two locations within the Ravenglass estuary;

7. Samples are taken of: fish (quarterly) from locations off the Cumbrian coast; shellfish (monthly, quarterly, twice yearly, or annually) from several locations and commercial landings; seaweed (quarterly) from twelve locations in West Cumbria, the Isle of Man and south-west Scotland; sediments (quarterly) from two locations and silt from ten locations; sea water (monthly) from the shorelines at Sellafield and Drigg and quarterly at St Bees and Seascale;

8. Samples are taken of milk, meat and liver, poultry, eggs and wildfowl, vegetables and fruit.[80]

3.58 Pursuant to Article 35 of the Euratom Treaty, BNFL's environmental monitoring programme has been verified by the European Commission.[81] BNFL's monitoring records an absence of significant environmental impact from operations at Sellafield. The monitoring undertaken independently by the Food Standards Agency confirms this.[82]

3.59 In the context of the Environment Agency's 2001 review of the Sellafield discharge authorisations (referred to in Chapter 2 above), a report was commissioned by BNFL from the Westlakes Research Institute on concentrations of radionuclides in non-human biota.[83] The highest doses to non-human biota due to measured and predicted concentrations arising from activities on the whole of the Sellafield site were summarised in the Westlakes Research Institute report as follows:

1. The highest measured terrestrial absorbed dose-rate due to historical

[80] Witness Statement of John Clarke, paragraph 36(f) (**Annex 2**).
[81] Witness Statement of John Clarke, paragraph 37 (**Annex 2**).
[82] See also the MARINA II study (**Annex 19**) and the report of Dr Dennis Woodhead, paragraph 1.7 (**Annex 11**).
[83] Ibid., paragraph 58 (**Annex 2**).

discharges is to elderberries (0.00033 milligray per day).

2. The highest predicted terrestrial absorbed dose-rate due to predicted discharges at mean best estimate levels is to sheep (0.00011 milligray per day).

3. The highest measured marine absorbed dose-rate due to historical discharges is to *Fucus vesiculosus* (seaweed) (0.1 milligray per day).

4. The highest modelled marine absorbed dose-rate due to predicted discharges at mean best estimate levels is to lobster (0.00047 milligray per day).

3.60 All these doses are well below the dose of 1 milligray per day below which the IAEA has concluded that there is no convincing evidence of harm to plant or animal populations.[84]

3.61 In addition, Annex F to the MARINA II study (Assessment of the Impact of Radioactive Substances on Marine Biota of North European Waters) states in its conclusions that:

> "During the assessment period (1986-2001), the dose rates to marine biota in the vicinity of Sellafield were below the levels, where any deterministic effects of radiation could be expected in marine organisms from natural populations. A gradual decrease in dose rates to marine biota was observed in the Sellafield area during the assessment period". [85]

3.62 It further states:

> "20. The methodology for determining the impact of radioactivity on marine biota is still under development. However, according to the available information, there is no identifiable impact on populations of marine biota from radioactive discharges (Figure 14)."[86]

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[84] Effects of Ionising Radiation on Plants and Animals at Levels implied by Current Radiation Protection Standards, Technical Reports Series, No. 332, IAEA, Vienna (1992). This report also states that in the aquatic environment limiting chronic dose rates to the most exposed individuals to less than 10 milligray per day would provide adequate protection for the population. Witness Statement of John Clarke, paragraph 59.

[85] **Annex 19**, Annex F, page 36, paragraph 5.

[86] **Annex 19**, Annex F, Executive Summary, page (xii). See also the report of Dr Woodhead at sections 4 and 5 and paragraph 6.5 (**Annex 11**).

3.63 At a conference at the Royal Irish Academy in Dublin in September 2002, entitled *Making Sense of Sellafield,* Professor Mitchell, a leading Irish authority on matters relating to radioactivity, presented a paper which referred to the MARINA II study.[87] The conclusion to be drawn from the study was that:

> "there is no identifiable impact on populations of marine biota from radioactive waste discharges in the OSPAR region including those from Sellafield into the NE Irish Sea". [88]

(iv) Impacts on Fish Stocks in the Irish Sea

3.64 The account given by Ireland's expert, Dr Connolly, of the decline in fish stocks in the Irish Sea confirms and quantifies what is widely known: that fish stocks in the Irish Sea have declined in the last ten years, in consequence of over-fishing, pollution and climate change. Although presented in support of Ireland's case against the MOX Plant, Dr Connolly's lengthy report "does not address the issue of the effects of low level radiation on fish stocks".[89] It is of very limited, if any, assistance in this case. In fact, there is no evidence to suggest that discharges from the Sellafield site as a whole – let alone discharges from the MOX Plant – might affect fish stocks in the Irish Sea.[90] The report of the United Kingdom's expert on fisheries, Dr Bannister, shows how the decline in fish stocks in the Irish Sea is paralleled by the decline of fish stocks in the North Sea. The common link is that both stocks have been subject to a similar duration and intensity of fishing.[91] Further, the report of Dr Woodhead, which does consider the impacts of measured and estimated radiation doses to certain fish in addition to other marine biota, concludes that the dose rates are substantially below those that are expected to produce any effects in sensitive organisms.[92]

(v) The Irish Sea

3.65 Ireland emphasises in its Memorial the importance that it attaches to the Irish Sea, not least for reasons of fishing and tourism.[93] The Irish Sea is, of course, of importance

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[87] See "Making Sense of Sellafield" (**Annex 18**).
[88] **Annex 18**, p. 10.
[89] Memorial, Volume II, p. 9.
[90] Indeed that statement would be contrary to the finding of the MARINA II study referred to at paragraph 3.63 above.
[91] Report of Dr Colin Bannister, paragraph 3.6 (**Annex 1**).
[92] Report of Dr Dennis Woodhead, paragraph 6.5 (**Annex 11**).
[93] Memorial, paragraphs 1.13 to 1.18.

to the United Kingdom also. For the United Kingdom, as for Ireland, the Irish Sea is an important resource for fishing and for tourism. There are fishing ports including at Ardglass, Fishguard, Holyhead, Kilkeel, Milford Haven, Workington and Whitehaven; and there are coastal resorts including at Aberystwyth, Blackpool, Conway and Morecambe. The Irish Sea is also a major shipping route, particularly for vessels using the ports of Belfast, Cardiff, Fleetwood, Larne, Liverpool, Neath, Newport, Stranraer, Swansea and Troon. The United Kingdom has as much interest as Ireland in the preservation of the waters of the Irish Sea; and has evidently more reason than Ireland to guard against any harmful atmospheric or liquid discharges from the Sellafield site, which lies within it own territory.

3.66 Ireland also focuses on the gyre in the western Irish Sea as if it were new to the United Kingdom. It says that the dispersal of discharges into the Irish Sea is restricted by a stable gyre, the existence of which was "unknown during the planning stages of the original plants at the Sellafield site".[94] The gyre (first postulated to exist in 1972) is a seasonal feature each year, whereby water circulates anti-clockwise in summer around the stratified region in the western Irish Sea, with mean non-tidal current speeds of up to 17.5 km per day. When the gyre breaks down in autumn, the western Irish Sea is flushed by the prevailing northward mean flow largely arising from a succession of wind-events. The gyre is stable in the sense it persists throughout the summer season and in the sense that its position does not change dramatically.[95]

3.67 The importance of the gyre should not be overstated.[96] The overall flow rate through the Irish Sea and associated inferred gross flushing times have been known since the 1950s. Subsequent work has confirmed the robustness of this estimate (and if anything tended to show increased flushing through the Irish Sea - both in the mean and as a result of events). Thus the report of Ireland's expert, Dr Hartnett, concentrates on the gyre but fails to acknowledge that the overall estimate of flushing time has not

[94] Memorial, paragraph 1.9. It is not, however, suggested that the gyre was unknown at the time of the planning for the MOX Plant, or even THORP. Indeed, specific mention is made of the gyre in the United Kingdom's Article 37 Submission in respect of the MOX Plant (at section 1.3). Memorial, Volume III, Part Three, p. 415.

[95] There are, however aspects of the gyre which are variable, including apparent alternative water trajectories within it.

[96] Report of Dr Edward Hill, paragraph 8.6.7 (**Annex 3**). The main significance of the western Irish Sea gyre is that it explains how elements of the waters of the Irish Sea are re-circulated southwards along the Irish coast in summer. Nevertheless, the majority of eastern Irish Sea water exits directly through the North Channel.

materially changed.[97] Moreover recent research has shown that storms can give rise to very significant movements of water out of the Irish Sea through the North Channel.[98] Volumes equivalent to over 30% of the water of the Irish Sea can be transported out of the Irish Sea within a duration of less than one month.

3.68 Ireland asserts that radionuclides tend to stay in the Irish Sea (concentrated, it is said, in "hot spots") and that "these hot spots represent major potential sources to radioactive contamination in the future, especially if exposed to heavy storm events, increasing the water erosion".[99] The argument is that radionuclides are liable to be dispersed, especially in storms. The true position is as follows: the Irish Sea does contain areas of sediments in which radionuclides, whether occurring naturally or through human activity, are inhomogeneously distributed. This is because of variable grain size and surface chemistry; radionuclides have an affinity for fine particles (i.e. muds) rather than coarse sands. Such areas can be found to the south-west of the Sellafield pipeline outlet and to the west of the Isle of Man. These areas have been the subject of considerable research in recent years with a view to understanding the factors that influence the movement and fate of the sediment. Whilst there is evidence that storm activity leads to some redistribution of sediments into the coastal zone and estuaries of the eastern Irish Sea, it is also acknowledged that the eastern Irish Sea mud-patch is essentially stable.[100]

3.69 It is known that radioactivity is, with the reductions in concentrations in the overlying sea water, slowly being remobilised from the seabed sediments. References are made to this fact in the report presented by Ireland from Professor Salbu, who states "it is obvious that remobilisation of radionuclides from the Irish Sea sediments takes place".[101] The phenomenon was actually first reported by the CEFAS laboratory at Lowestoft. Indeed, the effects of remobilisation under prevailing conditions are included in current monitoring studies. Now that discharges from Sellafield have reduced, these studies show that remobilisation is one of the main sources of input to sea water. Whether this could present a higher risk in the event of storm events has been the subject of a collaborative study reported in 1996. Following postulated extreme events in which the mud was deposited on land, doses to residents were estimated at around 0.1 millisievert per year. This is much lower than the ICRP's recommended dose-limit for the public of

[97] Report of Dr Edward Hill, paragraphs 8.2.3, 10.8, 10.11 and 11.6 (**Annex 3**).
[98] Report of Dr Edward Hill, paragraphs 8.4.1 and 12.6 (**Annex 3**).
[99] Memorial, paragraph 1.11 and, further, paragraphs 3.48-3.49.
[100] Report of Dr Edward Hill, paragraph 9.3 (**Annex 3**).
[101] Memorial, Volume II, p. 126.

1 millisievert per year.[102]

D. ABATEMENT

3.70 Ireland approaches the issue of the abatement of discharges as if this were a topic unknown to the United Kingdom and to BNFL. Ireland's is that the discharges from the MOX Plant and THORP are too high because of a failure on the part of BNFL to use appropriate abatement technologies.[103]

(i) EARP and SIXEP

3.71 Ireland gives a simplistic account of the abatement plants currently in operation at Sellafield for the treatment of liquid wastes, and states that improving the efficiency of these plants could reduce the levels of radioactivity in discharges.[104] It is useful to outline briefly how the major abatement plants operate. A full account of the abatement measures adopted at the Sellafield site can be found in the Statement of John Clarke at paragraphs 113-114 and 173-190.

3.72 Effluents are segregated depending on their radioactivity content and whether they are alkaline or acid. The Enhanced Actinide Removal Plant ("EARP") treats stored waste (Medium Active Concentrate ("MAC")) derived from the deliberate policy to store this waste in tanks rather than dispose of it directly to sea. The storage regime began in the 1980s and there is still about 2000 m^3 to be dealt with. This and current arisings of MAC (stored for 3-5 years to allow the short half-life radionuclides to decay) are treated in a dedicated concentrates line in EARP. This is a batch process and the plant is very efficient at removing actinides (over 99.9% removal). It is less efficient at removing caesium-137 and strontium-90 and the efficiency varies between about 90% for strontium-90 and about 99% for caesium-137. The Environment Agency's current authorisations require BNFL to apply BPM to the operation of the EARP plant, and the operation of EARP is considered by the Agency to be BPM.[105]

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[102] See report of Dr John Hunt, paragraph 27 (**Annex 4**).
[103] Memorial, paragraphs 3.67-3.73.
[104] Memorial, paragraph 1.56.
[105] Report of Ian Parker, paragraph 5.7 (**Annex 7**). For example, nickel ferrocyanide is now added to improve caesium-137 removal and the addition of iron has improved the removal of strontium-90. See also ibid. at paragraph 5.12: "The EARP plant has performed extremely well at removing actinides from medium active concentrate streams since coming into operation in 1994 and has contributed to the reduction in stored medium active concentrate at Sellafield from approximately 6000 m^3 to about 2000m^3

3.73 There is also a dedicated line in EARP used to treat low activity high volume effluent (bulks) from the Magnox and THORP reprocessing plants.

3.74 The Site Ion Exchange Plant ("SIXEP") consists of sand filters, to remove particulate material, followed by ion exchangers, to remove mainly caesium-137 and strontium-90 using a naturally occurring zeolite. The plant treats large volumes of liquid from the purging of the fuel cooling ponds and operates at over 99% efficiency with respect to caesium-137 and strontium-90. BNFL is also required to apply BPM to the operation of the SIXEP plant.[106]

3.75 The segregated effluent treatment plant provides filtration for course particles and pH adjustment to a large volume low activity effluent stream. This stream is lower in activity compared to the EARP 'bulks' stream.[107]

(ii) The Role of the United Kingdom Environment Agency in Ensuring the Application of Abatement Technologies

3.76 Mr Parker describes in some detail how the Environment Agency acts to ensure that BNFL applies BPM and BPEO, including abatement technologies, and how BNFL's application in this respect has been subject to recent review.[108] He concludes as follows:

> "Using the methodology described above in the recent review of the Sellafield authorisations, the Agency considered the best practical environmental option for the key radionuclides discharged from Sellafield. The radionuclides were selected on the basis of criteria related to the quantity discharged, the radiological impact and persistence in the environment. The Agency published its conclusions on what represented the best practical environmental option in its Explanatory Document (Annex 4, appendix 6) to assist the public consultation process included in the review. Following this consultation the Agency concluded that for the most part the current practices at Sellafield represented the best practical

in 2002, whilst at the same time reducing the amount of plutonium and americium discharged to sea. The operation of EARP is considered by the Agency to be best practicable means."

[106] For example, the changing of the ion exchange material is optimised so that the amount of secondary waste is minimised whilst maximising the removal of caesium-137 and strontium-90.

[107] Report of Ian Parker, paragraph 5.10 (**Annex 7**).

[108] Ibid., paragraphs 5.36-5.39 and 6.8-6.9 (**Annex 7**).

environmental option (BPEO)."[109]

3.77 As Mr Clarke says in his Statement:

> "Through the use of BPM so as to make discharges ALARA (both before and after the advent of the OSPAR Convention), BNFL has succeeded in reducing radioactive discharges from Sellafield very considerably - particularly discharges of the most radiotoxic radionuclides. For example, total discharges of beta activity (radioactivity that emits radiation in the form of very small atomic particles that can penetrate living tissue) from Sellafield have already been reduced to less than 1% of their peak levels in the 1970s and alpha activity (radioactivity that emits radiation in the form of larger atomic particles that have a greater potential for local tissue damage if ingested or inhaled) discharges to just 0.06% of peak levels."[110]

(iii) The Comparison with the Savannah River MOX Fabrication Facility

3.78 Ireland's allegation that there has been a failure to abate discharges is justified by reference to a claim that the emissions from the Savannah River MOX Fabrication Facility will be "practically zero".[111] At first sight, this looks like an odd claim given that the discharges from the MOX Plant are negligible. Further, as Mr Parker points out in his report, (i) the published data on the MOX Plant discharges are estimates, and it is possible that the actual discharges could be lower, whilst (ii) there are some errors in Dr Barnaby's calculations. The key point, as Mr Parker explains, is that irrespective of the result of the calculations, the discharges and impacts of both plants are trivial.[112]

E. MARINE TRANSPORTS

3.79 Although Ireland acknowledges that the bulk of the plutonium for the MOX Plant

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[109] Ibid., paragraph 6.9 (**Annex 7**). The report continues: "This was the case for tritium, sulphur-35, argon-41, krypton-85, ruthenium-106, plutonium and americium. The Agency did identify some areas where additional work by BNFL was needed to develop abatement techniques to see if they could be applied at Sellafield to reduce discharges. For example, the introduction of cobalt-60 abatement and iodine-129 abatement technologies at THORP (subject to successful plant trials and HSE agreement); the re-routing of some fuel storage pond water to the Site Ion Exchange Plant to remove strontium-90 and caesium-137 (subject to practicability and HSE agreement). It is only using these rigorous processes that appropriate and informed decisions can be made." Mr Parker also notes that Dr Barnaby's conclusions are "again rather superficial" and that there is "no evidence of a rigorous assessment, as carried out by the Agency in its recent review of the Sellafield authorisations" (paragraph 6.10).

[110] Witness Statement of John Clarke, paragraph 24 (**Annex 2**). See also UK strategy for radioactive discharges 2002-2020, Executive Summary, paragraph 4 (**Annex 13**).

[111] Memorial, paragraph 3.67.

[112] Report of Ian Parker, paragraph 6.11 (**Annex 7**).

is likely to come from fuel reprocessed from THORP or Magnox, Ireland maintains that the operation of the MOX Plant will lead to a significant increase in the international transportation of radioactive materials through the Irish Sea.[113] At various junctures in its Memorial, it focuses on an alleged risk arising from such transportation. The argument, as set out in Chapter 2 of Ireland's Memorial, is based on the following contentions of fact:

1. If BNFL secures any additional reprocessing contracts from overseas, this will lead to additional transports of spent fuel through the Irish Sea. Further, plutonium recovered from spent fuel that is reprocessed at THORP will be returned as MOX fuel to the overseas customer, again resulting in additional shipments.[114]

2. Besides Ireland, several other States have entered strong protests about the shipment of radioactive materials through waters over which they exercise sovereign rights, or over the high seas.[115]

3. The vessels in the PNTL fleet were built prior to 1993, i.e. well before the adoption of the INF Code. One conclusion that may be drawn, insofar as the vessels satisfy the Code, is that the IMO standards are insufficiently stringent.[116]

4. The vessels in the PNTL fleet are vulnerable because they are only double hulled around the cargo area.[117]

5. The effect of a maritime accident could seriously contaminate the ocean and probably also land with highly radioactive materials, which could have devastating effects on fisheries, on human health and on the environment.[118]

3.80 These contentions are condensed into two allegations in Chapter 3 of Ireland's Memorial: that it is unclear whether the packaging standards are adequate, and that the ship construction and equipment of the PNTL vessels are thought by some to be

[113] Memorial, paragraph 1.2.
[114] Memorial, paragraphs 2.36-2.37.
[115] Memorial, paragraphs 2.43-2.48.
[116] Memorial, paragraphs 2.50-2.51.
[117] Memorial, paragraph 2.53.
[118] Memorial, paragraph 2.56.

inadequate.[119]

3.81 This is not a strong basis for an allegation of treaty violations. In essence, the argument is the same as Ireland's argument in relation to discharges from the MOX Plant and THORP. It relies on the same projection of future reprocessing contracts at THORP and the same assumption of an inextricable linkage between the MOX Plant and THORP; it relies wholly on the same spectre of threat due to radioactive materials; it again skips over the existence of detailed international and domestic regulations, and the steps taken by regulatory authorities, on the international and domestic plane, in ensuring that these are complied with; it again ignores the wealth of available information in terms of assessment of risks.

3.82 The answers to Ireland's contentions of fact, insofar as relevant, are considered below.

(i) Additional Transports due to Further Reprocessing at THORP and the Return of Recovered Plutonium as MOX Fuel

3.83 The position in respect of future reprocessing contracts has already been considered in Chapter 1 and section B above. With respect to the return of recovered plutonium as MOX fuel, even leaving to one side the assumption of inextricable linkage, there is an immediate logical flaw. If the MOX Plant were not to operate, plutonium already separated at THORP would still be transported back to customers or taken to a third country for manufacture into MOX fuel or for some other form of treatment. Such transports will continue in accordance with the baseload and post-baseload contracts until these are performed and the recovered plutonium is returned.[120]

(ii) Inadequate Packaging

[119] Memorial, paragraph 3.41.

[120] Further, the shipping of MOX fuel (in the form of ceramic pellets contained in zirconium alloy fuel rods), rather than of separated plutonium (which is in the form of plutonium oxide powder), has the effect of reducing any associated security threat. As Ireland itself observed, in its submission dated 30 July 1999 to the fourth public consultation on MOX manufacture, the marine transportation of MOX fuel has advantages as compared to the marine transportation of separated plutonium from the point of view of security. MOX fuel is less attractive to potential terrorists and has safety advantages over separated plutonium during transport. See the Decision of 3 October 2001 at paragraphs 67-68. See, also, the Proposed Decision of October 1998, Appendix 4, paragraph A4.142 and Appendix 7, paragraphs A7.16-A7.20.

3.84 The regulations applicable to the packaging of radioactive materials, including nuclear fuels, have already been considered in Chapter 2 above, as has the United Kingdom's implementation of the applicable regulations (the IAEA Transport Regulations). It is recalled that the IAEA TranSAS Appraisal concluded that the United Kingdom had gone well beyond what has been and is currently required by the applicable international regulations on the maritime transport of radioactive materials.[121] All packages carried on BNFL/PNTL ships comply with the IAEA Transport Regulations.[122]

3.85 Ireland's allegation, if correctly formulated, would have to be that (i) the IAEA Transport Regulations, although subject to regular update and reflecting an internationally agreed and applied standard, were inadequate relative to the requirements of specific provisions of UNCLOS, and (ii) the United Kingdom's conduct, although going well beyond what is required by the applicable international regulations, was also inadequate relative to the requirements of those specific provisions of UNCLOS. It does not appear that Ireland makes either of these claims, and it certainly makes no attempt to substantiate either one of them.

3.86 In fact, as appears from the expert report of Mr Rawl, the adequacy of the IAEA Transport Regulations has been extensively studied and has been confirmed.[123] In particular, in the light of public concern for the safety of the maritime transport of radioactive material, an IAEA/IMO Joint Working Group was established in 1992 to address *inter alia* the adequacy of the IAEA Transport Regulations. This Working Group was later expanded to include representatives of UNEP. In addition, in 1994 a Co-ordinated Research Project ("CRP") was established by the IAEA. It was envisaged that the CRP would support the activities of the Joint Working Group as well as providing information that the IAEA could use in its ongoing regulatory review and revision process.[124] Its agreed objectives were *inter alia* to:

> "(a) Perform closer studies to find out whether the existing regulations take adequate account of accidents at sea, taking into account probability and consequence through:
> - assessing the severity of accidents on radioactive material packages and their expected frequencies of occurrence during sea transport,
> - conducting and examining new studies on fire and impact environment on

[121] **Annex 15**, p. 10.
[122] Witness Statement of Captain Malcolm Miller, paragraph 15 (**Annex 6**).
[123] Report of Richard Rawl. Paragraph 4.10 and section 6 (**Annex 9**).
[124] For more background to the CRP, see, ibid., pargraph 6.21 (**Annex 9**).

board ships,

- considering additional research on sea transport,
- providing input data to the IAEA regulatory review and revision process, through the executive summary report, that allows an evaluation of the adequacy of the design and performance requirements of the IAEA Regulations for Type B packages transported by sea."[125]

3.87 The CRP was carried out in the period 1995-1999. The conclusions were published in July 2001 in "Severity, probability and risk of accidents during maritime transport of radioactive material, Final report of a co-ordinated research project 1995-1999". The report is long and detailed. The adequacy of the IAEA Transport Regulations could not possibly be called into question in a meaningful way without an in-depth consideration of the CRP report. Its conclusion, which is of obvious relevance to Ireland's allegations that the Type B packages used by BNFL/PNTL may be inadequate, is as follows:

> "As this report, its annexes, and the reports that underlie the annexes show, review of maritime casualty data allowed estimates of the frequencies of severe ship collisions and ship fires and of ship collisions and fires of any severity to be developed per nautical mile sailed and per year of sailing; modelling of ship collisions developed a way to estimate the likelihood of deep hold penetration during severe ship collisions and concluded that should crush forces be applied to a flask due to deep hold penetration, the forces would be relieved by collapse of ship structures rather than flask structures. The conduct of shipboard fire tests, the modelling of these tests, and the use of the modelling results to develop models of fire propagation on ships showed that fire spreading to a RAM [radioactive material] hold is not likely and that if a fire should spread to a RAM hold, it is unlikely to burn at a sufficiently temperature or long enough in that hold to cause or enhance the release of radioactive material from a RAM Type-B flask. Finally, illustrative consequence analyses indicated that neither the loss of a flask into the ocean nor the release of radioactive material to the atmosphere as the result of a severe ship collision that initiates a severe fire are likely to subject exposed individuals to radiation doses that are significant by comparison to normal background doses. Thus, the CRP concluded that the risks of transporting RAM, for example, irradiated nuclear fuel and VHLW, in Type-B packages, are very small."[126]

3.88 Ireland's allegations as to the inadequacy of packaging regulations have no merit. Further, it may be noted that the CRP's conclusions on risks apply all the more so in

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[125] IAEA TECDOC-1231, *Severity, probability and risk of accidents during maritime transport of radioactive material, Final report of a co-ordinated research project 1995-1999*, July 2001 (**Annex 20**).
[126] **Annex 20**, p. 61.

respect of unirradiated MOX fuel. MOX fuel takes the form of extremely robust metal rods containing ceramic pellets of uranium and plutonium and is itself a solid material that does not dissolve in water. Fresh MOX fuel can be handled safely with minimal protection such as gloves. MOX fuel rods are transported in approved packages. Even if the double hull of the vessel were to be penetrated in every one of its compartments, and if the stability mechanism designed to prevent the ship from sinking in that event were to fail, and if the packages containing the MOX fuel were to be immersed in the sea, and if the package were then to fail, and if the zircalloy rods were then to rupture, and if the ceramic pellets were then to be exposed to the sea, they would not readily dissolve.[127]

(iii) Inadequate Vessels

3.89 There is no basis for any allegation that the BNFL/PNTL vessels do not meet the INF Code requirements. The vessels are subject to regular survey by (independent) classification societies and the United Kingdom's Maritime and Coastguard Agency.[128] Although the INF Code only became mandatory on the international plane in January 2001, PNTL vessels have been required to comply with its requirements since its inception in 1993. Further, the TranSAS Appraisal records how "PNTL implements and in many cases goes beyond the required international standards in the controls implemented on the ships used for the transport of INF Code material by sea".[129]

3.90 Ireland's central point appears to be that the PNTL vessels do not have adequate double hulls, as only the cargo area is double hulled, and they are therefore more vulnerable than most hazardous cargo carriers.[130] This is incorrect. The term double hulled refers to the construction of a double hull around the cargo area and not along the entire length of a vessel. Adding a double hull along the entire length of the PNTL vessels would do little to enhance either the safety of the cargo or the stability of the vessel. Further, in certain respects the double hulls of the PNTL vessels exceed normal practice.[131]

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[127] Witness Statement of Captain Malcolm Miller, paragraphs 195, 210 and 211 (**Annex 6**). Also, Witness Statement of Clive Young, paragraph 22 (**Annex 12**).
[128] Witness Statement of Captain Malcolm Miller, paragraphs 22-24 (**Annex 6**). The fact that the vessels pre-date 1993 is irrelevant. The issue is whether they comply with the latest requirements. They do. Of course, they have been modified in line with technological developments since construction. *Ibid*., paragraphs 149 and 153.
[129] **Annex 15**, p. 68.
[130] Memorial, paragraph 2.53.
[131] Report of John Lillie, paragraphs 9.2 and 10.2-10.4 (**Annex 5**); See also discussion re survivability of the PNTL vessels in the Statement of Captain Miller, paragraphs 150-155, including Fig. 3 (**Annex 6**).

3.91 There is no basis for any allegation that the INF Code requirements are inadequate. It is an internationally agreed and implemented Code. Those Member States and other parties who are interested in the development of the Code have an ongoing opportunity to make their position known and to influence the requirements included in the Code. The Code does not become inadequate because one State, at a given point in time, maintains that there are requirements that it considers should be included.[132]

(iv) The Effect of a Maritime Accident

3.92 Ireland refers in one short paragraph to the "devastating" effects of a maritime accident.[133] Ireland offers no evidence to support this. It puts forward, and takes out of context, an extract from the IAEA Chairman's report for 1996, in which the rationale for one aspect of the IAEA Transport Regulations, the 200 metre immersion test for the Type B package, was being explained. In order for there to be radiological consequence of concern, the package would have to remain in a shallow location, and the immersion test is designed to ensure that the package is recoverable in such conditions.[134]

3.93 The United Kingdom takes its responsibilities in relation to avoiding a ship casualty extremely seriously and does its utmost, including through the implementation of all applicable regulations, to ensure that no such casualty will occur and that, if it does, there are no significant consequences. In this respect, it may be noted that BNFL has safely transported radioactive material by sea over a period in excess of thirty-five years, including a distance of seven million kilometres travelled by the PNTL fleet.[135] Moreover, if there were to be a casualty, and if there were to be a package failure, as stated in the CRP report, the risks of significant doses to exposed individuals are very small.[136] The evidence shows that packages are robust, MOX fuel is further protected by its zircalloy cladding, MOX fuel is not soluble, and releases of radioactive material from a failed package would only be tiny fractions of the packages contents.[137]

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[132] Report of Richard Rawl, paragraphs 6.90-6.91 (**Annex 9**).
[133] Memorial, paragraph 2.56.
[134] Report of Richard Rawl, paragraph 7.3 (**Annex 9**).
[135] Witness Statement of Captain Malcolm Miller, paragraph 174 (**Annex 6**).
[136] **Annex 20**, p.61.
[137] See the discussion of MOX fuel packages in the Report of Richard Rawl, paragraphs 6.50-6.56 and 6.54, in particular, with regard to release of particulates (**Annex 9**); Witness Statement of Captain Malcolm Miller, paragraphs 160-161 (**Annex 6**).

CHAPTER 4

JURISDICTION

4.1 Ireland addresses questions of jurisdiction and applicable law separately. It asserts, in Chapter 5 of the Memorial, that it "has brought this claim to uphold its specific rights under UNCLOS".[1] It contends that the Tribunal has jurisdiction in this case notwithstanding that some or all of the issues which it raises might have been pursued under other international instruments as "there is no reason why the existence of narrower rights under other treaties should bar Ireland from relying upon its wider rights under the UNCLOS."[2] In support, Ireland relies on the Order of ITLOS to the effect that

> "even if the OSPAR Convention, the EC Treaty and the Euratom Treaty contain rights or obligations similar to or identical with the rights or obligations set out in the Convention, the rights and obligations under those agreements have a separate existence from those under the Convention."[3]

4.2 ITLOS noted further that the dispute settlement procedures under the OSPAR Convention, the EC Treaty and the Euratom Treaty deal "with disputes concerning the interpretation or application of those agreements, and not with disputes arising under the Convention"[4] and that "the dispute before the Annex VII arbitral tribunal concerns the interpretation or application of the Convention and no other agreement".[5]

4.3 With that, Ireland moves on to address the law applicable to the Dispute. On this, by reference to article 293(1) of UNCLOS, Ireland proposes that the Tribunal must *apply* not only UNCLOS but also other rules of international law which are not incompatible with the Convention. UNCLOS, Ireland says, is not a static instrument: "[t]he content and effect of its obligations evolve over time, to take into account developments in international law and changes in the state of scientific knowledge and understanding."[6] Article 293(1), on this contention, "directs the Annex VII Tribunal to apply all the

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[1] Memorial, paragraph 5.2.
[2] Memorial, paragraph 5.16.
[3] *The MOX Plant Case (Ireland v. United Kingdom)*, ITLOS, Request for Provisional Measures, Order of 3 December 2001, paragraph 50.
[4] *Ibid*., paragraph 49.
[5] *Ibid*., paragraph 52.
[6] Memorial, paragraph 6.4.

relevant rules of international law in identifying the nature and extent of each State's obligations, and in determining whether a State's behaviour is in conformity with those obligations."[7]

4.4 Amongst all the relevant rules of international law that the Tribunal is enjoined to apply, Ireland cites more than twenty other international instruments which, it contends, must be applied in the context of this case, including the OSPAR Convention, "relevant EU rules" and others. In Chapters 7 to 9 of its Memorial, a number of these other conventions and instruments become the pivot of the specific allegations levelled against the United Kingdom.

4.5 On the one hand, therefore, for purposes of jurisdiction, Ireland avers that this is a Dispute about rights under UNCLOS. Although parallel rights and obligations may be contained in other international instruments, the rights and obligations under UNCLOS have a separate existence. The Dispute before the Tribunal thus concerns "the interpretation or application of UNCLOS and no other agreement".

4.6 On the other hand, however, Ireland contends that UNCLOS incorporates and requires the application of all other international law not inconsistent with the Convention. Through the prism of applicable law, the jurisdiction of the Tribunal is thus dramatically enlarged. The Dispute is no longer about the interpretation or application of UNCLOS and no other agreement. Rather, it is about the interpretation or application of a much wider body of international law said to be incorporated into and applicable as part of UNCLOS.

(i) The Basis of the Tribunal's Jurisdiction

4.7 The jurisdiction of this Tribunal is prescribed by article 288(1) of UNCLOS, which provides:

> "A court or tribunal referred to in article 287 shall have jurisdiction over any dispute concerning the interpretation or application of this Convention which is submitted to it in accordance with this Part".

4.8 Article 286 provides that "any dispute concerning the interpretation or application of this Convention" shall, where no settlement has been reached by recourse to section 1

[7] Memorial, paragraph 6.7.

of Part XV, be submitted to the court or tribunal having jurisdiction under section 2. Article 287 provides that States shall be free to choose any of the means of settlement there prescribed for "disputes concerning the interpretation or application of this Convention".

4.9 By using the expression "any dispute concerning the interpretation or application of this Convention" the States Parties evinced a clear intention that the jurisdiction of a court or tribunal referred to in article 287 should be confined to disputes concerning the interpretation or application of UNCLOS.

4.10 Article 288(2) makes this clear. It provides for the enlargement of the jurisdiction of a court or tribunal, where the parties to the dispute so agree:

> "A court or tribunal referred to in article 287 shall also have jurisdiction over any dispute concerning the interpretation or application of an international agreement related to the purposes of this Convention, which is submitted to it in accordance with the agreement".

4.11 Since none of the other agreements on which Ireland relies provides for UNCLOS dispute settlement, the Tribunal does not have the enlarged jurisdiction contemplated by article 288(2).

(ii) Alternative Means for Settlement of Disputes

4.12 Although a dispute may concern the interpretation or application of UNCLOS, a court or tribunal referred to in article 287 will not have jurisdiction where the parties to the dispute have agreed that it shall be submitted to some other settlement procedure.

4.13 Article 281(1) addresses circumstances in which States which are parties to a dispute concerning the interpretation or application of UNCLOS have agreed to seek settlement of the dispute by some other means:

> "If the States Parties which are parties to a dispute concerning the interpretation or application of this Convention have agreed to seek settlement of the dispute by peaceful means of their own choice, the procedures provided for in this Part apply only where no settlement has been reached by recourse to such means and the agreement between the parties does not exclude any further procedure."

4.14 Article 282, entitled "Procedures under general, regional or bilateral agreements", provides:

> "If the States Parties which are parties to a dispute concerning the interpretation or application of this Convention have agreed, through a general, regional or bilateral agreement or otherwise, that such dispute shall, at the request of any party to the dispute, be submitted to a procedure that entails a binding decision, that procedure shall apply in lieu of the procedures provided for in this Part, unless the parties to the dispute otherwise agree."

4.15 Within the scheme of section 1 of Part XV, special importance attaches to articles 281 and 282, which set out the procedure to be followed where the parties have agreed to submit disputes concerning the interpretation or application of UNCLOS to means of settlement other than those prescribed by section 2.

4.16 Vice-President Nelson in his Separate Opinion in the Provisional Measures phase of this case observed as follows:

> "The whole object of section 1 of Part XV of the Convention is to ensure that disputes concerning the interpretation or application of the Convention are settled by peaceful means and not necessarily by the mechanism for dispute settlement embodied in the Convention. That was the intent of the drafters of the Convention. In a memorandum with respect to the negotiating text on this matter President Amerasinghe stated that: "while imposing the general obligation to exchange views and to settle disputes by peaceful means, these articles give complete freedom to the parties to utilise the method of their choosing, including direct negotiations, good offices, mediation, conciliation, arbitration or judicial settlement" (UN Doc A/CONF.62/WP.9/Add.1, Off. Rec. V.p.122). The view was also put forward that "when an agreement existed between the parties to a dispute whereby they had assumed an obligation to settle any given dispute by recourse to a particular method, that agreement should have precedence over the procedures agreed upon in the new Convention" (Statement by the Japanese delegation at the 60th plenary, paragraph 55, *ibid*., p.27. See too the observations of Argentina at the 59th plenary, paragraph 46, *ibid*., p.18 and the *Virginia Commentary* V, p.26)."[8]

(iii) Ireland's Claims based on European Law

4.17 A large part of Ireland's case appears to be based on provisions of European Community and Euratom law. Ireland makes constant reference to European Community

[8] Separate Opinion of Vice-President Nelson, at paragraph 2.

and Euratom instruments and bases much of its case on these. They include: European Community Directives on environmental statements,[9] on the quality of bathing waters,[10] on waste water discharges,[11] on the conservation of wild birds,[12] on the treatment of urban waste water,[13] and on the justification of certain nuclear activities,[14] as well as a Communication of the Commission of the European Communities on the Precautionary Principle.[15] In addition, Ireland makes constant reference to various treaties to which the European Community is a party.

4.18 The European Community is a party to about a thousand treaties concluded on the basis of public international law with other international legal persons. These include numerous multilateral treaties, one of which is UNCLOS. In some cases the Member States, as well as the Community, are parties to the agreements. Agreements to which the Member States are parties along with the Community are known as "mixed agreements". UNCLOS is a mixed agreement.

4.19 When depositing its instrument of formal confirmation of UNCLOS, the Community made a Declaration, in accordance with article 2 of Annex IX, on the competence of the Community with respect to the matters governed thereby.[16] With regard to the provisions of Part XII of UNCLOS, the Declaration states that this is a matter on which competence is distributed between the Community and the Member States. The Declaration continues:

> "With regard to the provisions of maritime transport, safety of shipping and the prevention of marine pollution contained *inter alia* in Parts II, III, V, VII and XII of the Convention, the Community has exclusive competence only to the extent that such provisions of the Convention or legal instruments adopted in implementation thereof affect common rules established by the Community."

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[9] Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment, OJ 1985 L 175/40.
[10] Directive 76/160/EEC of 8 December 1975 concerning the quality of bathing water, OJ 1976 L 31/1.
[11] Directive 76/464/EEC of 4 May 1976 on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community, OJ 1976 L 129/23.
[12] Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds, OJ 1979 L 59/61.
[13] Directive 91/271/EEC of 21 May 1991 concerning urban waste-water treatment, OJ 1991 L 135/40.
[14] Council Directive 96/29/Euratom of 13 May 1996.
[15] Memorial, Volume III, Part Two, p. 103.
[16] *Declaration concerning the competence of the European Community with regard to matters governed by the United Nations Convention on the Law of the Sea of 10 December 1982 and the Agreement of 28 July 1994 relating to the implementation of Part XI of the Convention*.

There is appended to the Declaration a list of Community measures by reference to which the extent of Community competence should be assessed. The list includes, for example, Directive 85/337/EEC.

4.20 It is well established that the European Court of Justice has jurisdiction to interpret not only Community legislation but also agreements to which any of the European Communities are party. In *Hauptzollamt Mainz v Kupferberg*, the European Court of Justice stated:

> "In ensuring respect for the commitments arising from an agreement concluded by the Community institutions the Member States fulfil an obligation not only in relation to the non-member country concerned but also and above all in relation to the Community which has assumed responsibility for the due performance of the agreement. That is why the provisions of such an agreement, as the Court has already stated … form an integral part of the Community legal system."[17]

The European Court of Justice confirmed these principles in Opinion 1/00 of 18 April 2002 on the *Proposed Agreement on a European Common Aviation Area*.[18] And by its judgment dated 19 March 2002 in Case C-13/00, *Commission v Ireland*,[19] the European Court of Justice reaffirmed that these principles apply in the case of a mixed agreement, as in the case of an agreement concluded by the Community to the exclusion of its Member States.

4.21 Article 292 of the EC Treaty and Article 193 of the Euratom Treaty provide in identical terms:

> "Member States undertake not to submit a dispute concerning the interpretation or application of this Treaty to any method of settlement other than those provided for therein".

This provision, which is binding on the Member States of the Communities, prohibits the Member States from using alternative methods of dispute settlement for issues involving the interpretation or application of the Community Treaties and other instruments of the Community legal order.

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[17] Case 104/81, *Hauptzollamt Mainz v Kupferberg*, [1982] ECR 3641, paragraphs 11-14.
[18] Opinion 1/00 of 18 April 2002 on the Proposed agreement between the European Community and non-Member States on the establishment of a European Common Aviation Area, [2002] ECR I-3493.
[19] [2002] ECR I-2943, paragraphs 14 to 15.

4.22 As this prohibition shows, the European Community and Euratom Treaties make their own provision for the settlement of disputes in respect of provisions of those Treaties, Community instruments such as Directives and treaties within the Community legal order. Insofar as Ireland's claims are more properly brought under the Community Treaties, this Tribunal lacks jurisdiction.

(iv) Other Sources and Instruments referred to by Ireland

4.23 A separate issue arises from the reliance placed by Ireland upon a wide range of agreements and instruments other than UNCLOS. Ireland contends that these are to be applied by the Tribunal pursuant to article 293(1) of UNCLOS. These agreements and instruments include:

1. The OSPAR Convention[20] and certain Statements and Decisions made in connection with it;[21] and

2. Other international agreements separate from UNCLOS including the Espoo Convention on Environmental Impact Assessment in a Transboundary Context,[22] the Convention on the Physical Protection of Nuclear Material,[23] the International Convention for the Prevention of Pollution by Ships ("MARPOL"),[24] the Test Ban Treaty of 1963,[25] the Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter[26] and the London Convention;[27]

3. Various resolutions, recommendations and statements of international organisations or conferences.[28]

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[20] Memorial, Volume III, Part One, p. 419.
[21] Memorial, Volume III, Part One p. 461, 483 and 487.
[22] 30 ILM (1991) 802.
[23] 18 ILM (1980) 1419.
[24] 12 ILM (1973) 1319; amended by Protocol of 1978 before entry into force on 2 October 1983.
[25] 480 UNTS 43.
[26] 11 ILM (1972), 1294.
[27] Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter, 11 ILM 1294.
[28] The instruments relied upon include Resolution 14/25 of the Governing Council of the United Nations Environment Programme ("UNEP"), Memorial, Volume III, Part Two, p. 43; GA Res. 3154 (XXVII) 14 December 1973; extracts from Chapter 17 of Agenda 21, tabled at the United Nations Conference on Sustainable Development, Memorial, Volume III, Part Two, p. 9; a recommendation adopted at the Stockholm Conference, which recorded that in some instances the discharge of heat from power stations

4.24 Disputes as to the interpretation or application of these measures are manifestly not disputes concerning the interpretation or application of UNCLOS within article 288(1). None of them falls within the terms of article 288(2). They are therefore beyond the jurisdiction of the present Tribunal.

4.25 Ireland seeks to avoid the plain meaning of article 288, and enlarge the jurisdiction of the Tribunal, by reference to article 293(1) of UNCLOS, which governs the entirely separate question of applicable law. This provides:

> "A court or tribunal having jurisdiction under this section shall apply this Convention and other rules of international law not incompatible with this Convention."

Ireland contends that "[i]t follows that the rules of international law which the Annex VII Tribunal is called upon to apply ... are to be found both in the relevant provisions of UNCLOS and in "other rules of international law which are not incompatible" with the Convention."[29] Ireland goes on to contend that "other rules of international law" will not only be germane to the *interpretation* of UNCLOS obligations but must also be *applied* in their own right by the Tribunal in the context of this dispute. In this way Ireland invites the Tribunal to apply not only a broad range of international agreements, including those identified in paragraph 4.23 above, but also general principles derived from those instruments and principles of customary international law. In many cases, indeed, on Ireland's contention, the law applicable to the dispute is to be found principally in other agreements and instruments, article 293(1) of UNCLOS being invoked as a conduit for their application.

4.26 The point corresponds to that which arises under Article 36 of the Statute of the International Court of Justice. In respect of jurisdiction founded on Article 36(1) of the Statute, i.e. jurisdiction based on a compromissory clause in a treaty (as in the present case), the scope of jurisdiction will be controlling of the law applicable to the dispute. The matter is addressed by Rosenne, in respect of Article 36 of the Court's Statute, in the following terms:

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may constitute a potential hazard for marine eco-systems; and the Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities, Memorial, Volume III, Part Two, p. 43.

[29] Memorial, paragraph 6.1 (emphasis in the original).

> "There is another major difference between jurisdiction under paragraph 1 and jurisdiction under paragraph 2. That relates to the 'sources' of the law to be applied by the Court. Where the jurisdiction is based on paragraph 1, the Court is empowered only to apply that treaty. Where it is based on paragraph 2, the Court's jurisdiction may allow it and even require it to have recourse to rules of customary international law which resemble the rules of a treaty but which exist independently of the treaty, if for any reason that treaty is excluded from the scope of the jurisdiction of the Court in that particular case".[30]

Article 38 of the Court's Statute, setting out the sources of international law, cannot be used to extend the jurisdiction of the Court under Article 36 of the Statute.

4.27 This analysis draws support from, and reflects, the jurisprudence of the International Court of Justice. For example, in its two Orders on provisional measures in the *Genocide Convention* case, the Court was clear that, where a claimant founded jurisdiction on a multilateral convention, the Court would have jurisdiction to grant relief only in respect of matters which fell within the terms of that convention. In its first Order, the Court held that, since the only basis on which *prima facie* jurisdiction had been established for purposes of the particular proceedings was Article IX of the Genocide Convention, it

> "ought not to indicate measures for the protection of any disputed rights other than those rights which might ultimately form the basis of a judgment in the exercise of that jurisdiction".[31]

4.28 In its second Order, the Court went on to refuse to order provisional measures which fell outside the scope of the Genocide Convention.[32] This was explained by Judge *ad hoc* Lauterpacht in the following terms:

> "The Court can only act in a case if the parties, both the applicant and respondent, have conferred jurisdiction upon it by some voluntary act of consent. ... Whatever form the consent may take, the range of matters that the Court can then deal with is limited to the matters covered by that consent."[33]

4.29 The same analysis is reflected in the Judgment of the Permanent Court of International Justice in the *Mavrommatis Palestine Concessions* case, on which

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[30] *The Law and Procedure of the International Court, 1920-1996*, Volume II, at p.668.
[31] ICJ Reports 1993, p.3 at p. 19, paragraph 35.
[32] ICJ Reports 1993, p.325 at pp. 345 – 346, paragraphs 42 – 43.
[33] ICJ Reports 1993, p.325, p.407 at p.412, paragraph 14.

jurisdiction was founded on a provision conferring jurisdiction in respect of disputes relating to "the interpretation or application of the provisions of the Mandate". The Permanent Court of International Justice concluded:

> "The dispute may be of any nature; the language of the article in this respect is as comprehensive as possible ...; but in every case it must relate to the interpretation or application of the provisions of the Mandate."[34]

4.30 As all this makes plain, the jurisdiction of a court or tribunal seised of a dispute on the basis of a compromissory clause akin to that relied upon in the present case extends only to matters that come within the scope of that clause and does not include the interpretation or application of other international agreements or of customary international law.

4.31 The "other rules of international law" to which article 293(1) refers may, however, be relevant to a dispute within the jurisdiction of a Part XV court or tribunal in a number of ways, in particular:

1. Where they arise incidentally in the determination of a dispute concerning the interpretation or application of UNCLOS. This is particularly so in the case of secondary rules of international law, such as those relating to State responsibility or the law of treaties.

2. Where they are to be taken into account, together with the context, in interpreting a treaty in accordance with articles 31 and 32 of the Vienna Convention on the Law of Treaties 1969.[35] This permits, in article 31(3), account to be taken for purposes of interpretation *inter alia* of (a) "any subsequent agreement between the parties regarding the interpretation of the treaty or the application of its provisions", (b) "any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation", and (c) "any relevant rules of international law applicable in the relations between the parties".[36]

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[34] *PCIJ Reports*, Series A No.2 (1924), pp.15-16. See also Louis Sohn in his Hague lectures on *The Settlement of Disputes Relating to the Interpretation and Application of Treaties*: 1976 II Hague Recueil, at pp. 237-272.
[35] 8 ILM 679 (1969).
[36] See Sinclair, *The Vienna Convention on the Law of Treaties*, 2nd ed., pp. 138-140.

3. Where they are relevant by virtue of an agreement falling within article 288(2).

4.32 Point 3 is not relevant in the present case. The matters referred to in points 1 and 2 are subject to the caveat that such an exercise cannot provide the basis for the wholesale revision of the express terms of UNCLOS or for the elaboration of rights and obligations that do not otherwise appear from the text. Interpretation is interpretation. It is not the creation or enlargement of rights and obligations. Nor can it be used to establish rights and obligations that would not otherwise be justiciable in proceedings under the dispute settlement procedures established by UNCLOS.

CHAPTER 5

ARTICLE 206: ASSESSMENT OF POTENTIAL EFFECTS OF PLANNED ACTIVITIES

5.1 Ireland seeks to expand the obligation under article 206 of UNCLOS because the potential effects of the MOX Plant have (incontestably) been assessed in detail at three junctures: (i) in the 1993 Environmental Statement prepared by BNFL, (ii) in the United Kingdom's Submission to the European Commission under Article 37 of the Euratom Treaty, and the Article 37 Opinion of the European Commission, (iii) as part of the justification exercise in the United Kingdom Environment Agency's Proposed Decision of October 1998.

5.2 In Section A below, the United Kingdom sets out its case on the proper interpretation of article 206 of UNCLOS. As appears from sub-sections (i) and (ii), the threshold requirements of article 206 are not met in this case, while sub-section (iii) demonstrates that the nature of the obligation under article 206, which must correctly be seen in the context of the whole of section 4 of Part XII of UNCLOS, is quite different from that contended for by Ireland.

5.3 Section B sets out the history of the assessment of the potential effects of the MOX Plant, which is a history of compliance with the applicable domestic regulations and European Community and Euratom Directives. In this respect, it is to be noted that Ireland has at no point sought to challenge the relevant decisions, whether before the United Kingdom's domestic courts or the European Court of Justice, as it could have done. This history of compliance shows that, even if article 206 were to apply in this case, and even if Ireland's extreme case on its interpretation were to be adopted, the United Kingdom has without doubt complied with this provision.

5.4 Finally, Section C considers Ireland's case on what would be the consequence of a failure to comply with article 206. It is shown that the legal corollary of such a failure would not be an order requiring the cessation of operations at the MOX Plant. If it were right that the assessment of the impacts of the MOX Plant had been inadequate as of 1993 or 2001 (the two dates put forward by Ireland), the appropriate remedy if any violation of UNCLOS obligations were found would be the monitoring of impacts (which is in any

case ongoing).

A. THE MEANING OF ARTICLE 206

5.5 Article 206 of UNCLOS provides:

> "When States have reasonable grounds for believing that planned activities under their jurisdiction or control may cause substantial pollution of or significant and harmful changes to the marine environment, they shall, as far as practicable, assess the potential effects of such activities on the marine environment and shall communicate reports of the results of such assessments in the manner provided in article 205."

5.6 Three points stand out immediately:

1. For article 206 to apply at all, there must be "planned activities".

2. The State concerned must have reasonable grounds for believing that "substantial pollution of or significant and harmful changes to the marine environment" may be caused by those planned activities.

3. Notwithstanding the assumptions made by Ireland in Chapter 7 of its Memorial,[1] article 206 makes no reference specifically to an "environmental impact assessment" (in contrast, for example, to the 1991 UNECE Convention on Environmental Impact Assessment in a Transboundary Context (the "1991 Espoo Convention") on which Ireland places great emphasis[2]), and certainly does not require that the potential effects of planned activities be assessed by reference to any set formula.

(i) The need for "planned activities"

5.7 The substantive obligation under article 206 of UNCLOS arises only where there are "planned activities". It is common ground that article 206 came into force as between the parties to this Dispute on 24 August 1997.[3] The MOX Plant did not then constitute a "planned activity". As of August 1997, planning approval for the construction of the MOX Plant had long since been given (in February 1994) and the MOX Plant had been

[1] Chapter 7 of Ireland's Memorial is headed "Environmental Impact Assessment".
[2] See further at sub-section (iii) below.
[3] Memorial, paragraph 6.8.

constructed at a cost in excess of £400 million. Article 206 is not correctly construed as applying to any activity however far advanced beyond the planning stage. This appears most obviously from the extract of the *Virginia Commentary* set out at paragraph 7.8 of Ireland's Memorial: "Article 206 … is concerned with the assessment of planned activities *before* they are begun".

5.8 Further, if Ireland is right that article 206 is to be construed by reference to (*inter alia*) Directive 85/337/EEC, then this merely confirms that the threshold requirements of article 206 are not met as there was no "planned activity" as at August 1997. In Case C-81/96 *Burgemeester en Wethouders van Haarlemerleide en Paarnwoude v. Gede Puteerde Staten van Noord-Holland*, the European Court of Justice held that Directive 85/337/EEC would not apply to planning consent procedures commenced before the date for transposing the Directive into national law. The European Court held:

> "The reason for that is that the Directive is primarily designed to cover large-scale projects which will most often require a long time to complete. It would therefore not be appropriate for the relevant procedures, which are already complex at a national level and which were formally initiated prior to the date of the expiry of the period for transposing the directive, to be made more cumbersome and time-consuming by the specific requirements imposed by the directive, and for situations already established to be affected by it."[4]

While it is the United Kingdom's view that article 206 is not correctly construed by reference to Directive 85/337/EEC (see paragraphs 5.36 to 5.40 below), there is an obvious logic to the European Court's approach.

5.9 The position is even more clear in relation to Ireland's case on the indirect effects of the MOX Plant, i.e. its case that the commissioning of the MOX Plant will lead to intensification of the use of THORP, and that the United Kingdom has failed to identify and assess the effects of the related additional discharges.[5] Such alleged intensification and/or discharges cannot possibly constitute "planned activities". The points have already been made that (i) there are no present proposals for contracts for the reprocessing of additional volumes of spent fuel at THORP, and (ii) as appears from the Government White Paper, *Managing the Nuclear Legacy*, any proposals for new contracts for reprocessing of additional volumes of spent fuel at THORP, or for modification of existing contracts so as to reprocess further materials, will require the Secretary of State's approval, which will only be given if the contracts are *inter alia*

[4] 1998 ECR I-3923, paragraph 24.
[5] Memorial, paragraph 7.81.

"consistent with the UK's environmental objectives and international obligations".[6]

5.10 Article 206 cannot be applied prospectively to activities that may one day be planned in the future. There has been no decision or action by the United Kingdom on which to base a claim.[7] The allegation that the United Kingdom has breached article 206 by failing to identify and assess the effects of additional discharges into the Irish Sea arising from increased operation of THORP is therefore premature. The time for identifying and assessing the effects of additional discharges into the Irish Sea arising from additional reprocessing operations at THORP could only be when the decision-making process in relation to such additional operations is in train. The earliest a breach could be alleged would be when a decision had been taken without assessment of potential effects as required by article 206. This is all the more so in circumstances where the United Kingdom has stated that approval of further reprocessing contracts will only be given "*consistent with the UK's environmental objectives and international obligations*".

(ii) The need for "substantial pollution" or "significant and harmful changes"

5.11 The obligation under article 206 of UNCLOS to assess potential effects of planned activities arises only where a State has reasonable grounds for believing that planned activities under its jurisdiction or control may either (i) cause "substantial pollution" of the marine environment or (ii) cause "significant and harmful changes" to the marine environment.[8] There are two points to be made. First, the reference to "reasonable grounds" introduces an element of discretion for the State concerned.[9] Second, the threshold laid down is high:[10] the same test is not prescribed in any of the three instruments that Ireland focuses on in Chapter 7 of its Memorial:[11]

> 1. The 1987 UNEP Goals and Principles of Environmental Impact Assessment (the "1987 UNEP Goals and Principles") provide that a comprehensive environmental impact assessment should be undertaken where

[6] Memorial, Volume III, Part Two, pp. 324-325, paragraph 5.10.
[7] Cf: *Applicability of the Obligation to Arbitrate under Section 21 of the United Headquarters Agreement of 26 June 1947*, ICJ Reports, 1988, p. 12 at 30.
[8] For the meaning of "pollution" in UNCLOS, see Chapter 7 below.
[9] As the *Virginia Commentary* confirms, Vol. IV, p. 124, paragraph 206.6(b).
[10] See for example the Commentary to Article 2 of the ILC Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, concerning "Use of Terms", paragraph (4): Memorial, Volume III, Part One, p.369. See further under sub-section (iii) below.
[11] See paragraphs 7.6 and 7.17-7.23 of the Memorial.

"the extent, nature or location of a proposed activity is such that it is likely to *significantly affect* the environment" (Principle 1: emphasis added).

2. Directive 85/337/EEC provides for "the assessment of the environmental effects of those public and private projects which are likely to have *significant effects* on the environment" (Article 1(1): emphasis added).

3. The 1991 Espoo Convention requires an environmental impact assessment to be undertaken "prior to a decision to authorise or undertake a proposed activity listed in Appendix 1 that is likely to cause a *significant adverse transboundary impact*" (Article 2(3): emphasis added).

5.12 Such differences raise an immediate question as to Ireland's approach on interpretation, which is to treat article 206 of UNCLOS (which was negotiated in the 1970s and appears in a Convention concluded in 1982) as if it incorporated the 1987 UNEP Goals and Principles, Directive 85/337/EEC and the 1991 Espoo Convention. The point here, however, is that Ireland's case on breach of article 206 of UNCLOS falls at this initial hurdle also. Chapter 3 above has demonstrated that the United Kingdom had and has no reasonable grounds for believing that the MOX Plant may cause substantial pollution of or significant and harmful changes to the marine environment. The discharge from the MOX Plant is negligible; there are no grounds for believing that such discharge will cause substantial pollution; there is no prospect of significant and harmful changes to the marine environment as a result of the authorisation and operation of the MOX Plant.

5.13 It follows that, in the absence of "planned activities", and in circumstances where the United Kingdom did not (and does not) have reasonable grounds for believing that there may be substantial pollution of or significant and harmful changes to the marine environment, the obligation under article 206 to assess the potential effects of the MOX Plant does not come into play. This is the obvious and simple answer to Ireland's case on a violation of article 206.

(iii) The scope of the substantive obligation under article 206

5.14 It is only if the Tribunal were to find against the United Kingdom on the above threshold requirements that it would be necessary to look further at the nature of the substantive obligation under article 206 and Ireland's allegations as to the United

Kingdom's non-compliance. Ireland's case on the interpretation and application of article 206 is in essence as follows: article 206, interpreted in accordance with general rules of international law or instruments such as the 1987 UNEP Goals and Principles, Directive 85/337/EEC and the 1991 Espoo Convention, requires strict compliance with a specific and detailed environmental impact assessment procedure; although an assessment of sorts was carried out in 1993, this was inadequate by the standards then prevailing as well as by the standards prevailing at the time of the Decision of 3 October 2001 (these more recent standards, so it is said, are to be applied as there is an obligation to update an environmental impact assessment). It follows, it is said, that the United Kingdom has breached article 206 of UNCLOS, leading in turn to other breaches of UNCLOS, and the need to bring the operation of the MOX Plant to a halt.

5.15 The United Kingdom's position is that Ireland is wrong as to the nature of the substantive obligation under article 206. It is common ground that the provision is to be interpreted in accordance with the Vienna Convention on the Law of Treaties. There is nothing difficult about the interpretation of the substantive obligation in article 206. It contains just two elements for the Tribunal to consider: the State Party is required (i) as far as practicable, (ii) to assess the potential effects of planned activities on the marine environment.[12] The first of these elements makes it clear that what is required by way of assessment will depend on each individual case: what is practicable in relation to one set of circumstances, may and likely will differ from what is practicable in another case. As to the second element, there is no suggestion that the assessment has to be done in a particular way, or through some unspecified but developed procedure, such that the State's compliance with article 206 may be assessed on a scale of 1 to 10 or A to E.

5.16 Further, article 206 must be interpreted in the context of section 4 of Part XII of UNCLOS as a whole. The section is entitled "Monitoring and Environmental Assessment". There are only three articles. First, article 204 is concerned with monitoring the risks or effects of pollution of the marine environment. Under article 204(1), States are to endeavour, as far as practicable, to observe, measure, evaluate and analyse such risks and effects. Particular emphasis is then given in article 204(2) to continuous monitoring of on-going activities:

> "In particular, States shall keep under surveillance the effects of any activities which they permit or in which they engage in order to determine whether these

[12] There is of course a third element in the obligation, namely, to communicate reports of the results of assessments in the manner provided in article 205. However, no issue has been raised in respect of this element.

activities are likely to pollute the marine environment."

5.17 Pursuant to article 205, the results of such monitoring must be communicated either by way of publication of reports or provision of such reports to the competent international organisations, which should make them available to States.

5.18 The purpose of these provisions is to ensure that the State concerned but also other interested parties are kept informed of likely pollution to the marine environment. Article 206 then fits into this scheme.[13] The assessment that is required by article 206 is one that will enable decision-makers to be informed (subject to what is practicable) of potential impacts, and the results of which must be communicated as provided for by article 205. In this respect, it is to be noted that article 206 is not focused on transboundary impact. Articles 206 and 205 do not provide for the results of the article 206 assessment to be communicated to a potentially affected State, as would be expected in relation to potential transboundary impacts. Nor does article 206 suggest any prohibition where harm is predicted. The assessment under article 206 is simply part of an ongoing process of information gathering and sharing and, once a given activity has been put into operation, the obligation turns from one of predicting potential effects to one of monitoring actual effects (article 204). There is no suggestion of any obligation to carry out further assessments under article 206; indeed, this would be inconsistent with article 204.

5.19 Ireland relies on two sources to expand ("inform") the nature of the substantive obligation under article 206: general rules of international law, and international and regional instruments/legal regimes that set out detailed procedures for environmental impact assessment.

(a) *Rules of general international law*

5.20 According to Ireland, the obligation to carry out a specific kind of environmental impact assessment reflects a rule of general international law.[14] The prime support for this assertion is the Separate Opinion of Judge Weeramantry in *Case concerning the Gabcíkovo-Nagymaros Project*.[15] However, the view expressed by Judge Weeramantry in his Separate Opinion highlights a difference with the judgment of the Court. The

[13] See the *Virginia Commentary*, Vol. IV, pp. 122-123.
[14] Memorial, paragraph 7.8.
[15] ICJ Reports 1997, p. 7 at p. 111.

Tribunal will be aware that in the *Gabcíkovo-Nagymaros* case Hungary argued that there was an international legal obligation to carry out specifically an environmental impact assessment before the parties could proceed with the implementation of their treaty project (the construction and operation of two hydroelectric dams on the River Danube). What is striking in the light of this argument is that nowhere in its judgment did the Court even mention environmental impact assessment, let alone direct that one should take place. It found that the parties should "look afresh" at the effects of their 1977 treaty project on the environment.[16] It was evidently up to the parties how they chose to do this.[17]

5.21 There is nothing in the phrase "look afresh" that suggests that the parties could not, for example, have looked again at the studies that had already been carried out, or looked at the results from the monitoring of the ongoing impacts of the treaty project (so far as it had been put into operation). Ireland nonetheless elevates this indication to the parties in the *Gabcíkovo-Nagymaros* case into a principle of general application to the effect that an environmental impact assessment must be updated.[18] This is inconsistent with the approach of the Court, as appears even from the passage in the judgment on which Ireland relies:[19]

> "Owing to new scientific insights and to a growing awareness of the risks for mankind - for present and future generations - of pursuit of such interventions at an unconsidered and unabated pace, new norms and standards have been developed, set forth in a great number of instruments during the last two decades. Such new norms have to be taken into consideration, and such new standards given proper weight, not only when States contemplate new activities but also when continuing with activities begun in the past. … For the purposes of the present case, this means that the Parties together should look afresh at the effects on the environment of the operation of the Gabcíkovo power plant."[20]

5.22 The International Court was very cautious in its choice of language and was wary even of binding Hungary and Slovakia as to their future actions, let alone creating

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[16] ICJ Reports1997, p. 7 at p. 78 (paragraph 140). According to Hungary, the project was considerably older than this 1977 date suggested. It alleged that the project was conceived in the 1950s and designed in the 1960s.
[17] ICJ Reports 1997, p. 7 at pp. 78 (paragraph 141) and 83 (paragraph 155(2)(B)).
[18] Memorial, paragraphs 7.27-7.32.
[19] Memorial, paragraph 7.29.
[20] ICJ Reports 1997, p. 7 at p. 78 (paragraph 140). The passage continues: "In particular they must find a satisfactory solution for the volume of water to be released into the old bed of the Danube and into the side-arms on both sides of the river." This is of relevance as the injunction "they must find a satisfactory solution" is to be contrasted with the softer language of "should look afresh".

principles of general application.[21] The only principle of general application that may be deduced from this passage is that new norms (if any) are to be taken into consideration and new standards (if any) are to be given proper weight when continuing with activities begun in the past. This would only be relevant if Ireland could show (i) a new norm or standard that (ii) the United Kingdom had failed to take into consideration/accord proper weight (iii) in breach of the obligation under article 206 of UNCLOS. It can show none of these.

5.23 Further, as already noted, the approach under UNCLOS is not that an environmental assessment should be updated, but rather that the effects of activities should be monitored (article 204).

5.24 Ireland also refers to article 7 of the ILC Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, entitled "Assessment of risk".[22] Ireland does not expand the contention that the Draft Articles contain rules of general international law but, leaving this to one side, draft article 7 does not anyway assist Ireland for three reasons:

1. The threshold for the application of the Draft Articles would not be met in relation to the MOX Plant. Draft article 2(a) requires a "risk of causing significant transboundary harm" which, according to the Commentary, "must lead to a real detrimental effect on matters such as, for example, human health, industry, property, environment or agriculture in other States", and which "must be susceptible of being measured by factual and objective standards".[23] As is clear from Chapter 3 above, there is no prospect of the MOX Plant leading to such a real detrimental effect.

2. Draft article 7 requires an "assessment of the possible transboundary harm" of an activity, "including any environmental impact assessment". It does not formulate an obligation to carry out a specific type of assessment, and there is no attempt to prescribe what the contents of the assessment should be. This is

[21] Professor Lowe has described "a caution and a delicate ambiguity in the phrasing of the passage". He continues: "The Court affirms the 'development' of 'new norms and standards' and asserts that the norms have to be taken into consideration and the standards given proper weight - phrasing that suggests that the norms do not bind as rules of law bind, and that the standards are not mandatory". V. Lowe, "Sustainable Developments and Unsustainable Arguments", in *International Law and Sustainable Development*, eds. Boyle and Freestone, Oxford, 1999, p. 20.
[22] Memorial, paragraph 7.9.
[23] Commentary, Article 2, at paragraph (4): Memorial, Volume III, Part One, p.369.

spelt out in terms in the Commentary: "The article does not specify what the content of the risk assessment should be". Further, the Commentary notes: "Most existing international conventions and legal instruments *do not* specify the content of assessment".[24]

3. Draft article 7 also envisages that "[t]he specifics of what ought to be the content of assessment is left to the domestic laws of the State conducting such assessment".[25]

5.25 It follows that ILC draft article 7 strongly undermines the contention that there is an obligation to carry out a specific and defined type of environmental impact assessment as a general rule of international law.

5.26 Ireland's contention as to the purpose of an environmental impact assessment – to "minimize environmental risks" – must also be viewed with caution.[26] An environmental impact assessment is no more than a tool to inform decision-makers and other parties at an early stage of the potential impacts of a project;[27] it is not a means of ensuring that the adverse environmental impacts of projects are necessarily mitigated or eliminated, or that projects with adverse environmental impacts do not go ahead. If this were so, much development would cease altogether. As recently explained by John H. Knox:

> "… EIA systems virtually never *require* states to adopt mitigative measures, much less to disapprove projects because of their environmental effects. EIA is designed to provide a decision maker and the public with information about the environmental consequences of a proposal, not to force an environmentally correct decision."[28]

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[24] Commentary, Article 7, at paragraph (6), emphasis added: Memorial, Volume III, Part One, p.385.
[25] Commentary, Article 7, at paragraph (7): Memorial, Volume III, Part One, p.386. Insofar as article 206 is concerned, this would follow from the elements of discretion that are allowed to States, both in terms of the threshold of "reasonable grounds" for believing that planned activities may cause substantial pollution etc., and in terms of the obligation being "as far as practicable" to assess the potential effects of activities.
[26] Memorial, paragraph 7.10. Cf. the passage from the *Virginia Commentary* (Vol. IV, p. 122) set out at Memorial, paragraph 7.8. This refers to the purpose of controlling activities and keeping other States informed "of the potential risks and effects" of planned activities. This is quite different.
[27] See, for example, the *Virginia Commentary*, Vol.V, p. 122. Also, the view expressed by Ireland's expert, Mr Sheate: "An EIA is intended to inform the decision-making process, so that decision-makers are aware of the environmental consequences of their decisions and that the process is transparent". Memorial, Vol. II, p. 201.
[28] "The Myth and Reality of Transboundary Environmental Impact Assessment", 96 AJIL (2002), vol. 96. This is a pertinent article in the context of the present case as it examines the "dominant story of transboundary environmental impact assessment in international law" and demonstrates that such regional agreements as there are that concern transboundary environmental impact assessment do not conform to this "dominant story" (p. 291 at 298): "The dominant story of transboundary environmental impact

5.27 The scheme of section 4 of Part XII, and the language of articles 204 and 206, are entirely consistent with this approach.

(b) *Global and regional instruments*

5.28 Ireland relies heavily on three instruments – the 1987 UNEP Goals and Principles, Directive 85/337/EEC and the 1991 Espoo Convention – to give "greater precision" to article 206.[29] It is not clear why article 206 should be thought to require "greater precision", or why this Tribunal should properly be invited to give the "greater precision". Article 206's terms are neither vague nor ambiguous. The reality is that for Ireland to have any prospect of showing a breach of article 206, it must radically expand and change the nature of the obligation that it contains.

5.29 Ireland relies on two tools to incorporate the above instruments into article 206.[30] First, it is said that these instruments are relevant as a guide to the interpretation of article 206 on the basis that they form part of its context for the purposes of article 31(1) of the Vienna Convention. Second, reliance is placed on article 293(1) of UNCLOS, the premise being that the 1987 UNEP Goals and Principles, Directive 85/337/EEC and the 1991 Espoo Convention constitute "other rules of international law not incompatible with this Convention" which the Tribunal should take account of. There is a series of points to be made:

1. Article 206 does not, in terms or by implication, refer to or incorporate by reference other international instruments.[31] In this respect, it may be contrasted with many other provisions of UNCLOS.

2. The three instruments on which Ireland relies are different in nature and

assessment in international law has the following elements: (1) customary international law prohibits transboundary pollution; (2) according to the classic version of this prohibition, contained in Principle 21 of the 1972 Stockholm Declaration, states must ensure that activities within their territory or under their control do not harm the environment beyond their territory; (3) to ensure that activities within their jurisdiction will not cause transboundary harm, states must assess the potential transboundary effects of the activities; and (4) to that end, states enter into international agreements requiring them to carry out transboundary environmental impact assessment (transboundary EIA) for activities that might cause transboundary harm. Despite its popularity, this story is not true." (p. 291)

[29] Memorial, paragraph 7.16.

[30] Memorial, paragraph 7.6.

[31] Ireland's contention (Memorial, paragraph 7.16) that article 206 achieves this through the term "as far as practicable" is far-fetched.

scope to article 206 of UNCLOS. To import into article 206, wholesale, obligations derived from these instruments would be to expand and change the nature of that article. It would also be inconsistent with the approach under the ILC Draft Articles.[32]

3. It is inappropriate to present a series of instruments agreed after the conclusion of UNCLOS as the context of article 206 for the purposes of article 31(1) of the Vienna Convention. This is all the more so given that Ireland makes no reference to the obvious context of article 206, namely section 4 of Part XII of UNCLOS.

4. Whilst pursuant to article 31(3)(c) of the Vienna Convention the Tribunal may take account of any "relevant rules of international law applicable in the relations between the parties", this does not lead to the incorporation of requirements under instruments that apply in different circumstances, or are different in substance or nature, or are not rules of international law applicable in the relations between the parties. A more rigorous approach is required.[33] For example, the Tribunal may wish to look at the 1987 UNEP Goals and Principles, but these do not contain rules of international law.[34] For example, Directive 85/337/EEC forms part of a highly developed regional legal order, which has its own dispute settlement system that Ireland has chosen not to employ. It is self-evident that if Ireland had wished to raise issues of the interpretation or application of this Directive it could and should have raised them before the appropriate European *fora*.[35] Indeed, in so far as it relies on the Directive, Ireland is bound by the Treaty establishing the European Community not to have recourse to other dispute settlement procedures, such as those under UNCLOS. A similar point may be made in relation to the 1991 Espoo Convention, which contains its own provisions for the resolution of disputes, and which Ireland only ratified in July 2002 (the treaty came into force for Ireland in October 2002), such that it did

[32] See paragraphs 5.25-5.26 above.

[33] The limits in the application of article 31(3)(c) of the Vienna Convention and article 293(1) of UNCLOS have already been considered in Chapter 4 above.

[34] The same of course may be said for Chapter 17 of Agenda 21. It is noted that Ireland does not refer to Principle 17 of the 1992 Rio Declaration ("Environmental impact assessment, as a national instrument, shall be undertaken for proposed activities that are likely to have a significant impact on the environment and are subject to a decision of a competent authority"). As discussed in Section B below, the United Kingdom has satisfied this principle.

[35] As discussed in Section B below, Directive 85/337/EEC does form part of the legal regime that was applied to the assessment of the impacts of the MOX Plant. Despite this, Ireland never sought to pursue the remedies available to it in respect of the Directive as a matter of EC law.

not constitute a rule of international law applicable in the relations between the Parties at a date relevant to the present Dispute. The Tribunal should be very wary of allowing Ireland to pick just the elements from these instruments that suit its current case, and to ignore the checks and balances otherwise built into each instrument, and to ignore the issue of the substantive rights that it might (or might not) have under each instrument.

5. For any of the instruments to apply Ireland would have to show a likelihood of a significant adverse impact on the environment. Ireland cannot meet the more stringent threshold for application of article 206,[36] but it would not be able to meet the threshold for the application of these instruments either.[37]

5.30 To these general points, it must be added that when Ireland comes to formulating its common list of what the 1987 UNEP Goals and Principles, Directive 85/337/EEC and the 1991 Espoo Convention require by way of environmental impact assessment, it leaves out anything in the instruments that suggests that the requirements are anything other than absolute. For example, Principle 5 of the 1987 UNEP Principles provides:

"The environmental effects in an EIA should be assessed with a degree of detail commensurate with their likely environmental significance."[38]

This is of obvious importance in the instant case where the only issue of environmental impact is radioactive discharges, and such discharges are negligible. Yet Principle 5 is ignored by Ireland.

5.31 A second example of the selective use of these instruments is the obligation that Ireland portrays in terms of the required contents of an environmental impact assessment, notably with regard to giving a description of alternatives and providing an outline for monitoring programmes.[39] In both cases, the relevant text relied on merely allows that such should be provided "where appropriate". It is not that any such requirements would

[36] See paragraph 5.11 above.
[37] It is to be recalled in this respect that Ireland would have to get round the Opinion of the European Commission that "the implementation of the plan for the disposal of radioactive wastes arising from the operation of the BNFL Sellafield mixed oxide fuel plant, both in normal operation and in the event of an accident of the magnitude considered in the general data, is not liable to result in radioactive contamination significant from the point of view of health, of the water, soil or airspace of another Member State." See paragraphs 2.20-2.22 above.
[38] See also Article 3 of Directive 85/337/EEC which makes it clear that what is "appropriate" by way of environmental impact assessment will depend on "each individual case".
[39] Memorial, paragraph 7.25, third and eighth indents.

be problematic for the United Kingdom;[40] but if Ireland were trying to deduce common principles, it would need to portray more accurately what States had been willing to agree to in these instruments.

5.32 In conclusion, Ireland encourages the Tribunal to import an extended code into article 206 that goes far beyond the ordinary meaning of its terms in their actual context. This is because, in the light of the considerable attention that the United Kingdom has paid to the potential effects of the MOX Plant, pursuant to the ordinary meaning of article 206, there has self-evidently been no breach. It is this considerable attention to potential effects, and the United Kingdom's compliance with applicable domestic and European regulations, that is considered in Section B below.

B. COMPLIANCE WITH APPLICABLE LEGAL REQUIREMENTS

5.33 A considerable part of Chapter 7 of Ireland's Memorial is devoted to BNFL's 1993 Environmental Statement and the alleged inadequacies of that document. In support of its position, Ireland has annexed a review of the 1993 Statement carried out according to criteria as at 1992 and as at 2001. None of this is of assistance to the Tribunal:

1. The criteria that Ireland and its expert (Mr Sheate) apply are not compliance with the applicable domestic or European legal requirements; nor, of course, are they compliance with the requirements of article 206 of UNCLOS (which, in any event, was not in force in 1993). In particular, at the time of the 1993 Environmental Statement there was no legal requirement for an environmental statement to cover: scoping; consideration of alternatives; description of methodologies; consideration of deactivation or decommissioning; consideration of accident scenarios; consideration of cumulative impacts; public consultation beyond publication of the Environmental Statement; description of forecasting methods; description of residuals; or for statements as to significance to be verifiable.

2. Mr Sheate's review proceeds on the assumption that the relevant authorising body, Copeland Borough Council, gave its planning approval to the MOX Plant without requiring further information from BNFL to supplement the

[40] As appears from the discussion (Section B below) of the United Kingdom's compliance with the legal regimes that do apply to the assessment of the impacts of the MOX Plant.

1993 Environmental Statement.[41] This is wrong. Further information was requested – and supplied – on two occasions.[42]

3. Ireland leaves out of account all the other assessments of the potential effects of the MOX Plant. In particular, it fails to consider the Submission of the United Kingdom and Opinion of the European Commission under Article 37 of the Euratom Treaty, as well as the assessment of the United Kingdom Environment Agency set out in the Proposed Decision of October 1998.

5.34 The relevant facts are considered further below in the context of the applicable legal requirements (although these requirements are not, of course, within the jurisdiction of this Tribunal). It is shown that the United Kingdom has complied with applicable domestic and European regulations.

(i) Assessment of the Potential Effects of the MOX Plant: Applicable Legal Requirements

5.35 Although the Environmental Statement that was prepared by BNFL in October 1993 was submitted on a voluntary basis, as opposed to being required because the MOX Plant was considered likely to have significant impacts on the environment, its adequacy was considered by reference to the Town and Country Planning (Assessment of Environmental Effects) Regulations 1988 (the "1988 Regulations"). These Regulations implemented Directive 85/337/EEC in the law of England and Wales.

(a) Directive 85/337/EEC

5.36 Directive 85/337/EEC required Member States to adopt by July 1988 "all measures necessary to ensure that, before consent is given, projects likely to have significant effects on the environment by virtue *inter alia*, of their nature, size or location are made subject to an assessment with regard to their effects" (Article 2(1)).[43] Pursuant to Article 4, an environmental impact assessment was mandatory for various project types listed in Annex I, and within the discretion of the Member State for project types

[41] Memorial, Volume II, p. 202.
[42] See paragraph 5.48 below.
[43] Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment, OJ 1985 L 175/40. This Directive has now been amended by Directive 97/11/EC, OJ 1997 L 73/5. However, Directive 97/11/EC has no application to projects in respect of which a request for a development consent was submitted prior to March 1999 (Article 3(2)). It appears to be common ground that Directive 97/11/EC is of no relevance to this case. Memorial, paragraph 7.21.

listed in Annex II. The MOX Plant falls within Annex II under the rubric "3. Energy industry … (g) Installations for the production or enrichment of nuclear fuels".[44]

5.37 Article 3 of Directive 85/337/EEC prescribes the contents of the environmental impact assessment in the following terms:

> "The environmental impact assessment will identify, describe and assess in an appropriate manner, in the light of each individual case and in accordance with Articles 4 to 11, the direct and indirect effects of a project on the following factors:
> - human beings, fauna and flora,
> - soil, water, air, climate and the landscape,
> - the inter-action between the factors mentioned in the first and second indents,
> - material assets and the cultural heritage."

5.38 Hence, the broad subject-matter of an environmental impact assessment under Directive 85/337/EEC is clear, although the specific approach in any given case will depend to a degree on what is appropriate. This is emphasised by Article 5, which provides further detail as to what is to be contained in the environmental impact assessment. Article 5(1) allows a measure of discretion to the Member State (by reference to Annex III) in terms of the precise content of the assessment for a given case or type of project. Article 5(2) establishes what is mandatory in terms of the contents of the assessment. Article 5(2) provides:

> "The information to be provided by the developer in accordance with paragraph 1 shall include at least:
> - a description of the project comprising information on the site, design and size of the project,
> - a description of the measures envisaged in order to avoid, reduce and, if possible, remedy significant adverse effects,
> - the data required to identify and assess the main effects which the project is likely to have on the environment,
> - a non-technical summary of the information mentioned in indents 1 to 3."

5.39 Article 7 of Directive 85/337/EEC makes special provision for those projects likely to have significant effects on the environment of another Member State:

> "Where a Member State is aware that a project is likely to have significant effects on the environment in another Member State or where a Member State likely to

[44] Cf. Memorial, paragraph 7.21, where it appears to be implied that the MOX Plant falls within the rubric of "Nuclear power stations" or "Radioactive waste processing and/or storage installations" under Annex I to the Directive. This is obviously wrong.

be significantly affected so requests, the Member State in whose territory the project is intended to be carried out shall forward the information gathered pursuant to Article 5 to the other Member State at the same time as it makes it available to its own nationals. Such information shall serve as a basis for any consultations necessary in the framework of the bilateral relations between two Member States on a reciprocal and equivalent basis."

5.40 Ireland does not focus on this provision. In effect, Article 7 allows another Member State to participate in the environmental impact assessment procedure, and to pursue any concerns by way of consultations. There is nothing here to suggest that, even where significant transboundary harm has been predicted as a result of the environmental impact assessment, the project in question will be prohibited.

(b) *The 1988 Regulations*

5.41 Regulation 4 of the 1988 Regulations provides that planning permission may not be granted unless environmental information has been considered. Pursuant to regulation 2(1) and Schedule 2 of the 1988 Regulations, an environmental statement is required for certain listed projects if they are likely to have "significant effects on the environment by virtue of factors such as [their] nature, size or location". Schedule 2, paragraph 3(g) includes (like Annex II of Directive 85/337EEC) "an installation for the production or enrichment of nuclear fuels". The MOX Plant would fall within this rubric, but only if the additional test of being "likely to have significant effects on the environment" was satisfied.

5.42 The main document required by the 1988 Regulations is the environmental statement. The contents of the environmental statement are set out at Schedule 3 to the 1988 Regulations. Certain information as set out in paragraph 2 (defined as the "specified information") is to be provided in the environmental statement, whilst the information set out in paragraph 3 may be included "by way of explanation or amplification of any specified information". The specified information under paragraph 2 comprises:

"(a) a description of the development proposed, comprising information about the site and the design and size or scale of the development;

(b) the data necessary to identify and assess the main effects which that development is likely to have on the environment;

(c) a description of the likely significant effects, direct and indirect, on the

environment of the development, explained by reference to its possible impact on: human beings; flora; fauna; soil; water; air; climate; the landscape; the interaction between any of the foregoing; material assets; the cultural heritage;

(d) where significant adverse effects are identified with respect to any of the foregoing, a description of the measures envisaged in order to avoid, reduce or remedy those effects; and

(e) a summary in non-technical language of the information specified above."

(c) Article 37 of the Euratom Treaty

5.43 Directive 85/337/EEC and the 1988 Regulations constitute one aspect only of the relevant regulatory background. As already discussed in Chapter 2 above, Article 37 of the Euratom Treaty requires Member States to provide the Commission with information relating to any plan for the disposal of radioactive waste. This is to enable the Commission to determine whether the implementation of a plan is liable to result in the radioactive contamination of the water, soil or airspace of another Member State. Ireland is dismissive of the Article 37 procedure.[45] Yet it is precisely a procedure of the type envisaged by section 4 of Part XII of UNCLOS, as it requires an assessment of potential effects (article 206) and provision of the results of such an assessment to a competent international organisation (article 205).

(d) Justification under Directive 96/29/Euratom

5.44 In addition, as part of the justification required pursuant to Directive 96/29/Euratom,[46] an assessment of the impacts of a project may be required to ensure that a practice resulting in exposure to ionising radiation is justified in advance of being first adopted or first approved by its economic, social or other benefits in relation to the health detriment it may cause.

(e) The Review Criteria applied by Mr Sheate do not constitute applicable legal requirements

5.45 A distinction must be drawn between legal requirements and review criteria – such as those applied by Mr Sheate – which have no legal effect and seek to define or reflect best practice. There is no dispute about this. As Mr Sheate explains, there is a

[45] Ireland's Memorial, paragraph 7.58.
[46] Directive 96/29/Euratom of 13 May 1996 laying down Basic Safety Standards (OJ 1996 L 159/1).

range of review criteria available, but all seek to evaluate environmental statements against best practice in addition to the legal requirements of the European Directive:

"ESs, therefore, are assessed against a benchmark of international best practice rather than just the minimum requirements, thereby encouraging improvement and innovation in the industry".[47]

The Tribunal is not, of course, concerned with improvement and innovation; its function is the interpretation and application of the provisions of UNCLOS.

5.46 It is immediately evident from Mr Sheate's report that he is not concerned with testing the 1993 Environmental Statement against the applicable law. He criticises the Statement's "inadequate treatment of key areas", listing lack of scoping, lack of consideration of impacts other than direct effects, lack of consideration of alternatives, inadequate baseline data, lack of significance evaluation methodology, inadequate consideration of decommissioning, lack of consideration of accidents, and general lack of description of assessment methodologies.[48] The important point is that (even outside UNCLOS) there was no legal requirement to consider such matters. The only exception is that paragraph 2(c) of Schedule 3 to the 1988 Regulations requires a description of likely significant effects, direct and indirect. But there is no basis for criticism of the 1993 Environmental Statement in this regard since: (i) direct and indirect effects were considered (see paragraph 5.51 below), and (ii) radioactive discharges from the MOX Plant are negligible. Further, the alleged failure to consider indirect effects is in respect of THORP. The question whether the MOX Plant will lead to increased operation of THORP is uncertain even today. This was *a fortiori* the case in 1993-1994.

(ii) Assessment of the Potential Effects of the MOX Plant: Compliance with the Applicable Legal Requirements

(a) *The 1993 Environmental Statement and Planning Approval for the MOX Plant*

5.47 In October 1992, BNFL lodged an application for planning approval of the MOX Plant. In the ensuing months, the planning authority, Copeland Borough Council, made various requests for and was supplied with information on the impact of discharges from the MOX Plant. At this stage, no environmental statement under the 1988 Regulations had been prepared by BNFL on the basis that the MOX Plant was not "likely to have

[47] Memorial, Volume II, p. 206, paragraph 2.3.
[48] Memorial, Volume II, p. 201, Executive Summary.

significant effects on the environment" and therefore fell outside the scope of Schedule 2 to the Regulations. On 28 July 1993, in a letter to the United Kingdom's Department of the Environment, Ireland's Department of Transport, Energy and Communications stated its view that an extensive environmental impact assessment was required as a matter of European and United Kingdom legislation. The letter concluded:

> "We are most concerned that the full environmental effects of the proposed MOX plant should be considered and I would feel obliged to take the matter up with the EC Commission if this was not the case."

5.48 In the event, in September 1993, BNFL decided, voluntarily, to produce an environmental statement. BNFL's Environmental Statement was submitted to Copeland Borough Council in October 1993 and a copy was sent to Ireland's Department of Transport, Energy and Communications on 27 October 1993. Shortly afterwards (on 12 November 1993), Ireland sent to Copeland Borough Council a submission detailing objections to the grant of planning permission for the MOX Plant.[49] This submission included a section detailing inadequacies in the Environmental Statement. The impression is given in Chapter 7 of Ireland's Memorial that Ireland's concerns were never considered and that the decision on planning permission was taken solely by reference to the information in the Environmental Statement. Neither is correct:

1. On 16 November 1993, Copeland Borough Council sent Ireland's submission to BNFL with a particular request that the concerns voiced in respect of the Environmental Statement be addressed.

2. On 17 January 1994, BNFL submitted a document entitled "Proposed Sellafield MOX Plant, Response to Queries raised by Copeland Borough Council" (the "supplementary information").[50] This document was sent to Ireland's Department of Transport, Energy and Communications on 18 January 1994.

3. On 28 January 1994, Copeland Borough Council required BNFL to address some outstanding points.

4. On 2 February 1994, Ireland's Department of Transport, Energy and

[49] Memorial, Volume III, Part One, p. 89. Note that this document is incorrectly dated 1994.
[50] Copeland Borough Council Report, Outline Planning Application for MOX Fuel Fabrication Plant, 22 February 1994 (**Annex 21)**.

Communications wrote to Copeland Borough Council to state its view that its concerns had not been addressed by BNFL's further document.

5. On 4 February 1994, BNFL submitted a document entitled "Proposed Sellafield MOX Plant, Further information in support of outline planning permission" (the " further supplementary information").[51]

6. On 22 February 1994, Copeland Borough Council considered BNFL's application for outline planning permission in respect of the MOX Plant. The report prepared for the meeting shows that the Council had sought a review of the Environmental Statement by the Institute of Environmental Assessment and that, in response to concerns raised, the further information had been supplied by BNFL. The Council had come to the conclusion that the Environmental Statement (including the supplementary information and further supplementary information submitted by BNFL) appeared to comply with the 1988 Regulations and that the environmental consequences of the MOX Plant had been adequately addressed.[52]

7. On 23 February 1994, outline planning permission was granted. This permission was subject to the proviso that the MOX Plant could not be brought into use without notification to the Council that all required licences under the Radioactive Substances Act and the Nuclear Installations Act had been received.

5.49 The brief history of the events above shows that the relevant authority, Copeland Borough Council, was careful to ensure that it had sufficient information on which to make a decision and that the information it had received complied with the applicable legal requirements, and that the information was considered prior to the grant of planning permission (as required by regulation 4 of the 1988 Regulations).

5.50 The resulting outline planning permission was, of course, a public document. It was open to Ireland, if it considered that the outcome of the planning consent procedure was inconsistent with domestic or European law, to take steps to enforce such law in the appropriate *fora*. Indeed, this is what Ireland had foreshadowed in its letter of 28 July 1993 in saying that it would feel obliged to take the matter up with the European Commission if the full environmental effects of the proposed MOX Plant were not

[51] Contained in **Annex 21**.
[52] Ibid.

considered. This was presumably a reference to seeking action from the Commission under Article 226 of the European Community Treaty on the grounds of a failure by the United Kingdom to fulfil its obligations in respect of Directive 85/337/EEC. No such action was ever taken so far as the United Kingdom is aware. Further, it will be recalled that pursuant to Article 7 of Directive 85/337/EEC it was open to Ireland to seek consultations with the United Kingdom insofar as it considered that the planning permission had been based on an inadequate application of domestic or European law. Again, it did not do so. Nor did it seek to challenge the decision in relation to planning permission in the English courts.

5.51 The obvious conclusion is that Ireland did not think that there had been any breach of domestic or European law. Nor has there been any such breach. The criteria laid down by the 1988 Regulations and Directive 85/337/EEC were satisfied as follows:

1. *A description of the development proposed, comprising information about the site and the design and size or scale of the development*: This is contained at sections 3-4 of the Environmental Statement, section 7 of the supplementary information, and sections 1-2 of the further supplementary information.

2. *The data necessary to identify and assess the main effects which that development is likely to have on the environment*: This is contained at paragraphs 4.35 and 5.48 to 5.51 of the Environmental Statement, sections 2 and 5 of the supplementary information, and sections 3 and 4 (page 6) of the further supplementary information.

3. *A description of the likely significant effects, direct and indirect, on the environment of the development, explained by reference to its possible impact on: human beings, soil, flora, fauna, water, air, climate, the landscape, the interaction between any of the foregoing, material assets, and the cultural heritage*: This is contained at paragraphs 5.31-5.101 of the Environmental Statement, sections 5 and 8 of the supplementary information, and section 3 of the further supplementary information.

4. *Where significant effects are identified with respect to any of the foregoing, a description of the measures envisaged in order to avoid, reduce or remedy those effects*: This is contained at section 2 of the supplementary information, and section 4 of the further supplementary information.

5. *A summary in non-technical language of the information specified above*: This is contained at pages (i) to (v) of the Environmental Statement.

5.52 Thus, the mandatory requirements of domestic and European law relating to the contents of the Environmental Statement were satisfied. In addition, however, in certain respects the non-mandatory criteria relating to the contents of an environmental statement were also satisfied, as appears from paragraph 5.54 below. Further, Ireland takes no account of the fact that the approach under Directive 85/337/EEC and the 1988 Regulations is to ensure an assessment of impacts that is appropriate in the light of the individual case.[53] The aim of the Environmental Statement was to consider what were likely to be the significant effects of the proposed development and, in respect of the matters relevant to these proceedings, the conclusion reached was that radiation doses resulting from the MOX Plant would be negligible. This conclusion informed other aspects of the Environmental Statement.[54]

(b) *The United Kingdom's Submission under Article 37 of the Euratom Treaty; assessment in the context of the justification exercise*

5.53 Ireland proceeds on the basis that the assessment of the impacts of the MOX Plant stopped with the 1993 Environmental Statement. This is not so. Reference has already been made to the supplementary information and further supplementary information provided by BNFL, which Ireland fails to take into account. In addition:

1. In May 1996, in accordance with its obligations under Article 37 of the Euratom Treaty, the United Kingdom submitted the required General Data on the MOX Plant with a view to enabling the European Commission to determine "whether the implementation of such plan is liable to result in the radioactive contamination of the water, soil or airspace of another Member State".[55] Ireland is notably defensive in its Memorial about the Article 37 Opinion.[56] In particular, it is said that the Opinion only addresses human health-related aspects of MOX discharges and not environmental aspects. Whilst this is a somewhat artificial distinction, it is not in any event on point. The issue in terms of the United

[53] See also Principle 5 of the 1987 UNEP Goals and Principles.
[54] Ireland has no case on impacts other than in terms of radioactive discharges.
[55] Memorial, Volume III, Part Three, p. 407.
[56] Memorial, paragraph 7.58. The Article 37 Opinion (Memorial, Volume III, Part Three, p. 473) has already been considered in Chapter 2 above.

Kingdom's obligations under article 206 of UNCLOS is whether the Article 37 Submission, not the Opinion, addresses the potential effect of the MOX Plant on the marine environment. It does. For the purpose of the Opinion, the United Kingdom was required to, and did supply, an assessment of the radiological consequences to the environment as well as data on radioactivity in air, water and soil, as well as food chains and about monitoring programmes.[57] Those data were considered by the experts for the purposes of the Opinion.[58] The European Court has rejected the suggestion that the Article 37 process is restricted in the way that Ireland now suggests.[59]

2. In the context of the justification exercise, the United Kingdom's Environment Agency carried out a detailed assessment of the effects of the MOX Plant. This is contained in the Proposed Decision of October 1998. As appears from the Proposed Decision, the Environment Agency in carrying out its functions has regard to the concept of sustainable development.[60] The main consideration of the potential effects of the MOX Plant is to be found at Appendices 3 and 4 to the Proposed Decision. In particular, from a brief review of Appendix 4, it may be seen that the Agency considered: radioactive discharges; waste management; health and safety; transport; proliferation of nuclear weapons; the plutonium stockpile and inventory; safety of MOX fuel in nuclear reactors; wildlife; and sustainable development.

5.54 At paragraph 7.51 of its Memorial, Ireland lists various matters that it says were not dealt with in the Environmental Statement. Although there is no basis for suggesting that many of these would have been required under Directive 85/337/EEC or the 1988 Regulations, it is to be noted that, insofar as they are not already covered in the Environmental Statement (excluding the two tranches of supplementary information), all are covered by at least one of: the supplementary information and further supplementary provided by BNFL, the Article 37 Submission and the Proposed Decision of October 1998.

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[57] Commission Recommendation 91/4 Euratom of 7 December 1990, OJ 1991 L 6/16.

[58] Indeed, the purpose of the procedure for Opinions under Article 37 of the Euratom Treaty is "to forestall any possibility of radioactive contamination of another Member State". Commission Recommendation 1999/829/Euratom of 6 December 1999, OJ 1999 L 324/23.

[59] In Case 187/87, *Saarland v Minister for Industry* [1988] ECR 5013 at 5040, paragraph 11, the European Court stated: "the provisions of the chapter of the Euratom Treaty entitled 'Health and Safety" form a coherent whole, conferring on the Commission powers of some considerable scope in order to protect the population *and the environment* against the risks of nuclear contamination". It recently reiterated that statement in Case C-29/99, *Commission v Council*, 10 December 2002, paragraph 79.

[60] At paragraph A2.9. This forms part of its principal aim. Memorial, Volume III, Part Two, p. 363.

1. *Alleged failure to consider effects on the marine environment*: This is dealt with in the general context of radioactive discharges and radiation doses; also specifically at section 2.1.8 and 7.5 of the Article 37 Submission.[61]

2. *Alleged failure to assess the consequences of transport and other accidents:* An assessment of accident scenarios is to be found at section 6 of the Article 37 Submission, including a consideration of a worst case accident scenario and the impact to the Irish critical group in such a case. An assessment of transport issues is to be found at paragraphs A4.126 to A4.140 of the Proposed Decision.

3. *Alleged failure to provide information on doses that might be received by members of the public in Ireland*: This information is provided at sections 3.4.2, 4.2.1 and 6.3.1 and Appendices 1-3 of the Article 37 Submission.

4. *Alleged failure to take proper account of topography, geology, seismology and meteorology*: These factors are all considered under section 1 of the Article 37 Submission. In particular, under section 1.3, "Hydrology", express reference is made to the gyre on which Ireland now places so much emphasis.[62]

5. *Alleged failure to provide information on production processes*: Such information is provided at section 7 of the supplementary information, section 1 of the further supplementary information, and section 2 of the Article 37 Submission.

6. *Alleged failure to provide information on effluents and wastes*: Such information is provided at sections 3, 4 and 5 of the Article 37 Submission, and at paragraphs A4.98 to A4.119 of the Proposed Decision.

7. *Absence of information on decommissioning*: Such information is provided at section 4 of the supplementary information and section 2.5 of the Article 37 Submission.

8. *Alleged failure to provide information on environmental monitoring*

[61] And see paragraph 5.43 above.
[62] Cf. Memorial, paragraph 1.8.

programmes: Such information is provided under section 7 of the Article 37 Submission.

5.55 In this last respect, the Tribunal will recall that, as described in some detail in Chapter 3, the United Kingdom continues to monitor all possible impacts of the MOX Plant in the context of the general monitoring of discharges from the Sellafield site.[63]

5.56 It may be added that Ireland's contention that there must be an environmental impact assessment in relation to transports shows a lack of awareness as to how maritime transports are regulated. If Ireland were right that an environmental impact assessment must specifically cover maritime transport of hazardous goods to and from a given activity involving such goods, it would follow that such an assessment would be needed, by way of example, for every port in the world handling ships carrying crude oil in respect of the hazards involved in that transport. This is obviously not the case. Maritime transports of radioactive materials are subject to the detailed and stringent regulations which are described in Chapter 2 above, and which are implemented in the United Kingdom to a standard that represents international good practice.[64]

5.57 It follows that the United Kingdom has complied with and exceeded the domestic and European legal requirements. Moreover, this conclusion can be reached without taking into account that (i) the effects of the MOX Plant do not in fact meet the threshold for application of Directive 85/337/EEC and the 1988 Regulations, and (ii) if they did, the negligible nature of the effects would be such as to affect the detail of the required environmental impact assessment. As recorded in the Proposed Decision of October 1998, "the assessed dose due to gaseous and liquid discharges from the MOX Plant is less than one millionth of that due to natural background radiation".[65] The instruments that establish requirements in terms of environmental impact assessment have not been drafted in a vacuum that can take no account of this reality. The extreme and formalistic approach adopted in Ireland's Memorial is to be contrasted in this regard.

C. CONSEQUENCES

5.58 Ireland's case on the consequences of a failure to comply with article 206 UNCLOS is not spelt out in detail, but it appears from paragraph 10.15 of its Memorial

[63] See paragraphs 3.55-3.58 above.
[64] See Chapter 2 above. In addition, risks of maritime transport have been extensively studied as described in Chapter 3 above.
[65] At paragraph A3.14. Memorial, Volume III, Part Two, p.385.

that it considers that the necessary result of such a failure to comply is that the operation of the MOX Plant should cease pending the carrying out of a further assessment. This may be dealt with quite briefly:[66]

1. This contention takes no account of the regime established by section 4 of Part XII of UNCLOS. The correct approach once a project is underway is to monitor its effects and communicate the results of such monitoring. It is not to carry out a further assessment of potential effects.

2. So far as the International Court was concerned in the *Gabcíkovo-Nagymaros* case, there was no question of halting that part of the project which had been implemented (unlawfully according to the Court) whilst its impacts were subjected to a fresh look.

3. In this regard, the approach under UNCLOS, and the approach of the Court, are both consistent with the general purpose of an environmental impact assessment. An assessment is not intended to prevent the initiation of a project – even if substantial harm is predicted by such an assessment, this does not in itself make it unlawful to proceed[67]. Ireland's case on consequences presupposes that such would be unlawful. In fact, the assessment provides an informed basis for decision-making. Where a project is underway, monitoring achieves the goal of determining whether activities are likely to pollute the environment. As has already been explained in Chapter 3, the discharges from the Sellafield site are subject to detailed monitoring programmes, carried out by both the relevant United Kingdom agency and by BNFL. The monitoring shows that the discharges are not harmful.[68] Discharges from the MOX Plant are too small to be capable of detection, but if this were otherwise, any effects would be subject to monitoring. In such circumstances, it would obviously be inappropriate to require a further environmental impact assessment to be carried out and operation of the MOX Plant to be suspended in the meanwhile.[69]

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[66] See also Chapter 8 below.

[67] See, for example, Ireland's expert Mr Sheate in *Environmental Impact Assessment: Law and Policy*, p. 26.

[68] See paragraphs 3.55-3.58 above. The results of monitoring have been communicated, e.g. in the context of the MARINA II Study (**Annex 19**).

[69] It may be added that this would be costly and damaging to BNFL's business, Witness Statement of Jeremy Rycroft, paragraph 27 (**Annex 10**). To require such costs to be incurred, with no question of a corresponding benefit in terms of improved knowledge of environmental impacts, would be quite out of step with general approaches to development as set out in instruments such as the 1992 Rio Declaration.

4. It is not just that there is no legal foundation for Ireland's contention. It must also be borne in mind that if Ireland is right that there has been no adequate environmental impact assessment, and that a new assessment is required, it has a case that could and should have been brought eight years ago when the decision on planning consent was made with reference to the 1993 Environmental Statement, before the construction of the MOX Plant had even commenced. Had Ireland then made timely use of the remedies available to it as a matter of domestic or European law, there would have been an opportunity to remedy any defects found in the Environmental Statement and a decision on planning consent might have been taken on the basis of a revised Statement. It would be inequitable and an incorrect application of the law to fail to take account of that delay.[70]

[70] *Case concerning the Gabcíkovo-Nagymaros Project*, ICJ Reports 1997, p. 7 at p. 76 (paragraph 134).

CHAPTER 6

CO-OPERATION

Note. The passages in this Chapter that are struck through are confidential and should be omitted when the Counter-Memorial is made public.

A. INTRODUCTION

6.1 Ireland devotes a lengthy chapter of its Memorial to the contention that the United Kingdom has failed to co-operate, as required by articles 123 and 197 of UNCLOS.[1] That contention is unfounded.

6.2 The United Kingdom's authorities considered the views of the Irish Government on the MOX Plant not only in the initial planning enquiry but also in five rounds of consultations, extending over no less than eight years, in all of which Ireland was able to participate and in four of which it did participate. Further, consultation in respect of the Sellafield site has taken place in exchanges conducted through the two States' embassies, in direct ministerial contacts and in various bilateral *fora*, including the United Kingdom-Ireland Contact Group on radioactivity, through the British-Irish Council as well as the British-Irish Inter-Parliamentary Body. Further, co-operation has taken place between the two States' coastguards and between their relevant competent authorities concerned with radiological protection and nuclear safety regulation.

6.3 In pursuance of the latter arrangements Irish representatives have been given information about the Sellafield site, in particular about the highly active storage tanks ("HASTs"). The Radiological Protection Institute of Ireland ("RPII") has on several occasions acknowledged in its Annual Reports the substantive nature of this co-operation.[2] For example, most recently in its Annual Report and Accounts 2001[3] the RPII gives an account of its activities on behalf of Ireland within the European Communities and key international organisations, and continues:

[1] Memorial, Chapter 8, pp. 139 – 199.
[2] RPII Annual Reports and Accounts, 1998-2001, **Annexes 24, 25, 26 and 27**.
[3] **Annex 27**, p. 26.

> "The Institute continued its formal exchange of information on nuclear licensing and safety issues with the Nuclear Installations Inspectorate of the UK Health and Safety Executive. It also joined the Department of Public Enterprise in formal meetings with the UK Department of the Environment, Transport and the Regions and other UK government agencies to exchange information on nuclear safety issues generally. Meetings for the exchange of information also took place with the Northern Ireland Office and with Heritage Service of the Northern Ireland Department of the Environment".

The RPII then gives an account of its work in the British-Irish Council and in the European Union.

6.4 Following the Order of ITLOS dated 3 December 2001 the United Kingdom offered to review the efficacy of the various existing arrangements for co-ordination and monitoring. Ireland has yet to respond.[4]

6.5 Together with Ireland, the United Kingdom is a member of the European Community, Euratom and various international organizations engaged in the formulation of the rules and standards contemplated by article 197 of UNCLOS. These include the IMO, IAEA, UNEP and the OSPAR Commission. The United Kingdom has co-operated further, in the matters relevant to the present case, by its ratification *inter alia* of the 1973 International Convention for the Prevention of Pollution by Ships ("MARPOL"),[5] the 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter ("the London Convention")[6] together with the 1996 Protocol thereto[7] and the 1992 OSPAR Convention[8].

6.6 Participation in the European Communities and international organisations has provided the United Kingdom with a further means of co-operating with Ireland on the issues raised in the present proceedings. For instance, as a Member State of Euratom the United Kingdom has made annual reports under Articles 35 and 36 of the Euratom Treaty, makes constant measurements of radiation in accordance with that Treaty and gives the Commission access to the Sellafield site. The commissioning of the MOX Plant was subject to the verification procedure prescribed by Article 37 of the Euratom Treaty,

[4] Paragraphs 6.75-6.76 below.
[5] 17 ILM (1978) 546; amended by Protocol of 1978 before entry into force on 2 October 1983.
[6] 11 ILM (1972) 1294; in force 30 August 1975. Also available at http://www.londonconvention.org
[7] 36 ILM (1997) 7; ratified by the United Kingdom on 15 December 1998. Also available at http://www.londonconvention.org
[8] 32 ILM (1993) 1072; in force 25 March 1998.

precisely for the purpose of determining whether the operation of the MOX Plant was likely to result in radioactive contamination of the water, soil or airspace of any other Member State, Ireland being identified as the closest.

6.7 Even if taken at face value, however, the allegations made by Ireland about non-co-operation would not disclose breaches of articles 123 and 197 of UNCLOS. Article 123 provides that States bordering a semi-enclosed sea shall endeavour directly or through an appropriate regional organisation, to co-ordinate the implementation of their rights and duties with respect to the protection and preservation of the marine environment. Article 197 provides that States shall co-operate on a global basis and, as appropriate, on a regional basis, directly or through competent international organisations, in formulating and elaborating international rules, standards and recommended practices and procedures consistent with the Convention.

6.8 The remainder of this Chapter reviews the interpretation of articles 123 and 197 of UNCLOS (Sections B and C); gives an account of the mechanisms in place between the United Kingdom and Ireland for co-operation in relation to Sellafield (Section D); then describes the United Kingdom's co-operation with Ireland in the process prior to the Decision of 3 October 2001 (Section E). Thereafter the Chapter addresses the principal complaints made by Ireland. These include Ireland's demand for full and unedited copies of the PA and ADL Reports (Section F); its request for a further suspension of a decision authorising MOX manufacture, pending the outcome of the OSPAR proceedings or of these proceedings (Section G); its request for a fresh environmental impact assessment (Section H); and Ireland's comments on co-operation in relation to marine transports (Section I); co-operation in relation to security (Section J); and finally, co-operation over the protection and preservation of the marine environment (Section K).

6.9 In addressing these matters the United Kingdom will have to correct several statements made by Ireland about matters falling outside the Dispute submitted to this Tribunal. In doing so the United Kingdom does not, of course, invite the Tribunal to determine any matter falling beyond the Dispute; nor indeed does it consent to determination of such a matter.

B. ARTICLE 123: SEMI-ENCLOSED SEAS

6.10 The first provision of UNCLOS on which Ireland relies in support of its claim of non-co-operation is article 123 *"Co-operation of States bordering enclosed or semi-enclosed seas"*. This provides as follows:

> "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 organisation: ..."[9]
> …
> (b) to co-ordinate the implementation of their rights and duties with respect to the protection and preservation of the marine environment;".

6.11 Ireland's case is not assisted by reference to article 123. It is clear from the wording of that article that it is hortatory only. As Judge Anderson stated in his Separate Opinion during the Provisional Measures phase of the present case, "Article 123 was cast in weak terms ("should"/"shall endeavour") in order to safeguard the world-wide application of the Convention's provisions and its unified character."[10] Contrary to paragraph 8.20 of Ireland's Memorial, it imposes no immediately binding obligations, whether of co-ordination or co-operation.

6.12 This conclusion is confirmed by the negotiating history of the provision. Based on proposals submitted by Iran and Finland, the ISNT[11] originally read:

> "States bordering enclosed or semi-enclosed seas *shall* co-operate with each other in the exercise of their rights and duties under the present Convention. To this end they *shall*, directly or through an appropriate regional organisation: … ."

Because of opposition from other States, the word "shall" in this initial draft was amended to read "should" and "shall endeavour" in the RSNT[12], which weak language remained in the final text. The Chairman of the Second Committee explained the changes by saying:

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[9] Emphasis added.
[10] *MOX Plant Case (Provisional Measures)*, ITLOS No. 10 (2001), at p.6.
[11] A/CONF.62/WP.8/Rev.1/Part II (ISNT, 1975), Article 134, IV *Off. Rec.* 152,171.
[12] A/CONF.62/WP.8/Rev.1/Part II (RSNT, 1976), Article 130, V *Off. Rec*. 151, 172.

> "I have responded to the expression of dissatisfaction with the provisions in the [ISNT] by making less mandatory the co-ordination of activities in such seas."[13]

6.13 Proposals subsequently made by various States at the 1977 and 1980 sessions to return to the language of obligation, or to delete the word "endeavour," were not accepted.[14] Referring to the final text of article 123 the *Virginia Commentary* thus concludes that:

> "This language is not consistent with any mandatory obligation to join with the States bordering such seas in the activities specified in the article."[15]

6.14 No distinction is drawn in this respect between the exhortation to co-operate referred to in the first sentence and the exhortation to endeavour to co-ordinate activities referred to in the second sentence. Ireland goes too far in paragraphs 8.20 to 8.23 of its Memorial, where it is argued that the duty to endeavour to co-ordinate activities entails "immediately binding" legal obligations.

6.15 Ireland does not say precisely what co-ordination would entail with respect to protection and preservation of the marine environment, which appears to be the aspect of article 123 on which it relies. Co-ordination of standards for the protection and preservation of the marine environment of the Irish Sea is already extensive. This is achieved, for example, under the 1993 amendments to the 1972 London Convention, which entered into force for the United Kingdom and Ireland on 20 February 1994;[16] under the 1992 OSPAR Convention, the effect of which is further considered in Chapter 7; and under European Community Directives including Directive 85/337/EEC,[17] Directive 80/836/Euratom,[18] Directive 96/29/Euratom[19] and in the Proposal for a Directive on the Management of Spent Nuclear Fuel and Radioactive Waste.[20] These measures do have the effect of coordinating the implementation by the parties concerned of their rights and obligations under Part XII of UNCLOS.

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[13] *Virginia Commentary*, Volume III, at p. 362.
[14] Algeria, Iraq, Libya, Turkey, Romania, Yugoslavia, *ibid*., pp. 363-4.
[15] *Ibid*., at p. 366.
[16] *1993 (Industrial Waste) Amendments* adopted, at their sixteenth Consultative Meeting on 12 November 1993 resolution LDC.49(16); *1993 (Incineration) Amendments*, adopted, at their sixteenth Consultative Meeting on 12 November 1993 resolution LDC.50(16); *1993 (Radioactive Wastes) Amendments* adopted, at their sixteenth Consultative Meeting on 12 November 1993 resolution LDC.51(16).
[17] OJ 1985 L 175/40.
[18] OJ 1980 L 246/1.
[19] OJ 1996 L 159/1.
[20] Available at http://europa.eu.int/comm/energy/nuclear/nuclearsafety.htm#New%20proposals.

6.16 Ireland maintains that article 123 might form part of the context for the interpretation of other articles of the 1982 Convention. The only effect specifically suggested by Ireland is that the particular characteristics of the sea must be taken into account.[21]

(i) The Special Characteristics of Semi-Enclosed Seas

6.17 In formulating their policies for the protection of the marine environment, States will, of course, take account of the characteristics of the waters in question. Ireland is incorrect, however, in asserting that article 123 of UNCLOS imposes on littoral States a legal duty, owed to other such States, to take account of the special characteristics of semi-enclosed seas. Contrary to paragraph 8.12 of Ireland's Memorial, the drafting history of article 123 does *not* make it clear that States participating in the Third United Nations Conference on the Law of the Sea considered the duty to have regard for their "special characteristics" to be a key element of the concept of enclosed or semi-enclosed seas. The Iranian proposal to this effect (cited in paragraph 8.12 of the Memorial) was not reflected in the wording of the article as initially formulated in the ISNT. A subsequent Finnish proposal to the same effect was not reflected in the RSNT.[22] Neither proposal is reflected in the wording of the final text of article 123.

6.18 Reference to "the natural characteristics" of an enclosed or semi-enclosed sea in article 15 of the 1995 Straddling Fish Stocks Agreement[23] is of no assistance in interpreting or applying article 123 of UNCLOS for the purposes of the present case. Article 15 requires States Parties to the 1995 Agreement to take into account the natural characteristics of a semi-enclosed sea *and in addition* it requires them to "act in a manner consistent with Part IX of the Convention" (i.e. articles 122 and 123). No such reference to natural characteristics would be necessary in article 15 if it were already inherent in the reference to Part IX and in article 123. It was presumably considered necessary in article 15 precisely because it was deliberately omitted from article 123.

6.19 Ireland is also incorrect in arguing that article 123 requires other articles of the Convention to be interpreted by reference to the particular characteristics of an enclosed or semi-enclosed sea. Other articles dealing with different sources of pollution provide in

[21] Memorial, paragraph 8.27.
[22] *Virginia Commentary*, Volume III, at pp. 358 and 360.
[23] UN Agreement Relating to the Conservation and Management of Straddling Fish Stocks and Migratory Fish Stocks, 34 ILM (1995) 1542.

their own terms for regional characteristics to be taken into account. It would either be subversive of the policy underlying these articles, or otiose, to reinterpret them for the purposes of article 123. article 197 already requires States to co-operate "taking into account characteristic regional features."

6.20 Further reference to the hortatory terms of article 123 for this purpose is redundant. Where pollution from vessels is concerned, articles 211(6) and 234 allow specifically for regional action within the strict parameters laid down there. Under article 211(6) the procedure involves determination by the IMO as to whether the conditions in a particular area correspond to the requirements of sub-paragraph (a). There is no reference in article 211 to the possibility that additional characteristics may have to be taken into account under article 123, and in respect of an article whose purpose is to safeguard global freedom of navigation it would be undesirable that they should be. With respect to pollution from land-based sources of marine pollution, article 207(4) already allows States to adopt regional rules "taking into account characteristic regional features". References to article 123 add nothing to the interpretation of these articles, which give effect to the more general rules found in articles 192 and 197 and referred to in paragraph 8.27 of Ireland's Memorial.

6.21 This was the conclusion of Judge Anderson in the provisional measures phase of the present case:

> "….article 123 does not require co-operation to be at the bilateral level so long as there is co-operation through an appropriate regional body……In other words there does not have to be a bilateral 'Irish Sea Conference' along the lines of the North Sea Conferences in order to secure compliance with article 123. Provided appropriate regional bodies exist, the necessary coordination can be achieved through them. In the case of the Irish Sea, the management of living resources is coordinated by means of the common fisheries policy of the EC; environmental protection, including the monitoring of nuclear radiation, is coordinated through Euratom, the EC and OSPAR; and research into the scientific qualities of the waters and the status of the living resources is coordinated through the International Council for the Exploration of the Sea, as well as through EC programmes. In my opinion, since the appropriate bodies do exist in regard to the Irish Sea and there is extensive, if not full, coordination through such bodies and since, moreover, there clearly have been some bilateral contacts between the parties at ministerial level in regard to the Irish Sea, there is little to be examined in the Applicant's claims under article 123."[24]

[24] Separate Opinion, at p. 6.

(ii) Articles 123 and 300: Good Faith and Abuse of Rights

6.22 Ireland seeks to bolster its argument based on article 123 by reference to article 300 of UNCLOS, which reads as follows:

> "States Parties shall fulfil in good faith the obligations assumed under this Convention and shall exercise the rights, jurisdiction and freedoms recognised in this Convention in a manner which would not constitute an abuse of right."

Article 300 applies in the specific context of UNCLOS the general principle enunciated in article 26 of the Vienna Convention on the Law of Treaties (*pacta sunt servanda*).[25]

6.23 There is no basis for an allegation of bad faith (which, it may be noted, Ireland is careful not to make, confining paragraphs 8.34 to 8.37 of its Memorial to statements of general principle). [26] It may in theory be the case that "an outright, blanket refusal to cooperate or co-ordinate actions and plans" could amount in a particular case to a breach of the requirement to fulfil obligations in good faith, as Ireland pleads in paragraph 8.30 of its Memorial. It would, however, be impossible for Ireland to contend that the circumstances of the present case involve such a refusal or anything remotely similar to this.[27]

6.24 In any event, what is to be fulfilled in good faith under article 300 are "the obligations assumed under this Convention". If article 123 had imposed a legal obligation, Ireland would in the context of the present case have had no occasion to buttress it by reference to article 300. As it does not impose a legal obligation, article 300 adds nothing of present relevance. The assertion that "the plain words of article 300 encompass hortatory provisions"[28] is incorrect. Article 300 refers expressly to performance of "the obligations assumed under this Convention".[29] The jurisprudence of the International Court of Justice demonstrates that although the principle of good faith is "one of the basic principles governing the creation and performance of legal

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[25] *Virginia Commentary*, Vol. V, p.152, paragraph 300.4.
[26] Memorial, paragraph 8.34.
[27] See paragraphs 6.2 to 6.6 above and 6.46-6.76 below.
[28] Memorial, paragraph 8.35.
[29] Contrast paragraph 8.43 of the Memorial, quoting the *Virginia Commentary* on Article 197, which uses the imperative word "shall". The authors of the *Commentary*, in the passage quoted by Ireland, note that this is a legal obligation and is accordingly to be implemented in good faith.

obligations….it is not in itself a source of obligation where none would otherwise exist."[30]

6.25 Ireland also asserts 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". It refers specifically to articles 192, 193, 194, 197, 206, 207, 211 and 213, and contends that "[i]n that context, UNCLOS Article 123 is relevant to the determination of what would constitute an "abuse of right".[31] Yet Ireland does not actually contend that the implementation of the United Kingdom's obligations under these articles amounts to an abuse of rights, and it is difficult to see how the hortatory provisions of article 123 could render abusive otherwise lawful compliance with the Convention.

6.26 Instead, Ireland quotes Professor Bin Cheng, who observes that rights must be exercised "in a manner compatible with its various obligations arising either from treaties or from the general law", must be "reasonably exercised", and must be "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".[32] Once again, Ireland fails either to assert or to offer evidence in support of the contention that the United Kingdom has acted otherwise than fully in accordance with the obligations contemplated by Professor Cheng. Nor is this failure a surprise. Taking account of the negligible risk to Ireland posed by the MOX Plant and associated transports,[33] the evidence of long-standing bilateral and multilateral co-operation at all levels between the parties set out later in this Chapter, it would be impossible to sustain the contention that the United Kingdom has deliberately set out to cause "unfair prejudice" to the legitimate interests of Ireland, or in any other way abused its rights.

6.27 In any event, Ireland's reliance on abuse of rights under article 300 is misconceived. Ireland advances its case on the premise that article 300 protects Ireland's rights from "abuse" by the United Kingdom. This is the reverse of what is contemplated by the article. The correct position is as stated in the *Virginia Commentary*, which

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[30] *Land and Maritime Boundary between Cameroon and Nigeria (Preliminary Objections)* ICJ Reports 1998, p.275; *Border and Transborder Armed Actions (Jurisdiction and Admissibility) (Nicaragua v Honduras)*, ICJ Reports 1988, p.69.
[31] Memorial, paragraph 8.36.
[32] Memorial, paragraph 8.37. Ireland also makes unspecified reference to books by Zoller and O'Connor.
[33] See paragraph 3.79 *et seq* above.

characterises this provision as concerned with "the unnecessary or arbitrary *exercise* of rights, jurisdiction, and freedoms or the *misuse* of powers…..". [34] Thus what must be demonstrated is abuse by the United Kingdom in the exercise of its own rights, jurisdiction, and freedoms, not abuse by the United Kingdom of Ireland's rights. This interpretation is supported both by the text of article 300 and by the passage from Professor Cheng cited earlier.

6.28 It is also supported by the *La Bretagne* arbitration, a decision which Ireland cites but does not explain.[35] This case concerned the entitlement of trawlers registered in St.Pierre and Miquelon to fish in Canadian waters under a 1972 treaty between France and Canada. Canada was concerned to ensure that "metropolitan trawlers disguised as local, or even trawlers manned by foreign crews but registered in Saint-Pierre might take advantage of any privilege which Canada might be willing to concede…". The arbitral tribunal concluded that "the registration of trawlers referred to in Article 4(b), effected in conformity with French legislation, together with the principle of good faith which is of necessity a principal factor in the performance of treaties, as affording (*sic*) a sufficient guarantee against any risk *of the French Party* exercising *its rights* abusively" (emphasis added).[36]

6.29 An analogy may be drawn here with general principles of judicial review in administrative law: discretionary powers are never unlimited and, as Professor Cheng points out, must always be exercised in accordance with the purposes for which they are conferred. Professor Lowe has similarly characterised the doctrine of abuse of rights as "a check upon exercises of legal power by States".[37] Ireland nowhere asserts that the United Kingdom has exercised any of its discretionary powers under UNCLOS in bad faith, or for improper purposes, or unreasonably, or arbitrarily.

6.30 The same interpretation follows from the civil law principle of *abus de droit*, in which the principle of international law originates. In Planiol's words, *le droit cesse où l'abus commence*. There is an abuse of rights when an individual exercises his right unjustly, in a manner injurious to another.[38] That is the sense in which the expression is

[34] *Virginia Commentary*, Vol. V, p.152, paragraph 300.5. See to the same effect *German Interests in Upper Silesia* (1926) PCIJ Series A/No.7, p.30; *Free Zones of Upper Savoy and District of Gex* (1930) PCIJ Series A/No.24, p.167
[35] Memorial, paragraph 8.38.
[36] 82 ILR 591, p. 614 at paragraph 27.
[37] In M.Byers (ed.), *The Role of Law in International Politics* (Oxford, 2000), at 218.
[38] For the adoption of this principle in European Community law see Case 33/74, *Van Binsbergen v Bedrijfsvereniging voor Metaalnijverheid* [1974] ECR 1299, paragraph 13; Case 39/86, *Lair v Universität*

used by the editors of *Oppenheim's International Law*, who consider the principle particularly in its application to environmental matters and cite in this context the maxim *sic utere tuo ut alienum non laedas*.[39]

6.31 Had Ireland wished to allege that the United Kingdom has exercised in an abusive manner any of its powers under UNCLOS, the provisions to which Ireland refers - articles 192, 193, 194, 197, 206, 207, 211, and 213 - would not have been the appropriate provisions on which to rely. None of these articles grants the United Kingdom any rights or confers any powers on it (with the exception of article 211(4) and (6) conferring powers on coastal States in the territorial sea and exclusive economic zone and on which Ireland does not rely). All of them create obligations for States Parties. To use an administrative law analogy once more, article 300 is not concerned with the performance of such mandatory duties, but only with the exercise of discretionary powers.

6.32 The error in applying the principle of the abuse of rights in such a manner as to assert a new obligation is identified by Robert Ago when he was Special Rapporteur of the International Law Commission for State responsibility:

> "Since the objective element of the international illicit act was failure to fulfil an international obligation, abuse of rights would be nothing else but failure to comply with a positive rule of international law thus enunciated."[40]

Writing in the *Encyclopedia of Public International Law*, Kiss states that:

> "In international law, abuse of rights refers to a State exercising a right either in a way which impedes the enjoyment by other States of their own rights or for an end different from that for which the right was created, to the injury of another State".[41]

6.33 The conclusion to be drawn is that article 300 is immaterial to the present proceedings. The United Kingdom has not performed its UNCLOS obligations in bad faith, nor has it abused any of its UNCLOS rights, nor has Ireland so alleged.

Hanover [1988] ECR 3161, paragraph 43; Case C-212/97, *Centros Ltd v Erhverv- og Selskabsstryrelsen* [1999] ECR I-1459, paragraph 24. See further L.N. Brown, "Is there a General Principle of Abuse of Rights in European Community Law?" in D. Curtin and T. Heukels, eds., *Institutional Dynamics of European Integration: Essays in Honour of Henry Schermers,* 1994, Vol. II p. 515.

[39] *Oppenheim's International Law*, 9th ed. by Sir Robert Jennings and Sir Arthur Watts, Vol. I (Peace) at paragraphs 124 and 125.

[40] 1970 *Yearbook of the International Law Commission*, Volume I, part 1, p.178 paragraph 25.

[41] Volume I, p. 4.

C. ARTICLE 197: CO-OPERATION IN FORMULATING RULES

6.34 The second principal provision of UNCLOS on which Ireland relies, in its chapter on co-operation, is article 197 (entitled *"Co-operation on a global or regional basis"*). This reads as follows:

> "States shall co-operate on a global basis and, as appropriate, on a regional basis, directly or through competent international organisations, 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."

6.35 Article 197 is the first of several articles dealing with global and regional co-operation in section 2 of Part XII of UNCLOS, a section entitled "Global and Regional Co-operation". The *Virginia Commentary* refers to this section as formulating "the basic obligations of states to co-operate in the development of what is sometimes referred to as 'environmental law,' with particular reference to the marine environment." Other aspects of global and regional co-operation are dealt with in the four subsequent articles: article 198 deals with the notification of imminent or actual damage to the marine environment by pollution; article 199 obliges States in the area affected (in cases in which the marine environment is in imminent danger of being damaged or has been damaged by pollution) and the competent international organisations to co-operate in eliminating the effects of pollution and preventing or minimizing the damage; articles 200 and 201 require States to co-operate in studies, research programmes and encouraging the exchange of information and data, and to endeavour to participate actively in regional and global programmes.

6.36 By its express terms, article 197 covers only the requirement for States Parties to co-operate for the purpose of *"formulating and elaborating international rules, standards and recommended practices and procedures."* It does not cover or refer to co-operation on the management of sources of transboundary risk (which is the subject of paragraphs 8.40 to 8.92 of Ireland's Memorial and of the authorities and precedents relied on there). What is required by article 197 is that States co-operate in formulating and elaborating international rules, standards, practices and procedures; and that in doing so they take account of characteristic regional features. This is precisely what the United Kingdom has done for two decades since the conclusion of UNCLOS (and many decades previously) on both a global and a regional basis, directly and through competent international organisations, including the European Community, Euratom, IMO, IAEA and the OSPAR Commission.

6.37 Most of the proposals for comprehensive draft treaty articles submitted to Sub-Committee III of the Sea-Bed Committee at its 1973 session referred to the need for international co-operation in environmental standard-setting.[42] Article 197 was based principally on an Australian proposal which referred to co-operation "in the further elaboration and implementation of internationally agreed rules, standards and procedures for the prevention of marine pollution", and in formulating "common policies and measures" for the protection of the marine environment. The initial draft of what became article 197 read as follows:

> "States shall co-operate on a global basis and as appropriate on a regional basis, directly or through competent organizations, global or regional, to formulate and elaborate treaties, rules, standards, and procedures consistent with the Convention, for the prevention of marine pollution, taking into account characteristic regional features and economic factors."[43]

This text was further refined in the ISNT and RSNT to refer to the formulation and elaboration of "international rules, standards and recommended practices and procedures" and the "protection and preservation of the marine environment". [44] In 1980 the United States proposed omitting the words "rules, standards and recommended practices and procedures" and replacing them with "measures", but this was not accepted.[45]

6.38 The drafting history of article 197 is unequivocal. It was never the intention of the drafters, nor was it ever proposed, that article 197 should deal with co-operation through environmental impact assessment, notification and consultation in respect to activities posing a risk of marine pollution. The *Virginia Commentary* rightly characterises the article as a contribution to law-making only. The Commentary contrasts the text agreed at the Third United Nations Conference on the Law of the Sea with "the more general approach to international co-operation in the field of the environment concerning natural resources shared by two or more States" exemplified by United Nations General Assembly resolutions 2995(XXVII), 2996(XXVII) and 2997(XXVII) of 15 December 1972 and 3129(XXVIII) of 13 December 1973.[46] Moreover, the UNCLOS drafts can also

[42] *Virginia Commentary*, Volume IV, p.79.
[43] Ibid, p.80.
[44] Ibid, p.81.
[45] Ibid, p.81.
[46] Ibid, p.79, note 1.

be contrasted with the contemporaneous negotiation of UNEP Principles on Conservation and Harmonious Utilization of Natural Resources Shared by Two or More States.[47]

6.39 There is no support in the language of article 197, or in the *travaux préparatoires*, for the proposition that the negotiators believed that States Parties engaged thereby in some "more general approach to international cooperation", whatever that might mean. In particular, the States Parties did not include the obligation to notify littoral States, or to obtain their permission, when exercising freedom of navigation by warships or civilian vessels. The United Kingdom was among a number of States which, on accession to UNCLOS, made a declaration dealing with this point expressly. In its Declaration upon accession the United Kingdom stated that it considered that declarations and statements not in conformity with articles 309 and 310 included: "those which purport to require any form of notification or permission before warships or other ships exercise the right of innocent passage or freedom of navigation or which otherwise purport to limit navigational rights in ways not permitted by the Convention".

(i) Information, Consultation and Co-ordination

6.40 Little of present relevance is added by Ireland's extensive reference to the International Convention on Maritime Search and Rescue 1979 ("the SAR Convention").[48] Although Ireland and the United Kingdom are both parties, Ireland does not plead that the United Kingdom has failed to act consistently with the SAR Convention. Ireland apparently relies upon it as evidence of the existence of what it claims are three more general duties of States: the duties to inform, to consult and to co-ordinate, which it then seeks to import into article 197 of UNCLOS. In fact, the SAR Convention does not contain provisions governing or defining any general duty to supply information, consult or co-ordinate; and is difficult to see its relevance to the operation of a land-based MOX Plant.[49]

6.41 The ILC Draft Articles on the Prevention of Transboundary Harm from Hazardous Activities contain provisions on information, consultation and co-ordination.[50] They are not a source of legal obligation under UNCLOS; and even if they were, they would not advance Ireland's case unless it could show that the operation of the MOX Plant carried a high probability of causing significant transboundary harm (which is not

[47] 17 ILM (1978),1094. The UN General Assembly took note of them in resolution 34/186 (1975).
[48] 1405 UNTS 97.
[49] Memorial, paragraph 8.48.
[50] Memorial, paragraphs 8.50 – 8.54.

suggested) or a low probability of causing disastrous transboundary harm (for which there is no evidence; and much evidence to the contrary).[51]

6.42 Ireland relies on the Draft Articles, as on the SAR Convention, for the purpose of implying into article 197 of UNCLOS an obligation to inform, to consult and to co-ordinate. This is an incorrect approach. article 197 provides for global and regional co-operation in formulating and elaborating international rules, standards, practices and procedures. It does not embody obligations in respect of the information, consultation and co-operation that is to take place between States in relation to particular projects or activities. In that respect it is to be contrasted with articles 4 and 8 of the ILC's Draft Articles. Ireland relies on the ILC Draft Articles as evidence of customary international law. The clear terms of article 197 of UNCLOS are not to be construed by reference to the specific terms of the ILC's Draft Articles so as to read into the former language and standards that are absent from it.

(ii) Notification and Consultation in Customary International Law

6.43 It is not open to Ireland in the context of the present case to rely on rules of customary international law on notification and consultation in regard to transboundary risks. Nor can it use rules of customary international law to revise UNCLOS. This Tribunal's jurisdiction is limited to disputes concerning the interpretation or application of UNCLOS: it does not have jurisdiction over disputes concerning rights or obligations arising under rules of customary international law[52].

6.44 Moreover, even under the rules contended for by Ireland, prior notification and consultation are required only where there is a risk of significant harm to another State. It is in this context that these obligations appear in the ILC's Draft Articles on Prevention of Transboundary Harm from Hazardous Activities (2001),[53] in articles 3 and 5 of the 1991 Espoo Convention[54], and in the 1992 Rio Declaration on Environment and Development.

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[51] See Chapter 3 above.
[52] See further at Chapter 4 above, paragraphs 4.23-4.32, and Chapter 8 below.
[53] See draft articles 8 and 9 reproduced at paragraph 8.50 of the Memorial.
[54] Convention on Environmental Impact Assessment in a Transboundary Context, adopted at Espoo, Finland, 25 February 1991; entered into force for the United Kingdom on 8 January 1998 and for Ireland on 23 October 2002; 30 ILM (1971) 802.

6.45 These provisions require notification and consultation only where the proposed activity is *likely to cause a significant adverse transboundary impact* (Espoo Convention article 3), or where it *may have a significant adverse transboundary environmental effect* (Rio Declaration, Principle 19), or where there is *a high probability of causing significant transboundary harm [or] a low probability of causing disastrous transboundary harm* (ILC Draft articles 1 and 2).[55]

6.46 As Chapters 2 and 3 above have demonstrated, there is no risk of significant transboundary harm (direct or indirect) from the MOX Plant. It is clear from the evidence that the risk posed by operation of the MOX Plant or any associated transport operations falls well below the threshold for notification and consultation set by any of the treaties or rules of customary law which Ireland seeks to import into UNCLOS. The consultations which nevertheless ensued between the United Kingdom and Ireland must be seen in that context. While any customary obligations of notification and consultation relied on by Ireland could not be applicable in the present proceedings, it is nevertheless the case that the United Kingdom has fully met them in a manner appropriate to the circumstances of the MOX Plant.

6.47 Both Ireland and the United Kingdom are parties to IAEA agreements which provide for co-operation in the event of a nuclear accident or emergency. The 1986 Convention on Early Notification of a Nuclear Accident[56] imposes on parties a duty to notify other States likely to be affected by transboundary releases of 'radiological safety significance'. Information on the occurrence and on means of minimizing its radiological consequences must be supplied to enable other States to take all possible precautionary measures. The Convention specifies in detail what information is to be given, and requires States to respond promptly to requests for further relevant information. Assistance in cases of nuclear emergency is also the subject of the 1986 Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency. [57] This allows States to call for international help to protect 'life, property and the environment' from the effects of radioactive releases. The latter Convention has been implemented by the United Kingdom in the Atomic Energy Act 1989.

6.48 Save in cases of accident or emergency, State practice and applicable treaties do not demonstrate that the obligation to notify, consult and negotiate in good faith applies

[55] See further at Chapter 5 above, paragraphs 5.11-5.13.
[56] 25 ILM (1986) 1370.
[57] 25 ILM (1986) 1377.

to transit by ships carrying nuclear or other potentially hazardous cargoes. Rules on notification and consultation found in UNCLOS, the 1973/78 MARPOL Convention and the 1969 Convention Relating to Intervention on the High Seas in cases of Oil Pollution Damage are concerned only with notification of incidents resulting in polluting discharges or the probability of discharges from ships that may affect other States.[58] There is no acceptance of any wider rule requiring prior notification of innocent passage or freedom of navigation merely because the ship is carrying a potentially dangerous cargo; on the contrary, an obligation of prior notification has been strongly resisted in State practice.[59]

6.49 Article 4(12) of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal[60] also leaves unaffected UNCLOS navigational rights in the exclusive economic zone and territorial sea.[61] In general, maritime States have interpreted this to mean that prior notice or consent for the passage of vessels carrying hazardous wastes or substances is not required,[62] but not all coastal States accept this view.

6.50 The non-binding 1990 IAEA Code of Practice on International Transboundary Movement of Radioactive Waste[63] affords transit States the same right of prior informed consent as are enjoyed by the State of intended disposal under the Basel Convention. Article 27(1) of the 1997 Joint Convention on the Safety of Spent Fuel Management and Radioactive Waste Management,[64] which replaces the 1990 Code, merely stipulates that "transboundary movement through States of *transit* shall be subject to those international obligations which are relevant to the particular modes of transport utilised", without

[58] 1982 UNCLOS, article 211 (7); 1973/78 MARPOL, Article 8 and Protocol 1; 1969 Intervention Convention, Article 3. The 1969 Intervention Convention is at 9 ILM (1970) 25.
[59] USSR-US Uniform Interpretation of Rules of International Law Governing Innocent Passage, 28 ILM (1989) 1446. See also the declaration by the United Kingdom on accession to UNCLOS (available at http://untreaty.un.org/ENGLISH/bible/englishinternetbible/partI/chapterXXI/ treaty6.asp).
[60] 28 ILM (1989) 657.
[61] Article 2(5) of the 1995 Waigani Convention on Hazardous Wastes within the South Pacific Region also preserves rights and obligations under UNCLOS . Article 4(4)(c) of the 1991 Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes Within Africa, 30 *ILM* (1991), 775, recognizes 'the exercise by ships and aircraft of all states of navigation rights and freedoms as provided for in international law and as reflected in relevant international instruments'.
[62] UK Declaration on Signature of the Basel Convention; reaffirmed on ratification on 7 February 1994; (1990) 39 *ICLQ* 944.
[63] 30 ILM (1991) 55.
[64] 36 ILM (1997) 1436; in force 18 June 2001.

making clear what those obligations are.[65] What appears from the 1997 conference records[66] is that, in the view of the majority of States which supported the text as finally adopted, international law does not require prior notice for transit of vessels carrying nuclear material through the territorial waters or exclusive economic zone of another State. As with oil tankers and ships carrying hazardous waste, the passage of ships carrying dangerous cargoes in the territorial sea and exclusive economic zone may be regulated by coastal States according to international standards, but prior notice or consent for transit through maritime zones cannot be demanded unilaterally.[67]

(iii) The Duty to Co-ordinate

6.51 The alleged duty to co-ordinate referred to in paragraphs 8.84 to 8.92 of Ireland's Memorial is not implicit in article 197. Article 197 requires only co-operation in the elaboration of international rules and standards: it does not deal with co-ordination of activities listed in article 123. It cannot be interpreted to include the alleged duty. Moreover, even if it is legitimate to interpret this article by reference to article 123, that article requires States Parties only to *endeavour* to co-ordinate, and must be interpreted and applied accordingly, as was shown in paragraphs 6.11 to 6.16 above.

6.52 Ireland accepts that there is no authoritative statement of the duty to co-ordinate in international law.[68] There is no authoritative statement because there is no such duty. Ireland's reference to article 19 of the 2001 Convention on the Conservation and Management of Fishery Resources in the South East Atlantic Ocean and article 5(1) of the 2000 Framework Agreement for the Conservation of the Living Resources on the High Seas of the Southeast Pacific ("the Galapagos Agreement")[69] demonstrates only that, in accordance with article 7 of the 1995 Straddling Fish Stocks Agreement, parties to modern fisheries agreements recognise the need for compatibility between coastal State fisheries conservation measures in the exclusive economic zone and conservation measures applied on the high seas by distant water fishing States. The existence of two southern hemisphere regional fisheries agreements (neither of which is in force) does not

[65] Neither the 1989 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes nor the 1997 Joint Convention on the Safety of Spent Fuel Management and Radioactive Waste Management apply to nuclear fuel, or to spent fuel intended for reprocessing (although the UK, France and Japan have voluntarily undertaken to apply the latter convention to spent fuel intended for reprocessing). They are therefore not directly applicable to the transport of MOX fuel by sea.
[66] IAEA GOV/INF/821-GC(41)/INF/12 (1997); available on the IAEA website http://www.iaea.org at http://www.iaea.or.at/worldatom/About/Policy/GC/GC41/Documents/gc41inf12.html.
[67] UNCLOS, article 211(4).
[68] Memorial, paragraph 8.88.
[69] Memorial, paragraphs 8.91-8.92

sustain the argument that States must co-ordinate environmental protection measures to an extent greater than is required by the express terms of articles 123 or 197 of UNCLOS.

6.53 In short, article 197 of UNCLOS does not support the claims made by Ireland with regard to co-operation, nor does it require notification and consultation as alleged by Ireland. The other instruments and rules of customary international law cited in the Memorial do not assist Ireland's case. Nevertheless, and without prejudice to this conclusion, the United Kingdom makes the following observations on Ireland's allegations.

D. THE MECHANISMS IN PLACE

6.54 Save that 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",[70] no mention is made in the Memorial of the numerous standing arrangements between the two countries for co-operation on the Sellafield site, including the supply of information, consultation and co-operation. These standing arrangements are by no means confined to those summarised in the following paragraphs.

6.55 Among the principal standing arrangements in place between the parties for co-operation in relation to Sellafield are those made under the aegis of the IAEA, IMO, the European Community, Euratom, and the OSPAR Commission. An account of the United Kingdom's co-operation with Ireland and other States through these organisations is given in Chapter 2. Through these mechanisms, the United Kingdom discharges its obligation to co-operate on a global basis and, as appropriate, on a regional basis, directly or through competent international organisations, in formulating and elaborating the rules, standards and recommended practices and procedures contemplated by article 197 of UNCLOS. This is in addition to the bilateral consultations that take place between the United Kingdom and Ireland, and the various arrangements for co-ordination and monitoring which operate between British authorities and agencies and their Irish counterparts.

[70] Memorial, paragraph 8.95.

(i) Bilateral Consultation with Ireland

6.56 For many years the United Kingdom has, as a matter of course, invited Ireland to be involved in any consultation process which takes place following a possible or proposed course of action in relation to developments at Sellafield or within the United Kingdom's nuclear industry more generally. Consultation takes the form of comments made directly by the Government of Ireland on proposals on which the Government of the United Kingdom or local authorities or agencies within the United Kingdom undertake public consultation. Consequently the Irish Government has been able to submit detailed views on all significant developments affecting the United Kingdom's civil nuclear industry over recent years including the consultations on THORP, the manufacture of MOX fuel and the revision of authorised limits for discharges from Sellafield.

6.57 In its Request for Provisional Measures to ITLOS Ireland itself made the point that the United Kingdom has acknowledged Ireland's interest, has consulted Ireland and, where appropriate, has been influenced by Ireland's representations.[71] Ireland was consulted about the construction of the MOX Plant: in particular it participated in the planning inquiry, where its views were fully taken into account. Ireland was again consulted prior to the Decision of 3 October 2001: it made four principal written representations, all of which were considered.

6.58 The complaint that Ireland has been inadequately consulted about any intensification or prolongation of THORP is misconceived. Although Ireland states repeatedly that the commissioning of the MOX Plant will prolong the life of THORP, and is insistent on the point,[72] no decision has been taken which will have that effect. As is explained in Chapter 1 above,[73] any new reprocessing contracts for THORP, or variations to existing contracts providing for the reprocessing of additional quantities of fuel, will require the approval of the Secretary of State acting on advice from the LMA. The White Paper, *Managing the Nuclear Legacy*, states that major decisions will be taken only in the light of full consultation with stakeholders.[74] Ireland is therefore mistaken in contending that a decision to intensify or prolong the use operation of THORP has been taken without prior consultation with Ireland.

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[71] Ireland's Written Request, paragraph 6.
[72] Memorial, paragraphs 8.128, 8.129, 8.141, 8.170, 8.201, 8.204.
[73] Chapter 1 above, paragraphs 1.31 to 1.38.
[74] Memorial, Volume III, Part Two, paragraph 3.24.

(ii) Embassy Contacts

6.59 There are regular contacts between the two Governments through their respective Embassies on matters relating to Sellafield, including the MOX Plant. Participants in relevant meetings in Dublin have included British Embassy staff and Irish Government officials from the Department of Foreign Affairs, the Department of the Environment and Local Government, the Department of Transport, and the Department of Communications, Marine and Natural Resources. The timing of meetings is a matter for mutual agreement. Five relevant meetings have taken place since 1 July 2002. Through the British Embassy in Dublin, the United Kingdom commonly provides the Irish Government with copies of official reports or policy documents.

(iii) The UK-Ireland Contact Group

6.60 In the 1980s, the Governments of the United Kingdom and Ireland agreed to put into place arrangements for the informal but regular exchange of information on matters of radioactivity. This provides a mechanism whereby the United Kingdom keeps Ireland informed about a range of issues including activities at Sellafield, activities at other nuclear sites in the United Kingdom, including those in Scotland, various nuclear practices, and the effects of radon on households across the United Kingdom.

6.61 Over time this informal arrangement has become more formalised and the United Kingdom and Ireland now meet on a six monthly basis to discuss issues of common interest. On the United Kingdom's side the participants are generally drawn from the Department for Environment, Food and Rural Affairs, the Department of Health, the Foreign and Commonwealth Office, the British Embassy in Dublin, the Environment Agency, the Food Standards Agency, the Scottish Executive, the National Assembly for Wales and Northern Ireland Department for the Environment and Department of Health. On Ireland's side the participants are generally drawn from the Department of Environment and Local Government, the RPII and the Irish Embassy, London. This Group has met every 6 months for at least 10 years. The most recent meeting took place on 23 September 2002 in Dublin.

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(iv) The British-Irish Council

6.64 The British-Irish Council was established by an agreement dated 10 April 1998. Its purpose is to promote the harmonious and mutually beneficial development of the totality of relationships among the respective peoples of Ireland, and of the United Kingdom, Northern Ireland, Scotland and Wales, Jersey, Guernsey and the Isle of Man. The Council normally operates by consensus and its members aim to co-operate on matters of mutual interest. Members of the Council may agree common policies or common actions, although individual members may opt not to participate in such common policies or common actions.

6.65 At its first summit in London in December 1999, the Council decided on a number of priority areas of work which would benefit from such co-operation. The environment was one priority area that was identified, and the United Kingdom is the Lead Administration for this area of work. The British–Irish Council (Environment) Sectoral Group ("BIC(E)") has a secretariat provided by the Government of the United Kingdom. Meetings are held twice a year. One particular area of work which the BIC(E) was mandated to consider by the British-Irish Council was Sellafield and Radioactive Waste.

6.66 In November 2001 Ireland, together with the Isle of Man, produced a paper for discussion at the BIC(E) meeting in Edinburgh on 25 February 2002. Presentation of the paper followed shortly after the initiation by Ireland of the present proceedings and in particular the application to ITLOS for provisional measures and preceded the hearing of that application. After some exchanges, and since the matters raised in the revised version of the paper from Ireland and the Isle of Man were similar to those raised in the present arbitration, the United Kingdom was advised that it could not offer substantive comments at that stage. The United Kingdom has agreed to provide papers for the next Ministerial meeting of BIC(E), when it is reconvened, on the vitrification of high-level waste and the storage of plutonium.

(v) British-Irish Inter-Parliamentary Body

6.67 At the request of Members of the Oireachtas in Dublin and the Parliament at Westminster, the British-Irish Inter-Parliamentary Body was established in February 1990 with the consent and co-operation of both Governments, at first under the auspices of the British and Irish Groups of the Inter-Parliamentary Union. The Body originally consisted of twenty-five members from each Parliament, with twenty Associated Members from each side to replace Full Members either at Plenary Sessions or at Committee meetings. In February 2001 the membership of the Body was expanded to involve members from the United Kingdom's devolved parliamentary bodies.

6.68 The purpose of the Body is to bring together Members of the participating institutions to consult on a wide range of non-legislative parliamentary activities. The four Committees conduct inquiries on matters of common concern. They meet regularly throughout the year and take oral and written evidence from interested parties on which to base their reports.

6.69 Issues relating to activities at Sellafield or nuclear matters more generally have often been the subject of discussions in the Body. Sellafield has also been the subject of reports by the Body's Committee D on "Education, Culture and the Environment". As part of their report, the Committee undertook to visit the Sellafield site in July 1996. The members of the Committee were shown the THORP process and were briefed on work which Nirex were undertaking to develop a rock characterisation facility in order to determine the suitability of sites for storage of low and intermediate level waste.

6.70 Members of Committee D visited Sellafield on 28 January 2002. They held discussions with the Chief Executive of BNFL and with representatives of management and trades unions at the site. They also visited THORP and the MOX Plant. On 11 March 2002 the Committee met again in London and discussed the issues with officials from UK Government departments and agencies. There was also discussion of Sellafield at the British-Irish Inter-Parliamentary Body's meeting at Manchester from 24-26 November 2002.[75]

(vi) The Draft Coastguard Agreement

6.71 The coastguards of Ireland and the United Kingdom have co-operated for years, and continue to do so, in respect of maritime search and rescue and in respect of the control of maritime pollution. More specifically, the coastguards provide advance information to each other of commercial shipping movements involving significant IMDG Code and INF Code cargoes to or from ports in their respective areas.

6.72 Discussions on a possible Memorandum of Understanding between Ireland and the United Kingdom on co-operation on search and rescue and maritime pollution response have been under way since the early 1990s. In its current form this is being developed as an Operational Agreement between the Irish Coastguard and the United Kingdom's Maritime and Coastguard Agency ("MCA"). In its earlier manifestations it was to have been a Memorandum of Understanding between the respective Governments and later the respective Government Departments. For much of the period the debate about the contents of the Agreement focused on the appropriate boundaries to use and this was finally resolved by using different boundaries for search and rescue and pollution response. The issue of notification of nuclear cargo movements was raised during discussions in 1999 and the United Kingdom provided alternative texts on this aspect in October 2000. The draft document was finalized during 2001. In April and

[75] The work of the Body is described in detail on their website at http://www.biipb.org/biipb/.

May 2002 the MCA telephoned and e-mailed their Irish counterparts requesting confirmation that the Irish Coastguard were content with the latest draft. On 24 June 2002 the MCA received an e-mail apologizing for the delay in the Irish response and stating that the Irish were not in a position to finalise the agreement as they were awaiting information from their Department of Foreign Affairs on certain aspects of the draft Agreement.

(vii) Exchange of Information between HSE and RPII

6.73 Arrangements have been in place since 1980 for the exchange of information between the United Kingdom's Health and Safety Executive (HSE) and the Radiological Protection Institute of Ireland (RPII). An "Arrangement for the Exchange of Information" was signed on 2 December 1980 between the HSE and the Nuclear Energy Board (now called the RPII). The Arrangement was initially valid for five years, has been renewed periodically and remains in operation.

6.74 Pursuant to this Arrangement, the Head of RPII and the Chief Inspector of the Nuclear Installations Inspectorate (NII) of the HSE meet annually to talk through issues of the day and exchange information. The most recent such meeting was held in London on 8 November 2002. These meetings are very open and informal. Items discussed cover a wide range of matters pertaining to Sellafield, including the commissioning of the MOX Plant and progress in vitrification of Highly Active Liquid Waste. The HSE routinely provides the RPII with updates on its nuclear regulatory activities and on the progress of key activities at nuclear licensed sites associated with such activities. As an aid to RPII's understanding of and confidence in the context and rigour of its work, HSE has offered the facility for RPII inspectors to attend some HSE training courses and has recently offered to host a mission to enable RPII better to understand the HSE/NII's regulatory activities and ways of working.

6.75 In November 2000, the RPII suggested that the text of the 1980 Arrangement be updated to take account of the RPII's new name. They confirmed that they were content with the existing arrangements and did not propose any changes of substance in the text. A new draft Arrangement between the HSE and the RPII was sent by the HSE to the RPII in December 2000. The substance remains the same as the 1980 Arrangement, namely that the Participants will exchange safety-related information concerning the regulation of the siting, construction, commissioning, operation and decommissioning of nuclear installations in relation to which they have responsibilities. There have been intermittent

contacts between HSE and RPII on the new text, which has undergone further minor updating to take account of new freedom of information and data protection legislation. The United Kingdom had hoped to sign this new Arrangement by now; but on 18 September 2002 the RPII informed the HSE that it now wished to expand the scope of the Arrangement to include nuclear powered submarines.

6.76 The HSE is looking into this new proposal, and suggested that meanwhile the new Arrangement could be signed as it stands at the 8 November 2002 meeting, and the submarine issue resolved thereafter. The RPII declined, saying they preferred not to sign until there was agreement to expand the scope of the Arrangement to cover military installations. Notwithstanding the delay in signing the new Arrangement, the exchange of information has continued pursuant to the 1980 Arrangement, as outlined above.

6.77 In addition, and on a routine, informal basis, the HSE notifies the RPII of any incidents that occur that may be of interest and provides explanatory information. This is done whenever it is considered helpful, whether or not it is covered by any formal commitment to do so. For example, in January 2002 when an announcement was made at Sellafield about a recent discovery of technetium-99 in boreholes off the licensed site, an HSE official emailed some unofficial background information on this discovery to his RPII counterpart.

(viii) Co-operation between the Radiological Protection Board of Ireland (RPII) and the UK's National Radiological Protection Board (NRPB)

6.78 The RPII also have close contact with some sections of the United Kingdom's National Radiological Protection Board ("NRPB") particularly with the Population Exposure and Environmental Assessments Department in its work related to exposures to radon and radioecology. An NRPB manager is contracted as a Technical Expert, on behalf of the Irish National Accreditation Board ("INAB") with respect to their assessment of RPII's personal dosimetry services. The RPII and NRPB collaborate on Community projects funded by the European Commission contracts and research programmes under FPV (Fifth Framework Programme) and through the work carried out within the European Late Effects Project Group ("EULEP") which involves staff at the Radiation and Environmental Science Centre, Dublin Institute of Technology. Among the achievements of the work in FPV is the MARINA II project on the impact of radioactivity in the marine environment.[76] For the purposes of that project the United

[76] August 2002, MARINA II Study (**Annex 19**). See also paragraphs 3.37-3.49 above.

Kingdom and Ireland collaborate as members of the working group collating measurement data, including that for the Irish Sea.

(ix) Draft Agreement on Early Notification

6.79 In addition to the IAEA and Euratom incident reporting procedures, a draft bilateral agreement dealing with the early notification of nuclear accidents or incidents of radiological significance and the exchange of information concerning the operation and management of nuclear facilities has been under consideration by the two governments for some years. The United Kingdom prepared a draft text which was given to Ireland for consideration in November 1999. Ireland's comments were delivered at the end of November 2002.

6.80 In the meantime, the United Kingdom has put in place separate informal arrangements whereby Ireland is automatically notified of any unplanned incidents of radiological significance at nuclear licensed sites in the United Kingdom.

(x) Food Standards Agency Contacts

6.81 The Food Standards Agency ("FSA") has two meetings each year with the Irish Government at the Anglo-Irish Forum. Through its Belfast office the FSA also supplies the Food Safety Promotion Board (the cross border body on food safety throughout Ireland) with advice on radiation protection. Among the data conveyed at the meetings between the FSA and their Irish counterparts are the quarterly provisional radioactivity surveillance results for the Sellafield site. The meetings also provide an opportunity for sharing of surveillance results for Sellafield and the Irish Sea.

6.82 In October 2002 a member of the staff of the FSA was seconded for six months to the staff of the RPII under the United Kingdom–Irish Civil Service Bilateral Exchange Scheme Agreement. It is possible that there will be a reciprocal visit by a member of the RPII's staff.

(xi) United Kingdom's Invitation to Improve these Arrangements

6.83 Furthermore, following the ITLOS Order of 3 December 2001 the United Kingdom, by letter dated 7 December 2001, proposed that "the relevant policy and technical experts [should] begin to exchange further information with regard to possible

consequences for the Irish Sea arising out of the commissioning of the MOX Plant; and to discuss modalities for further exchanges". The same letter suggested that "it would be useful to review the efficacy of the various existing arrangements for co-ordination and monitoring".[77] The United Kingdom was then and remains willing to build upon and improve the mechanisms in place.

6.84 Ireland did not, however, respond favourably to the offer made by the United Kingdom. Rather at the meeting in Dublin Castle on 11 December 2001 Ireland pressed for prompt answers to its list of 55 questions.[78] Those questions have been answered, save in those instances in which Ireland sought disclosure of confidential information affecting, in particular, national security; but Ireland has still not accepted the United Kingdom's offer to review the existing arrangements with a view to making any improvements that may appear useful.

E. CO-OPERATION IN THE MOX CONSULTATIONS

6.85 As has been explained[79] the United Kingdom engaged in no fewer than five rounds of public consultation before Ministers reached the Decision of 3 October 2001 that the manufacture of MOX fuel was justified in accordance with the requirements of Article 6(1) of Directive 96/29/Euratom. This was in addition to the enquiry into the application for planning permission conducted by Copeland Borough Council and the procedure leading to the Opinion of the Commission of the European Communities under Article 37 of the Euratom Treaty.

6.86 At the planning stage Ireland was given an opportunity to make submissions and indeed it did so.[80] Particular attention was given to the submissions made by Ireland about the content of the Environmental Statement, security aspects and the findings of an OECD Report.

6.87 As a Member State of the Community, Ireland was officially notified of the procedure leading to the Opinion of the Commission under Article 37 of the Euratom Treaty. The Commission's Opinion was adopted on the basis of a report from a panel of experts, which included two experts of Irish nationality nominated by Ireland. It is clear

[77] Memorial, Volume III, Part One, p. 219.
[78] See Irish minutes of meeting, Memorial, Volume III, Part One, pp. 51-57. The United Kingdom's minutes are annexed to the United Kingdom's report to ITLOS of 17 December 2001, at **Annex 13**.
[79] Paragraphs 2.16-2.31 above.
[80] Memorial, Volume III, Part One, p. 89.

on the face of the Opinion that the interests of Ireland were specifically taken into account.[81] The Commission's conclusion, based on scientific advice of experts, was that implementation of the plan for the MOX Plant was not liable to result in radioactive contamination, significant from the point of view of health, of the water, soil or airspace of another Member State.

6.88 There followed the five founds of public consultations about the MOX Plant, in all of which Ireland was entitled to be involved, in four of which it was involved.

6.89 In the first consultation, the Irish Department of Transport, Energy and Communications made a submission dated 4 April 1997 in which it stated that Ireland was opposed to the reprocessing of nuclear fuel at THORP and continued:

> "The Department therefore opposes the commissioning of the MOX Plant on the grounds that it will perpetuate the nuclear fuel reprocessing industry in Britain. It believes that all reprocessing activities should cease, that plutonium is a dangerous product and that it should not be regarded as an energy asset."

The Department added:

> "there has not been an adequate presentation of the "justification" for the MOX Plant by BNFL [and] that the Environment Agency should undertake a wider assessment of the benefits and disadvantages related to the commissioning and operation of the MOX Plant at Sellafield".[82]

The Department expressed concern about additional discharges from Sellafield resulting from MOX production, acknowledging that they are "likely to be small".[83]

6.90 The Environment Agency then organised a second round of public consultations, stating expressly that this was done in response to the concerns expressed by several respondents to the first round that BNFL had not provided in the public domain sufficient commercial information to justify the commissioning and operation of the plant. For the purpose of that second round it engaged independent consultants, PA Consulting, "to conduct an independent review of the BNFL economic case and assess whether and to what extent there are likely to be economic benefits" from the operation of the MOX Plant. Ireland made a submission dated 16 March 1998 arguing that following what it

[81] OJ 1997 C 68/03**;** Memorial, Volume III, Part Three, p. 473. See especially paragraph (a) of the Opinion.
[82] Memorial, Volume III, Part One, pp. 95 and 97.
[83] Memorial, Volume III, Part One, p. 95.

called "the collapse" of plans for the development of fast breeder reactors, the economic justification for reprocessing activities such as those carried out at THORP had evaporated.[84] Ireland reiterated its long-standing objections to existing nuclear operations at the Sellafield site, and to reprocessing of nuclear fuel generally, and stated that additional radioactive discharges, "however small they may be, are objectionable and unacceptable to the Irish Government".[85]

6.91 It was at this stage that the Environment Agency concluded its consideration of the environmental issues arising from the proposal to operate the Plant. Overall there were some small benefits and some small detriments among the matters that it had considered but overall the balance was broadly neutral.[86]

6.92 Following the criticism made by Ireland and others that too much cost and price data had been omitted from the version of the PA report released for the purposes of the second consultation in 1997, Ministers released in June 1999 a fresh version of the report.[87] There followed a third public consultation. Ireland made a submission dated 30 July 1999 reiterating its strong opposition "to any expansion of nuclear activity at Sellafield".[88] Again Ireland's views were considered.[89]

6.93 Following the publication in March 2001 of an updated economic plan for the MOX Plant[90] the United Kingdom arranged for a fourth round of public consultations in which, once again, Ireland participated.[91] Ireland declared by a submission dated 22 May 2001 that it "is totally opposed to spent fuel reprocessing".[92] Ireland also argued that before any decision is made on the MOX Plant, the independent consultants' report should be the subject of a public consultation.

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[84] Memorial, Volume III, Part One, p.104.
[85] Memorial, Volume III, Part One, p.103. A submission similar to that of Ireland was made by Mr Gordon MacKerron together with two others. His criticism was that whereas THORP was constructed on a basis that guaranteed its profitability (because customers underwrote the construction costs and committed themselves to reprocessing there) there was no guarantee of profit for the MOX Plant. Mr MacKerron and his colleagues said that they were aware of only one firm contract.
[86] Memorial, Volume III, Part Two, pp. 398, 400, 401, 404, 406 and 407.
[87] Memorial, Volume III, Part Two, p. 419.
[88] Memorial, Volume III, Part One, p.115.
[89] Memorial, Volume III, Part One, p. 123.
[90] Memorial, Volume III, Part Three, pp. 57-88.
[91] Paragraph 2.28 above.
[92] Memorial, Volume III, Part One, p.149, at p.152. (Note: pp. 150 and 151 should be reversed to obtain the correct sequence of the letter.)

6.94 Following the publication of the report, by the new consultants ("the ADL Report")[93] there was another period of public consultation, as Ireland had requested. On this occasion Ireland did not participate, although it was free to do so. This consultation ended on 24 August 2001.

6.95 The conclusion to be drawn is that while Ireland's views have not prevailed, Ireland was repeatedly consulted. On several occasions, the United Kingdom acted in accordance with the submission made by Ireland (and others) that further information should be published or that further consultations should take place before the process of MOX manufacture should be approved.

F. FULL AND UNEDITED COPIES OF PA AND ADL REPORTS

6.96 The contention that the United Kingdom acted in breach of article 197 of UNCLOS in failing to accede to Ireland's request for information under article 9 of the OSPAR Convention[94] is a reiteration of the claim advanced by Ireland before the OSPAR Tribunal.[95] It is not appropriate that this Tribunal should enquire into those matters, which are governed by a separate Convention making provision for the settlement of disputes in accordance with its terms and which are subject to proceedings before another tribunal.

6.97 The United Kingdom must however correct the impression, conveyed by the Memorial, that Ireland has been denied information relevant to the effects of the MOX Plant on the environment.[96] All information about the effects of the MOX Plant on the environment has been published. The subject of the OSPAR proceedings is the United Kingdom's refusal to supply to Ireland, at its request, *unedited and full copies* of the PA and ADL Reports. The material edited from the PA and ADL Reports was not information about the nature and extent of the effect of the MOX Plant on the Irish Sea. It consisted essentially of names of potential customers, together with contractual information, particularly about prices and volumes, and statistical data, including

[93] Memorial, Volume III, Part Two, pp. 473-512.
[94] Memorial, paragraphs 8.105-8.107.
[95] Memorial, Volume III, Part One, p. 331 (paragraph 30) and p. 343 (paragraph 46) "information deleted from the PA report as requested by Ireland". The request for complete and unedited versions of the PA Report and the ADL Report was made and reiterated by Ireland's letters of 30 July 1999, Memorial, Volume III, Part One, p.115; 18 November 1999, Memorial, Volume III, Part Two, p. 125; 25 May 2000, Memorial, Volume III, Part One, p.139; and 22 May 2001, Memorial, Volume III, Part One, p. 149.
[96] Memorial, paragraph 8.106. Indeed, Ireland complains of a failure "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": Memorial, paragraph 8.126.

assumptions and projections appearing in the consultants' economic models. It is described as follows in Ireland's Statement of Claim in the OSPAR proceedings:

> "numerical information relating to assumptions as to production capacity and costs, sales volumes and prices, contractual commitments, price and decommissioning costs, start-up date, plant maintenance down time, fixed costs, level of manning, operational costs and the quantity of fuel already on site".[97]

G. THE REQUEST TO SUSPEND OPERATION OF THE MOX PLANT

6.98 The contention that the United Kingdom ought to have suspended the operation of the MOX Plant pending the outcome of the OSPAR proceedings is a matter that could only have been raised, if at all, before the OSPAR Tribunal. The contention that the United Kingdom ought to have suspended the operation of the MOX Plant pending the outcome of the present proceedings is essentially a reiteration of the unsuccessful application for provisional measures, made by Ireland to ITLOS.[98]

6.99 Ireland produced no scientific evidence before ITLOS to show that the process of MOX manufacture is liable to affect adversely the protection and preservation of the marine environment, in the period pending the constitution of the present Tribunal; and in these proceedings it has produced no evidence to show that the process is liable to have any such effect in the period pending decisions of the OSPAR Tribunal or of this Tribunal. All the scientific evidence is to the contrary.[99]

H. THE ENVIRONMENTAL STATEMENT

6.100 The submission that the United Kingdom infringed articles 123 and 197 of UNCLOS by failing to make a fresh Environmental Statement[100] amounts in essence to a reiteration of Ireland's submission based on article 206 of UNCLOS (which is addressed in Chapter 5 of this Counter-Memorial). Article 206 provides that when States have reasonable grounds for believing that planned activities under their jurisdiction may cause substantial pollution or significant and harmful changes to the environment, they shall as far as possible assess the potential effects and communicate the result of the assessment.

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[97] Memorial, Volume III, Part One, p.335.
[98] Memorial, paragraphs 8.105-8.107 (OSPAR); ibid., paragraphs 8.147-8.153 (present proceedings).
[99] See Chapter 3 above.
[100] Memorial, paragraphs 8.110–8.126.

6.101 The United Kingdom does not have reasonable grounds for believing the operation of the MOX Plant may cause substantial pollution or significant and harmful changes to the environment. On the contrary, the scientific evidence, which is overwhelming, is that the operation of the MOX Plant both in normal conditions and in the circumstances of any accident considered plausible would not produce discharges, significant from the point of view of health, on the air, land or water of Ireland or any other State.

I. CO-OPERATION IN RELATION TO MARINE TRANSPORTS

6.102 Ireland's complaint that the United Kingdom has failed to co-operate, consistently with articles 197 of UNCLOS, in relation to international transports, must be judged in the light of the significant role that has been played by the United Kingdom in formulating appropriate rules, particularly within the IMO and IAEA; and in the light of the recent review of the United Kingdom's transport operations conducted by the latter.

6.103 As already explained at paragraphs 2.94-2.97, the IAEA's Transport Safety Appraisal Service ("TranSAS") conducted a thorough review of the implementation in the United Kingdom of the Agency's Regulations for the Safe Transport of Radioactive Material ("the Transport Regulations"). The review addressed the implementation of the Transport Regulations in all relevant transport activities in the United Kingdom, for all modes of transport, but with special emphasis on maritime transport.

6.104 The TranSAS report did not find any issues that were safety critical. It did make three recommendations for areas in which the United Kingdom's regulatory practice could be streamlined or improved.[101] Those recommendations were for changes in the method of review and inspection of packages. They have been accepted. Dealing with the question of shipping, the TranSAS report made the following determinations:

> "It was determined that the United Kingdom has comprehensive and effective emergency response plans involving governmental agencies and industry that go beyond the norm incorporating emergency arrangements for all modes of transport.
>
> It was determined that the United Kingdom has gone well beyond what has been and is currently required in the area of maritime transport of radioactive material

[101] Those recommendations were for a written formal report to be issued for each package design certificate and special arrangement certificate; for a systematic review, on a sampling basis, of package designs approved other than by competent authorities; and for evaluation of the audit and inspection programme.

covered by the IMOP, IMDG, INF and International Safety Management Codes, implementing recommendations that have since or are later anticipated to become mandatory and often adopting additional measures beyond those specified in these codes to enhance the actual or perceived level of safety for the maritime transport of these materials".[102]

6.105 Among the matters considered in the TranSAS Appraisal was co-operation between the United Kingdom and Ireland. The TranSAS Appraisal noted in particular that arrangements were being made to secure a government-provided emergency towing vehicle capability in the Irish Sea. It recorded that negotiations have begun with the Irish authorities over the provision of an Irish Sea emergency towing vehicle. The Irish Government was considering its funding options.[103] At paragraph 4.145 the Agency reported as follows:

> "The appraisal showed that the MCA has been involved in extensive liaison with the Irish authorities regarding general counter pollution measures in neighbouring waters. There has been extensive and ongoing bilateral discussions between the British and Irish governments with respect to cross-border contingency planning and emergency management procedures. The liaison has resulted in an operational agreement between the MCA and the Irish Marine Emergency Service on maritime search and rescue and maritime counter-pollution, which is in a final draft form.
>
> Ireland attended the last Anglo-French Accident Technical Group, held in Jersey in May 2002, to participate in discussions on joint counter-pollution and contingency planning issues in the English Channel. Currently progress is ongoing for the accession of Ireland to the Bonn Agreement,[104] The decision has been made to amend the agreement to allow the accession of Ireland. Ratification is still awaited from the Netherlands, Denmark and Norway. Once this accession has been finalized, it will provide additional coverage and enhanced response capability through the Bonn Agreement to the whole of the UK Counter Pollution Control Zone and Irish waters".[105]

6.106 The TranSAS Appraisal made two suggestions relating to consultation with Ireland. The first was that the United Kingdom should continue bilateral liaison with the Irish Government on counter-pollution and emergency response measures including the provision of an Irish Sea emergency towing vehicle. This the United Kingdom has done: it is awaiting a response from Ireland to its proposals. The second was that the United

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[102] TranSAS Appraisal, p.10 (**Annex 15**).
[103] Ibid, p. 73, paragraph 4.143.
[104] Agreement for Co-operation in Dealing with Pollution of the North Sea by Oil and other Harmful Substances, Bonn, 13 September 1983 (www.bonnagreement.org/eng/html/welcome.html).
[105] TranSAS Appraisal, paragraph 4.145 (**Annex 15**).

Kingdom should continue multilateral liaison with neighbouring States. Again, the United Kingdom has followed this suggestion.

6.107 The allegation that the United Kingdom has failed to co-operate with other States in relation to international transports of radioactive material may properly be judged in the light of the TranSAS report. The fact that it took place at all is evidence of such co-operation, as is the implementation of the recommendations made in it.

6.108 Ireland claims that the United Kingdom has failed to inform it of the number of shipping movements likely to arise in consequence of the operation of the MOX Plant.[106] On the contrary, the United Kingdom has made it clear that in the absence of a decision authorising variation of existing reprocessing contracts, or the conclusion of new reprocessing contracts, the operation of the MOX Plant is not expected to result in any increase in the number of marine transports through the Irish Sea. Indeed it may result in a small reduction in that number.[107] This point was spelled out in express terms by counsel for the United Kingdom in the ITLOS proceedings.[108]

6.109 Ireland complains repeatedly that the United Kingdom "is cutting Ireland out of plans and denying that Ireland has any interest in the protection of the shipments" so that "despite requests, the United Kingdom has not indicated even the approximate number of sea transports to and from the Sellafield site".[109] The record shows otherwise. In its Written Response in the ITLOS stage of these proceedings, dated 15 November 2001, the United Kingdom committed to writing its offer to disclose the figure, provided that Ireland would keep it confidential (for reasons of security as well as commercial confidence). Since Ireland did not respond, the offer was reiterated at the oral hearing.[110] As there was still no response, it was repeated in writing on 19 April 2002.[111] On 9 May 2002 Ireland stated that it wanted to discuss the United Kingdom's offer but did not accept that the information was confidential.[112] The United Kingdom reiterated its offer to supply the information once more by letter dated 17 May 2002, offering to host a meeting.[113] On 15 June 2002 Ireland agreed to accept the information on a confidential

[106] Memorial, paragraphs 8.96, 8.229, 8.238, 8.273, 8.274.
[107] Memorial, paragraphs 8.128, 8.170.
[108] ITLOS oral hearing, Verbatim Record, 20 November 2001 PM p. 22, lines 11-19 on the ITLOS website at http://www.itlos.org/cgi-bin/cases/case_detail.pl?id=10&lang=en.
[109] Memorial, paragraphs 8.96, 8.229, 8.238, 8.273, 8.274.
[110] ITLOS oral hearing, Verbatim Record, 20 November 2001, PM, p. 22 lines 7-9 on the ITLOS website at http://www.itlos.org/cgi-bin/cases/case_detail.pl?id=10&lang=en.
[111] Memorial, Volume III, Part One, p. 289.
[112] Memorial, Volume I, Part One, p. 295.
[113] Memorial, Volume III, Part One, p. 297.

basis. The United Kingdom then supplied the information that Ireland has requested (which was the projected figure given in a report by consultants). Subsequently, the United Kingdom supplied to Ireland further and more recent information about the estimated number of transports.

6.110 The written record does not support Ireland's assertion that the United Kingdom has been "progressively reducing the amount of information shared with Ireland".[114]

6.111

6.112

[114] Memorial, paragraph 8.245.
[115]

6.113 The Bergen Declaration singles out for mention the United Kingdom's practice in this regard, drawing attention to the fact that it goes further than other States in the region. In that Declaration the ministers

> "welcome the practice of some states and operators of undertaking timely consultations with relevant coastal states in advance of shipments and invites others to do so".

A footnote adds:

> "The United Kingdom already provides timely information and will continue to do so".[116]

6.114 In its Memorial Ireland advances the case that the United Kingdom sought to mislead it about the date of return of the fuel from Japan forming the subject of the falsification incident. The allegation is that instead of co-operating the United Kingdom conveyed information "couched in language that is designed more to mould itself around the contours of the United Kingdom's legal obligations than to communicate facts".[117] In support of this allegation Ireland argues that counsel for the United Kingdom stated at the hearing before ITLOS that a cargo of fuel from Japan would not be returned until "some time late next year". By reference to other passages in counsel's speech, Ireland argues that "some time late next year" meant not before October whereas the cargo was returned before then. The date of return is not given in Ireland's Memorial. It was on 17 September 2002. In fact, Ireland has quoted counsel's words selectively. The relevant words were as follows:

> "You have also heard a certain amount about the falsification of data incident at the MOX demonstration facility. It is a matter of public knowledge that the MOX fuel, which was the subject of that incident, is to be returned. It will not be returned to the MOX Plant but to a storage pool. *It is presently not anticipated that this will not be returned until some time late next year. It is a matter for agreement with the Japanese authorities, among others*".[118]

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[116] Paragraph 67 of the Bergen Declaration, Memorial, Volume III, Part Two, p.161
[117] Memorial, paragraph 8.256.
[118] ITLOS oral hearing, Verbatim Record, 20 November 2001, PM, p 26, lines 21-27 on the ITLOS website at http://www.itlos.org/cgi-bin/cases/case_detail.pl?id=10&lang=en.

Those words were correct.[119]

6.115

6.116 Ireland is also incorrect in alleging that the United Kingdom failed to co-operate over what it calls the security of shipments associated with the MOX Plant, although in fact this claim is about emergency plans and is not about security arrangements.[121] Ireland's claim, it will be noted, is at variance with the TranSAS Report. All vessels operated by BNFL and PNTL comply with the INF Code. It is of course the case, as Ireland observes, that such vessels must have a Shipboard Emergency Plan. All BNFL and PNTL vessels do have such plans. There is no basis for any suggestion that the operators, or the United Kingdom, have been unwilling to provide information to Ireland about their emergency preparedness arrangements, within the necessary constraints of maintaining the confidentiality of security sensitive information. Indeed, the evidence is that BNFL has been keen to disclose as much information as they can about their safety arrangements (including emergency preparedness) so as to set at rest groundless public anxiety. In the words of Mr Young:

> "I can say from my own knowledge and experience that BNFL and PNTL go to considerable efforts to provide information about their transport activities to the public and to a wide range of Governments and organisations that express an interest in this matter. This includes information on their emergency planning arrangements."[122]

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[119] Furthermore, the reference elsewhere in the speech to October 2002 did not relate to the fuel to be returned from Japan. By its express terms, quoted by Ireland at paragraph 8.257 of the Memorial, the month of October was mentioned as the earliest date at which there would take place additional marine transports *as a result of the commissioning of the MOX Plant*. The return of fuel from Japan was not a result of the commissioning of the MOX Plant.

[121] Memorial, paragraphs 8.231-8.232.

[122] **Annex 12**, paragraph 17.

J. CO-OPERATION IN RESPECT OF TERRORIST THREAT

6.117 The precautions that the United Kingdom takes to guard the Sellafield site as a whole against acts of terrorists are not among the matters submitted for determination by this Tribunal, which is concerned with the MOX Plant and not with the entire Sellafield complex. Moreover UNCLOS makes it clear that there is no obligation on States Parties thereunder to disclose information the revelation of which could be inconsistent with national security. In the words of article 302:

> "Without prejudice to the right of a State Party to resort to the procedures for the settlement of disputes provided for in this Convention, nothing in this Convention shall be deemed to require a State Party, in the fulfilment of its obligations under this Convention, to supply information the disclosure of which is contrary to the essential interests of its security."

6.118 Ireland does not address this article, which is of obvious relevance to its allegation that the United Kingdom has consistently refused to discuss the terrorist threat with Ireland, other than in "the most vague and general terms, expecting Ireland to rely solely on British assurances that Ireland has nothing to worry about".[123] This allegation is as unjustified as it is irrelevant.

6.119 Subject to the proper protection of information that is necessarily kept confidential for reasons of national security, the United Kingdom seeks to be as open as possible about matters relating to civil nuclear security. In the Report of the Director for Civil Nuclear Security ("the DCNS Report")[124], published earlier this year, the balance to be struck between necessary confidentiality and transparency is specifically considered, in particular in respect of heightened public interest in civil nuclear security issues following the events of 11 September 2001.

6.120 Ireland has been kept properly informed about security issues. Ireland was supplied with the DCNS Report when this was published earlier this year. In addition, at a specially arranged meeting in London on 16 July 2002, attended by representatives of the Irish Government and the RPII, the Director for Civil Nuclear Security and the Chief Inspector of Nuclear Installations gave a personal briefing covering a range of issues concerning the security of facilities at Sellafield and elsewhere.

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[123] Memorial, paragraph 8.187.
[124] DCNS Report, paragraphs 45 and 46 (**Annex 22**).

6.121 The note of that meeting[125] shows that the Irish authorities were given information about changes in the security measures taken since September 2001 to take account, in particular, of threats of suicide attacks. They were informed that physical protection measures at all sites have been strengthened in respect of the prevention of vehicle bomb attacks. They were also informed that increased search arrangements have been introduced at sensitive facilities. Further information about steps taken to enhance security since September 2001 is provided in the DCNS Report[126]. It was also explained to the Irish representatives that the Office for Civil Nuclear Security was at that date in the process of undertaking a comprehensive review of the physical protection arrangements for potential sabotage and terrorist attack targets on all nuclear sites. The Irish representatives were further informed of the further strengthening of transport security arrangements to deter, prevent and detect the hi-jacking of vehicles transporting nuclear materials.

6.122 The United Kingdom acknowledges that the sensitivity of the arrangements in question is such that many details cannot be disclosed to individuals other than those necessarily involved in putting them in place. The United Kingdom registers its concern, however, that it should be alleged that it has consistently refused to discuss the terrorist threat with Ireland.

6.123 Ireland notes that the threat of terrorism to land-based nuclear sites was the subject of a special session of the IAEA which concluded on 2 November 2002.[127] The United Kingdom was among the States principally involved in the convening of that special session and in its conduct.[128]

6.124 Nowhere in its Memorial does Ireland identify any feature of the MOX Plant which would cause it to present a risk of terrorist action separate from the risk of such action at Sellafield generally. Nor does Ireland suggest that MOX fuel presents a greater danger, from the point of view of terrorism, than the material from which it is manufactured.

6.125 Instead Ireland refers to the presence at Sellafield of the HASTs, which contain liquid waste arising from the THORP and Magnox reprocessing plants; and argues that

[125] DTI note of meeting of July 16 2002 (**Annex 23**).
[126] DCNS Report, paras 39-42 and 49 (**Annex 22**).
[127] Memorial, paragraph 8.160.
[128] The paper entitled "Nuclear Terrorism: Reactors and Radiological Attacks after September 11" was delivered by a delegate from the United Kingdom.

"the MOX Plant has magnified and prolonged Ireland's exposure to these risks".[129] Ireland contends in particular that the United Kingdom has failed to co-operate about inspection of the HASTs which, it is suggested, might be vulnerable to terrorist attack.[130] It should first be noted that the commissioning of the MOX Plant does not extend to the use of the HASTs. The matter is therefore beyond the scope of this Dispute. Moreover, as Ireland's own account shows, the United Kingdom arranged for representatives of the RPII to have what the RPII has described as "unprecedented access to the documentation relating to" the HASTs.[131] The representatives of the RPII concluded that the present risks of severe accident associated with them are low. They proposed some further precautions that could be taken (such as further analysis of the risks arising from severe earthquake); and reported that BNFL accepted each of their recommendations.[132]

6.126 Ireland's claims about the risk arising from the threat of a terrorist attack on a vessel serving the Sellafield site must be considered in view of the fact that operation of the MOX Plant does not lead to an increase of marine transports of radioactive materials. If the MOX Plant were not in operation at Sellafield, the plutonium belonging to overseas customers presently on the site together with that contained in the fuel to be recycled at THORP in pursuance of existing contracts would be expected to be returned in due course to its owners. The shipping of MOX fuel rather than that of separated plutonium would have the effect of reducing risks, such as the security threat, because MOX fuel is less attractive to potential terrorists and has safety advantages over separated plutonium during transport.[133]

6.127 Ireland asserts that:

> "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".[134]

As has been made clear in Chapter 3, this issue has (of course) been addressed by the United Kingdom. The Decision of 3 October 2001 contains a section setting out Ministers' conclusions on issues of safety and security. This records, among other

[129] Memorial, paragraph 8.201; see also paragraphs 8.204, 8.205.
[130] Memorial, paragraphs 8.192-8.201.
[131] RPII Annual Report 2000, at p.8 (**Annex 26**); and Annual Report 1999 (**Annex 25**).
[132] Ibid.
[133] Memorial, Volume III, Part Two, p. 239, paragraph 67. See also the Witness Statement of John Clarke, Annex 2, paragraph 227 (**Annex 2**).
[134] Memorial, paragraph 8.171.

matters, that the Office for Civil Nuclear Security ("OCNS"), which regulates security within the civil nuclear industry, is satisfied that the security arrangements to be applied by BNFL will provide effective security once the MOX Plant starts to operate. It continues:

> "The OCNS has taken into account the terrorist attacks on New York and Washington DC which took place on 11 September and it continues to be satisfied that this is still the case. The operation of the [MOX Plant] does not materially affect the availability of potential targets for hi-jacked aircraft. The [MOX Plant] is one of many plants within a large industrial site and has no special features which would single it out from others on the Sellafield site". [135]

The Decision then summarises ministers' conclusions on risks associated with marine transport and concludes:

> "The OCNS has advised that the manufacture of MOX fuel and its transportation present negligible nuclear security or proliferation risks. That remains its view following the events of 11 September.
>
> Re-using separated plutonium as a fuel reduces the demand for raw uranium as a fresh fuel, thus reducing the environmental and safety risks associated with its mining, transportation and processing. The manufacture of MOX fuel does not increase or reduce the total amount of plutonium in existence; it simply allows plutonium derived from spent fuel to be re-used."[136]

The Ministers' reasoning is set out in rather more detail in the Annex to that Decision. [137]

6.128 The same Decision set out Ministers' conclusions on the security implications of transporting fuel to and from Sellafield, in the event of the operation of the MOX Plant The principal effect of present authorisations is to permit conversion of separated plutonium dioxide into MOX pellets which, in the words of Lord Justice Simon Brown, are said to be less attractive to terrorists and safer than plutonium. [138]

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[135] Memorial, Volume III, Part Two, p. 240, paragraph 68.
[136] Memorial, Volume III, Part Two, p. 240, paragraphs 69-70.
[137] *Summary of the main issues raised by interested organisations and individuals and the Secretaries of State's views on those issues* (Annex 1 to the MOX Justification Decision of 3 October 2001), paragraphs 25-33 (**Annex 28**).
[138] Judgment of 7 December 2001; *R. v. (1) Secretary of State for Environment, Food and Rural Affairs (2) Secretary of State for Health, ex parte (1) Friends of the Earth Ltd (2) Greenpeace Ltd* (2001) 50 Eastern Gazette 91

6.129 In these circumstances nothing of value is added by Ireland's reference to article 193 of UNCLOS (which declares that 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.); article 194 (which provides *inter alia* that 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); article 205 (which provides for the publication or provision to international organizations of reports about the risks or effects of pollution of the marine environment); article 207 (which deals with pollution from land-based sources); or article 211 (which deals with pollution from vessels).[139]

K. CO-OPERATION WITH RESPECT TO THE MARINE ENVIRONMENT

6.130 The claim that the United Kingdom has failed to consult Ireland with respect to the protection of the marine environment is based on the same false premise as its allegation of non-co-operation in relation to terrorism. Ireland is explicit in putting its case on the premise that "the Sellafield plant is constantly adding to the pollution of the Irish Sea and the commissioning of the MOX Plant will prolong that pollution".[140] It is necessary to reiterate yet again that no decision has been taken which is liable to prolong the life of THORP or to increase the number of shipments of nuclear material through the Irish Sea.

6.131 Once this is appreciated, Ireland's allegations evaporate. There is no scientific evidence to suggest that the operation of the MOX Plant "may cause substantial pollution of or significant and harmful changes to the marine environment".[141] The evidence is to the contrary, as has been demonstrated by Chapters 2 and 3 above and as is developed in the context of Ireland's allegation on pollution in Chapter 7 below.[142]

6.132 Indeed, as has been shown, one of the areas in which the United Kingdom has co-operated with Ireland, under the aegis of the European Community, is in the MARINA II project on the impact of radioactivity in the marine environment, for the purpose of

[139] Memorial, paragraphs 8.173 *et seq*.
[140] Memorial, paragraphs 8.128, 8.129, 8.141.
[141] UNCLOS, article 206.
[142] It is to be noted that the figures on discharge from the MOX Plant have not been challenged by Ireland. See in this respect the hearing before ITLOS, where counsel for Ireland said that Ireland did not challenge the figures that the United Kingdom Attorney General had put before the Tribunal the day before: Verbatim Record, Tuesday 20 November 2001, p. 10, lines 19-20.

which the two countries collaborate as members of the working group collating measurement data, including that for the Irish Sea.

6.133 Ireland's claim that the United Kingdom has failed to co-operate, and in particular to supply information, on these matters, coupled with its alarming assertions about the radiological pollution of the Irish Sea, may be contrasted with the publications of Ireland's own radiological institute, the RPII. As has been shown[143] the RPII collaborates with the NRPB. The *Annual Reports* of the former not only acknowledge this co-operation but also reflect, it their findings, the results of the monitoring in which the United Kingdom's agencies are engaged. The RPII has consistently reported that:

> "The dose to the Irish public resulting from the presence of artificial radioactivity in the marine environment is therefore small and does not pose any significant health risk."[144]

L. CONCLUSION

6.134 By article 197 of UNCLOS the States Parties undertake to co-operate on a global or regional basis and, as appropriate, directly or through competent international organisations, in formulating and elaborating international rules, standards and recommended practices and procedures for the protection and preservation of the marine environment. For many years the United Kingdom has been in the forefront of States engaged in just such co-operation. It is and has long been an active member of the IAEA, of the IMO, of the European Communities, and a party to the OSPAR Convention and the London Convention. The international instruments on which Ireland relies, almost without exception, are the product of cooperative efforts in which the United Kingdom was actively engaged.

6.135 The record shows that the United Kingdom has long co-operated with Ireland, and with other regional States, on matters affecting the Sellafield site. Such co-operation has taken the form of bilateral exchanges through ordinary diplomatic channels and also exchanges through a variety of mechanisms established for the purpose. Such co-operation has been effective, especially at the practical level.

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[143] Paragraphs 6.3 and 6.70 above.

[144] 1998 Report (**Annex 24**). The last sentence is repeated in the RPII's Reports for 1999 and 2000, with the following addition: "The Institute advises that from a radiological perspective it is safe to eat seafood landed at Irish fishing ports and to enjoy the amenities of the Irish maritime area". The 2001 annual report 2001 reaffirms that: "The doses incurred by people living in Ireland today as a result of the routine operations at Sellafield are now very small and do not constitute a significant health risk" (**Annexes 25-27**).

6.136 The process of evaluating the co-operation achieved by the parties is not advanced by the selective quotation of letters written over a long period, for the purpose of finding what one side may, with retrospect, consider to be deficiencies here or there and presenting these in an amalgam. If the exchanges described in this chapter are viewed as a whole, they will demonstrate a degree of co-operation, including the supply of information, far exceeding the requirements of UNCLOS.

CHAPTER 7

MEASURES TO PREVENT, REDUCE AND CONTROL POLLUTION

A. INTRODUCTION

7.1 In Chapter 9 of its Memorial, Ireland claims that the United Kingdom is in breach of certain obligations under UNCLOS to take all measures necessary to prevent, reduce and control pollution associated with the MOX Plant. The United Kingdom rejects these claims. Ireland offers no evidence of either pollution or of any risk of pollution in support of its case. Rather, the allegations of pollution appear for the most part to be adjuncts of Ireland's earlier allegations of non-cooperation or the failure of the United Kingdom to undertake an adequate assessment of risks. Insofar as the allegations in Chapter 9 of Ireland's Memorial in fact go to questions of cooperation or the assessment of environmental risks, the United Kingdom relies on the arguments advanced in Chapters 5 and 6 of this Counter-Memorial.

7.2 As is confirmed by the scientific evidence, there is no risk of pollution from radioactive discharges as a result of the authorisation and commissioning of the MOX Plant. Before authorising the commissioning of the MOX Plant, the United Kingdom took steps to satisfy itself that all measures necessary to prevent, reduce and control pollution from the MOX Plant, as well as from transports carrying radioactive material to and from the MOX Plant, had been taken and would be effective.

7.3 Ireland makes much of the fact that there will be some planned emissions from the MOX Plant. However, the scale of those emissions is so vanishingly small – a matter not contested by Ireland – as to be below the current limits of detection. The scientific and technical facts relevant to this assessment are set out in Chapters 2 and 3 above. They are also addressed in a number of the statements and reports annexed hereto. The point is authoritatively made by Mr Parker, of the United Kingdom's Environment Agency:

> "... it is important to note that discharges from the MOX plant are insignificant both in absolute terms and when compared to the discharges from THORP and

> Magnox reprocessing operations. ... The radiological impact of the MOX plant has also been assessed and has negligible radiological significance."[1]

7.4 The same point is made in the Statement of Mr Clarke:

> "To date, all the results of analyses show that, as is the case in relation to liquid discharges, the discharge of aerial effluents from the MOX Plant is so small as to be less than the current limits of detection of highly sensitive measuring equipment."[2]

7.5 This Chapter proceeds as follows. Section B addresses the definition of "pollution" under UNCLOS and, by reference to authoritative scientific assessment, contends that radioactive discharges as a result of the commissioning and operation of the MOX Plant do not constitute "pollution" within the meaning of this term in UNCLOS. Section C goes on to make a number of general observations on law. It begins by describing the legal regime of Part XII of UNCLOS dealing with the *Protection and Preservation of the Marine Environment*. It goes on to identify the specific legal bases in UNCLOS of Ireland's allegations. Thereafter, it addresses a number of general issues relevant to an appreciation of the legal aspects of Ireland's allegations, including in respect of the OSPAR Convention and precaution, both of which are central to Ireland's case.

7.6 Ireland's specific allegations, and the United Kingdom's response thereto, are addressed in Section D. This proceeds by way of the identification of the legal base in UNCLOS of each of Ireland's claims and the specific allegations of fact that underlie each claim. The United Kingdom there points out that a number of Ireland's allegations do not have any foundation in UNCLOS. In other cases, while formally rooted in an UNCLOS provision, the central component of the claim, necessitating evaluation, is an allegation of breach of a non-UNCLOS commitment. As the United Kingdom has already contended, the Tribunal has no jurisdiction in respect of such claims. In respect of yet other allegations, although Ireland advances a claim based in UNCLOS, it makes no allegation of fact at all, contending that it has insufficient information to do so in consequence of the United Kingdom's non-cooperation. In the absence of any allegation of fact, the United Kingdom refrains from addressing what can only be described as speculative and vexatious claims.

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[1] Report of Ian Parker, paragraph 5.33 (**Annex 7**).
[2] Statement of John Clarke, paragraph 126 (**Annex 2**).

7.7 Finally, still in Section D, the United Kingdom addresses three substantive issues relevant to a number of Ireland's claims that have not already been addressed elsewhere: (1) the evaluation of risk and harm and measures taken to prevent, reduce and control pollution, (2) the use of appropriate abatement technologies, and (3) the implementation of applicable international rules and standards to prevent, reduce and control pollution of the Irish Sea. These issues are addressed by reference to the material set out in Chapters 2 and 3 of this Counter-Memorial and the Witness Statements and Experts' reports annexed hereto.

7.8 In summary, the United Kingdom contends that there is no risk of pollution from radioactive discharges resulting from the commissioning and operation of the MOX Plant; that this is fully supported by the detailed scientific evaluations of the issues; that the United Kingdom has in any event, notwithstanding the absence of any risk of significant harm, adopted a precautionary approach to the authorisation, commissioning and operation of the MOX Plant; that this approach is on-going through a continuous process of monitoring; and that, in consequence, the United Kingdom is fully in compliance with all its commitments under UNCLOS and that Ireland's allegations on pollution must accordingly be rejected.

7.9 Before turning to address the definition of "pollution" under UNCLOS, two preliminary observations of a general nature on Chapter 9 of Ireland's Memorial are required. First, a striking feature of Ireland's case is that, while the headline claim is one of the alleged breach of UNCLOS, the principal focus of Ireland's allegations is often on other instruments. Thus, Section B of Chapter 9,[3] refers to an array of other instruments by way of both general background and for purposes of advancing other rules of international law which, in Ireland's contention, the Tribunal must apply.[4] These include, notably, various obligations under the OSPAR Convention[5] which form the central pivot of a number of Ireland's specific allegations under UNCLOS. The most revealing example of this approach is found in Ireland's fifth allegation to the effect that *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*.[6] In this case, through the medium of article 213 of UNCLOS, which is relatively brief and general in its terms, Ireland develops its claim by reference to four

[3] Memorial, pp.210 – 221.
[4] Memorial, paragraph 9.58.
[5] Memorial, pp.214 – 220.
[6] Memorial, pp.238 – 242.

detailed provisions of the OSPAR Convention, the 1998 Sintra Statement, OSPAR Commission Decisions 2000/1 and 2001/1, unspecified obligations under customary international law, Agenda 21 and the 1995 Global Programme of Action, and contends that the United Kingdom is in violation of each of these and thereby also in violation of UNCLOS. Article 213 of UNCLOS, however, provides simply that States shall enforce their laws and regulations adopted to address pollution from land-based sources and shall adopt laws and regulations and take other measures to implement applicable international rules and standards. It does not incorporate in its entirety, and make justiciable in the context of UNCLOS dispute settlement, every law, instrument and principle that can be remotely connected with its purpose.

7.10 This feature of Ireland's case has already been addressed in Chapter 4 above. For present purposes, the United Kingdom simply reiterates its general submission that the Tribunal has jurisdiction in these proceedings in respect of disputes concerning the interpretation or application of UNCLOS, and of UNCLOS alone.

7.11 Second, another feature of Ireland's case on pollution is the broadening of the allegations to include THORP on the basis of nothing more than the unsubstantiated proposition that "without the THORP plant there could be no MOX plant ... [a]nd without the MOX plant, the THORP plant would close earlier than it would with the MOX plant."[7] This appreciation infuses Ireland's allegations on pollution. It is the basis on which Ireland overlooks the insignificant discharges and negligible radiological impact of emissions from the MOX Plant. The problem with the proposition is that no support is offered for it anywhere in Ireland's Memorial.

7.12 The question of the link between THORP and the MOX Plant has been addressed in Chapter 3 above. It is also addressed in the Statements of Jeremy Rycroft and John Clarke and in the report of Ian Parker. The point that requires emphasis is that, were the MOX Plant to close immediately, this would have no effect whatever on emission levels from THORP or from the Sellafield site generally.

B. THE UNCLOS DEFINITION OF "POLLUTION"

7.13 Ireland contends that this is not a dispute about science. The United Kingdom's position is that, on the contrary, science goes to the very heart of this dispute. It cuts

[7] Memorial, paragraph 9.138.

across assertions of law on which Ireland relies. It underpins the United Kingdom's assessment of risks. It forms the basis of the international standards on which nuclear facilities such as the MOX Plant operate and on which vessels carrying radioactive material are constructed. It provides the only secure foundation that is possible on which facilities such as the MOX Plant can be authorised and commissioned.

7.14 Ireland contends that "[t]he 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."[8] In so doing, it refers to the definition of pollution in article 1.1(4) of UNCLOS, which provides that "pollution of the marine environment" means

> "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".

7.15 As this definition makes clear, an essential element of pollution within the meaning of UNCLOS is that it results or is likely to result in such deleterious effects as harm or hazards to the life or health of human and other biota or to the environment. This appreciation is supported by the writings of commentators. For example, Churchill and Lowe note that "[a]s this definition suggests, it is not the aim of international law to prevent all substances being added to the sea – many substances are harmless or are rapidly rendered so by the sea – but only those which have or are likely to have deleterious effects."[9]

7.16 The commissioning of the MOX Plant was authorised following a rigorous and lengthy assessment as to whether there was a risk of any harm or hazards. On the available evidence, there was no such risk. The United Kingdom remains of this view. This assessment is fully endorsed by the Experts' reports annexed hereto. It is also echoed in the assessment of the Radiological Protection Institute of Ireland ("RPII"), Ireland's statutory authority responsible for monitoring and advising on radiological safety, in its recently published *Annual Report and Accounts 2001*:

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[8] Memorial, paragraph 9.59.
[9] Churchill and Lowe, *The Law of the Sea* (3rd ed., 1999), p.329.

> "In recent decades Irish coastal waters have been influenced by a number of artificial sources of radioactive contamination. ...
>
> The consumption of seafood remains the most important exposure pathway for the Irish public. ...
>
> The dose to consumers who eat substantial quantities of seafood each day (20g shellfish, 200g of fish) was estimated to be less than 2 microsieverts (μSv) which is similar to that in both 2000 and 1999. A small additional dose is incurred through recreational activities such as swimming, walking on beaches or fishing. The size of these doses may be put into context by comparing them to the annual dose to a member of the Irish public from all sources of radiation which can range from about 2000 μSv to 20,000 μSv, or even higher in cases of exceptional exposure to radon gas.
>
> The doses incurred by people living in Ireland today as a result of the routine operations at Sellafield are now very small and do not constitute a significant health risk. The Institute therefore advises that from a radiological perspective it is safe to eat seafood landed at Irish fishing ports and to enjoy the amenities of the Irish maritime area.
>
> ...
>
> The measurements carried out during 2001 show that the levels of artificial radioactivity in air, water and foodstuffs remain low and are well within accepted international standards."[10]

7.17 The United Kingdom's assessment that there is no risk of significant harm from radionuclide emissions from Sellafield as a whole also draws support from the recently published *MARINA II* study prepared by an independent group of scientists for the European Commission's Directorate-General for Environment. Summarising the main findings of the report on the question of discharges from the nuclear industry, the study notes:

> "Since 1986, the **radiological impact on the most exposed groups of populations** (effective dose to members of the critical group) in the vicinity of the major nuclear sites, such as Sellafield and Cap de la Hague was consistently and significantly below the ICRP and EU Basic Safety Standards limit of 1 mSv per year to members of the general public. The range of doses to members of the critical groups for the two sites during 1988-1999 was 0.01 – 0.4 mSv per

[10] Radiological Protection Institute of Ireland, *Annual Report and Accounts 2001*, pp.12 – 14 **(Annex 27)**. This statement is consistent with statements made in previous RPII Annual Reports (see **Annexes 24, 25 and 26**).

year for anthropogenic radionuclides. The variation in such doses was primarily due to changes in the consumption rates of marine produce by the most exposed groups of the population."[11]

7.18 Addressing the *Assessment of the Impact of Radioactive Substances on Marine Biota of North European Waters* with specific reference to emissions from nuclear reprocessing at Sellafield (ie, Magnox and THORP), the study concludes:

> "... throughout the assessment period 1986-2001, the estimated dose values were all below the levels of deterministic effects of radiation, so it is unlikely any radiation effects will appear in marine organisms."[12]

7.19 As both the *MARINA II* study and the RPII Report attest, while there are radionuclide emissions *from Sellafield as a whole*, these remain well within international limits and do not pose deleterious effects to the life or health of humans or other biota or to the marine environment. The same applies in respect of planned discharges resulting from the commissioning and operation of *the MOX Plant* which constitute such an infinitesimally small amount of the total emissions from Sellafield as to be below the current limit of detection.

7.20 Ireland seems almost to accept this point in its Memorial. It does not, for example, contest the non-detectable scale of the emissions from the MOX Plant. On the question of harm, under the heading of *The Effects of Discharges into the Irish Sea*, Ireland addresses, respectively, the *Effects upon Marine Life* and the *Effects on Humans* in its Memorial in the following terms:

> "As far as the effects upon marine life are concerned, the overall levels of radioactivity in the seawater of the Irish Sea itself, taken as a whole, do not appear to be yet so harmful that an average consumption of fish caught in the Irish Sea exposes the consumer to dangerous levels of radiation."[13]

> "The levels of radioactivity in fish caught in the Irish Sea are, in general, not so high that at present they fall above the levels that are officially regarded as representing a serious risk to human health. Nor are the levels of radioactivity resulting from wind-spray and airborne particles from drying mad-flats."[14]

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[11] MARINA II study, Executive Summary, p.2, paragraph 3 (emphasis in the original) **(Annex 19)**.
[12] MARINA II study, Report of Working Subgroup D on the *Assessment of the Impact of Radioactive Substances on Marine Biota of North European Waters*, at p.25 **(Annex 19)**.
[13] Memorial, paragraph 3.54.
[14] Memorial, paragraph 3.59.

7.21 Ireland thus acknowledges in its Memorial what its competent statutory authority has acknowledged elsewhere, ie, that radioactive emissions from Sellafield are low, that they come well within acceptable international standards, and that they do not constitute any significant risk to life, health or the environment.

7.22 In the face of these admissions, Ireland's claim that emissions resulting from the MOX Plant constitute "pollution" is based on the bare assertion that radioactive substances are toxic, harmful and persistent.[15] No attempt is made to substantiate the point with reference to the scale of the emissions in issue in these proceedings. Save in the case of the report by Frank Barnaby appended to Ireland's Memorial, a report that attracts significant criticism from Ian Parker of the Environment Agency, none of Ireland's experts address the question of emissions resulting from the MOX Plant and whether they are properly to be considered as "pollution" within the meaning of this term in UNCLOS. In the face of the RPII and the *MARINA II* assessments, as well as those of other experts, there is no credible basis for such an assertion.

7.23 The United Kingdom has taken every reasonable and necessary step to ensure that there is no risk of harm from radioactive emissions, whether planned or unintended, as a result of the authorisation, commissioning and operation of the MOX Plant. Were there to be any such risk, the potential effects would be significantly greater on the population, environment and territory of the United Kingdom than they would be for Ireland. The point is self-evident. The United Kingdom has taken no such risks with its own population, environment and territory. It has not done so indirectly with regard to Ireland, its territory, population or environment.

C. GENERAL OBSERVATIONS ON LAW

(i) The Scope and Framework of Part XII of UNCLOS

7.24 Part XII of UNCLOS addresses the *Protection and Preservation of the Marine Environment*. Its object is to "establish general rules to serve as the legal framework for specific global or regional agreements."[16] The expression "protection and preservation of

[15] Memorial, paragraph 9.69.
[16] *Virginia Commentary*, Vol. IV, p.4, paragraph XII.3

the marine environment" "conveys the concept of a long-term policy" and "is embodied in articles enunciating general principles or basic rights and duties".[17]

7.25 Part XII is organised into 11 sections of which three (sections 1, 5 and 6) are relevant for present purposes. Section 1 sets out *General Provisions*, including, in article 192, the *General obligation* to protect and preserve the marine environment. Also in section 1, article 194 addresses *Measures to prevent, reduce and control pollution of the marine environment*, providing, in paragraph 1, that "States shall take ... all measures ... 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". Paragraph 2 provides that "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 areas where they exercise sovereign rights". Paragraph 3 goes on to indicate the scope of the measures to be taken to deal with pollution pursuant to Part XII, including (a) pollution from land-based sources, (b) pollution from vessels, and (c) pollution from installations and devices.

7.26 The general obligations indicated in section 1 are developed in the succeeding sections of Part XII which set out specific obligations. Of relevance for present purposes, sections 5 and 6 address, respectively, *International Rules and National Legislation to Prevent, Reduce and Control Pollution of the Marine Environment* and *Enforcement*. Section 5 contains a series of articles which require States to adopt laws and regulations to prevent, reduce and control pollution from: land-based sources (article 207); seabed activities (article 208); activities in the Area (article 209); dumping (article 210); vessels (article 211); and from or through the atmosphere (article 212). These potential sources of pollution reflect the scope of Part XII as described in article 194(3).

7.27 Section 6 follows the same scheme, addressing enforcement with respect to pollution from: land-based sources (article 213); seabed activities (article 214); activities in the Area (article 215); dumping (article 216); vessels (articles 217 – 221); and from or through the atmosphere (article 222).

7.28 As this framework makes clear, section 1 defines the scope of Part XII and describes the general obligation to prevent, reduce and control pollution. Sections 5 and

[17] *Virginia Commentary*, Vol. IV, p.12, paragraph XII.13

6 then set out specific rules to address pollution from particular sources. Sections 5 and 6 are thus an elaboration of the general obligation in section 1. Section 1 identifies the framework within which the detailed rules laid down in sections 5 and 6 must be interpreted.

(ii) The Legal Basis in UNCLOS of Ireland's Allegations

7.29 In Section A of Chapter 9 of its Memorial,[18] Ireland refers to nine articles of UNCLOS in support of its allegations, namely, articles 192, 193, 194, 207, 211, 212, 213, 217 and 222. In fact, as appears from Ireland's specific allegations later in the Chapter,[19] the allegations of a breach of UNCLOS are rather more narrowly focused, specific allegations of violation being made in respect of only four articles, namely Articles 194,[20] 213,[21] 217[22] and 222.[23] Article 194 is drawn from section 1 of Part XII, describing the scope of the measures to be taken under this Part to prevent, reduce and control pollution. Articles 213, 217 and 222 are drawn from section 6 of Part XII, dealing with enforcement in respect to pollution from land-based sources (article 213), by flag States (article 217), and from or through the atmosphere (article 222). The other provisions of UNCLOS to which Ireland refers do not form the basis of self-standing allegations of breach. In particular, Ireland does not make any specific allegations in respect of the obligations to adopt laws and regulations to prevent, reduce and control pollution in section 5 of Part XII. Each of Ireland's specific allegations are addressed in turn in Section D below.

7.30 A number of general observations on law are necessary. First, as has just been noted, Ireland advances nine specific allegations against the United Kingdom. These allegations are set out in detail in Section D of Chapter 9 of the Irish Memorial under the heading *The United Kingdom has Violated UNCLOS* and, more particularly, from page 229 of the Memorial. These nine allegations are also identified at the start of Chapter 9, in paragraph 9.2, cross-referring to the detailed discussion of the allegations that follows.

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[18] Memorial, paragraphs 9.5 - 9.21
[19] Memorial, pp.224 – 247.
[20] Memorial, paragraphs 9.92 – 9.100, 9.101 – 9.104, 9.105 – 9.111, 9.112 – 9.126, 9.146 – 9.152, 9.157 – 9.166.
[21] Memorial, paragraphs 9.127 – 9.145.
[22] Memorial, paragraphs 9.153 – 9.156.
[23] Memorial, paragraphs 9.167 – 9.169.

7.31 At various places elsewhere in Chapter 9, notably in Section A, Ireland highlights other provisions of Part XII of UNCLOS. Reference is made, for example, to articles 192 and 193 of UNCLOS in the context of discussion of general obligations. Further articles are also highlighted. For example, reference is made to article 207 of UNCLOS which addresses pollution from land-based sources.[24] Similarly, reference is made to article 211 of UNCLOS concerning pollution from vessels.[25]

7.32 In a number of cases, references to particular provisions in the background sections of Chapter 9 are *not* followed up by specific allegations of breach later in the chapter under any of the nine heads of allegation. This is the case, in particular, as regards both articles 207 and 211. The United Kingdom accordingly assumes that no allegation of breach is being made in respect of these provisions and it refrains from addressing their interpretation or application in any detail.

7.33 Second, the United Kingdom accepts that articles 192 and 193 of UNCLOS are relevant to the interpretation of the specific provisions of Part XII. Ireland develops the point in some detail and also places reliance on the ILC's Draft Articles on Prevention of Transboundary Harm from Hazardous Activities of 2001.[26] These Draft Articles do not assist Ireland's case. It is useful to recall a number of elements of these Draft Articles and the Commentaries thereon.

7.34 The mandate given to the ILC on the question of the prevention of transboundary harm from hazardous activities was "to codify and develop international law".[27] Article 2 of the Draft Articles defines the phrase "risk of causing significant transboundary harm" to include "risks taking the form of a high probability of causing significant transboundary harm and a low probability of causing disastrous transboundary harm". In respect of this definition, the Commentary notes:

> "For the purposes of these articles, 'risk of causing significant transboundary harm' refers to the combined effect of the probability of occurrence of an accident and the magnitude of its injurious impact. It is, therefore, the combined effect of 'risk' and 'harm' which sets the threshold. ... A definition based on the combined effect of 'risk' and harm' is more appropriate for these articles, and

[24] Memorial, paragraph 9.14.
[25] Memorial, paragraph 9.17.
[26] ILC *Draft Articles on Prevention of Transboundary Harm from Hazardous Activities*, November 2001 ("Draft Articles on Transboundary Harm") and the "Commentary" thereon: Memorial, Volume III, Part One, p.347.
[27] Commentary, Preamble, at paragraph (1): Memorial, Volume III, Part One, p.361.

the combined effect should reach a level that is deemed significant. The obligations of prevention imposed on States are thus not only reasonable but also sufficiently limited so as not to impose such obligations in respect of virtually any activity. The purpose is to strike a balance between the interests of the States concerned."[28]

7.35 On the meaning of the term "significant", the Commentary notes:

"The term 'significant' is not without ambiguity and a determination has to be made in each specific case. It involves more factual consideration than legal determination. It is to be understood that '*significant*' *is something more than 'detectable' but need not be at the level of 'serious' or 'substantial'*. The harm must lead to a real detrimental effect on matters such as, for example, human health, industry, property, environment or agriculture in other States. Such detrimental effects must be susceptible of being measured by factual and objective standards."[29]

7.36 On the meaning of Article 3 of the Draft Articles – which provides that "[t]he State of origin shall take all appropriate measures to prevent significant transboundary harm or at any event to minimise the risk thereof" – the Commentary notes:

"The modalities whereby the State of origin may discharge the obligations of prevention which have been established include, for example, legislative, administrative or other action necessary for enforcing the laws, administrative decisions and policies which the State of origin has adopted.

The obligation of the State of origin to take preventive or minimisation measures is one of due diligence. It is the conduct of the State of origin that will determine whether the State has complied with its obligations under the present articles. The duty of due diligence involved however is not intended to guarantee that significant harm be totally prevented, if it is not possible to do so. In that eventuality, the State of origin is required, as noted above, to exert its best possible efforts to minimising the risk. In this sense it does not guarantee that the harm would not occur.

...

In the context of the present articles, due diligence is manifested in reasonable efforts by a State to inform itself of factual and legal components that relate

[28] Commentary, Article 2, at paragraph (2): Memorial, Volume III, Part One, p.368.
[29] Commentary, Article 2, at paragraph (4): Memorial, Volume III, Part One, p.369.

foreseeably to a contemplated procedure and to take appropriate measures in timely fashion, to address them."[30]

7.37 The ILC Draft Articles are not binding or in any way dispositive of the interpretation of UNCLOS. Nevertheless, if one takes the Draft Articles as a guide, it is clear that the United Kingdom has acted squarely within the scope of the obligation to protect and preserve the marine environment in Part XII of UNCLOS.

7.38 Third, as has already been observed, a feature of Ireland's allegations on pollution is that, in a number of cases, they turn on the interpretation and application of agreements and instruments other than UNCLOS. All told, some 14 agreements or instruments are highlighted as "informing" the interpretation and application of the rights and obligations on which Ireland relies. These include resolutions of the UN General Assembly only remotely connected with the subject-matter of this Dispute,[31] various soft law instruments that are not of themselves normative in character,[32] treaties which are no longer in force as between the Parties,[33] agreements and instruments that have only a peripheral connection (if any) with the subject-matter of this dispute,[34] agreements and instruments that are said to establish firm obligations but in respect of which no breach is ultimately alleged,[35] and instruments which post-date the crystallisation of this dispute and the commencement of proceedings.[36] With one or two exceptions, eg, Agenda 21 and the 1995 Global Programme of Action to which passing reference is made in the context of two of Ireland's allegations,[37] it is not entirely clear what relevance these instruments have for the present dispute. They do not form the basis of specific allegations against the United Kingdom. Even assuming, *arguendo*, that the Tribunal had jurisdiction to address disputes over the interpretation or application of these instruments, or that they fall to be applied by reference to some extended conception of applicable law, they could not found rights or obligations in this case.

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[30] Commentary, Article 3, at paragraphs (6), (7) and (10): Memorial, Volume III, Part One, pp.372 - 374.
[31] As in the case of GA res. 913(X) of 1955 and GA res. 3154 (XXVIII) of 1973 on the UN Scientific Committee on the Effects of Atomic Radiation; Memorial, paragraphs 9.29 and 9.33.
[32] As in the case of the 1972 Stockholm Declaration, the 1992 Rio Declaration (Agenda 21) and the 1995 UN Global Plan of Action for the Protection of the Marine Environment from Land-Based Activities; Memorial, paragraphs 9.33, 9.35 – 9.39.
[33] As in the case of the 1958 Geneva Convention on the High Seas; Memorial, paragraph 9.30.
[34] As in the case of the 1963 Treaty Banning Nuclear Weapons Tests in the Atmosphere, in Outer Space and Under Water; Memorial, paragraphs 9.31 – 9.32.
[35] As in the case of the 1972 London Convention, resolution LDC 21(9) of 1985 thereof, and the 1993 amendments to Annexes I and II of the Convention; Memorial, paragraph 9.42.
[36] The Bergen Declaration of March 2002; Memorial, paragraph 9.56.
[37] Fifth Allegation, Memorial, pp.238 – 242, in particular at paragraphs 9.130 and 9.144 – 9.145; Ninth Allegation, Memorial, pp.246 – 247, in particular at paragraph 9.169.

(iii) The OSPAR Convention and instruments adopted thereunder

7.39 In a number of its specific allegations, Ireland cites various provisions of the OSPAR Convention, and of instruments adopted thereunder, both by way of general background and to give specific content to its allegations. This is the case notably in respect of Ireland's second allegation,[38] which focuses on the interpretation and application of the 1998 Sintra Statement; its fifth allegation,[39] which alleges a breach by the United Kingdom *inter alia* of Articles 2(1)(a), 2(2), 3 and 9 of the OSPAR Convention, of the Sintra Statement, and of OSPAR Commission Decisions 2000/1 and 2001/1; and its ninth allegation,[40] which similarly alleges a breach *inter alia* of Articles 2(1)(a), 2(2), 3 and 9 of the OSPAR Convention, of the Sintra Statement, and of OSPAR Commission Decisions 2000/1 and 2001/1. In each case, it is said that the alleged breach by the United Kingdom of its OSPAR obligations gives rise to a further violation of UNCLOS.[41]

7.40 As regards the justiciability of these allegations in these proceedings, in each of the claims just noted Ireland's allegation that the United Kingdom is in breach of its OSPAR commitments forms the essential basis of its allegation of violation of UNCLOS such that the alleged violation of UNCLOS that is said to flow therefrom could not possibly be assessed without a prior determination of rights and obligations under the OSPAR instruments.

7.41 As has been addressed in Chapter 4 above, under article 288(1) of UNCLOS the Tribunal has jurisdiction over disputes concerning the interpretation or application of UNCLOS. As is made clear by the terms of article 288(2), the Tribunal does not have jurisdiction over any dispute concerning the interpretation or application of an international agreement related to the purposes of UNCLOS which is submitted to it

[38] Second Allegation: "The United Kingdom has failed to take 'all measures necessary' to ensure that [the] MOX plant does not cause damage by pollution to Ireland and its environment", Memorial, paragraphs 9.102 – 9.104.
[39] Fifth Allegation: "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", Memorial, paragraphs 9.127 – 9.145.
[40] Ninth Allegation: "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", Memorial, at paragraphs 9.167 – 9.169.
[41] See, for example, Memorial, paragraphs 9.102, 9.133, 9.135, 9.142, 9.143, and 9.169.

otherwise than in accordance with the terms of that agreement. This applies to the allegations based on the OSPAR Convention and the instruments adopted thereunder in this case. The Tribunal does not have jurisdiction to address such matters. Ireland's allegations in respect of the OSPAR Convention and the instruments adopted thereunder are not, accordingly, justiciable in these proceedings.

7.42 The same conclusion is warranted by reference to the provisions of the OSPAR Convention. Article 32 of the OSPAR Convention provides for the settlement of disputes "relating to the interpretation or application of this Convention" in accordance with the procedure laid down in that article. Article 21 of the Convention establishes a further specific procedure for purposes of addressing concerns over *Transboundary Pollution*, paragraphs (1) and (2) of the article providing as follows:

> "1. When pollution originating from a Contracting Party is likely to prejudice the interests of one or more of the other Contracting Parties to the Convention, the Contracting Parties concerned shall enter into consultation, at the request of any one of them, with a view to negotiating a cooperation agreement.
>
> 2. At the request of any Contracting Party concerned, the Commission shall consider the question and may make recommendations with a view to reaching a satisfactory solution."[42]

7.43 The OSPAR Convention thus contains procedures relevant to the settlement of disputes arising under its terms and, explicitly, in respect of concerns over transboundary pollution. Under Article 21(2) of the Convention, the OSPAR Commission is required to consider any question concerning transboundary pollution with which it is seised by an OSPAR Contracting Party. It is competent to make recommendations with a view of reaching a satisfactory solution to such matters.

7.44 Ireland has chosen not to proceed against the United Kingdom in respect of its allegations of transboundary pollution under either Article 21 or Article 32 of the OSPAR Convention. It is entitled to decide not to do so. It cannot, however, circumvent the OSPAR Convention by choosing to proceed instead under UNCLOS in circumstances in which the essence of its claims is an allegation of breach by the United Kingdom of its OSPAR undertakings.

[42] OSPAR Convention, Article 21(1) and (2); Memorial, Volume III, part One, p.432.

7.45 On the question of the relevance of the OSPAR Convention, and the instruments adopted thereunder, for purposes of "informing" the interpretation and application of UNCLOS, Ireland contends that in assessing the content of the rights and obligations under Part XII of UNCLOS regard must be had to other rules and standards of international law. As a matter of general proposition, the United Kingdom does not object to reference to other relevant rules of international law applicable in the relations between the parties for purposes of assisting in the interpretation of UNCLOS. This is contemplated by Article 31(3)(c) of the Vienna Convention on the Law of Treaties, which the United Kingdom takes as embodying a rule of interpretation of customary international law. This exercise cannot, however, be relied upon to import into UNCLOS rights and obligations that are not found in the text of the Convention itself.

7.46 Both the United Kingdom and Ireland are party to the OSPAR Convention. In principle, the Convention thus comes within the scope of relevant rules of international law applicable in the relations between the parties to the present dispute. The OSPAR Convention is, however, a regional convention of limited application which sets out special rules applicable between the parties thereto and establishes a procedural and institutional framework for the on-going elaboration of such rules. Ireland seeks to rely on it as an aid to the interpretation of a multilateral convention of general application which, on the question of the protection and preservation of the marine environment, lays down a general framework of rights and obligations opposable to the 141 States Parties to the Convention drawn from every region of the world.[43] It is not open to it to do so.

7.47 The OSPAR Convention is one amongst a large number of regional agreements that have been adopted to formulate and elaborate rules and standards for the protection and preservation of the marine environment, taking into account characteristic regional features. Its provisions are in many respects untypical in their sophistication and detail. It cannot be relied upon as a touchstone of generally applicable multilateral standards. There is nothing in UNCLOS which purports to incorporate OSPAR rules into UNCLOS or give them special status. Nor is there anything in the OSPAR Convention which suggests that its terms are actionable within the framework of UNCLOS dispute settlement. As Peter Sand observed 15 years ago on the subject of regional agreements for the protection of the marine environment: "In substance, they [the regional agreements for the protection of the marine environment] reflect specific regulatory

[43] States Parties to the Convention as of 10 December 2002.

priorities which differ from region to region".[44] Judge Mensah has similarly observed that detailed regulation of standards relating to marine pollution within UNCLOS was:

> "unrealistic because of the absence of a shared common view of the problem and its solution, between States from different regions and at varying stages of economic and industrial development."[45]

7.48 It is not therefore open to Ireland to draw on the OSPAR Convention for purposes of "informing" the interpretation and application of UNCLOS. This applies equally in respect of instruments adopted under the framework of the OSPAR Convention, such as the 1998 Sintra Statement, the 1998 OSPAR Strategy with Regard to Radioactive Substances, and OSPAR Commission Decisions 2000/1 and 2001/1.

7.49 It must be emphasised that the United Kingdom is fully committed to meeting the objectives agreed upon in the Sintra Statement. Contrary to Ireland's suggestion, however, Sintra does not impose "clear and immediate constraints". The OSPAR Commission, for example, has a detailed strategy that requires it to develop criteria relevant to the assessment of the Sintra objectives. It is required to report on these criteria by 2003, at which point it is also required to assess the need for action on radioactive substances and/or human activities which give rise to concern. Further, the OSPAR Commission is required to assess the combined effect of the national plans submitted for achieving particular Sintra objectives by 2020. The United Kingdom submitted its national plan to the OSPAR Commission in July 2002. The Commission has yet to report on it. Before the United Kingdom had even produced its national plan, Ireland had alleged a breach by the United Kingdom of the "clear and immediate constraints" of the Sintra Statement. This cannot be. There is as yet no consensus within OSPAR as to the detailed requirements of Sintra. The OSPAR Commission, on its own timetable, has still to produce its own preliminary assessments.

7.50 With reference to OSPAR Commission Decisions 2000/1 and 2001/1 cited by Ireland in support of its case,[46] two comments are necessary. First, in accordance with Article 13 of the OSPAR Convention, neither Decision is binding on the United Kingdom, as it abstained from voting thereon and has not subsequently notified that it is

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[44] Peter H. Sand, *Marine Environment Law in the United Nations Environment Programme* (1988), at p.xii.
[45] Mensah, "The International Legal Regime for the Protection and Preservation of the Marine Environment from Land-based Sources of Pollution", in Boyle and Freestone (eds.), *International Law and Sustainable Development* (1999), p.297, at p.313.
[46] Memorial, paragraphs 9.53 – 9.55.

able to accept them. Second, there is in any event nothing in either of these Decisions which has a bearing on Ireland's claims. Neither is therefore germane to the issues before the Tribunal in this case.

(iv) Precaution

7.51 The central element of precaution, or a precautionary approach, is that it operates in circumstances in which a scientific evaluation of the available evidence does not enable an adequate assessment of risks to be made of a given activity but identifies the possibility of a risk of significant harm. Significant harm means objectively quantifiable harm that is more than merely detectable, though not necessarily at the level of serious or substantial, such as would lead to real detrimental effects on human, animal or plant health or on the environment. Importantly, precaution does not require that all risk of harm be eliminated or a guarantee that significant harm will be totally prevented.

7.52 As will be addressed further below, the United Kingdom contends that the authorisation, commissioning and operation of the MOX Plant is in every respect consistent with the dictates of a precautionary approach. The authorisation and commissioning of the MOX Plant proceeded in the light of detailed scientific and technical evidence on the risks of both planned and unintended emissions from the MOX Plant and associated activities. The evidence was more than sufficient to enable a full and careful assessment of risks to be made. The evidence did not identify a risk of significant harm. Through successive enquiries, the United Kingdom took steps to inform itself fully of all of the factors that are relevant to an assessment of both risk and harm. Where necessary, it took steps to address areas of concern. The MOX Plant was subject to a prior authorisation procedure laid down in both EU and English law. It is subject to continuing and rigorous safety monitoring.

7.53 In both Chapters 6 and 9 of its Memorial, Ireland refers to the "precautionary principle" and prays it in aid of its case. Ireland does not, however, anywhere identify the textual basis in UNCLOS for its reliance on such a principle. Nor does it anywhere indicate the content of the principle in an UNCLOS context. While Ireland notes the Separate Opinion of Judge Laing in the *Southern Bluefin Tuna* cases in which he states that "UNCLOS adopts a precautionary *approach*",[47] the Judge was there addressing the

[47] *Southern Bluefin Tuna* cases (Australia and New Zealand v. Japan), ITLOS, Request for the Indication of Provisional Measures, Order of 27 August 1999, Separate Opinion of Judge Laing, at paragraph 16

conservation of marine living resources in the exclusive economic zone and the high seas rather than the protection and preservation of the marine environment from pollution.

7.54 In the *UK strategy for radioactive discharges 2001 – 2020*, which sets out the United Kingdom's strategy for implement its OSPAR commitments, the United Kingdom noted that it had been guided by the precautionary principle as elaborated in the context of European Community law by the Resolution of the European Council at the Nice Summit in December 2000. This states *inter alia* that the Council:

> "Considers that use should be made of the precautionary principle where the possibility of harmful effects on health or the environment has been identified and preliminary scientific evaluation, based on the available data, proves inconclusive for assessing the level of risk".[48]

7.55 This Resolution reflects an earlier Communication by the European Commission on the Precautionary Principle of 2 February 2000 which draws together the various threads of the principle in European Community and international law.[49]

7.56 Ireland contends that "[t]he precautionary principle requires the Tribunal to interpret and apply the relevant provisions of UNCLOS in a precautionary manner."[50] It goes on to define the content of the principle for purposes of these proceedings by reference to Article 2(2)(a) of the OSPAR Convention.[51] This provides that the Contracting Parties shall apply

> "(a) the precautionary principle, by virtue of which 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".[52]

(emphasis in the original).

[48] *European Council Resolution on the Precautionary Principle*, Annex III of the Presidency Conclusions, Nice European Council Meeting, 7, 8 and 9 December 2000, at paragraph 7; available at http://ue.eu.int/Newsroom/LoadDoc.asp?BID=76&DID=64245&from=&LANG=1

[49] *Communication from the Commission on the Precautionary Principle*, COM(2000) 1, 2 February 2000; Memorial, Volume III, Part Two, p.103.

[50] Memorial, paragraph 6.26.

[51] Memorial, paragraph 6.22; also paragraph 9.79.

[52] OSPAR Convention, Article 2(2)(a).

7.57 As indicated above, the OSPAR Convention is a regional convention. The only generally accepted expression of the precautionary approach in a global context is Principle 15 of the 1992 Rio Declaration on Environment and Development. This provides:

> "In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."[53]

7.58 The elaboration of the precautionary principle in Article 2(2)(a) of the OSPAR Convention cannot, for two reasons, be controlling. First, the Tribunal does not have jurisdiction over disputes concerning the interpretation or application of the OSPAR Convention. Nor is the OSPAR Convention part of the applicable law which the Tribunal is mandated to apply. Second, the precautionary principle is not articulated in many of the regional conventions which elaborate detailed rules on the protection and preservation of the marine environment. It would not therefore be sound methodologically to draw on the relatively sophisticated expression of that principle in one regional convention for purposes of "informing" the interpretation of UNCLOS.

7.59 There is no express textual basis for the precautionary principle in the provisions of Part XII of UNCLOS. The United Kingdom has nevertheless been guided by the precautionary principle as formulated in European Community law for purposes of drawing up its strategy to implement its OSPAR commitments. While it is content for reference to be made to the Community formulation of the principle, it would be inappropriate for this to be controlling of the interpretation and application of a multilateral convention to which 127 States apart from the European Community and 13 of its Member States are party. Although the ILC Draft Articles on the Prevention of Transboundary Harm from Hazardous Activities do not refer explicitly to precaution, they nevertheless approach the concept closely.

7.60 A further element of precaution relevant to the commissioning of the MOX Plant requires comment. As a matter of both international practice and European Community law, an evaluation of risk and harm, in the context of an overall assessment of benefit, is a fundamental component of the justification and authorisation process of a nuclear

[53] Principle 15, Declaration of the UN Conference on Environment and Development, Rio de Janeiro, 3 –

facility such as the MOX Plant. Precaution is thus an essential feature of the conceptual framework of radiological protection within which the MOX Plant was authorised and commissioned.

7.61 Authoritative guidance at the international level on the issue of radiological protection is given in the form of recommendations of the International Commission on Radiological Protection ("ICRP"). The principal ICRP recommendation on radiation protection is ICRP Publication 60 of November 1990 ("ICRP 60").[54] This is a detailed text which addresses, amongst other things, quantities used in radiological protection (chapter 2), biological aspects of radiological protection (chapter 3), the conceptual framework of radiological protection (chapter 4), and the system of protection for proposed and continuing practices (chapter 5).

7.62 Addressing the basic framework of radiological protection, ICPR 60 recommends a system of radiological protection based on the following principles:

> "(a) No practice involving exposure to radiation should be adopted unless it produces sufficient benefit to the exposed individuals or to society to offset the radiation detriment it causes. (The justification of a practice.)
>
> (b) In relation to any particular source with a practice, the magnitude of individual doses, the number of people exposed, and the likelihood of incurring exposures where these are not certain to be received should all be kept as low as reasonably achievable, economic and social factors being taken into account. This procedure should be constrained by restrictions on the doses to individuals (dose constraints), or the risks to individuals in the case of potential exposures (risk constraints), so as to limit inequity likely to result from the inherent economic and social judgements. (The optimisation of protection.)
>
> (c) The exposure of individuals resulting from the combination of all the relevant practices should be subject to dose limits, or to some control of risk in the case of potential exposures. These are aimed at ensuring that no individual is exposed to radiation risks that are judged to be unacceptable from these practices in any normal circumstances. Not all sources are susceptible of control by action at the source and it is

14 June 1992.

[54] ICRP Publication 60, *1990 Recommendations of the International Commission on Radiological Protection*, November 1990 (**Annex 16**).

necessary to specify the sources to be included as relevant before selecting a dose limit. (Individual dose and risk limits.)"[55]

7.63 On the various stages in this process, the ICRP recommends *inter alia*:

"4.3.1 *The justification of a practice*

(115) ... The Commission recommends that, when practices involving exposure, or potential exposure, to radiation are being considered, the radiation detriment should be explicitly included in the process of choice. ...

(116) The process of justification is required, not only when a new practice is being introduced, but also when existing practices are being reviewed in the light of new information about their efficacy or consequences. If such a review indicates that a practice could no longer be claimed to produce sufficient benefit to offset the total detriment, withdrawal of the practice should be considered. ...

4.3.2 *The optimisation of protection*

(117) Once a practice has been justified and adopted, it is necessary to consider how best to use resources in reducing the radiation risks to individuals and the population. The broad aim should be to ensure that the magnitude of the individual doses, the number of people exposed, and the likelihood of incurring exposures where these are not certain to be received, are all kept as low as reasonably achievable, economic and social factors being taken into account. ...

4.3.3 *Individual dose limits*

(122) If the procedures of justification of practices and of optimisation of protection have been conducted effectively, there will be few cases where limits on individual doses will have to be applied. However, such limits provide a clearly defined boundary for these more subjective procedures and prevent excessive individual detriment, which might result from a combination of practices. The Commission's dose limits should be applied only in the control of practices.

(123) It is the Commission's intention to choose the values of dose limits so that any continued exposure just above the dose limits would result in additional risks from the defined practices that could reasonably be described as 'unacceptable' in normal circumstances. ...

[55] Ibid., chapter 4, *The Conceptual Framework of Radiological Protection*, at p.28, paragraph (112).

4.3.4 *Potential exposures*

(127) Not all exposures occur as forecast. There may be accidental departures from the planned operating procedures, or equipment may fail. Environmental changes may occur after the disposal of radioactive waste, or there may be changes in the way in which the environment is used. Such events can be foreseen and their probability of occurrence estimated, but they cannot be predicted in detail. The concept of both individual and collective detriment resulting from an exposure then has to be extended to allow for the fact that the exposure may not occur.

(128) Potential exposures need to be considered as part of the assessment of practices, but they may also lead to calls for intervention. Their implications should therefore be considered in both contexts. If the probability of occurrence of the event causing the potential exposures is fairly high, so that several such events might be expected within a year, it should be assumed that the doses resulting from the event will certainly occur. ..."[56]

7.64 As described in Chapters 2 and 3 above, the United Kingdom's approach to the authorisation and commissioning of the MOX Plant has been fully consistent with these recommendations at every step of the way. The recommendations have been incorporated into European Community law in the form of Directives made within the framework of the Euratom Treaty. The currently applicable Directive which addresses these matters is *Directive 96/29/EURATOM of 13 May 1996 laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionising radiation*.[57] This refers to ICRP 60 in its preambular paragraphs and requires *inter alia* that all new practices resulting in exposure to ionising radiation must be justified and that prior authorisation is required for the operation and decommissioning of any facility of the nuclear fuel cycle.[58]

[56] Ibid., chapter 4, *The Conceptual Framework of Radiological Protection*, at pp.29-32, paragraphs (115)-(129).
[57] Official Journal 1996 L 159/1.
[58] At Articles 6 and 4 respectively.

D. IRELAND'S SPECIFIC ALLEGATIONS ON POLLUTION

7.65 Ireland makes nine specific allegations on the subject of pollution. Many of these overlap in their factual dimension. They will be addressed in turn below. In responding to these allegations, this section will proceed first to consider the legal basis of each allegation in UNCLOS and to identify the core allegations of facts advanced in respect of each claim which requires a response. It will thereafter address the allegations by reference to the evidential material set out in Chapters 2 and 3 above and in the Witness Statements and Experts' reports annexed hereto.

7.66 Ireland's nine allegations are as follows:

> 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 contrary to Article 194(1) of UNCLOS.[59]
>
> 2. The United Kingdom has failed to take all measures necessary to ensure that the MOX Plant does not cause damage by pollution to Ireland and its environment contrary to Article 194(2) of UNCLOS.[60]
>
> 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 contrary to Article 194(2) of UNCLOS.[61]
>
> 4. The United Kingdom has failed to take measures designed to minimise to the fullest possible extent the release of radioactive substances arising from the authorisation of the MOX Plant contrary to Article 194(3)(a) of UNCLOS.[62]
>
> 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 contrary to Article 213 of UNCLOS.[63]

[59] Memorial, paragraphs 9.92-9.100.
[60] Memorial, paragraphs 9.101-9.104.
[61] Memorial, paragraphs 9.105-9.111.
[62] Memorial, paragraphs 9.112-9.126.
[63] Memorial, paragraphs 9.127-9.145.

6. The United Kingdom has failed to take all measures necessary to minimise to the fullest extent pollution from vessels involved in transports of radioactive substances associated with the MOX Plant contrary to Article 194(3)(b) of UNCLOS.[64]

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 where not in compliance with those rules and standards contrary to Article 217(1) of UNCLOS.[65]

8. The United Kingdom has failed to take measures designed to minimise to the fullest extent the release into the atmosphere of radioactive substances arising from the authorisation of the MOX Plant contrary to Article 194(3)(a) of UNCLOS.[66]

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 contrary to Article 222 of UNCLOS.[67]

(i) The legal basis in UNCLOS of Ireland's claims and its core allegations of fact

7.67 It will be convenient to start by identifying the legal basis in UNCLOS of each claim in turn and the core allegations of fact which require response.

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

7.68 Ireland alleges that the United Kingdom has failed to take all measures necessary to prevent, reduce and control pollution of the Irish Sea. It bases this allegation on article 194(1) of UNCLOS. This provides:

[64] Memorial, paragraphs 9.146-9.152.
[65] Memorial, paragraphs 9.153-9.156.
[66] Memorial, paragraphs 9.157-9.166.
[67] Memorial, paragraphs 9.167-9.169.

> "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 harmonise their policies in this connection."

7.69 The allegations of fact are that the authorisation of the MOX Plant will lead to intended and unintended discharges directly into the marine environment as well as through the atmosphere, that the intended discharges from THORP have not been identified or quantified, that the unintended discharges do not appear to have been identified or subject to a risk assessment in accordance with the precautionary principle, and that all of these discharges constitute "pollution" within the meaning of UNCLOS.[68] Ireland further contends that the alleged failure of the United Kingdom to carry out an adequate assessment of risks violates the obligation to use "best environmental practices" in respect of measures to prevent, reduce and control pollution.[69]

7.70 The United Kingdom takes issue with the propositions of law and fact at the heart of this allegation, namely, (a) that the discharges from or associated with the MOX Plant come within the definition of "pollution of the marine environment" in Article 1.1(4) of UNCLOS, (b) that there is a necessary and inevitable link between the authorisation of the MOX Plant and discharges from THORP, (c) that the risks associated with both intended and unintended discharges resulting from the commissioning and operation of the MOX Plant have not been fully appraised by reference to technical and scientific evidence in accordance with the dictates of precaution, and (d) that the United Kingdom has not taken all measures necessary to prevent, reduce and control pollution of the marine environment from or associated with the MOX Plant using the "best practicable means" at its disposal.

7.71 As a matter of general proposition, the United Kingdom notes that the phrase, in Article 194(1), "all measures that are necessary ... to prevent, reduce and control pollution" does not require a State to take measures to eliminate completely all risk of pollution or guarantee that pollution will never take place. The composite language of "prevent, reduce and control" indicates the multifaceted nature of the obligation to act

[68] Memorial, paragraph 9.93.
[69] Memorial, paragraph 9.100.

under this provision. Even an expansive reading of precaution does not equate to a search for zero risk or require the complete elimination of all risk of harm or a guarantee that significant harm will be totally prevented. As will be addressed below, the United Kingdom has taken all measures that are necessary to prevent, reduce and control pollution resulting from the commissioning and operation of the MOX Plant.

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

7.72 Ireland alleges that the United Kingdom has failed to take all measures necessary to ensure that the MOX Plant does not cause damage by pollution to Ireland and its environment. It bases this allegation on the first part of article 194(2) of UNCLOS. This provides:

> "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".

7.73 The allegation of fact is that United Kingdom has failed 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 storage at Sellafield of additional quantities of radioactive waste, will not cause damage by pollution to Ireland and its environment. Ireland does not allege any actual damage, or even any risk of damage, but simply that the United Kingdom has failed to take all measures necessary to "prevent" damage.[70] In support of its claim, Ireland alleges that there would be damage by pollution "where concentrations of radionuclides in the Irish Sea were above the level of 'close to zero' after 2020."[71]

7.74 The United Kingdom takes issue with a number of propositions of law and fact central to this allegation, namely, (a) that any discharges resulting from the authorisation and operation of the MOX Plant come within the definition of "pollution" in article 1.1(4) of UNCLOS, (b) that there is a necessary and inevitable link between the authorisation and operation of the MOX Plant and a prolongation in the operation of THORP, and (c) that the United Kingdom has failed to take all measures necessary to ensure that the authorisation and operation of the MOX Plant, and activities associated

[70] Memorial, paragraphs 9.101 and 9.103.
[71] Memorial, paragraph 9.102.

therewith, will not cause damage by pollution to Ireland and its environment. As with the first allegation, the United Kingdom contends that the reference to measures "necessary" to ensure that activities under its jurisdiction do not cause damage does not require the complete elimination of all risk of damage or a guarantee that damage will never occur.

7.75 Ireland does not allege actual damage or even a risk of damage. Its claim is limited to the allegation that the United Kingdom has failed to take all measures necessary to prevent damage. On the question of proof of damage, Ireland points to article 31 of the ILC draft articles on State Responsibility to justify its failure to adduce any evidence of damage, whether actual or prospective. Article 31 does not, however, endorse such an approach. It addresses circumstances in which a State has caused injury by the commission of an internationally wrongful act. In the present case, there has been no internationally wrongful act. The essence of a violation of the first part of article 194(2) of UNCLOS is that there must be a risk of damage by pollution to Ireland and its environment which the United Kingdom has failed to take measures to control. The point is made in the *Virginia Commentary*: "The expression 'damage by pollution', read in the light of the meaning given to the term 'pollution of the marine environment' in article 1 ..., would seem to be the equivalent of 'harm', 'hazards', 'hindrance', 'impairment' and 'reduction', as used in that article."[72] Some evidence of risk of damage is therefore an essential component of this provision. Ireland does not, however, adduce any evidence in support of its claim.

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

7.76 Ireland alleges that 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. It bases this allegation on the second part of article 194(2) of UNCLOS. This provides:

> "States shall take all measures necessary to ensure that ... pollution arising from accidents or activities under their jurisdiction or control does not spread beyond the areas where they exercise sovereign rights in accordance with this Convention."

[72] *Virginia Commentary*, Volume IV, p.65, paragraph 194.10(f).

7.77 The allegation of fact is that United Kingdom has failed to take all measures necessary to ensure that pollution arising from the authorisation of the MOX Plant, including consequential discharges from THORP, does not spread beyond the areas where the United Kingdom exercises sovereign rights.[73] Ireland suggests that a claim under this head will be well-founded if it can show that pollution will be caused by the authorisation and operation of the MOX Plant, that such pollution enters the Irish Sea, that it enters Irish waters, and that the United Kingdom has failed to take all measures necessary to ensure that this does not occur.[74] Against this background, Ireland contends that "at least some of the radionuclides which are discharged from the MOX and THORP plants will reach Irish waters"[75] and that "[t]he 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 [sic], authorising the operation of the MOX plant."[76]

7.78 The United Kingdom disputes the central propositions of this allegation, namely, (a) that emissions resulting from the commissioning and operation of the MOX Plant constitute "pollution" within the meaning of this term in UNCLOS, and (b) that the United Kingdom has failed to take all measures necessary to, in Ireland's words, "put itself in a position to be informed as to the totality of the radioactive discharges" resulting from the commissioning and operation of the MOX Plant. As with the preceding allegations, the reference to measures "necessary" does not require the complete elimination of all risk of pollution or a guarantee that pollution will never occur.

4. The United Kingdom has failed to take measures designed to minimise to the fullest extent possible the release of radioactive substances arising from the authorisation of the MOX Plant

7.79 Ireland alleges that the United Kingdom has failed to take measures designed to minimise to the fullest extent possible the release of radioactive substances arising from the authorisation of the MOX Plant. The basis of the allegation is article 194(3)(a) of UNCLOS, which provides:

[73] Memorial, paragraph 9.105.
[74] Memorial, paragraph 9.106.
[75] Memorial, paragraph 9.109.
[76] Memorial, paragraph 9.110. The Decision was dated 3 October 2001.

> "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 minimise 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".

7.80 The allegation of fact is 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 minimise to the fullest possible extent such releases."[77] Elaborating on the second of these, Ireland contends that the United Kingdom "has failed to inform itself as to the volume of radioactive substances which will be released" as a result of the authorisation of the MOX Plant.[78] Ireland also relies on the report of Frank Barnaby appended to its Memorial to contend that various abatement technologies exist but have not been used.[79]

7.81 The primary question that arises in respect of this allegation is whether it has any legal foundation in the provision on which it is said to be based. The *chapeau* of paragraph 3 of article 194 provides that "[t]he measures taken pursuant to this Part shall deal with all sources of pollution of the marine environment." It does not create an obligation to act but rather is an introductory provision which describes the scope of Part XII of UNCLOS. This reading is confirmed by the following sub-paragraphs of the provision which simply describe forms or sources of pollution, viz. (a) toxic, harmful or noxious substances from land-based sources, from or through the atmosphere or by dumping, (b) pollution from vessels, and (c) pollution from installations and devices used in exploration or exploitation of the natural resources of the seabed and subsoil. In each case, these descriptions of forms or sources of pollution are followed by substantive articles elsewhere in Part XII which establish specific legal obligations. Thus, pollution from land-based sources, from or through the atmosphere or by dumping, identified as coming within the scope of Part XII by article 194(3)(a), is addressed, respectively, in articles 207, 212 and 210 in section 5 of Part XII and in articles 213, 222 and 216 in section 6 of Part XII. It is these provisions which establish various obligations to act, not article 194(3)(a). Article 194(3)(a), for example, is virtually repeated in article 207(5)

[77] Memorial, paragraph 9.112.
[78] Memorial, paragraphs 9.114 and 9.160.
[79] Memorial, paragraphs 9.120 and 9.165.

and adds nothing to the terms of that Article. Similarly, pollution from vessels, referred to in article 194(3)(b), is addressed substantively in article 211, in section 5, and articles 217 – 221, in section 6. Pollution from installations and devices, referred to in article 194(3)(c), is addressed substantively in articles 208 and 209, in section 5, and in articles 214 and 215, in section 6.

7.82 By reference to the plain language of article 194(3)(a), as well as to the substantive provisions elsewhere in Part XII, the United Kingdom contends that article 194(3)(a) does not create a self-standing obligation to act and that it cannot therefore be relied upon by Ireland to found its fourth allegation. For the avoidance of doubt, the United Kingdom nevertheless addresses below the allegations of fact underlying this claim, namely, that the United Kingdom has failed to inform itself as to the volume of radioactive substances that will be released as a result of the authorisation of the MOX Plant and that the United Kingdom has failed to use appropriate abatement technologies.

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

7.83 Ireland alleges that 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. The basis of the allegation is article 213 of UNCLOS, which 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 organisations or diplomatic conference to prevent, reduce and control pollution of the marine environment from land-based sources."

7.84 The factual elements of the allegation are that the United Kingdom has failed to implement an array of mostly OSPAR commitments but also obligations under customary international law and derived from two non-binding instruments, Agenda 21 and the UN Global Programme of Action. The specific contentions in respect of non-compliance with the OSPAR Convention and related instruments are detailed and form the core of the allegations such that the alleged violation of article 213 that is said to flow

therefrom is incapable of assessment without a prior determination of OSPAR rights and obligations. Disputes concerning the interpretation or application of the OSPAR Convention and related instruments are, however, outside the jurisdiction of the Tribunal.

7.85 On the detail, Ireland alleges that the United Kingdom has:

- "committed itself to further material discharges of radioactive substances" leading to the failure to ensure that concentrations of radionuclides are reduced to 'close to zero' by 2020 contrary to its commitments in the Sintra Statement;[80]

- failed to apply the precautionary principle and "best available techniques" and "best available practices" contrary to Articles 2(2) and 3, Annex I and Appendix 1 of the OSPAR Convention;[81]

- failed to take preventive measures to minimise the risk of pollution caused by accidents contrary to Article 3, Annex I and Appendix 1 of the OSPAR Convention;[82]

- extended the life and operation of THORP contrary to OSPAR Commission Decision 2000/1 and other unspecified commitments;[83]

- failed to complete its review of discharge authorisations contrary to OSPAR Decision 2001/1;[84]

[80] Memorial, paragraphs 9.132 and 9.135. As in respect of Ireland's earlier allegations under this head, this allegation is both speculative and premature and is advanced without any evidence in support of the claim.
[81] Memorial, paragraph 9.133. For the reasons already stated, these allegations are not justiciable. In response to Ireland's wider allegations that the United Kingdom has failed to take measures necessary to prevent, reduce and control pollution, including by reference to the precautionary principle, the measures in fact taken by the United Kingdom are addressed below.
[82] Memorial, paragraph 9.134. For the reasons already stated, these allegations are not justiciable. In response to Ireland's wider allegations that the United Kingdom has failed to take measures necessary to prevent, reduce and control pollution, the measures in fact taken by the United Kingdom are addressed below.
[83] Memorial, paragraphs 9.136 and 9.140. Irrespective of the substance of Ireland's allegation, which the United Kingdom rejects, pursuant to article 13 of the OSPAR Convention, OSPAR Commission Decision 2000/1 does not bind the United Kingdom.
[84] Memorial, paragraph 9.139. Irrespective of the substance of Ireland's allegation, which the United Kingdom rejects, pursuant to article 13 of the OSPAR Convention, OSPAR Commission Decision 2001/1 does not bind the United Kingdom.

– failed to provide Ireland with information that it requested contrary to Article 9 of the OSPAR Convention;[85]

– failed to cooperate and provide information to Ireland contrary to "other rules of international law";[86]

– promoted and/or allowed the further storage of radioactive wastes near the marine environment contrary to the requirements of paragraph 22.5(c) of Agenda 21;[87]

– failed to ensure "proper planning", by failing to carry out a proper environmental impact assessment, contrary to the terms of the UN Global Programme of Action.[88]

7.86 Insofar as is material for present purposes, article 213 requires States to take measures necessary to implement applicable international rules and standards to prevent, reduce and control pollution. It does not incorporate such rules and standards into UNCLOS, the UNCLOS obligation being simply to take the necessary implementing measures.

7.87 While the terms "rules" and "standards" are not defined in the Convention, it is evident that both refer to measures that give rise to binding obligations as a matter of international law. This follows from the inter-relationship between article 213 and article

[85] Memorial, paragraph 9.142. This allegation is currently the subject of separate proceedings before a Tribunal constituted in accordance with article 32 of the OSPAR Convention.
[86] Memorial, paragraph 9.143. The substance of this allegation is addressed in chapter 6 above.
[87] Memorial, paragraph 9.144. Paragraph 22.5(c) of Agenda 21 provides: "States, in cooperation with relevant international organisations, where appropriate, should: ... (c) 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 other legitimate uses of the sea, making, in the process of consideration, appropriate use of the concept of the precautionary approach."; Memorial, Volume III, Part Two, p.9 at p.40. Agenda 21 is not a binding instrument. Further, on its terms, paragraph 22.5(c) does not itself purport to establish a binding obligation but is evidently hortatory in nature. It cannot become binding indirectly through the operation of article 213 of UNCLOS.
[88] Memorial, paragraph 9.145. Paragraph 110(c) of the UN Programme of Action provides: "Actions, policies and measures of States within their national capabilities should include: ... (c) 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"; Memorial, Volume III, Part Two, p.43, at p.84. The UN Global Programme of Action is not a binding instrument. It cannot become binding indirectly through the operation of article 213 of UNCLOS.

207. Article 207(1) provides that States shall adopt laws and regulations to prevent, reduce and control pollution "taking into account internationally agreed rules, standards and recommended practices and procedures". Article 207(4) goes on to provide that States "shall endeavour to establish global and regional rules, standards and recommended practices and procedures" to prevent, reduce and control pollution.

7.88 In contrast to this formulation, which identifies four types or sources of guidance – rules, standards, recommended practices and recommended procedures – article 213 requires that States take measures to implement "applicable international rules and standards". No reference is made to recommended practices or recommended procedures notwithstanding that the drafters of the Convention clearly had these in mind. This omission is telling. Article 213 cannot accordingly be read as establishing an obligation upon States to take measures necessary to implement recommended practices and recommended procedures.

7.89 This reading of article 213 draws support from the *Virginia Commentary* which notes that the word "applicable" in this provision "would seem to imply more than merely non-binding recommendations."[89] This interpretation is also consistent with the wider system of international law. States frequently adopt instruments setting out recommended practices and procedures and an agenda or programme for future action. Two such instruments are Agenda 21 and the UN Global Programme of Action on which Ireland relies in the context of these allegations. Neither instrument establishes binding obligations. Binding obligations cannot be created indirectly through the operation of article 213 of UNCLOS.

7.90 Distinct from the question of the justiciability of these allegations in these proceedings, the United Kingdom disputes the propositions that stand at the heart of this allegation, namely, (a) that, by authorising the MOX Plant, the United Kingdom has committed itself to discharges of radioactive substances that will put it in breach of its Sintra commitments, (b) that, in authorising the MOX Plant, the United Kingdom failed to adopt a precautionary approach, (c) that there is a necessary and inevitable link between the authorisation of the MOX Plant and the continued operation of THORP, (d) that the United Kingdom has failed, without legal justification, to provide Ireland with information it has requested, (e) that the United Kingdom has failed to cooperate with

[89] *Virginia Commentary*, Volume IV, p.216, paragraph 213.1.

Ireland, and (f) that the United Kingdom has failed to implement applicable international rules and standards to prevent, reduce and control pollution of the Irish Sea.

7.91 A number of these elements, relating to access to information and co-operation, are addressed elsewhere in this Counter-Memorial. It is not intended to repeat that analysis here.

6. The United Kingdom has failed to take all measures necessary to minimise to the fullest extent pollution from vessels involved in transports of radioactive substances associated with the MOX Plant

7.92 Ireland alleges that the United Kingdom has failed to take all measures necessary to minimise to the fullest extent pollution from vessels involved in transports of radioactive substances associated with the MOX Plant. It bases this allegation on article 194(3)(b) of UNCLOS. This provides:

> "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 minimise to the fullest possible extent:
>
> ...
>
> (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".

7.93 In respect of this allegation, Ireland states that, for its claim to succeed, it needs to show that 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 minimise pollution to the fullest extent possible.[90] Having set out what it takes to be the standard that it is required to meet, Ireland goes on to state, however, that, since it "has little information as to the measures which the United Kingdom has in place ... it is not in a position to offer any detailed comment on the adequacy of the United Kingdom's arrangements."[91] Indeed, no allegations are made anywhere under this heading that the measures applied by the United Kingdom to international transports are in any way inadequate. The only

[90] Memorial, paragraph 9.147.

allegation advanced by Ireland is that "it is the very failure of the United Kingdom to provide information to Ireland which gives rise to a violation of Article 194(3)(b)."[92] Items of information which Ireland says have not been provided relate to the measures for preventing accidents, for dealing with emergencies, for preventing unintentional discharges, and for regulating the design, construction, equipment, operation and manning of vessels.

7.94 In paragraph 7.82 above, in respect of Ireland's fourth allegation based on article 194(3)(a), the United Kingdom observed that article 194(3) does not create an obligation to act but is rather explanatory of the scope of Part XII of UNCLOS. This follows from the plain language of the *chapeau* of the provision. In respect of article 194(3)(b), which addresses the scope of measures to be taken pursuant to other provisions in Part XII concerning pollution from vessels, substantive provisions concerning pollution from vessels are to be found in articles 211 and 217 to 221 of UNCLOS. Article 194(3)(b) does not create a self-standing obligation to act. It cannot be relied upon by Ireland as a legal basis on which to found this allegation.

7.95 There is a further fundamental objection to this allegation. Ireland makes no allegations which, even on its own reading of the provisions, come within its scope. It does not anywhere set out a case that allows a substantive response by the United Kingdom.

7.96 Ireland seeks to turn article 194(3)(b) into an access to information provision. Mention has already been made of proceedings which Ireland is pursuing in another forum in respect of Article 9 of the OSPAR Convention concerning access to information. Ireland might well have sought the information it now identifies in the course of those proceedings under the OSPAR Convention. It did not. Article 9 of the OSPAR Convention sets out a procedural framework for requests for information as well as various grounds for refusal to provide information requested. It follows a fairly standard form as regards access to information provisions. Article 194(3)(b) of UNCLOS, on whatever reading, does not address such matters. For both this reason and for the reason stated above, namely that article 194(3)(b) does not in any event create a self-standing obligation to act, Ireland's allegation under this heading requires no further response at this point.

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[91] Memorial, paragraph 9.148.

[92] Memorial, paragraph 9.149. This allegation of non-co-operation through a failure to provide information

7.97 Insofar as Ireland's allegation under this heading overlaps with its allegations on non-cooperation, it is addressed in the response to those allegations in Chapter 6 above. In view of the relevance to other allegations advanced by Ireland which are addressed elsewhere, questions concerning the design, construction, equipment, operation and manning of vessels, accident and emergency preparedness, as well as other matters relating to the international transport of radioactive substances, including the international and domestic regulatory framework thereof, are addressed in Chapters 2 and 3 above, in the of Statements of Captain Malcolm Miller[93] and Clive Young,[94] and in the reports of John Lillie[95] and Richard Rawl.[96]

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 where not in compliance with those rules and standards

7.98 Ireland alleges that 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 where not in compliance with those rules and standards. It bases this allegation on article 217(1) of UNCLOS, which provides:

> "States shall ensure compliance by vessels flying their flag or of their registry with applicable international rules and standards, established through the competent international organisation 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."

7.99 In respect of this allegation, Ireland contends that, for its claim to succeed, it must show that there are applicable international rules and standards concerning the

is repeated in paragraphs 9.150-9.152.
[93] Witness Statement of Captain Malcolm Miller (**Annex 6**).
[94] Witness Statement of Clive Young (**Annex 12**).
[95] Report of John Lillie (**Annex 5**).
[96] Report of Richard Rawl (**Annex 9**).

prevention, reduction and control of pollution from vessels carrying radioactive substances, that "such rules and standards are not being complied with by vessels involving transports associated with the MOX plant", and that "the United Kingdom has not prevented such vessels from sailing".[97]

7.100 As with the preceding allegation, having set out what it takes it be the standard that it is required to meet, Ireland fails to advance any allegation of fact in support of its claim. It once again simply states that it "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" and that it is "similarly not in a position to know whether any vessels have sailed, and if so under what conditions".[98] The United Kingdom's "refusal to share information" is again cited as the reason for this, and "the principles described above",[99] which the United Kingdom takes to mean Ireland's argument concerning access to information, is relied upon.

7.101 However one might read article 217(1), it cannot found a claim concerning an alleged "refusal to share information". Absent any allegation of fact that contends that the United Kingdom has in some specified way failed 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, there is nothing to which the United Kingdom can respond. Accordingly, Ireland's allegation under this heading requires no further response at this point.

7.102 As with the preceding allegation, insofar as this allegation overlaps with Ireland's allegations on non-cooperation, it is addressed in Chapter 6 above. Issues concerning the international transport of MOX fuel, including the regulatory framework in respect thereof, are addressed in Chapters 2 and 3 above, in the Statements of Captain Malcolm Miller and Clive Young and in the reports of John Lillie and Richard Rawl.

7.103 It is a fundamental principle that a party seeking to establish a fact has the burden of proving it.[100] In respect of its sixth and seventh allegations, Ireland has not even approached this burden. For the avoidance of doubt, the United Kingdom avers that it

[97] Memorial, paragraph 9.153.
[98] Memorial, paragraphs 9.155 – 9.156.
[99] Memorial, paragraph 9.155.
[100] *Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America), Jurisdiction and Admissibility, Judgment*, I.C.J. Reports 1984, p.392 at 437, paragraph 101.

has complied fully with its obligations under UNCLOS to ensure compliance by vessels flying its flag or of its registry that are engaged in the international transport of radioactive substances associated with the MOX Plant with applicable international rules and standards for the prevention, reduction and control of pollution of the marine environment.

8. The United Kingdom has failed to take measures designed to minimise to the fullest possible extent the release into the atmosphere of radioactive substances arising from the authorisation of the MOX Plant

7.104 Ireland alleges that the United Kingdom has failed to take measures designed to minimise to the fullest extent the release into the atmosphere of radioactive substances arising from the authorisation of the MOX Plant. The basis of this allegation is article 194(3)(a) of UNCLOS, which provides:

> "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 minimise 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".

7.105 This allegation is virtually identical to the fourth allegation noted above, the only difference being that it is focused on the release of radioactive substances into the atmosphere rather than into the Irish Sea directly. The allegations of fact are identical in each case.

7.106 As with the fourth allegation, the United Kingdom contends that article 194(3)(a) does not create a self-standing obligation to act but rather describes the scope of measures to be taken under other provisions of Part XII. The reasoning on this point set out in paragraphs 7.81 and 7.82 above as regards the fourth allegation is adopted as regards this allegation as well. The United Kingdom accordingly contends that article 194(3)(a) does not create a self-standing obligation to act and that it cannot be relied upon by Ireland to found its eighth allegation. For the avoidance of doubt, the United Kingdom nevertheless addresses the allegations of fact underlying this claim below.

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

7.107 Ireland alleges that 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 from or through the atmosphere. The basis of this allegation is article 222 of UNCLOS, which provides:

> "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 organisations 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."

7.108 This allegation is virtually identical to the fifth allegation noted above, the only difference being that this allegation is focused on pollution from or through the atmosphere. The factual elements of this allegation are in every respect identical to those advanced in respect of the fifth allegation, the analysis in respect of the fifth allegation simply being incorporated by reference into the ninth allegation.[101] The United Kingdom accordingly adopts, as regards this allegation, the analysis and conclusions in respect of the fifth allegation set out in paragraphs 7.84 to 7.90 above.[102] Questions of substance relevant to this allegation are addressed below.

(ii) The United Kingdom has complied fully with its obligations to prevent, reduce and control pollution resulting from the commissioning and operation of the MOX Plant

7.109 By reference to the foregoing, the United Kingdom disputes a number of common propositions of fact and law that underlie Ireland's allegations:

(i) that the discharges from or associated with the MOX Plant come within the definition of "pollution of the marine environment" in article 1.1(4) of UNCLOS;

[101] Memorial, paragraphs 9.168 – 9.169.
[102] For purposes of this allegation, the references to articles 213 and 207 in paragraphs 7.87 – 7.89 above

(ii) that there is a necessary and inevitable link between the authorisation of the MOX Plant and the operation of and discharges from THORP;

(iii) that the risks associated with both intended and unintended discharges from and associated with the MOX Plant have not been fully appraised, using best practicable means, in the light of the dictates of precaution, and that the United Kingdom has accordingly failed to take all measures necessary to prevent, reduce and control pollution of the marine environment, directly and from or through the atmosphere, and to ensure that any emissions will not cause damage to Ireland and its environment;

(iv) that the United Kingdom has failed to take all measures necessary to put itself in a position to be informed as to the totality of the radioactive discharges from and associated with the MOX Plant;

(v) that, by authorising the MOX Plant, the United Kingdom has committed itself to discharges of radioactive substances that will put it in breach of its Sintra commitments;

(vi) that the United Kingdom has failed to adopt appropriate abatement technologies;

(vii) that the United Kingdom has failed to implement applicable international rules and standards to prevent, reduce and control pollution of the Irish Sea.

7.110 Of these propositions, **(i)**, **(ii)** and **(v)** have already been addressed in the earlier parts of this Chapter, as well as in Chapters 2 and 3 above, and need no further comment.[103] Insofar as it raises questions which are distinct from proposition **(iii)**, issues relevant to proposition **(iv)** have been addressed in Chapter 5 and need no further elaboration. The outstanding propositions underlying Ireland's allegations which thus require further comment are **(iii)**, **(vi)** and **(vii)**.

7.111 Each of these is addressed below. Detailed material relevant to each element is set out in Chapters 2 and 3 above, as well as in the following Witness Statements and Experts' reports commissioned by the United Kingdom in respect of these matters:

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should be read as referring to articles 222 and 212.

[103] On **proposition (i)**, see also the report by Dr Hunt, **Annex 4**, paragraphs 17 and 30; the Witness Statement of John Clarke, **Annex 2**, paragraphs 115-132; and the report of Ian Parker, paragraphs 5.19-5.25. On **proposition (ii)**, see also the Witness Statement of John Clarke, paragraphs 204-214 (**Annex 2**); the report of Ian Parker, paragraphs 5.5, 5.14, 5.32-5.33 and 6.2-6.3 (**Annex 7**); and the Witness Statement of Jeremy Rycroft, paragraphs 9-26 (**Annex 7**). On **proposition (v)**, see also the report by Dr John Hunt, paragraphs 16 and 30; the report of Ian Parker, paragraphs 3.15.6 – 3.15.7 (**Annex 7**).

- **Report of Dr Colin Bannister**,[104] the Senior Fisheries Science Adviser at the United Kingdom's Centre for Environment, Fisheries and Aquaculture ("CEFAS") Lowestoft Laboratory, on *Irish Sea Fisheries* – this attests that the dominant factor effecting the spawning of fish and the depletion of fish stocks in the Irish Sea is over-fishing, including by the Irish fishing industry.

- **Witness Statement of John Clarke**,[105] the Head of Environment, Health, Safety and Quality at Sellafield – this addresses (a) operations at Sellafield generally, including radioactive discharges and environmental monitoring, (b) the MOX Plant, including its regulatory history, radioactive discharges and operational and environmental safety, (c) THORP, including its history, operational and environmental safety, and radioactive discharges and the radiological impact therefrom, (d) the question of the link between the MOX Plant and THORP, and (e) issues of security. This Statement sets out key aspects in the evidential response to Ireland's allegations.

- **Report of Dr Edward Hill**,[106] the Director of the Natural Environment Research Council's ("NERC") Proudman Oceanographic Laboratory, providing *A Review of the Oceanography of the Irish Sea* – this takes issue with the Report of Dr Michael Hartnett, appended to Ireland's Memorial, which suggests that the oceanographic features of the Irish Sea lead to a reduction in the flushing of the Sea with the consequence that contaminants accumulate more readily therein. In contrast, Dr Hill notes *inter alia* that the tidal effects of the Irish Sea are not such as to cause an accumulation of contaminants; that "wind forcing" is able to bring about major flushings of the Irish Sea; that Dr Hartnett's analysis over-emphasises the importance of the western Irish Sea gyre; and that the overall flow rate through the Irish Sea, including gross flushing times, has been well known since 1950. Dr Hill also notes that the use made of Dr Hartnett's Report in Ireland's Memorial is questionable on a number of important elements.

- **Report by Dr John Hunt**,[107] the Chief Radiological Consultant at the CEFAS Lowestoft Laboratory, on *Radionuclide Discharges into the Irish Sea,*

[104] Report of Dr Colin Bannister, *Irish Sea Fisheries* (**Annex 1**).
[105] Witness Statement of John Clarke (**Annex 2**).
[106] Report by Dr Edward Hill, *A Review of the Oceanography of the Irish Sea* (**Annex 3**).
[107] Report by Dr John Hunt, *Radionuclide Discharges into the Irish Sea, Distributions in the Environment and Doses to Critical Groups* (**Annex 4**).

Distributions in the Environment and Doses to Critical Groups – this attests to the extensive scientific investigation of and knowledge on the discharge of radionuclides into the Irish Sea and takes issue with elements of the Reports of Dr Hartmutt Nies and Professor Brit Salbu appended to Ireland's Memorial. On the question of current and future discharges from Sellafield facilities, Dr Hunt points to "the significant reductions already achieved" and observes that "[f]uture discharges, including from THORP, will comply with the OSPAR Strategy set out in the Sintra agreement."[108] He continues: "Discharges of total alpha radioactivity are projected to decline by a further approximately 35%, total beta by about 70%, and technetium-99 by about 99% from now to 2020."[109] On the question of discharges from the MOX Plant, Dr Hunt observes that "[l]iquid radioactive waste discharges from the Sellafield MOX plant will be very small, amounting at most to ... less than a millionth of the proposed authorised limit [of alpha activity] and ... less than one ten-millionth of the proposed authorised limit [of total beta activity]".[110] Dr Hunt goes on to address radionuclides in marine organisms and doses to critical groups. His report concludes:

> "Since the peak levels of the 1970s the radiologically significant radionuclides in the liquid radioactive waste discharges from Sellafield have been reduced very considerably. These reductions have been due *inter alia* to the introduction of a number of waste treatment plant and the setting of progressively lower authorised limits. The currently proposed revised authorisation will limit total beta discharges to 2% of the limit which applied inn the 1970s; for total alpha discharges the limit will be 1.4% of the limit of the 1970s. It is noted that discharges of some radionuclides, notably technetium-99, have been an exception to this decreasing scenario but that they are of low radiological significance.
>
> ...
>
> It is shown in this report that discharges from THORP and especially the Sellafield MOX plant will have only a very small effect on the doses to the critical group, which will be dominated by effects due to historic discharges from Sellafield and from magnox plants."[111]

[108] Ibid., paragraph 16.
[109] Ibid., paragraph 16. See also paragraph 30.
[110] Ibid., paragraph 17.
[111] Ibid., paragraphs 47-53.

- **Report of Ian Parker**,[112] the Nuclear Regulation Group Manager for the north of England and Wales at the Environment Agency, the statutory authority responsible for regulating nuclear facilities in England and Wales – this addresses *inter alia* the legal and policy framework, and international commitments, relevant to the disposal of radioactive wastes from nuclear installations in the United Kingdom, and the implementation of this regime at Sellafield. Mr Parker also addresses specific issues raised in Ireland's Memorial, issues raised in the Report of Frank Barnaby appended to Ireland's Memorial, and issues raised in the Report by Brit Salbu appended to Ireland's Memorial.[113] The Report addresses key evidential aspects relevant to the response to Ireland's allegations. On the question of the radiological impact of discharges from Sellafield facilities generally, Mr Parker notes that the Environment Agency concluded that it is unlikely that radionuclides discharged in liquid effluent by Sellafield are leading to significant effects in marine flora and fauna along the Cumbrian coastline and that the impact in more remote areas would be much lower. Addressing the "radiation exposure resulting from the MOX plant", Mr Parker notes that this was assessed in 1998 as part of the Environment Agency's proposed decision on the justification for the plutonium commissioning and operation of the Plant and that the assessed doses "are extremely small and have negligible radiological significance."[114] Mr Parker also addresses the question of abatement technologies, concluding that there is "a robust system in place which requires a continual assessment".[115]

- **Report of Dr Julian Preston**,[116] Director for the Environmental Carcinogenesis Division at the United States Environmental Protection Agency, giving an *Assessment of Health Risks at Low Radiation Doses* – this addresses the question of health risks from very low doses of radiation and takes issue in a number of respects with the Reports of Dr Carmel Mothersill and Professor Howard Liber appended to Ireland's Memorial. The central conclusions of the report indicate that Ireland both inaccurately characterises the state of scientific knowledge on the effects of low dose radiation, suggesting that it is particularly uncertain, and inaccurately characterises the harm associated with such radiation, suggesting

[112] Report of Ian Parker (**Annex 7**).
[113] Ibid., paragraphs 7.1-7.16.
[114] Ibid., paragraph 5.23.
[115] Ibid., paragraph 5.39. See also paragraphs 5.35-5.39, 6.1 and 6.8.
[116] Report by Dr R. Julian Preston, *Assessment of Health Risks at Low Radiation Doses* (**Annex 8**).

that it is potentially great. Addressing the Mothersill and Liber reports on which Ireland relies in support of its claims on low dose radiation, Dr Preston observes that neither Dr Mothersill nor Professor Liber provide data on health outcomes to support their low dose claim and have to rely on speculation on the relevance of novel mechanisms of radiation-induced effects. On the substance of the claim, Dr Preston states:

> "As I have already said, the shape of the dose-response curve at low doses has recently been reviewed in detail by a NCRP committee of which I was a member, which produced NCRP Report No.136 in June 2001. The group considered all the scientific evidence of relevance to risk estimates at low doses. In particular, those specific biological mechanisms that are the subject of the reports of Dr Mothersill and Professor Liber, namely the bystander effect, genomic instability adaptive response and genetic susceptibility, were addressed in this NCRP report. These mechanisms were comprehensively reviewed by the committee which concluded that in the low dose region 'no alternate dose-response relationship appears to be more plausible than the linear-non-threshold model on the basis of present scientific knowledge'."[117]

- **Witness Statement of Jeremy Rycroft**,[118] Director of the Spent Fuel Services Business Unit at BNFL – this addresses the commercial and regulatory background of both the MOX Plant and THORP in the context of Ireland's allegation that the two plants are inextricably linked and attests that they are not so linked.

- **Report of Dr Dennis Woodhead**,[119] a Senior Research Scientist based at the CEFAS Lowestoft Laboratory, on *The Possible Impact of Radiation on Fish and Shellfish Populations in the Irish Sea* – this attests to the fact that considerable work has been done over many years on the question of the possible impact of radioactive discharges into the Irish Sea and that robust conclusions can be drawn "concerning the absence of significant damage to populations of marine organisms from radiation exposure".[120] More specifically, Dr Woodhead states:

[117] Report by Dr Preston, paragraph 13. See also paragraphs 40 and 41.
[118] Witness Statement of Jeremy Rycroft (**Annex 10**).
[119] Report by Dr Dennis Woodhead, *The Possible Impact of Radiation on Fish and Shellfish Populations in the Irish Sea* (**Annex 11**).
[120] Ibid., paragraph 0.2.

> "1.1. None of the material in the Memorial of Ireland provides a reasoned basis for claiming that the radionuclides released to the northeast Irish Sea from the Sellafield site have caused, or may, in the future, cause, significant damage to living marine resources. Rather, varying degrees of concern are expressed, or implied, at scattered intervals throughout the documents. ...
>
> 1.5. ... The Memorial of Ireland (including the supporting appendices) neglects much of the available information published inn the open literature ... As regards dosimetry and possible effects, it ignores all the available evidence.
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> ...
>
> 1.7. This report shows that, contrary to the suggestion in the Memorial of Ireland, radiation exposures to marine organisms in the Irish Sea, and the risk of any adverse effects resulting from those exposures, have been considered since the very beginning of operations at Windscale/Sellafield. These aspects of the environmental impact of Windscale/Sellafield have been kept under review as scientific knowledge has improved, and research by UK scientists has made a prominent contribution to the development of this improved knowledge."[121]

7.112 In the light of this evidential and expert material, the United Kingdom now turns to address the three outstanding propositions identified above that are central to Ireland's case and that warrant further comment.

(1) The evaluation of risk and harm and measures taken to prevent, reduce and control pollution

7.113 There is an undercurrent to all of Ireland's allegations that the United Kingdom has not adopted a precautionary approach to the authorisation and commissioning of the MOX Plant. It is said that the risks associated with both intended and unintended discharges from and associated with the MOX Plant have not been fully appraised, using best practicable means. It follows, says Ireland, that the United Kingdom has failed to take all measures necessary to prevent, reduce and control pollution of the marine environment, to ensure that pollution will not spread beyond United Kingdom sovereign areas and to ensure that emissions will not cause damage to Ireland and its environment.

[121] Ibid., paragraphs 1.1-1.7.

7.114 The first step required by precaution is an evaluation of risk and harm. Precaution operates in circumstances in which a scientific evaluation of the available evidence does not enable an adequate assessment of risks to be made but identifies the possibility of a risk of significant harm. "Significant" harm means harm that is objectively quantifiable and is more than merely detectable. "Harm" means some real detrimental effect on human, animal or plant life or on the environment.

7.115 How does the evidence stack up? How do the United Kingdom's actions in respect of the authorisation and commissioning of the MOX Plant measure up to this template?

(i) The process of evaluation

7.116 Chapter 2 describes the extended nine-year process of planning and evaluation that was undertaken in respect of the MOX Plant. The process commenced with a planning application in October 1992. It was followed by the submission of an Environmental Statement. Evidence was taken, and representations heard, from all interested parties. Two further tranches of information were supplied. Amongst the issues addressed in this material were projections concerning radioactive discharges. Planning permission was granted in February 1994.

7.117 As is required under the Euratom Treaty, the United Kingdom submitted its plan relating to the disposal of radioactive wastes from the MOX Plant to the European Commission. In February 1997, the Commission gave its Opinion. In November 1996, BNFL applied to the United Kingdom's Environment Agency for variations to the existing gaseous and liquid discharge authorisations in respect of the Sellafield site. This application included further scientific information on the MOX Plant, including projections of both liquid and gaseous radioactive discharges. Pursuant to the then applicable Euratom Directives, the Environment Agency was required to consider whether the MOX Plant was "justified". As has been described elsewhere in this chapter, this justification process, informed by relevant international guidelines, contains a precautionary dimension.

7.118 Two initial rounds of public consultations took place as part of the justification process. In October 1998, the Environment Agency forwarded two proposed decisions to Ministers on justification. These contained estimates of radiation exposure to members

of the public arising from the MOX Plant. These showed that the projected radiation doses from the MOX Plant were of negligible radiological significance.

7.119 Further rounds of public consultations on the justification of the MOX Plant took place before the Secretaries of State finally took a decision in October 2001 that the Plant was justified.

7.120 Separately from the justification process, although parallel to it, the United Kingdom's Health and Safety Executive ("HSE") was required to address an application to authorise the plutonium commissioning of the MOX Plant from the point of view of safety.

7.121 There are currently six radioactive discharge Authorisations in respect of the Sellafield site. Of these, one addresses the disposal of liquid waste to sea. Another addresses the disposal of waste gases, mists and dusts. The discharges on which Ireland focuses, those into the Irish Sea directly and those into the atmosphere, are thus addressed explicitly in separate Authorisations.

7.122 Condition 2 of both these Authorisations requires BNFL to use "best practicable means" ("BPM") to limit the activity of relevant waste discharged. This corresponds to the express requirement in Article 194(1) of UNCLOS for States to take all measures that are necessary to prevent, reduce and control pollution of the marine environment using the "best practicable means" at their disposal. The schedules to both the liquid and gaseous discharge Authorisations requires BNFL to demonstrate that it is employing BPM. They also require an on-going evaluation and the use of improved technology and techniques where these become available. The Authorisations are re-examined by the Environment Agency on a regular basis to ensure that the discharge of radioactive substances proceeds on the basis of the as low as reasonably achievable ("ALARA") principle. In the period 2000 – 2002, the Environment Agency carried out a detailed review of the discharge Authorisations granted to the Sellafield site. In August 2002, after considering all representations made, the Agency published its proposed decision for the future regulation of disposals of radioactive waste from the Sellafield site. Key elements of this proposed decision include a reduction in discharge limits of 80% in the case of aerial discharges and 50% in the case of liquid discharges, a new integrated Authorisation for regulating disposals to air, sea and land, and a range of improvement and additional information requirements, including a requirement to carry out Best

Practicable Environmental Option ("BPEO") and Best Practicable Means assessments on all new waste streams requiring disposal.

7.123 Further detail on the evaluation process in respect of the MOX Plant is given in the Statement of John Clarke[122] and the report of Ian Parker.[123]

(ii) The scientific evidence

7.124 The scientific evidence addressed in the course of the risk/harm evaluation process is considered in Chapter 3 above. Further material is set out in the Statement of John Clarke and the report of Ian Parker. Other experts' reports, as outlined above, address discrete elements of science relevant to the overall picture in response to specific contentions advanced by Ireland.

7.125 The scientific evaluation of risks and harm from radioactive discharges from or associated with the MOX Plant did not start with a blank slate. Detailed evaluations of risks and harm from radioactive discharges from Sellafield have been undertaken for six decades. Dr Hunt observes, for example, that

> "[a]s part of its work on protection from hazardous radiological effects due to radioactive releases to the aquatic environment, the [CEFAS] Lowestoft laboratory has carried out extensive monitoring activities and supporting research; this work began in 1947 in anticipation of the Sellafield releases (Hunt, 1997b). A series of reports presents the results of the monitoring from 1963 to the present, in three series: the 'FRL' series (e.g. Mitchell, 1967); the 'AEMR' series (e.g. Hunt, 1979) and the 'RIFE' series (e.g. MAFF, 1996). Extensive supporting research has been published in the scientific literature.
>
> ...
>
> The series of reports by the Lowestoft laboratory (e.g. Mitchell, 1967; Hunt, 1979; MAFF, 1996) as well as monitoring reports by BNFL and other sources give extensive data over the years on radionuclides in marine biota from the Irish Sea."[124]

[122] Witness Statement of John Clarke, in particular at paragraphs 69 – 72. See also paragraphs 20 – 32.
[123] Report of Ian Parker, in particular at paragraphs 3.1 – 3.15.10, 4.1 – 4.12, 5.5 and 5.14.
[124] Report of Dr John Hunt, paragraphs 19 and 34.

7.126 This observation is echoed in the Report of Dr Woodhead in respect of the possible impact of radiation on fish and shellfish populations in the Irish Sea.[125] It is also echoed in the Report of Dr Hill on the subject of oceanographic factors relevant to the accumulation of contaminants in the Irish Sea.[126] Extensive research and evaluation has also been undertaken by others. For example, attention has been drawn above to the various *Annual Report and Accounts* of the Radiological Protection Institute of Ireland ("RPII") as well as to the *MARINA II* study and the various OSPAR Quality Status Reports. As will be apparent from the detailed footnote references in the Report of Dr Woodhead, BNFL also publishes an *Annual Report on Radioactive Discharges and Monitoring of the Environment*. As the report of Ian Parker affirms, the United Kingdom's Environment Agency also undertakes an on-going evaluation of risks and harm from radioactive discharges from nuclear facilities.[127]

7.127 There is a coincidence of views across all of these studies and reports. The consensus is reflected in the recent RPII report quoted at the start of this chapter:

> "The doses incurred by people living in Ireland today as a result of the routine operations at Sellafield are now very small and do not constitute a significant health risk. The Institute therefore advises that from a radiological perspective it is safe to eat seafood landed at Irish fishing ports and to enjoy the amenities of the Irish maritime area.
>
> ...
>
> The measurements carried out during 2001 show that the levels of artificial radioactivity in air, water and foodstuffs remain low and are well within accepted international standards."[128]

7.128 There is no equivocation in this statement. A detailed and careful scientific evaluation of the available evidence has been undertaken over many years by a wide range of experts. The available scientific evidence is extensive. It has enabled a careful and informed assessment of risks and harm to be undertaken. That assessment does not identify any possibility of a risk of significant harm. On the contrary, it endorses a conclusion that radioactive emissions from Sellafield as a whole "do not constitute a significant health risk" and "are well within accepted international standards".

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[125] Report of Dr Dennis Woodhead, paragraph 1.7.
[126] Report of Dr Edward Hill, for example at paragraph 10.5.
[127] Report of Ian Parker, paragraph 4.1 *et seq*.
[128] RPII Annual Report and Accounts 2001, at pp. 12-14 **(Annex 27)**.

7.129 Relying on the reports of Dr Carmel Mothersill and Professor Howard Liber appended to its Memorial, Ireland attempts to introduce uncertainty. "The uncertainties concerning the effects of low dose radiation are one of the main areas of scientific controversy in the field of radiology."[129] It also points to the stable gyre of the Irish Sea, contending that this "reduces the effective amount of water for dilution within the Irish Sea and tends to cause elevated levels of radionuclides to be drawn towards the vicinity of the western Irish Sea gyre."[130] It goes on to say that the gyre was unknown during the planning of the original plants at the Sellafield site and was not considered when the decision to construct the MOX Plant was taken.[131]

7.130 Neither line of argument stands up to scrutiny. The report of Dr Preston points out that neither Dr Mothersill nor Professor Liber provide data to support their claims. He further states that the claims made by both, including the specific biological mechanisms to which they refer (the bystander effect, genomic instability, adaptive response, and genetic susceptibility), were "comprehensively reviewed" by the U.S. National Council for Radiation Protection and Measurement ("NCRP") in June 2001. In the report that was issued following this review, the NCRP concluded that the low dose hypothesis on which Ireland now relies did not point to considerations that were not already addressed in established analytical models.[132]

7.131 On the question of the western Irish Sea gyre, the Report by Dr Hill observes that the expert of whom Ireland relies, Dr Michael Hartnett, over-emphasises the significance of the gyre.[133] "[T]he Hartnett Report (2002) concentrates on just one mechanism that might enhance retention in the Irish Sea (the western Irish Sea gyre) but does not acknowledge that the overall estimate of flushing time from measurements in the North Channel shows no overall tendency for increased retention on the whole of the Irish Sea scale."[134] Dr Hill also notes *inter alia* that the tidal effects of the Irish Sea are not such as to cause an accumulation of contaminants and that major flushings of the Irish Sea are brought about by "wind forcing".[135] He also observes that

[129] Memorial, paragraph 3.64.
[130] Memorial, paragraph 1.8.
[131] Memorial, paragraph 1.9.
[132] Report of Dr Preston, paragraphs 13, 40 and 41 (**Annex 8**).
[133] Report of Dr Hill, paragraphs 8.6.6 – 8.6.7 (**Annex 3**).
[134] Ibid., paragraph 8.2.3.
[135] Ibid., paragraphs 4.10 – 4.15 and 5.1 – 5.6 respectively.

> "the overall flow rate through the Irish Sea and associated inferred gross flushings have been known since the 1950's (Bowden, 1950). Subsequent work (as recently as the 1990s) has confirmed the robustness of this estimate (and if anything tended to show increased flushings through the Irish Sea – both in the mean and as a result of events). Consequently, our understanding of the overall flow rate through the Irish Sea has not changed materially since 1950."[136]

7.132 On the evidence, the uncertainty for which Ireland contends is not established. In any event, even accepting such uncertainty *arguendo*, the scale of radioactive discharges from all Sellafield facilities, and the possibility of significant harm therefrom, is a matter of on-going monitoring and assessment. The report of Ian Parker highlights, for example, the scope of the Environment Agency's recent review of Sellafield emissions and its objectives "to ensure that radiation doses to members of the public are as low as reasonably achievable (ALARA) and within national and international limits and constraints".[137] Precaution is thus a constant and on-going feature of the evaluation of risks and harm from the discharge of radioactive substances.

7.133 As to the detail of the scientific data, the numbers are so small that they virtually defy measurement. As Ian Parker has stated: "discharges from the MOX Plant are insignificant ... The radiological impact of the MOX plant has also been assessed and has negligible radiological significance."[138] As the evidence also demonstrates, the radiological impact of THORP has been assessed, is very small, and is well within accepted international standards.[139]

7.134 The fragmentary scale of the radiation doses from Sellafield as a whole is also emphasised in the recent RPII report:

> "[t]he dose to consumers who eat substantial quantities of seafood each day (20g shellfish, 200g of fish) was estimated to be less than 2 microsieverts (μSv) which is similar to that in both 2000 and 1999. A small additional dose is incurred through recreational activities such as swimming, walking on beaches or fishing. The size of these doses may be put into context by comparing them to the annual dose to a member of the Irish public from all sources of radiation which can range from about 2000 μSv to 20,000 μSv [ie, 2 to 20 mSv], or even higher in cases of exceptional exposure to radon gas."[140]

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[136] Ibid., paragraph 10.5. See also Chapter 3 above.
[137] Report by Ian Parker, paragraph 4.1 (**Annex 7**).
[138] Report of Ian Parker, paragraph 5.33 (**Annex 7**).
[139] See paragraphs 3.26-3.69 above.
[140] RPII, Reports and Accounts 2001, p.12 (**Annex 27**).

7.135 The impact of these emissions on biota and on the environment has been the subject of extensive study. The underlying factual material and supporting analysis are set out in detail in Chapter 3, as well as in the Reports of Dr Hunt and Dr Woodhead and the Statement of John Clarke. As this material shows, there is no scientific basis for concluding that there is a possible risk of significant harm as a result of radioactive emissions of the scale in issue in these proceedings. The *MARINA II* study, for example, on the basis of current knowledge, notes that "there is no identifiable impact on populations of marine biota from radioactive discharges".[141] This assessment is echoed in the Reports of Dr Hunt and Dr Woodhead.

7.136 An evaluation of the impact of radioactive discharges on both biota and the environment is the subject of on-going monitoring by the Environment Agency, other scientists (such as those at CEFAS), as well as by regional and other agencies (such as the OSPAR Commission). Standards are reappraised in the light of developing knowledge.[142] The present assessment that there is no risk of significant harm is thus kept under constant review.

(iii) Design, structural and security considerations

7.137 The last limb of the risk/harm evaluation concerns design and structural issues relevant to the MOX Plant and security considerations. Design and structural issues are relevant to an assessment of the risk of unintended discharges following either an accident or an attack on the Plant. The evidential material relevant to this issue is set out in Chapter 3 above, as well as in the Statement of John Clarke.[143]

7.138 Regulatory control over the design, construction, commissioning and operation of facilities at Sellafield, including the MOX Plant, are the responsibility of the United Kingdom's Nuclear Installations Inspectorate ("NII"), a part of the Health and Safety Executive ("HSE"), under the Nuclear Installations Act 1965. The NII has drawn up, and applies, Safety Assessment Principles relevant to the assessment of safety in the context of the design, construction, commissioning and operation of nuclear facilities, including

[141] Quoted at paragraph 3.63 above.
[142] See the Report of Ian Parker, paragraph 4.1 *et seq*.
[143] Witness Statement of John Clarke, paragraphs 96 – 112 and 215 – 228. See also paragraphs 154 – 172 in relation to THORP.

in respect of accidents. The operators of nuclear installations are required to comply with these Principles.

7.139 As the Statement of John Clarke attests, BNFL has formulated its own set of standards and criteria regarding the design of its facilities to ensure that all applicable statutory regulations are adhered to and that any hazards that may exist, to either employees or the general public, are minimised. It has also developed a Code of Practice underpinning design safety principles. These principles adhere to the NII Safety Assessment Principles and were formally approved by the NII during the design phase of the MOX Plant.

7.140 Design and structural considerations address the issue of safety from a number of perspectives. The construction of the MOX Plant is designed to ensure the physical containment of any unintended radioactive discharges. The operation of the Plant is very largely conducted, controlled, monitored and surveyed remotely. Safeguards, at both the design and operational level, are built in to ensure that "criticality" is avoided before the fuel is placed into the reactor. The Plant also has a Criticality Incident Detection system with independent detectors situated throughout the Plant. There is also an air monitoring system in place, linked to audible and visual alarms. In addition, abatement measures have been out put in place to prevent the uncontrolled release of airborne particulate material. This aspect is addressed separately below in more detail.

7.141 As part of its submission to the European Commission under the Euratom Treaty, the United Kingdom addressed the risk of, and potential harm associated with, unplanned releases of radioactive material. The Commission's assessment was that, even in the event of unplanned discharges of radioactive waste which may follow an accident, the doses likely to be received by the population in other Member States would not be significant.

7.142 On the question of security, responsibility lies with the United Kingdom's Office of Civil Nuclear Security ("OCNS"). As noted by Mr Clarke, OCNS has been involved from the outset in the design of the security arrangements for the MOX Plant.[144] It undertakes regular inspections. Security considerations were also explicitly addressed in the justification Decision of 3 October 2001. OCNS was asked to review security in the light of the events of 11 September 2001.

[144] See the Witness Statement of John Clarke, paragraph 216.

(iv) The evaluation of risk and harm

7.143 A precautionary approach requires, in the first instance, an evaluation of risk and harm associated with a particular activity on the basis of the available scientific evidence. The object of the evaluation is to assess whether there is a possibility of a risk of significant harm from the activity in question.

7.144 As the preceding review of the United Kingdom's practice in respect of the MOX Plant shows, the Plant was authorised following a long process of review which, at every step of the way, involved an evaluation of risk and harm by reference to the available scientific evidence. The scientific evidence is not contested. It is detailed, compelling and clear. It is not in any way ambiguous. It does not point to any possibility of a risk of significant harm from radioactive discharges from or associated with the MOX Plant. The same point may be made in respect of THORP.

7.145 Ireland variously alleges that the United Kingdom has failed to fully appraise the risks associated with both intended and unintended discharges from and associated with the MOX Plant using best practicable means. In consequence of this alleged breach, Ireland contends that the United Kingdom has failed to take all measures necessary to prevent, reduce and control pollution of the Irish Sea, to ensure that pollution will not spread beyond United Kingdom sovereign areas, and to ensure that emissions will not cause damage to Ireland and its environment. Ireland further alleges – although, in the United Kingdom's contention, without a legal basis on which to do so – that the United Kingdom has failed to take measures designed to minimise to the fullest possible extent the release of radioactive substances, including into the atmosphere, arising from the authorisation of the MOX Plant. The central basis of this allegation is that the United Kingdom has failed to inform itself as to the volume of radioactive substances that will be released.

7.146 By reference to the foregoing, the United Kingdom contends that these allegations have no merit and cannot be sustained.

(2) The use of appropriate abatement technologies

7.147 The proposition that appropriate abatement technologies have not been used goes to the allegations that the United Kingdom has failed to take measures designed to minimise to the fullest possible extent the release of radioactive substances, including into the atmosphere, arising from the authorisation of the MOX Plant. The basis of this proposition is the report of Dr Frank Barnaby appended to Ireland's Memorial.

7.148 The use of abatement technologies is addressed in Chapter 3 above and in the Statement of John Clarke and the report of Ian Parker. Mr Parker is highly critical of Dr Barnaby's analysis, on which Ireland relies, noting that he "deals in a superficial way with abatement technologies and makes no attempt to balance the factors that would normally be taken into account in deciding whether to pursue any particular technology."[145] On the substance of Ireland's claim, Mr Parker emphasises that the MOX process does not lead to significant discharges of gases or liquids. He continues:

> "The air discharged from the plant and its various facilities is subject to filtration using high efficiency particulate in air filters. This type of filtration, when supported by a well managed testing and maintenance regime, is considered BPM. The small amount of liquid waste derived from the plant is treated through existing effluent plants, mainly SETP and this is considered by the Agency to be best practicable means. More comments are provided on the specific abatement technologies in the section of this report dealing with the issues raised by Dr Frank Barnaby.
>
> In my opinion there is a robust system in place which requires a continual assessment by BNFL of the operation of the various plants at Sellafield and whether it is using BPM to minimise discharges of radioactivity. There is also a robust methodology in place to properly assess the complex factors involved in deciding whether new orb improved technology should be applied to abating discharges from Sellafield. The Agency checks for compliance and continually appraises BNFL's performance and requires BNFL to implement improvements when all the factors have been considered and it is appropriate to do so."[146]

7.149 There is no foundation to Ireland's contentions on the question of the use of appropriate abatement technologies. The Environment Agency has recently undertaken a wide-ranging review of Sellafield authorisations and, in doing so, addressed the Best Practicable Environmental Option / Best Practicable Means for waste disposal from the

[145] Report of Ian Parker, paragraph 6.8 (**Annex 7**).
[146] Ibid., paragraphs 5.38 – 5.39.

site using a wide range of environmental, health and safety, operational and socio-economic criteria.[147] For the most part, the Agency concluded that practices at Sellafield represented the Best Practicable Environmental Option. In some instances it considered that additional work was required to develop abatement techniques to see if they could be applied at Sellafield to reduce discharges. BNFL was required to implement improvements accordingly.

7.150 Even if there were a legal basis for a discrete claim under article 194(3)(a) of UNCLOS, which the United Kingdom disputes, there is no substance to Ireland's allegation that the United Kingdom has failed to take measures designed to minimise to the fullest possible extent the release of radioactive substances by failing to use appropriate abatement techniques.

(3) The implementation of applicable international rules and standards to prevent, reduce and control pollution of the Irish Sea

7.151 By its fifth and ninth allegations, Ireland alleges that the United Kingdom has failed to implement applicable international rules and standards to prevent, reduce and control pollution of the Irish Sea, whether directly or from or through the atmosphere. The central foundation of these claims is that the United Kingdom has failed to implement various obligations under the OSPAR Convention and related instruments.

7.152 The alleged violations of article 213 and 222 of UNCLOS, which form the basis of these claims, cannot be assessed without a prior determination of rights and obligations under the OSPAR Convention. This falls outside the Tribunal's jurisdiction. The allegation of principle nevertheless requires a response. Articles 213 and 222 provide that States shall "adopt laws and regulations and take other measures necessary to implement applicable international rules and standards established through competent international organisations or diplomatic conference to prevent, reduce and control pollution of the marine environment". As is evident from the text, the focus of the obligation is on the adoption of measures within a municipal framework to give effect to international rules and standards. This reading draws support from the opening phrase of each article which requires States to "enforce their laws and regulations" adopted in accordance with articles 207 and 212 of UNCLOS. The focus of articles 213 and 222 is

[147] Ibid., paragraph 6.8.

thus on the establishment of an effective municipal legal regime addressing pollution from land-based sources and pollution from or through the atmosphere.

7.153 Chapter 2 above describes the regulatory framework in the United Kingdom in respect of nuclear installations and activities. As will be apparent from that survey, the network of domestic laws and regulations operates within and gives effect to a wider framework of both EU and international rules and standards. Key elements of this wider framework of applicable international rules and standards includes various conventions and other measures adopted under the auspices of the International Atomic Energy Agency (IAEA), the International Maritime Organisations (IMO) and the International Commission on Radiological Protection (ICRP). At a regional level, various measures have been adopted within the framework of both the European Union (for these purposes, the EC and Euratom) and the OSPAR Convention.

7.154 A very extensive domestic regulatory regime operates under the framework of this wider legal regime, giving effect to it. In many cases, international rules and standards find their way into United Kingdom law through European Community law.

7.155 The report by Ian Parker describes the legal and policy framework, and the international commitments, relevant to the operation of the Environment Agency, the statutory authority charged with responsibility for protecting and enhancing the environment, including in respect of the regulation of discharges from nuclear installations. In exercising its functions under the Radioactive Substances Act 1993, the Environment Agency has regard to United Kingdom policy on radioactive waste and the United Kingdom's international commitments. A similarly "holistic approach" is adopted by other United Kingdom agencies and bodies that have responsibilities for overseeing and regulating some or other aspect of the nuclear industry, including the Nuclear Installations Inspectorate of the Health and Safety Executive and the Office of Civil Nuclear Security.

7.156 The United Kingdom takes its regulatory responsibilities in respect of nuclear activities within its jurisdiction seriously. It has adopted a wide range of laws and regulations and taken other measures necessary to implement applicable international rules and standards to prevent, reduce and control pollution of the marine environment. Such measures include the day-to-day regulation and oversight of nuclear installations and activities by Government agencies. This is the requirement of articles 213 and 222 of

UNCLOS. The United Kingdom's practice is fully in accordance with these provisions. There is no merit to Ireland's allegations under these headings.

CHAPTER 8

THE RELIEF SOUGHT BY IRELAND

8.1 The preceding chapters of this Counter-Memorial have shown that all Ireland's allegations of breach of UNCLOS are ill-founded. Ireland's case should therefore be dismissed in its entirety.

8.2 For completeness, it is nevertheless appropriate that some brief observations be made on Ireland's request for relief. Apart from costs, Ireland requests two forms of relief. One is a series of declarations in relation to past events; the other is an order in relation to future conduct.

A. DECLARATIONS IN RELATION TO PAST EVENTS

8.3 Ireland seeks four declarations in relation to past events. The principal elements appear to be:

(i) that the United Kingdom has breached its obligations under articles 192, 193, 194, 207, 211 or 213 of UNCLOS, or more than one of those articles, by failing to take the measures necessary to prevent, reduce and control pollution;

(ii) that the United Kingdom has breached its obligations under articles 192, 193, 194, 207, 211 or 213 of UNCLOS, or more than one of those articles, by failing properly to assess the risk of terrorist attack on the MOX Plant;

(iii) that the United Kingdom has breached its obligations under articles 123 and 197 of UNCLOS by refusing to share information with Ireland or to carry out a proper environmental assessment; and

(iv) that the United Kingdom has breached its obligations under Article 206 of UNCLOS by failing properly to assess the effects of the operation of the MOX Plant on the Irish Sea.

8.4 First, the declarations that Ireland seeks are unclear in their scope. In the case of three of the four declarations, Ireland claims that the United Kingdom has infringed UNCLOS "including by failing" to take certain steps or "*inter alia* by refusing" to take other steps. The proposed declarations would thus embrace findings that the United Kingdom has infringed UNCLOS by some acts and omissions that are unspecified.

8.5 Second, where the proposed declarations refer to the acts or omissions alleged to have been in contravention of UNCLOS, they do so only in imprecise terms. For example they identify the specific measures which it claims the United Kingdom ought properly to have taken, and has failed to take to reduce intended or accidental discharges from the MOX Plant or THORP.

8.6 Third, in particular, no attempt is made by Ireland to develop or particularise any allegation that the United Kingdom has breached its obligations under articles 207, 211, 217, or 222 of UNCLOS to apply or take into account generally agreed international rules and standards for the prevention of marine pollution.

8.7 Fourth, the relief that Ireland claims includes declarations that the United Kingdom acted in breach of UNCLOS before the date on which the United Kingdom became a party to UNCLOS. This is the case, for example, with the claim that a breach was occasioned "by failing, by its 1993 Environmental Statement, properly and fully to assess the direct and indirect potential effects of the operation of the MOX plant".[1]

B. ORDER IN RESPECT OF FUTURE CONDUCT

8.8 As regards the future operation of the MOX Plant, Ireland seeks in paragraph 10.15(5) of its Memorial an order in the following terms:

> "That the United Kingdom shall refrain from authorizing or failing to prevent (a) the operation of the MOX plant and/or (b) international movements of radioactive materials into and out of the United Kingdom related to the operation of the MOX plant or any preparatory or other activities associated with the operation of the MOX plant, in particular the reprocessing of spent fuel at the THORP plant for the purposes of the operation of the MOX plant, until such time as (1) there has been carried out a proper assessment of the environmental consequences arising directly or indirectly from the operation of the MOX plant and associated facilities as well as related international movements of radioactive materials, and (2) it is demonstrated that the operation of the MOX plant and associated facilities

[1] Memorial, paragraph 10.15 (4)(a).

> and related international movements of radioactive materials will result in the deliberate discharge of no radioactive materials, including wastes, directly or indirectly into the marine environment of the Irish Sea, and (3) there has been agreed and adopted jointly with Ireland a comprehensive strategy or plan to prevent, contain and respond to terrorist attack on the MOX plant and associated facilities and international movements of radioactive waste associated with the plant".

8.9 Even if Ireland were to succeed in all its claims in the present case, there would be no basis for ordering a cessation in the operation of the MOX Plant or associated activities as sought by Ireland. This is so for four reasons.

8.10 First, it remains quite exceptional for an international court to make a mandatory order addressed to a State at the merits stage.[2] For example, in the *Gabcíkovo-Nagymaros* case,[3] there was no suggestion that the operation of that part of the hydroelectric dam project that had been implemented should cease while the parties complied with the Court's direction to "look afresh" at its environmental consequences.

8.11 Second, cessation would be wholly inappropriate when there is no evidence of any risk of harm to Ireland pending whatever further procedures the Tribunal might order. The evidence before this Tribunal shows that discharges of radioactivity from the MOX Plant to the marine environment are of negligible radiological significance.

8.12 Third, when considering an appropriate remedy for a breach of international law, the Tribunal would need to consider proportionality. In this case, the considerable costs and long-term damage to BNFL would be an important factor. That suspension of the operation of the MOX Plant would cause very substantial cost is confirmed by evidence in these proceedings. In paragraph 27 of his Statement, Mr Rycroft states:

> "I consider the Tribunal should also be aware of the commercial and financial implications of the orders that Ireland is seeking in these proceedings. A decision by the Tribunal which resulted in the United Kingdom taking steps to suspend current operations of the MOX Plant pending fulfilment of the conditions proposed by Ireland would very likely result in the loss of business for the MOX Plant. This in turn would result in direct losses to BNFL in the order of some tens of millions of pounds. Further, amongst other consequences, there would be substantial costs (i.e. hundreds of thousands of pounds each month) associated with maintaining the MOX Plant in a static state pending re-commencement of

[2] Gray, *Judicial Remedies in International Law*, 1987, pp. 64-68.
[3] ICJ Reports 1997, p. 7.

operations; and damage to BNFL's competitive position as a MOX fuel manufacturer".

In the present case these costs would not be counter-balanced by any identifiable benefit to Ireland or to the marine environment.

8.13 Fourth, the terms of Ireland's proposed order are in any event inappropriate. It appears that Ireland is seeking an order requiring the United Kingdom to rescind a Decision taken in accordance with European Community law, and to cause BNFL to act in breach of commitments made towards its customers, until three conditions are satisfied.

8.14 The first condition would be a "proper" environmental impact assessment. Assuming *arguendo* that the Environmental Statement made in relation to the MOX Plant were in breach of article 206 of UNCLOS, the correct approach would not be to carry out a further assessment of the potential effects of the Plant but to monitor the actual effects.[4]

8.15 The second condition would be demonstration that the operation of the MOX Plant and "associated facilities" and related "international movements of radioactive materials" will result in the deliberate discharge of no radioactive materials. The Tribunal will now have it firmly in mind that planned discharges from the MOX Plant are negligible, and that all international movements of radioactive materials take place in accordance with the applicable international regulations.[5]

8.16 The third condition would be that there must be agreed and adopted jointly with Ireland a comprehensive strategy against any terrorist attack. This would be a wholly inappropriate condition, intruding on the essential interests of the United Kingdom's security.[6]

8.17 As the International Court of Justice observed in the *Northern Cameroons Case*[7], referring to its Judgment in *Haya de la Torre*[8]: "it cannot concern itself with the choice amongst various practical steps which a State may take to comply with a judgment."

[4] See Chapter 5 above.
[5] See Chapters 2 and 3 above.
[6] See Chapter 6 above.
[7] ICJ Reports 1963, p. 15.
[8] ICJ Reports 1951, p. 71.

8.18 Of the three conditions contemplated in Ireland's proposed order, the first is expressed in terms liable to prolong the dispute. The second, read literally, is incapable of fulfilment. The third would make the operation of the MOX Plant contingent upon the agreement of Ireland. Ireland's reasons for seeking such an order are plainly visible. As Irish Ministers have repeatedly made clear, Ireland's object in these proceedings is to secure the closure not only of the MOX Plant but of the Sellafield site as a whole.[9]

[9] Paragraph 1.23 above.

CONCLUDING SUBMISSIONS

10.1 For the reasons given in this Counter-Memorial, the United Kingdom requests the Tribunal to:

(i) adjudge and declare that it lacks jurisdiction over the claims brought against the United Kingdom by Ireland;

or, in the alternative

(ii) to dismiss the claims brought against the United Kingdom by Ireland.

10.2 The United Kingdom further invites the Tribunal to reject Ireland's request that the United Kingdom pay Ireland's costs, and instead to order Ireland to pay the United Kingdom's costs.

M. C. Wood
Agent of the United Kingdom
of Great Britain and
Northern Ireland

9 January 2003

LIST OF ANNEXES

Expert Reports and Witness Statements

VOLUME I

1. Expert Report of Colin Bannister (CEFAS)

2. Witness Statement of John Clarke (BNFL)

3. Expert Report of Edward Hill (Proudman Oceanographic Lab)

4. Expert Report of John Hunt (CEFAS)

5. Expert Report of John Lillie (Salvage Association)

6. Witness Statement of Malcolm Miller (BNFL)

VOLUME II

7. Expert Report of Ian Parker (Environment Agency)

8. Expert Report of Julian Preston (US Environmental Protection Agency)

9. Expert Report of Richard R. Rawl (Oak Ridge Laboratory)

10. Witness Statement of Jeremy Rycroft (BNFL)

11. Expert Report of Dennis Woodhead (CEFAS)

12. Witness Statement of Clive Young (DfT)

Annexes Referred to in the Counter-Memorial

VOLUME III

13. UK Interim Report to ITLOS (including UK Minutes of 11 December 2001 meeting), dated 17 December 2001

14. UK strategy for radioactive discharges 2001-2020, published by the Department for Environment, Food and Rural Affairs, July 2002

15. Appraisal for the United Kingdom of the Safety of the Transport of Radioactive Material, IAEA, Vienna, September 2002 ("the TranSAS Appraisal")

16. 1990 Recommendations of the International Commission on Radiological Protection, ICRP Publication 60, adopted November 1990

17. Environment Agency Proposed Decision for the future regulation of disposals of radioactive waste from British Nuclear Fuels plc Sellafield (Executive Summary only), August 2002 (www.environment-agency.gov.uk/yourenv/consultations/145908/322084/?lang=_e&region=)

VOLUME IV

18. "Making Sense of Sellafield", published by the Royal Irish Academy, 2002

19. *Update of the MARINA Project on the radiological exposure of the European Community from radioactivity in North European marine waters*,2002 ("the MARINA II study")

undertaken for the Directorate-General for Environment of the European Commission (Executive Summary and Annexes D and F only).

VOLUME V

20. CRP Report, published as IAEA-TECDOC 1231 "Severity, probability and risk during maritime transport of radioactive material. Final report of a co-ordinated research project 1995-1999"

21. Report to Copeland Borough Council of 22 February 1994, Outline Planning Application for MOX Fuel Fabrication Plant.

22. *The State Of Security In The Civil Nuclear Industry And The Effectivesness Of Security Regulation: A Report To The Secretary Of State For Trade And Industry* by the Director of Civil Nuclear Security, October 2000 – March 2002 ("the DCNS Report").

23. DTI Note of meeting of July 16 2002

VOLUME VI

24. Annual Report and Accounts of RPII, 1998

25. Annual Report and Accounts of RPII, 1999

26. Annual Report and Accounts of RPII, 2000

27. Annual Report and Accounts of RPII, 2001

28. *Summary of the main issues raised by interested organisations and individuals and the Secretaries of State's views on those issues* (Annex 1 to the MOX Justification Decision of 3 October 2001)

29. International Code for the Safe Carriage of Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Wastes on board Ships (the "INF Code"), effective 1 January 2001.

30. Recommendations for the Physical Protection of Nuclear Material (INFCIRC/225/Rev.4)

31. Letter of 27 April 1999 from Barbara Larkin (US Department of State) to Senator Gilman

Other Annexes

32. BNFL submissions to the Environment Agency, 27 January 1997.

33. Westlakes Report "Summary of Radionuclide Concentrations in Non-human Biota in the Vicinity of BNFL Sellafield and an Assessment of the Resulting Doses", provided by BNFL to the Environment Agency in 2001.

34. Central Research Institute of Electric Power Industry, Industry Report, EU98001, July 1999 - Study on Transport Safety of Fresh MOX Fuel, Performance of the Transport Cask for Fresh MOX Fuel Against External Water Pressure