

DOCTOR OF PHILOSOPHY

THESIS

**JOINT DEVELOPMENT OF OFFSHORE POLAR OIL AND GAS
RESOURCES AND THE UNITED NATIONS CONVENTION ON THE
LAW OF THE SEA**

John Topham Abrahamson

**A thesis submitted for the degree of Doctor of Philosophy of the Australian National
University**

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STATEMENT OF DECLARATION

I certify that the thesis is my own original work and that this thesis contains no material previously published or written by another person, except when due reference is made in the text of this thesis. I have researched issues relating to Joint Development Zones in *Joint Development of Seabed Resources and the United Nations Convention on the Law of the Sea*, the Graduate Research Paper for the LL.M degree at Monash University. This thesis presents more detailed analysis with respect to the Arctic and Southern Oceans. The text represents the law and circumstances at 31 December 2014.

.....
John Topham Abrahamson

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ABSTRACT

This thesis examines whether the establishment of Joint Development Zones (JDZs) for the development of offshore oil and gas resources in the Arctic and Southern Oceans can effectively resolve competing continental shelf and outer continental shelf (OCS) claims arising under the provisions of Article 76 of the United Nations Convention on the Law of the Sea (LOSC).

One of the effects of global warming has been increased interest in oil and gas activity in the Arctic region, however there is significant concern as to the related environmental risks. The Environmental Protocol to the Antarctic Treaty currently suspends exploration for state parties for oil and gas in the Southern Ocean, however current exploration has been reported.

A JDZ may be defined as an inter-governmental arrangement of a provisional or permanent nature, designed for joint exploration and exploitation of the hydrocarbon resources of the sea-bed. JDZs are generally based on agreements to suspend sovereignty claims and share offshore oil and gas in the JDZ region.

The thesis was prepared to contribute to the prevention of potential international conflicts over offshore oil and gas resources. State claims may be based on historic claims, interpretation of treaties, and LOSC exclusive economic zone (EEZ), continental shelf, and OCS delimitation provisions. LOSC provides dispute resolution alternatives, including referral to the International Court of Justice and international arbitration. A significant number of states have, however, preferred to adopt JDZ agreements.

The methods used for the thesis included analysis of LOSC maritime delimitation provisions, existing JDZ agreements, the terms of model JDZ agreements, and analysis of current Arctic and Southern ocean maritime boundary disputes. The principal thesis conclusions are:

- JDZs can resolve resource disputes as demonstrated by the existing international state practice in adopting JDZs. JDZ regimes are not a universal panacea, however, and successful JDZs are based on the continued political support of the respective states;

- LOSC maritime boundary delimitation provisions may not resolve boundary disputes, which can arise due to issues including conflicting sovereignty of land territory;
- Specific Arctic and Southern Ocean disputed regions have similar characteristics to existing JDZs. JDZs may therefore potentially apply to resolve these disputes;
- JDZs can potentially provide solutions for disputed boundaries, such as between United States/Canada (Beaufort Sea), United States/Russia (Bering Sea) in the Arctic Ocean region, and between United Kingdom/Argentina/Chile in the Southern Ocean;
- JDZ should be adapted to better protect and preserve the marine environment, and to provide a significant liability regime similar to the Greenland regime;
- JDZs should support a framework of regional governance, including Arctic Council or Antarctic Treaty representation in the respective JDZs; and
- Potential game changing events may affect the use of JDZs in the future, including political and technological developments, and significant oil and gas discoveries.

The result of the thesis conclusions is to prove the hypothesis that JDZs can effectively resolve resource conflicts in the Arctic and Southern Ocean regions.

LIST OF ACRONYMS AND ABBREVIATIONS

AAT	Australian Antarctic Territory
ABC	Australian Broadcasting Corporation
ABLOS	Advisory Board on the Law of the Sea
ACAP	Arctic Contaminants Action Plan
ACIA	Arctic Climate Impact Assessment
ADMA	Abu Dhabi Marine Areas
AEPS	Arctic Environmental Protection Strategy
AMAP	Arctic Monitoring and Assessment Programme
ASL	Archipelagic sea lanes
ATCM	Antarctic Treaty Consultative Meeting
ATCP	Antarctic Treaty Consultative Parties
ATS	Antarctic Treaty System
BBNJ	Biodiversity Beyond National Jurisdiction
BIICL	British Institute of International and Comparative Law
BIT	Bilateral Investment Treaty
BP	British Petroleum
BTU	British thermal units
CAFF	Conservation of Arctic Flora and Fauna
CARA	Circum-Arctic Resource Appraisal
CCAMLR	Conservation of Antarctic Marine Living Resources
CCAS	Convention for the Conservation of Antarctic Seals
CCSBT	Convention for the Conservation of Southern Bluefin Tuna
CEP	Committee for Environmental Protection
CLC	Convention on Civil Liability
CLEE	Convention on Civil Liability for Oil Pollution Damage resulting from Exploration for and Exploitation of Seabed Mineral Resources
COLREG	International Regulations for Preventing Collisions at Sea
CRAMRA	Convention on the Regulation of Antarctic Mineral Resource Activities
CRISTAL	Contract Regarding an Interim Supplement to Tanker Liability for Oil Pollution
DOALOS	Division for Ocean Affairs and the Law of the Sea (United Nations)
EEZ	Exclusive Economic Zone

EIA	Environmental Impact Assessment
EPPR	Emergency Prevention, Preparedness and response, protection of the Arctic Marine Environment
EU	European Union
FBIS	Foreign Broadcast Information Service
FPSO	Floating production, storage and offloading vessel
FRTG	Flow Rate Technical Group
GDR	German Democratic Republic
HNS	Hazardous and noxious substances
IBRU	International Boundaries Research Unit
ICJ	International Court of Justice
ICZM	Integrated Coastal Zone Management
ILA	International Law Association
ILC	International Law Commission
IMO	International Maritime Organisation
IPCC	Intergovernmental Panel on Climate Change
IPS	Arctic Council Indigenous Peoples Secretariat
ISBA	International Seabed Authority
ITLOS	International Tribunal for the Law of the Sea
ITOPF	International Tanker Owners Pollution Federation Ltd
IUA	International Unitisation Agreement
JDA	Joint Development Authority
JDZ	Joint Development Zone
JOA	Joint Operating Agreement
JPDA	Joint Petroleum Development Area
KNOC	Korean National Oil Company
LME	Large marine ecosystem
LNG	Liquefied natural gas
LOSC	Law of the Sea Convention
LRTAP	Long-range Transboundary Air Pollution
MAP	Mediterranean Action Plan
MARPOL	International Convention for the Prevention of Pollution from Ships
MOPPR	Arctic Marine Oil Pollution Preparedness and Response
MOU	Memorandum of Understanding
MTJA	Malaysia Thailand Joint Authority

NASA	National Air and Space Administration (United States)
NOAA	National Oceanic and Atmospheric Administration (United States)
OCS	Outer Continental Shelf
OPRC	Oil Pollution Preparedness, Response and Cooperation
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic
OSRV	Offshore oil recovery vessel
PAME	Protection of the Arctic Marine Environment
PCA	Permanent Court of Arbitration
PCIJ	Permanent Court of International Justice
POP	Persistent Organic Pollutants
PSA	Production Sharing Agreement
PSC	Production Sharing Contract
RAIPON	Russian Association of Indigenous People of the North
RCMP	Royal Canadian Mounted Police
REE	Rare earth elements
SAO	Senior Arctic Officials
SDWG	Sustainable Development Working Group
SOLAS	International Convention for the Safety of Life at Sea
SPLOS	States Parties to the United Nations Convention on the Law of the Sea
STCW	International Convention on Standards of Training, Certification and Watchkeeping for Seafarers
TOVALOP	Tanker Owners' Voluntary Agreement concerning Liability for Oil Pollution
TSJDA	Timor Sea Joint Development Authority
UAE	United Arab Emirates
UN	United Nations
UNCITRAL	United Nations Commission on International Trade Law
UNCLOS	United Nations Conferences on the Law of the Sea
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UK	United Kingdom
USA	United States of America
USD	United States Dollars
USGS	United States Geological Survey
USSR	Union of Soviet Socialist Republics

VAT	Value Added Tax
VCLT	Vienna Convention on the Law of Treaties
WMO	World Meteorological Organization
WWF	World Wildlife Fund

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CHAPTER I – JOINT DEVELOPMENT THESIS AND FOUNDATION

CHAPTER

1. Introduction

This foundation chapter summarises the purpose and significance of the thesis, and introduces the respective parts of the related research. The introduction will principally explain the research hypothesis of the thesis, the increasing competition for offshore oil and gas resources in the Arctic Ocean and the Southern Ocean and potential global warming, why there are limitations in the current way offshore boundaries are determined under the United Nations Law of the Sea Convention (LOSC)¹, and analyse the potential for joint development zones (JDZs) for peaceful resolution of competing polar offshore oil and gas claims.

A JDZ is a place where joint development takes place. The research will adopt the definition of joint development used by Ian Townsend-Gault, which can be described as follows:²

...a decision by one or more countries to pool any rights they may have over a given area and, to a greater or lesser degree, undertake some form of joint management for the purposes of exploring and exploiting offshore minerals.

This definition has been adopted for this research as it includes JDZs adopted pending the future settlement of a maritime boundary, and JDZs where states have agreed a maritime boundary, but have also agreed to share resources of a JDZ. The definition also includes multilateral agreements, which allow access to resources by more than two states. These regimes relate to the Area regime, applying to the sea-bed and ocean floor and subsoil beyond the limits of national jurisdiction, and future regimes may relate to the Svalbard Islands, and to the Southern Ocean. These regimes provide for sharing of resources, and can therefore potentially eliminate conflicts over resources such as offshore oil and gas.

¹ *United Nations Convention on the Law of the Sea*, opened for signature 10 December 1982, 1833 UNTS 396 (entered into force 16 November 1994) ('LOSC').

² Ian Townsend-Gault 'Joint Development of Offshore Mineral Resources - Progress and Prospects for the Future', (1988) 12(3) *Natural Resources Forum* 275.

There have been several other definitions of joint development, including definitions by Rainer Lagoni,³ Masahiro Miyoshi,⁴ and Hazel Fox.⁵ The definition used by Townsend-Gault is adopted as best supporting the focus of the research on resolution of potential conflicts over offshore oil and gas, and should therefore include permanent and multilateral regimes for sharing of offshore oil and gas resources.

JDZs have been introduced in a significant number of ocean areas, varying from seas subject to ice conditions, to seas adjacent to desert regions, JDZs between two states, and also multilateral JDZ regimes between several states. The analysis will include examining the structure of JDZs in these locations to determine characteristics for JDZs in the Arctic and Southern Ocean regions.

The geographical scope of the research is generally based on regions currently subject to sea-ice conditions, and which may be expected to come under increasing pressure for oil and gas development as a result of advancing technological developments in offshore oil and gas, and the effects of global warming reducing the severity of ice conditions.

³ Rainer Lagoni, *Oil and Gas Deposits across National Frontiers* (1979) 73(2) *American Journal of International Law* 215. Lagoni defined joint development as follows:

The cooperation between states with regard to the exploration for and exploitation of certain deposits, fields or accumulations of non-living resources which either extend beyond a boundary or lie in areas of overlapping claims

The definition includes unitisation agreements where boundaries are agreed. The Townsend-Gault definition may however be somewhat more precise, by referring to the pooling of rights, and that joint management to a greater or lesser extent.

⁴ Masahiro Miyoshi, Clive H Schofield (eds), 'The Joint Development of Offshore Oil and Gas in relation to Maritime Boundary Delimitation', (1999) 2(5) *IBRU Maritime Briefing* 3. Masahiro Miyoshi defined joint development as follows:

An inter-governmental arrangement of a provisional nature, designed for functional purposes of joint exploration for and/or exploitation of hydrocarbon resources of the sea-bed beyond the territorial sea.

The definition excluded joint ventures between governments and oil companies, and is intended to focus on arrangements where resources are shared between two or more states. The agreement focused on joint development as provisional arrangements pending a settlement, in accordance with LOSC Article 83.

⁵ Hazel Fox et al, *Joint Development of Offshore Oil and Gas, A Model Agreement for States for Joint Development with Explanatory Commentary* (British Institute of International and Comparative Law, 1989) 45 and 54. Fox defined joint development as follows:

An agreement between two states to develop so as to share jointly in agreed proportions by inter-state cooperation and national measures the offshore oil and gas in a designated zone of the seabed and subsoil of the continental shelf to which both or either of the participating states are entitled in international law.

The definition focussed on bilateral agreements to the proposal and analysis of a Model Agreement for joint development between two states. Fox referred to multilateral JDZ regimes in the publication including CRAMRA and the Area, although the focus of the publication was the development of a bilateral Model JDZ agreement.

The geographical scope relating to the Arctic Ocean will include regions in general proximity to the Arctic Circle extending to the North Pole relating to potential JDZs, including the Bering, Chukchi, Beaufort, Greenland, Norwegian and Barents seas.⁶

The geographical scope in the Southern Ocean will extend from the Antarctic coast north to 60° south latitude, being the area subject to the regime of the Antarctic Treaty,⁷ (together with related agreements known as the Antarctic Treaty System or ATS).

2. Joint Development Zone Thesis

A. Research Hypothesis

The research hypothesis to be tested is as follows:

The establishment of Joint Development Zones for the development of offshore oil and gas resources in the Arctic and Southern Oceans can effectively resolve competing continental shelf and outer continental shelf (OCS) claims arising under the provisions of Article 76 of the United Nations Convention on the Law of the Sea.

This research examines whether the establishment of JDZs for the development of offshore oil and gas resources in the Arctic and Southern Ocean regions can effectively resolve competing claims. Article 76 of LOSC provides for the delimitation of the continental shelf based on physical characteristics of the seabed. In regions such as the Arctic Ocean, for example, coastal states may use different methods allowed under LOSC to determine the maritime boundary, and so disputes arise where there is an overlap of the claimed continental shelves.

Article 83 of LOSC provides that the delimitation of the continental shelf between States with opposite or adjacent coasts shall be effected by agreement on the basis of international law. Pending agreement, the states concerned shall make every effort to

⁶ This analysis will include the continental shelf and outer continental shelf (OCS) claims in this region, comprising the United States, Canada, Denmark (based on Denmark's claim to Greenland), Iceland, Norway (including the Svalbard Islands) and Russia.

⁷ *Antarctic Treaty*, opened for signature 1 December 1959, 402 UNTS 71 (entered into force 23 June 1961).

enter into provisional arrangements of a practical nature. These arrangements are to be without prejudice to any final boundary delimitation.

A JDZ can be entered into as a provisional arrangement, consistent with Article 83, by which the states concerned either agree a boundary but share resources such as oil and gas on either side within the overlapping areas, or suspend the boundary delimitation, and still share the benefits of development of resources such as oil and gas in the overlapping area.

The JDZ examples used in several locations principally relate to oil and gas resources, which have historically been the most valuable non-living resources. JDZs may relate to other resources such as fishing stocks, and may have application to other valuable resources which may be scarce in the future. One example concerns rare-earth elements (REE), such as dysprosium and neodymium, used to make the magnets for electric generators and motors.⁸ A second example concerns biological compounds and genetic materials which may be used in pharmaceuticals.⁹

The continental shelf and outer continental shelf (OCS) claims in the Arctic and Southern Oceans are examined, including information on estimated oil and gas reserves where available. The thesis will analyse the terms for Model JDZ agreements for the Arctic and Southern Oceans, with proposals for provisions adapted for specific regions. This will include proposed measures to increase the protection of the Arctic and Southern Ocean environment, and to incorporate regional bodies, specifically the Arctic Council and the Antarctic Treaty, in environmental protection measures. The thesis will analyse the potential for JDZs to reduce potential Arctic and Southern Ocean regional resource conflicts. The analysis includes examples of cancelled JDZ agreements to establish that JDZs are not a 'panacea' for all maritime boundary disputes, while analysing the circumstances likely to lead to successful JDZs in the Arctic and Southern Ocean regions. Political circumstances have resulted in the cancellation of two JDZs, and suspension of a further two JDZs, as reviewed in Chapter III. JDZ regimes apply in the Arctic Ocean in the Jan Mayen continental shelf, and in the Svalbard territorial sea

⁸ 'In a hole? Demand for some rare-earth elements could rapidly outstrip supply', *The Economist*, (London), March 17, 2012 <<http://www.economist.com/node/21550243>> at 24 July 2012.

⁹ Donald R Rothwell and Tim Stephens, *The International Law of the Sea* (Hart Publishing, 2010) 328.

regions. A JDZ regime was also proposed for the Southern Ocean under the Convention on the Regulation of Antarctic Mineral Resource Activities (CRAMRA).¹⁰

The thesis will analyse the reasons why JDZs may be needed under the Law of the Sea, specific disputes in the Arctic and Southern Ocean regions where JDZ may be used as provisional arrangements to resolve specific resource conflicts, the terms of a related Model JDZ agreement, specific implementation issues including protection of the environment, and potential future developments which may affect the use of JDZs.

B. Addition to Existing Literature

The additions made by this thesis to the existing literature concern i) the basis of current JDZs and related terms of a Model JDZ agreement, and ii) resolving current and potential maritime boundary delimitation disputes in the Arctic and Southern Ocean regions. In summary, the thesis adds to existing literature as follows:

a) The maritime boundary delimitation provisions of LOSC have been extensively reviewed in the literature on the Law of the Sea, including publications by Robin Churchill and Alan Vaughan Lowe in 1999,¹¹ and Donald Rothwell and Tim Stephens in 2010.¹² LOSC maritime boundary delimitation provisions may not resolve disputes.¹³ Chapter II is a summary of LOSC provisions as a basis for the later analysis;

b) Existing JDZs have been comparatively analysed by several legal experts, including in particular reviews by Fox in 1989,¹⁴ Masahiro Miyoshi in 1999,¹⁵ and Vasco Becker-Weinberg in 2014.¹⁶ Specific JDZ have been reviewed including the Australia/Timor Leste JDZ in particular by Clive Schofield,¹⁷ and the China/Japan provisional JDZ

¹⁰ *Convention on the Regulation of Antarctic Mineral Resource Activities*, opened for signature 2 June 1988, not in force, (1988) 27 ILM 868 ('CRAMRA'). The Convention was superseded by the Protocol on Environmental Protection to the Antarctic Treaty.

¹¹ RR Churchill and AV Lowe, *The Law of the Sea* (Manchester University Press, 3rd ed, 1999), together with prior editions in 1983 and 1988.

¹² Rothwell and Stephens, above n 9.

¹³ This may apply, for example, due to different interpretations of treaties, the determination of baselines, the effect given to islands, and sovereignty of land masses or islands are disputed.

¹⁴ Fox, et al, above n 5.

¹⁵ Miyoshi, above n 4.

¹⁶ Vasco Becker-Weinberg, *Joint Development of Hydrocarbon Deposits in the Law of the Sea* (Springer Verlag, Heidelberg, 2014).

¹⁷ Clive H Schofield, 'Minding the Gap: The Australia-East Timor Treaty on Certain Maritime Arrangements in the Timor Sea (CMATS) (2007) 22(2) *International Journal of Marine and Coastal Law* 201.

agreement by Schofield and Ian Townsend-Gaunt.¹⁸ Issues relating to the negotiation of JDZs were analysed by David Anderson.¹⁹ Chapter III is a summary of JDZs as a basis for the later analysis in the thesis.²⁰

c) Polar regimes have been reviewed in existing literature, including publications by Churchill and Lowe,²¹ Rothwell and Stephens,²² and Michael Byers.²³ Chapter IV is a summary of these regimes as a basis for later chapters, with analysis of recent international arbitration cases, and circumstances where states may not be able to agree upon a boundary and may prefer to negotiate a JDZ, rather than refer the dispute to binding dispute resolution process under LOSC;

d) Arctic boundary disputes have been reviewed in existing literature in particular by Alex Oude Elferink,²⁴ Donat Pharand,²⁵ Rothwell,²⁶ and Tore Henriksen and Geir Ulfstein.²⁷ Chapter V is based on the literature, with additional updates on current Arctic developments such as Arctic OCS claims by Russia, Denmark (Greenland) and Canada, and current Southern Ocean OCS claims by Argentina.

e) Antarctica and Southern Ocean sovereignty and boundary disputes have been reviewed, in particular by Stuart Kaye,²⁸ and Christopher Joyner.²⁹ Chapter VI includes related discussion of Antarctic sovereignty claims referring to publications relating to the acquisition of sovereignty by James Crawford,³⁰ and Andrew Clapham;³¹

¹⁸ Clive H Schofield and Ian Townsend-Gault, 'Choppy Waters Ahead in 'a sea of peace cooperation and friendship'? - Maritime Joint Development in the East China Sea', (Paper presented at the International Boundary Research Unit Conference, Durham, 2 April 2009).

¹⁹ David Anderson, 'Strategies for Dispute Resolution - Negotiating Joint Agreements' in *Modern Law of the Sea - Selected Issues*, (Martinus Nijhoff, 2014) 491.

²⁰ This includes examples where JDZ have not been successful, including the cancellation of the United Kingdom/Argentina JDZ in 2010. *Joint Declaration on Cooperation over Offshore Activities in the South West Atlantic* (Argentina and United Kingdom) 35 ILM 301 signed 27 September 1995 (entered into force 27 September 1995, repudiated cancelled by Argentina in 2010)

²¹ Churchill and Lowe, above n 11.

²² Donald R Rothwell and Tim Stephens, *The International Law of the Sea* (2010) above n 9.

²³ Michael Byers, *International Law and the Arctic* (Cambridge University Press, 2013) 9.

²⁴ Alex G Oude Elferink, 'Arctic Maritime Delimitations' in Alex G Oude Elferink and Donald R Rothwell (eds), *The Law of the Sea and Polar Maritime Delimitation and Jurisdiction* (Martinus Nijhoff, 2001) 179.

²⁵ Donat Pharand, *Canada's Arctic Waters in International Law* (Cambridge University Press, 2009).

²⁶ Donald R Rothwell, *The Polar Regions and the Development of International Law* (Cambridge University Press, 1996).

²⁷ Tore Henriksen and Geir Ulfstein, 'Maritime Delimitation in the Arctic: The Barents Sea Treaty' (2011) 42 *Ocean Development and International Law* 1.

²⁸ Stuart Kaye, 'Antarctic Maritime Delimitations' in Oude Elferink and Rothwell above n 25, 163.

²⁹ Christopher C Joyner, *Antarctica and the Law of the Sea* (Kluwer Academic Publishers, 1992).

³⁰ James Crawford, *Brownlie's Principles of Public International Law* (Oxford University Press, 8th ed, 2012).

f) The existing literature includes discussion of terms for protection of the marine environment, including terms for a model JDZ by Patricia Birnie,³² and approaches within an internationalised regime for Antarctica and the Southern Ocean by Francisco Vicuna.³³ Chapter VII adds to the literature by reviewing specific adaptations to a model JDZ required for Arctic and Southern Ocean regions. In particular the majority of the existing literature predates the *Deepwater Horizon* offshore oil spill;

g) The potential use of JDZs in relation to the Arctic region has received consideration, including publications by Fox,³⁴ Churchill and Geir Ulfstein,³⁵ and Ted L McDorman,³⁶ and in relation to the Southern Ocean has included discussion of the proposed structures for Antarctic resources by Gillian Triggs,³⁷ and Vicuna.³⁸ Chapter VIII adds to the literature by analysing specific boundary disputes and their similarities to current JDZs, including the United States/Canada and United States/Russia bilateral disputes, the dispute on the geographical scope of the application of the Svalbard Treaty, and the overlapping United Kingdom/Argentina/Chilean multilateral disputes;

h) Policy issues relating to JDZs have had some analysis in literature particularly by Fox.³⁹ Chapter IX adds to the literature by analysing policy issues relating to Arctic and Southern Ocean region JDZs, including the development of the International Seabed Authority (ISBA).

i) Potential game changing events may affect the use of JDZs in the future. The further expanded development of the Arctic Council was considered by authors including

³¹ Andrew Clapham, *Brierly's Law of Nations, An Introduction to the Role of International Law in International Relations* (Oxford University Press, 7th ed, 2012).

³² Patricia Birnie, 'Protection of the Marine Environment' in Hazel Fox et al, *Joint Development of Offshore Oil and Gas, A Model Agreement for States for Joint Development with Explanatory Commentary* (1990), vol 2, 202.

³³ Francisco Orrego Vicuna, *Antarctic Mineral Exploitation: The Emerging Legal Framework* (Cambridge University Press, 2009).

³⁴ Fox, et al, above n 5.

³⁵ Robin R Churchill, and Geir Ulfstein, *Marine Management in Disputed Areas: The Case of the Barents Sea* (Routledge, 1992)

³⁶ Ted L McDorman, *Salt Water Neighbors – International Ocean Relations between the United States and Canada* (Oxford University Press, 2009).

³⁷ Gillian Triggs, *The Antarctic Treaty Regime: Law, Environment and Resources* (Cambridge University Press, 1987).

³⁸ Vicuna, above n 33.

³⁹ Fox, et al, above n 5.

David VanderZwaag,⁴⁰ and potential game changing events in relation to global and regional regimes were considered by authors including Molenaar, Rothwell and Oude Elferink.⁴¹ Chapter X adds to the literature with analysis of potential events, including Greenland independence, political developments relating to the Svalbard Islands, oil spills in polar and other regions, updated analysis relating to the Arctic Council and Antarctic Treaty system, technological developments, and responses to significant oil and gas discoveries;

j) The existing literature has no comprehensive analysis of the potential for JDZs in the Arctic and Southern Ocean regions. Chapter XI summarises the research conclusions, completing the analysis and confirming the research hypothesis.

C. Arctic and Southern Oceans – Offshore Oil and Gas

Technological developments in oil and gas extraction and transportation may be expected in the coming decades to allow increasing access to potential resources in the Arctic and Southern Ocean regions which previously had not been capable of economic exploitation due to extremes of weather conditions, difficulties with ice cover, and potential damage from iceberg collisions.

These developments may also allow access to hydrocarbons existing in extremely cold climates which are trapped in forms other than oil or gas, such as gas hydrates.⁴²

A consensus view is developing that global temperatures may be increasing, known as global warming, as a result of carbon dioxide, or 'greenhouse gas' emissions, and the

⁴⁰ David VanderZwaag, 'The Arctic Council at 15 Years: Edging Forward in a Sea of Governance Challenges' (2011) 54 *German Yearbook of International Law* 282.

⁴¹ Erik J Molenaar, Donald R Rothwell and Alex G Oude Elferink, 'The Law of the Sea and Polar Regions' in Alex G Oude Elferink, Erik Molenaar, Donald R. Rothwell (eds), *The Law of the Sea and Polar Regions: Interactions between Global and Regional Regimes* (Brill, 2013); and Donald R Rothwell, 'The Antarctic Treaty System: Resource Development, Environmental Protection or Disintegration?' (1990) 43(3) *Arctic* 284.

⁴² Gas hydrates are gases such as methane trapped in structures resembling ice. The potential to exploit gas hydrates was explored by test wells and related research at the Mallik 2002 Gas Hydrate Production Research Well Program on Richard's Island, Northwest Territories, Canada. Geological Survey of Canada 'Scientific Results from the Mallik 2002 Gas Hydrate Production Research Well Program, Mackenzie Delta, Northwest Territories, Canada' (2005) *GSC Bulletin* 585. The gas hydrate research drilling program at the Mallik site is described by the Geological Survey of Canada as a cooperative effort including Canadian, United States, German and Indian governments and oil companies including BP Canada and Chevron.

consequential trapping of the sun's energy in the earth's atmosphere.⁴³ A significant rise in global temperatures appears at present likely to reduce ice congestion in the Arctic and Southern Ocean regions, and may make drilling and transportation more practicable. This development should allow increased access to potential oil and gas reserves in these regions.

Discussion of potential Arctic Ocean region offshore oil and gas is included in Chapter V, and for the Southern Ocean in Chapter VI.

D. Reasons for Competing Maritime Boundary Claims

Competing state claims in the Arctic Ocean are based on historic claims and treaties, sovereignty of territory such as islands, how the baselines from the coast used to determine maritime zones are determined, and whether boundaries based on equidistance lines between opposite or adjacent coasts should be modified by geographical features. In the Arctic Ocean region, disputes include the interpretation of treaties, particularly with respect to the Svalbard Islands, the use of sector lines relating to the North Pole compared to equidistance lines, and the effect given to islands in determining a maritime boundary. In the Southern Ocean, disputes include whether states recognise prior sovereignty claims to Antarctica, and overlapping claims to regions in Antarctica, particularly the Antarctic Peninsula and the Weddell Sea regions. The basis of current disputes and relationship to LOSC are analysed in Chapter II.

E. JDZs and Conflict Resolution

The thesis that JDZs can effectively resolve competing outer continental shelf claims is supported by the JDZs currently in operation, although the particular challenges of the Arctic and Southern Oceans must be considered.

JDZs should be seen as one available remedy to resolve potential conflicts, but with a realistic understanding that the JDZ can only be used where there is approval of both countries concerned. For example, the existence of a JDZ agreement between the United Kingdom and Argentina has not reduced current tensions over sovereignty of the

Falkland Islands (Malvinas) in the South Atlantic, and the related JDZ has been cancelled by Argentina. The reasons for current failure of the Falklands Agreement are as important as the reasons for JDZ successes in other locations.⁴⁴

The JDZ should be considered in the context of other dispute resolution methods available to states, particularly the International Court of Justice (ICJ), international arbitration, and the International Tribunal for the Law of the Sea (ITLOS). The extent to which the maritime delimitation provisions of LOSC support the adoption of JDZs as interim measures is reviewed in Chapter II.

Currently successful JDZ regimes generally relate to maritime regions where there is no significant landmass or island sovereignty dispute, as examined in Chapter III, and these JDZs have usefully resolved conflict over resources in these ocean regions.⁴⁵

3. Law of the Sea Convention and Maritime Boundaries

The following is a brief introduction to the maritime zones extending from the coastal state's baseline under LOSC. These zones are analysed in detail in Chapter II (see Illustration 2-1).⁴⁶

A. Baselines and Territorial Sea

LOSC provides that the baseline from which the maritime zones are generally measured is the low water line along the coast.⁴⁷ A related issue concerned large ice shelves located in the Antarctic, and whether the baseline should be measured from the land coast or from the outer limit of the shelf. The Arctic and Southern Ocean regions have

⁴⁴ The JDZ in the Falklands Agreement concerns circumstances where the sovereignty of the related islands is disputed and has high political importance.

⁴⁵ The JDZ as a form of conflict resolution is based on international agreement, and therefore relies on the support of both state parties. Future development in the Law of the Sea may include international or regional support to adopt a JDZ in future disputed maritime areas.

⁴⁶ LOSC Maritime Boundaries, Martin Pratt, International Boundaries Research Unit (IBRU) <http://www.oceanstewardship.com/IOSF%202009/Presentations_2009/MPratt_2009.pdf> at 20 December 2012.

⁴⁷ LOSC art 5. In localities where the coastline is deeply indented and cut into, or there is a fringe of islands along the coast in its immediate vicinity, then the method of straight baselines may be used under Article 7 of LOSC. The drawing of straight baselines is generally limited to a length of 24 nautical miles, and the straight baselines must not 'depart to any appreciable extent from the general direction of the coast'.

extensive areas of ice-covered coasts and floating ice, and this issue is reviewed in Chapter II.⁴⁸

The territorial sea is a zone of 12 nautical miles from the baseline.⁴⁹ States with opposite or adjacent coasts may not extend their boundary beyond the equidistance line failing agreement to the contrary, however an exception is made 'by reason of historic title or other special circumstances.'⁵⁰

B. Exclusive Economic Zone

The state's rights in the EEZ include sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living, of the waters superjacent to the seabed and to the seabed and its subsoil, under Article 56 of LOSC. The EEZ is determined from the coastal baseline to a breadth not exceeding 200 nautical miles under Article 57 of LOSC.⁵¹

The EEZ claims may overlap due to issues including the determination of baselines, the sovereignty and effect given to islands, and the interpretation of treaties. Coastal states are required to reach an agreement on maritime boundaries 'on the basis of international law' under Article 74, and if no agreement is reached, the states are required to refer the matter for dispute resolution under Part XV of LOSC.

C. Continental Shelf and Outer Continental Shelf

The state's rights in the continental shelf are sovereign rights for the purpose of exploration and utilisation of natural resources, under Article 77 of LOSC. The

⁴⁸ LOSC Article 234 grants regulatory and enforcement rights to coastal states in ice-covered areas to reduce vessel source pollution within the limits of the EEZ, however LOSC does not contain other provisions relating to ice-covered, and specifically no provisions relating to boundary delimitation in ice-covered areas. This raises the issue of whether ice coasts should affect baselines of coastal states and their related EEZ, continental shelf and OCS maritime zones, and related maritime boundary delimitations, under LOSC.

⁴⁹ LOSC art 3. The nautical mile used in international treaties is approximately one minute of arc of latitude. This allows measurement of distance on a nautical chart using a chart divider and the chart's latitude scale. The nautical mile is 1,852 metres (approximately 6,076 feet) under the First International Extraordinary Hydrographic Conference, Monaco, in 1929. Wikipedia, 'Nautical mile' <http://en.wikipedia.org/wiki/Nautical_mile> at 28 February 2013.

⁵⁰ LOSC art 15. Several of the disputes discussed below are between one state seeking to apply an equidistance line as the boundary, and the other state seeking to modify that line.

⁵¹ The EEZ therefore provides economic rights for the area extending for 188 nautical miles beyond the full sovereign rights of the 12 nautical mile territorial sea.

continental shelf, at a minimum, extends out to 200 nautical miles from the coastal state's baselines.

Continental shelf claims may overlap due to issues including the determination of baselines, the sovereignty and effect given to islands, and the interpretation of treaties. Coastal states are required to reach an agreement on the maritime boundary 'on the basis of international law' under Article 83, and if no agreement is reached, the states are required to refer the matter for dispute resolution under Part XV of LOSC.⁵²

LOSC provides that states may have a more extended continental shelf claim beyond 200 nautical miles, also known as an Outer Continental Shelf (OCS), to be determined by the physical characteristics of the seabed.⁵³

The coastal state is required to make payments or contributions in kind to the International Seabed Authority (ISBA) for exploitation of the non-living resources of the continental shelf beyond 200 nautical miles from the coastal state's baseline.⁵⁴

Coastal states are required to submit claims for the OCS, supported by physical survey data, to the Commission on the Limits of the Continental Shelf (CLCS).⁵⁵ The CLCS is required to examine the claim, and then make recommendations on the limits of the OCS. If a state accepts those recommendations then the boundaries are determined on the basis of these recommendations. The process of establishing an OCS and related submissions to the CLCS is analysed in Chapter IV.

D. The Area

LOSC Part XI provides a regime for 'the Area', defined as the sea bed and ocean floor and subsoil beyond the limits of national jurisdiction.⁵⁶ LOSC declares the Area and its

⁵² Several of the disputes discussed concern the EEZ or continental shelf are based on one country claiming that the boundary should be equidistant, and the other state claiming a different boundary based on previous treaties or agreements, or on the historic ownership and use of that area of the sea.

⁵³ The limit is generally based on at least 1 per cent thickness of sedimentary rock over the seabed, or a limit of 60 nautical miles distance from the foot of the continental slope, under LOSC art 76. The OCS claims are generally limited to 350 nautical miles under Article 76(5), but may exceed this limit in relation to submarine elevations that are natural components of the continental margin, such as its plateaus, rises, caps, banks and spurs.

⁵⁴ The payment of contribution is 1 per cent of the value or volume in the sixth year of production, rising annually to 7 per cent from the 12th year.

⁵⁵ LOSC art 76(8).

⁵⁶ LOSC, art 1(1).

resources to be the common heritage of mankind, including all solid liquid or gaseous mineral resources in the Area at or beneath the seabed.⁵⁷ The Area is estimated to comprise 50 per cent of the earth's surface,⁵⁸ (see Illustration 2–3).⁵⁹ ISBA was established to control activities in the Area.⁶⁰ ISBA is controlled by the Assembly consisting of all state members, and an elected Council with members elected by the Assembly acts as the executive.⁶¹

LOSC established the 'Enterprise', to carry out exploration and exploitation activities in the Area.⁶² These activities could be conducted independently or through joint venture arrangements. No state or national of a state could exploit seabed resources unless this is done under a contract from ISBA.⁶³ The revenue provisions for the Area are based on companies or consortiums acting as 'Contractors' to the Enterprise, and in general require payments to ISBA examined in Chapter IV.⁶⁴

The application of the Area regime to the Arctic and Southern Ocean regions is discussed in Chapters V and VI.

4. Joint Development Zones and the Law of the Sea – LOSC Articles 74(3) and 83(3)

JDZs have the common characteristic of an agreement between states to allow the sharing of benefits from offshore oil and gas production, and so they effectively suspend disputes over sovereignty of an offshore region. They are increasingly used to resolve disputes where the existing terms of LOSC can give rise to competing claims. JDZs have been introduced in several of the world's contested maritime regions,

⁵⁷ LOSC art 133. The principle of the seabed as the common heritage of mankind was proposed by Arvid Pardo, Permanent Representative of Malta to the United Nations, during the Third United Nations Conference on the Law of the Sea (UNCLOS III).

⁵⁸ Rothwell and Stephens, above n 9, 123.

⁵⁹ LOSC Part XI – International Seabed Area, International Seabed Authority <http://www.isa.org.jm/en/node/399> at 19 December 2012. The precise area is still to be determined, and would require the Commission on the Limits of the Continental Shelf (CLCS) to receive submissions and make recommendations for the Outer Continental Shelf (OCS) for all states. The Area will then be the regions beyond all state OCS zones.

⁶⁰ LOSC art 157.

⁶¹ LOSC art 161.

⁶² LOSC art 170.

⁶³ LOSC art 153(2).

⁶⁴ LOSC art 171 and annex 3 art 13. The payments are either a contribution based on the value of production of 5% rising to 12% after 10 years, or a combination of contribution based on production of 2% to 4%, together with a share of net revenue of 35% to 70%.

including Australia's current agreements applying with Timor-Leste in relation to offshore oil and gas resources in the Timor Sea.

The potential advantages for JDZs in polar regions are significant. These regions are characterised by the potentially large number of overlapping claims, particularly in the Arctic, and suspended claims in the Antarctic, and the potential for much higher levels of environmental damage in the event of a major accident from offshore oil or gas platforms, shipping used for oil or gas transport, or oil and gas pipelines.

The research will analyse how existing JDZs and related agreements address boundary delimitation disputes by analysing a selection of the current agreements. The following JDZ agreements and related agreements will be examined:

- A. Svalbard (Spitsbergen), 1920,⁶⁵
- B. Saudi Arabia/Kuwait - Neutral Zone, 1922, Agreement 1965,⁶⁶
- C. Saudi Arabia/Bahrain Agreement 1958,⁶⁷
- D. Qatar/Abu Dhabi Agreement 1969,⁶⁸
- E. Iran/Sharjah (UAE) Agreement 1971,⁶⁹
- F. France/Spain - Bay of Biscay, 1974,⁷⁰
- G. Saudi Arabia/Sudan - Common Zone, 1974,⁷¹
- H. Japan/Republic of Korea - 1974,⁷²
- I. United Kingdom/Norway - Frigg Field Reservoir, 1977,⁷³
- J. Malaysia/Thailand - Joint Development Area, 1979,⁷⁴

⁶⁵ *Treaty between Norway, The United States of America, Denmark, France, Italy, Japan, the Netherlands, Great Britain and Ireland and the British Overseas Dominions and Sweden concerning Spitsbergen*, opened for signature 9 February 1920, 2 LNTS 8, (entered into force 14 August 1925) ('Svalbard Treaty').

⁶⁶ Isa Huneidi, 'Saudi/Kuwait Joint Development', in Fox et al above n 5, 77.

⁶⁷ Fox et al, above n 5, 54.

⁶⁸ Ibid 55.

⁶⁹ Ibid 56.

⁷⁰ *Convention Between the Government of the French Republic and the Government of the Spanish State on the Delimitation of the Continental Shelves of the Two States in the Bay of Biscay*, 29 January 1974, 996 UNTS 345 (entered into force 5 April 1975).

⁷¹ *Agreement Between Sudan and Saudi Arabia Relating to the Joint Exploitation of the Natural Resources of the Seabed and Subsoil of the Common Zone*, 16 May 1974, 952 UNTS 198 (entered into force 16 May 1974).

⁷² *Agreement concerning the Joint Development of the Southern Part of the Continental Shelf adjacent to the Two Countries*, 30 January 1974, Japan – Republic of Korea, 1225 UNTS 104 (entered into force 30 January 1974).

⁷³ *Agreement Between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of the Kingdom of Norway relating to the Exploitation of the Frigg Field reservoir and the Transmission of Gas therefrom to the United Kingdom*, 10 May 1976, 1098 UNTS 4 (entered into force 22 July 1977).

- K. Iceland/Norway - Jan Mayen Island Treaty Area, 1981,⁷⁵
- L. Vietnam/Cambodia Agreement, 1982,⁷⁶
- M. Tunisia/Libya Agreement, 1988,⁷⁷
- N. Australia/Indonesia - Timor Gap (superseded), 1989,⁷⁸
- O. Malaysia/Vietnam, 1992,⁷⁹
- P. Senegal/Guinea-Bissau, 1993,⁸⁰
- Q. Columbia/Jamaica, 1993,⁸¹
- R. Argentina/United Kingdom - South West Atlantic (Repudiated), 1995,⁸²
- S. Nigeria/São Tome and Principe, 2001,⁸³
- T. Australia/Timor-Leste - Timor Sea Treaty, 2002,⁸⁴
- U. China/Japan Agreement - East China Sea, 2008,⁸⁵
- V. Malaysia/Brunei Agreement, 2009,⁸⁶

⁷⁴ *Memorandum of Understanding between the Kingdom of Thailand and Malaysia on the Delimitation of the Continental Shelf Boundary between the two countries in the Gulf of Thailand*, 24 October 1979, 1291 UNTS 251 (entered into force 15 July 1982).

⁷⁵ *Agreement between Iceland and Norway on the Continental Shelf in the Area between Iceland and Jan Mayen*, 22 October 1981, 2124 UNTS 262 (entered into force 2 June 1982).

⁷⁶ *Agreement on Historic Waters of Vietnam and Kampuchea*, 7 July 1982, Jonathan I. Charney and Lewis M. Alexander (eds) *International Maritime Boundaries*, (1993) Volumes 2-3, 2364, and United States Foreign Broadcast Information Service (FBIS) Daily Report, Asia and Pacific, July 9 1982, (entered into force 7 July 1982) ('Vietnam Cambodia Agreement').

⁷⁷ Fox et al, above n 5, 63.

⁷⁸ *Treaty between Australia and the Republic of Indonesia in the Zone of Cooperation in an Area between the Indonesian Province of East Timor and Northern Australia*, 11 December 1989, 1654 UNTS 106 (entered into force 9 February 1991, terminated on independence of Timor-Leste in April 2003) ('Australia and Indonesia - Timor Gap Treaty').

⁷⁹ *Memorandum of Understanding between Malaysia and the Socialist Republic of Vietnam for the Exploration and Exploitation of Petroleum in a Defined Area of the Continental Shelf between the Two Countries*, 5 June 1992

<<http://cil.nus.edu.sg/tp/il/pdf/1992%20MOU%20between%20Malaysia%20and%20Vietnam%20for%20the%20Exploration%20and%20Exploitation%20of%20Petroleum-pdf.pdf>> at 31 July 2012, (entered into force 4 June 1993) ('Malaysia and Vietnam Agreement'),

⁸⁰ *Agreement on Management and Cooperation between the Government of the Republic of Guinea-Bissau and the Government of the Republic of Senegal*, 14 October 1993, 1903 UNTS 64, (entered into force 21 December 1995) ('Guinea-Bissau and Senegal Agreement').

⁸¹ *Maritime Delimitation Treaty between Jamaica and the Republic of Columbia*, 12 November 1993, 1776 UNTS 17 (entered into force 14 March 1994) ('Jamaica and Columbia Treaty').

⁸² *Joint Declaration on Cooperation over Offshore Activities in the South West Atlantic*, 27 September 1995, Argentina –United Kingdom, 35 ILM 301 (entered into force 27 September 1995, repudiated by Argentina).

⁸³ *Treaty between the Federal Republic of Nigeria and the Democratic Republic of Sao Tome and Principe on the Joint Development of Petroleum and Other Resources, in respect of the Areas of the Exclusive Economic Zones of the Two States*, 21 February 2001

<<http://www.un.org/Depts/los/legislationandtreaties/pdf/treaties/stp-nga2001.pdf>> at 3 June 2008 (entered into force 21 February 2001).

⁸⁴ *Timor Sea Treaty*, 20 May 2002, 2258 UNTS 3 (entered into force 2 April 2003) ('Australia and Timor-Leste - Timor Sea Treaty').

⁸⁵ Jiang Yu, Chinese Foreign Ministry 'China, Japan reach principled consensus on East China Sea issue' (Press Release, 18 June 2009) at <<http://www.china-embassy.org/eng/fyrth/t466632.htm>> at 29 July 2009.

5. The Polar Regimes - Legal Framework and Governance Mechanisms

There are several legal regimes and institutions which can affect coastal state jurisdiction relating to offshore oil and gas resources, and the use of JDZs to resolve potential disputes over oil and gas resources.

A. The Commission on the Limits of the Continental Shelf

The Commission on the Limits of the Continental Shelf (CLCS) is an institution created under LOSC to make recommendations to coastal states on the establishment of the outer limits of the continental shelf.⁸⁷ The OCS claims relate to resources of the seabed and subsoil beyond the 200 mile limit, where there is a natural prolongation or extension of the continental shelf.⁸⁸ Determining the limits of the OCS requires extensive hydrographical survey work to be undertaken. The limits of the OCS are analysed in Chapter II, (see Illustration 2–2).

A significant issue arises in respect of submarine elevations which can form part of the continental shelf, and are not limited to the 350 mile limit.⁸⁹ This issue has essential importance to evaluating some of the largest Arctic OCS claims, and particularly the Russian, Danish and Canadian claims extending along the Lomonosov Ridge analysed in Chapter V.⁹⁰

The recommendations of the CLCS are based on a strict evaluation of geographical criteria for the continental shelf under LOSC, and not based on negotiation between states and CLCS, or between states and ISBA, which has rights to the ocean seabed

⁸⁶ *Exchange of Letters between Malaysia and Brunei Darussalam*, 16 March 2009, (not publicly released), referred to in Jeffrey J. Smith, 'Brunei and Malaysia resolve outstanding maritime boundary issues' [2010] 1 *Law of the Sea Reports*

<<http://www.asil.org/losreports/LOSReportsVol12010w6Smith.pdf>> at 1 August 2012.

⁸⁷ LOSC, annex 2.

⁸⁸ LOSC art 76(1). The limits of the OCS are reviewed in Chapter II. In general terms, the 'Outer Limit Line' is the limit of the OSC, and is based on the foot of the slope feature on the seabed floor, plus the greater of: i) the line where the sediment thickness on the seabed floor is 1% of the distance to the foot of the slope (FOS); or ii) 60 nautical miles. This distance is then limited to the greater of: i) the 2500 meter isobath (water depth line) plus 100 nautical miles; or ii) the coast baseline plus 350 nautical miles.

⁸⁹ LOSC art 76(6). LOSC refers to submarine elevations 'that are natural components of the continental margin such as its plateaux, rises, caps, banks and spurs.

⁹⁰ Marc Benitah, 'Russia's Claim in the Arctic and the Vexing Issue of Ridges in LOSC' (2007) *ASIL Insight* 11. Benitah notes that the terms 'submarine elevations' and 'natural components' are not defined in LOSC, with the result that the CLCS may have to 'legislate' on the meaning of these terms in considering a revised Russian Federation (Russia) claim.

beyond the OSC of coastal states. LOSC generally requires an OCS submission within ten years of ratification. Original signatories to LOSC, and states which ratified LOSC prior to 13 May 1999, were then allowed to commence the ten-year time period on 13 May 1999, and so these CLCS submissions were due in 2009. These states were then also allowed to notify their intention to make OCS submissions by that date, rather than make the full OCS submission.⁹¹ There is a significant issue whether the CLCS is adequately resourced to examine the number of submissions likely to be received.⁹²

States which are not parties to LOSC, such as the United States, may be bound by terms of LOSC to respect the OCS boundaries of states, the extent to which these terms are considered to have become part of customary international law.

B. Dispute Resolution - The International Tribunal for the Law of the Sea, International Court of Justice, and Arbitration Tribunals

There are several alternative methods third party dispute settlement entailing binding decisions provided under LOSC, Part XV. The parties are, however, required at first instance by Article 83 to effect a delimitation based on agreement.⁹³ In relation to a dispute over the continental shelf, the methods of dispute resolution may include the International Tribunal for the Law of the Sea (ITLOS), the International Court of Justice (ICJ), and an arbitral tribunal constituted in accordance with Annex VII of LOSC.

ITLOS was established under Annex VI of LOSC.⁹⁴ This jurisdiction includes all disputes referred to it under the terms of LOSC.⁹⁵

The ICJ can have jurisdiction to consider disputes in relation to continental shelf claims between states with adjacent or opposite coasts under Article 83, which provides that

⁹¹ *Decision regarding the workload of the Commission on the Limits of the Continental Shelf and the ability of States, particularly developing States, to fulfil the requirements of article 4 of annex II to the United Nations Convention on the Law of the Sea, as well as the decision contained in SPLOS/72, paragraph (a), Meeting of States Parties, United Nations Convention on the Law of the Sea, Eighteenth Meeting, (New York), 13-20 June 2008*

<<http://daccessdds.un.org/doc/UNDOC/GEN/N08/398/76/PDF/N0839876.pdf>> at 24 October 2008.

⁹² Donald R. Rothwell, 'Issues and Strategies for Outer Continental Shelf Claims' (2008) 23(2) *International Journal for Marine and Coastal Law* 185.

⁹³ JDZ agreements also need to set out the procedure for the resolution of disputes. The majority of recent JDZ agreements have adopted an arbitration procedure for disputes between states, which are broadly similar to the LOSC arbitral tribunal provided under Annex VII as discussed in Chapter VII.

⁹⁴ LOSC annex 4 art 3.

⁹⁵ LOSC annex 6 art 21.

the delimitation of the continental shelf between states with opposite or adjacent coasts shall be effected by agreement on the basis of international law, as referred to in Article 38 of the Statute of the ICJ, in order to achieve an equitable solution. States may, however, opt out of compulsory jurisdiction in respect of maritime disputes.

State parties to LOSC may alternatively refer a dispute to the arbitration procedures under Part XV, as set out in Annex VII of LOSC.⁹⁶

The majority of JDZs entered into between states have not been as a result of a procedure under ITLOS, the ICJ, or an arbitral tribunal. The reasons for this are discussed in Chapter VI, however the principal reason is likely to be that negotiating a JDZ allows the parties to come to an agreement which is satisfactory to both parties. Where such an agreement can be reached, this is likely to be preferred compared to a solution imposed on the parties by a court or arbitration procedure. This is recognised by the structure of LOSC, as parties are at first instance required to effect the delimitation based on agreement.⁹⁷

C. The International Seabed Authority

ISBA was established to develop the Area, which is defined as the sea-bed and ocean floor and subsoil thereof beyond the limits of national jurisdiction.⁹⁸ LOSC declares the Area and its resources to be the common heritage of mankind,⁹⁹ and defines these resources to include all solid, liquid or gaseous mineral resources in the Area at or beneath the seabed.¹⁰⁰ The Enterprise was established to carry out exploration and exploitation activities in the Area, and for transporting, processing and marketing of resources from the Area.¹⁰¹ Significant areas of the Arctic and Southern Ocean regions are likely to be beyond the OCS claims of coastal states, and will therefore be subject to the Area regime.

⁹⁶ LOSC annex 7 art 11.

⁹⁷ JDZ agreements also need to set out the procedure for the resolution of disputes. The majority of recent JDZ agreements have adopted an arbitration procedure for disputes between states, which are broadly similar to the LOSC arbitral tribunal provided under Annex VII as discussed in Chapter VII.

⁹⁸ LOSC Part 11.

⁹⁹ LOSC art 136.

¹⁰⁰ LOSC art 133.

¹⁰¹ LOSC art 170.

The concerns that the United States previously expressed with the Area regime have arguably been addressed by the Implementation Agreement made in 1994.¹⁰² Notwithstanding this, the United States has still not ratified LOSC. The Implementation Agreement is analysed in Chapter IV.

The Area may be considered as a form of JDZ, as activities will be carried out by the Enterprise, and also by commercial enterprises. However there is a principal issue whether Arctic region states would give access to third states, and whether Antarctic Treaty states would accept the Area regime in the Southern Ocean. There is also an issue whether this is an effective model for the Arctic Ocean and the Southern Ocean, in that oil and gas exploration and exploitation will be carried out in environmentally very sensitive areas, and will therefore require very careful supervision. The research will examine whether the ISBA would operate effectively in this role, and whether efforts to promote further integration with environmental administrations in these areas, such as the Arctic Council and the Antarctic Treaty, should be encouraged.

D. The Arctic Council

The Arctic Council was established as a high-level intergovernmental forum by Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden and the United States at a meeting in Ottawa, Canada in 1996.¹⁰³ The members of the Arctic Council include these states together with observer states, and indigenous communities of the Arctic region.

The policies of the Arctic Council will be examined to determine how the Council may affect the development of JDZs in the Arctic region, particularly in respect of cooperation for protection of the environment.

The Arctic Council may have a significant role in relation to Arctic navigation. In addition to the environmental issues relating to oil and gas extraction and transport, there are also current international disputes relating to rights of passage, particularly in

¹⁰² *Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982*, opened for signature 28 July 1994, 1994 UNTS 42 (entered into force provisionally 16 November 1994).

¹⁰³ *Declaration on the Establishment of the Arctic Council*, 19 September 1996 < <http://www.arctic-council.org/index.php/en/about/documents/file/13-ottawa-declaration> > at 17 September 2012 ('Ottawa Declaration').

the Canadian Northwest Passage, to the north of the Canadian mainland and to the south of the Arctic islands, and also to the Russian Northern Sea Route.

E. The Antarctic Treaty

The Antarctic Treaty together with related agreements are known as the Antarctic Treaty System (ATS). The Antarctic continent is subject to claims for territorial sovereignty by Argentina, Australia, Chile, France, New Zealand, Norway, and the United Kingdom. Article IV of the Antarctic Treaty suspends sovereignty claims on the basis of 'frozen sovereignty' under which existing and future claims are not recognised or denied while the Antarctic Treaty is in force.

CRAMRA would have allowed and regulated oil and gas development in Antarctica and the continental shelf, however it was not ratified by sufficient parties to come into force.¹⁰⁴ The Protocol on Environmental Protection to the Antarctic Treaty (Environmental Protocol) prohibits oil and gas development in the Antarctic and Southern Ocean south of 60° south latitude by state parties to the Treaty.¹⁰⁵ The Protocol came into force in January 1998.

6. Arctic Ocean Continental Shelf Claims

The maritime jurisdictions including expected OCS claims which apply in the Arctic Ocean was updated in 2014 by the International Boundaries Research Unit (IBRU).¹⁰⁶ A summary based on the IBRU maritime jurisdictions map is included in Chapter 2 together with the detailed analysis of these claims (see Illustration 5–1).¹⁰⁷

The Arctic claims include the Russian continental shelf claim based on the undersea Lomonosov and Mendeleev Ridges extending to the North Pole, the Danish and Greenland government claim in the Arctic extending from Greenland, the Norwegian

¹⁰⁴ *Convention on the Regulation of Antarctic Mineral Resource Activities*, opened for signature 2 June 1988, not in force, (1988) 27 ILM 868 ('CRAMRA'). The Convention never entered into force, and minerals development was suspended by the Protocol on Environmental Protection to the Antarctic Treaty.

¹⁰⁵ *Protocol on Environmental Protection to the Antarctic Treaty*, opened for signature 4 October 1991, 30 ILM 1455 (entered into force 14 January 1998) ('*Environmental Protocol*').

¹⁰⁶ 'Maritime Jurisdiction and Boundaries in the Arctic Region' (2008) International Boundaries Research Unit <<http://www.durham.ac.uk/ibru>> at 24 January 2015.

¹⁰⁷ Potential Arctic Maritime Boundary Delimitations – Martin Pratt – Source: IBRU <http://www.dur.ac.uk/resources/ibru/arctic.pdf> at 24 January 2014.

claim for areas in the Norwegian and Barents Sea, and the anticipated Canadian claim extending in the Arctic from Ellesmere Island. The national claims can reduce the area to be governed by ISBA, established under LOSC to ensure that the mineral resources of the ocean areas beyond state control are the common heritage of mankind, and that the benefits from economic activity are shared with the international community.

The thesis examines the coastal baseline and continental shelf claims of the states with Arctic coasts, comprising the United States, Canada, Denmark (relating to Greenland), Norway and Russia.

The potential oil and gas reserves where claims overlap is then analysed to identify potential areas for the use of JDZs to resolve competing territorial claims, with oil and gas estimates based on the United States Geological Survey (USGS) report in 2008 (see Illustrations 5–2 and 5–3).

One long standing Arctic maritime boundary dispute has recently been resolved, being the boundary between Russia and Norway in the Barents Sea. This is a significant example of states being able to make a final boundary delimitation, and did not apply a JDZ as an interim measure pending a final boundary delimitation.

The maritime jurisdictions including expected OCS claims which apply in the Arctic Ocean were published on 15 August 2008 by IBRU (see Illustration 2–1).¹⁰⁸ The disputed regions are discussed in Chapter V. The most significant area of current and potential overlapping offshore claims in the Arctic region to which a JDZ solution should be considered, and one example where a boundary has been successfully negotiated, are:

- i) The Bering Sea between the United States and Russia, and immediately to the north, the Chukchi Sea north to the Arctic Ocean (see Illustration (see Illustration 5–5)).

¹⁰⁸ ‘Maritime Jurisdiction and Boundaries in the Arctic Region’, International Boundaries Research Unit, 15 August 2008, <<http://www.durham.ac.uk/ibru>> at 15 August 2008.

- ii) The Beaufort Sea between the United States and Canada. The disputed area is not large, however oil exploration is already conducted in this region (see Illustration 5–6).
- iii) The Lomonosov Ridge and Mendeleev Ridge areas, where the claim made by Russia to the CLCS on the outer continental shelf extending from the Russian coast to the North Pole overlaps the Denmark and Greenland government claim and may potentially overlap the expected Canadian claim (see Illustrations 5–7 and 5–8).
- iv) The Barents Sea between Norway and Russia was resolved by treaty.¹⁰⁹ This is significant as the states were able to determine the boundary delimitation without use of a JDZ, and the circumstances of the treaty will be discussed (see Illustration 5–9).
- v) The Svalbard Islands region, where Norway obtained sovereignty over the Svalbard Islands under the Svalbard Treaty, however the right of Norway to the resources of the EEZ and continental shelf is disputed by other states, analysed in Chapters IV and VII (see Illustration 5–10).

7. Southern Ocean Continental Shelf and Outer Continental Shelf Claims

In relation to the Southern Ocean, the Antarctic Treaty applies to the area south of 60° south latitude, including ice shelves. The current prohibition on oil and gas development under the Environmental Protocol extends to the high seas region in the Southern Ocean to 60° south. This issue of the geographical scope of the Antarctic Treaty and related agreements is examined in Chapter IV.

The Antarctic Treaty demilitarises the Antarctic, and declares the continent should only be used for peaceful purposes.¹¹⁰ The Antarctic Treaty also provides a regime for enforcement and inspection.¹¹¹ The Antarctic Treaty also suspends territorial claims

¹⁰⁹ *Treaty Between the Kingdom of Norway and the Russian Federation Concerning Maritime Delimitation and Cooperation in the Barents Sea and the Arctic Ocean*, signed 15 September 2010, [UNTS] (entry into force 7 July 2011).

¹¹⁰ *Antarctic Treaty*, opened for signature 1 December 1959, 402 UNTS 71 (entered into force 23 June 1961).

¹¹¹ *Antarctic Treaty* art 7.

over Antarctica.¹¹² There is a related issue whether member states are therefore required not to make OCS claims. As discussed by Vidas,¹¹³ states with Antarctic claims therefore face a difficult policy and legal question of whether to suspend OCS claims, or make an OCS claim to the CLCS given they may be time limited.¹¹⁴

A related issue for Southern Ocean OCS claims is the status of the Unclaimed Sector (Marie Byrd Land), located between the two areas claimed by Chile and New Zealand. The areas of the Southern Ocean beyond continental shelf claims south of 60° south latitude should be under the Area regime under the jurisdiction of ISBA. This issue is analysed in Chapter VI.

The research will summarise the provisions of the Antarctic Treaty relating to the suspension of sovereignty claims and the treatment of the Antarctic as the common heritage of mankind, and will then focus on the impact of the treaty on Antarctic claims, and the potential for JDZs in the Southern Ocean.

The proposed CRAMRA regime would have allowed oil and gas development, however CRAMRA did not come into force. The Protocol on Environmental Protection to the Antarctic Treaty (Environmental Protocol)¹¹⁵ now prohibits all oil and gas exploration or development.¹¹⁶ The prohibition may not remain in place in the long term under increased competition for scarce resources.¹¹⁷

¹¹² *Antarctic Treaty*, art 4(2). Article 4(2) provides:

No acts or activities taking place while the present Treaty is in force shall constitute a basis for asserting, supporting or denying a claim to territorial sovereignty in Antarctica or create any rights of sovereignty in Antarctica. No new claim, or enlargement of an existing claim, to territorial sovereignty in Antarctica shall be asserted while the present Treaty is in force.

¹¹³ Davor Vidas, 'The Antarctic Continental Shelf beyond 200 Miles: A Judicial Rubik's Cube' in Davor Vidas (ed), *Implementing the Environmental Protection Regime for the Antarctic* (Springer, 2000) 263.

¹¹⁴ The Australian submission to the CLCS included geographical data in relation to an OCS claim including the continental shelf off the Antarctic coast, while requesting the CLCS to take no further action in respect of this region. *Australian submission through the Secretary-General to the Commission on the Limits of the Continental Shelf, pursuant to article 76, paragraph 8, of the Convention*, United Nations Division for Ocean Affairs and the Law of the Sea

<http://www.un.org/Depts/los/clcs_new/submissions_files/submission_austr.htm> at 17 August 2012. Submission was made on 15 November 2004.

¹¹⁵ *Protocol on Environmental Protection to the Antarctic Treaty*, opened for signature 4 October 1991 (entered into force 14 January 1998) ('Environmental Protocol').

¹¹⁶ Environmental Protocol art 7.

¹¹⁷ Article 25 provides that the Protocol may be amended on the same basis as Article XII(1) of the Antarctic Treaty. This effectively requires a majority vote of the ATCPs, including 75 per cent of the ATCPs which originally adopted the Protocol. No change to the prohibition on minerals activity is permitted for a period of 50 years from the entry into force, in 2048. Rothwell notes that in practice the 2048 date results in a 55 year prohibition, given the time frame for procedures of the Review Committee, and so the prohibition applies until at least 2053. The 2048 date will be used for discussion purposes.

The most significant area of current and potential overlapping offshore claims in the Southern Ocean region to which a JDZ solution should be considered are:

- i) Argentina and the United Kingdom, where the Antarctic claims prior to the adoption of the Antarctic Treaty significantly overlap (see Illustration 6-3 and 6-4).
- ii) Chile and the United Kingdom, where the Antarctic claims prior to the adoption of the Antarctic Treaty significantly overlap (see Illustrations 6-1 and 6-3).
- iii) Chile and Argentina, where the Antarctic claims prior to the adoption of the Antarctic Treaty significantly overlap (see Illustration 6-1 and 6-3).
- iv) Australia and France, where the Australian and French continental shelf and OCS claims may potentially overlap,¹¹⁸ (see Illustration 6-6).
- v) The Unclaimed Sector, which may involve several claiming states in the future, and also which may conflict with the interests of ISBA,¹¹⁹ (see Illustrations 6-1 and 6-7).
- vi) The Area under the LOSC Part XI regime, which may potentially conflict with present or future continental shelf and OCS claims of the Antarctic claimant states which may not be recognised by other states (see Illustrations 2-3 and 6-1).

8. JDZ Model Agreements

The BIICL review of JDZ agreements, edited by Fox, included a Model Agreement.¹²⁰ The thesis will analyse the Model Agreement, and consider whether changes may be proposed in respect of the Arctic and the Southern Ocean regions.¹²¹

Donald R Rothwell, *The Polar Regions and the Development of International Law* (Cambridge University Press, 1996) 148.

¹¹⁸ Stuart Kaye, *Australia's Maritime Boundaries* (Center for Maritime Policy, 2001).

¹¹⁹ Stuart Kaye, 'The Outer Continental Shelf in the Antarctic' in Oude Elferink and Rothwell (eds), above n 24, 131.

¹²⁰ Fox, et al, above n 5.

9. JDZ Implementation

The thesis will focus on the following implementation issues for the potential use of JDZs:

A. Resolving Potential Disputes

The thesis will discuss the establishment of JDZs for specific areas where the development of offshore oil and gas resources in the Arctic and the Southern Ocean regions can more effectively resolve competing continental shelf claims than the current delimitation provisions of LOSC and the ATS.

Several of the Arctic Ocean boundary disputes may be resolved by the establishment of JDZs on a pattern applied to other disputed maritime boundaries, particularly the potential maritime boundary between Canada and the United States. Other disputed boundaries face greater challenges, such as the boundary issues between Canada, Denmark and Russia, where the claims relate to distant opposite coasts. In the Southern Ocean, the challenges include the Antarctic Treaty suspension of sovereignty claims, and the issue that other states may not recognise the current Antarctic claims.¹²²

The potential advantages of JDZs for the Arctic and Southern Ocean regions are examined and found to be significant in a number of areas, based on the large number of overlapping claims in the Arctic arising from the continental shelf and ISBA regimes of LOSC, the security concerns of states in Arctic and Southern Ocean regions, and the potential for significant environmental damage from offshore oil and gas development.

B. Environmental Protection

The thesis will examine whether there are environmental protection benefits of JDZs to limit potential oil pollution in Arctic and Southern Oceans. There are significant limitations with the current system of environmental protection under LOSC and

¹²¹ Ibid.

¹²² The application of JDZs where several states have conflicting claims will also discuss Mark Valencia's analysis in relation to JDZs and the South China Sea. Mark Valencia, *'China and the South China Sea Disputes'* Adelphi Paper No. 298 (International Institute for Strategic Studies, 1995).

international agreements for environmental protection such as the International Convention on the Prevention of Pollution from Ships (MARPOL).¹²³ The research will examine these limitations to determine whether JDZs present opportunities to improve the system or regulation.

A significant limitation of the current system is the use of flags of convenience, where ships are registered in countries which do not impose rigorous environmental protection requirements on ships, and do not impose related inspection regimes. The extent to which JDZs can impose safety requirements and inspection regimes is examined.

The environmental protection provisions of a JDZ should be integrated with regional environmental protection provisions of the Arctic Council and Antarctic Treaty regimes. The thesis will conclude that the JDZ should set out the primary responsibility for inspection and enforcement of environmental protections standards, with these regional institutions having the responsibility to set specific operational standards and codes of practice, together with an oversight role to ensure that the JDZ regime enforces these standards and codes.

The JDZs examined in Chapter III have evolved over time to include more detailed environmental provisions, and also provide for enforcement of environmental protection measures against third states.

C. Supporting Regional Governance

JDZs should support regional governance, through the Arctic Council or Antarctic Treaty membership of the respective JDZ regime, such as the related JDZ Joint Commission, to represent regional interests, and through control of the JDZs Joint Commission for the Unclaimed Sector and the Area.

10. Policy Implications for Joint Development and Conclusions

The thesis will discuss the broader policy framework of the negotiation of JDZs. The related policy issue is that the development of JDZs needs to take into account the

¹²³*International Convention for the Prevention of Pollution from Ships (MARPOL), and Protocol of 1978 relating to the International Convention for the Prevention of Pollution from Ships, 1973, as amended, opened for signature 17 February 1978, 1340 UNTS 184 and 1340 UNTS 61, 62 (entered into force 2 October 1983).*

political circumstances of the respective states, and that the proposed outcome is seen to be fair and equal, and not a surrender of sovereignty. These issues are particularly significant as the term of JDZs can typically extend from 40 to 50 years.¹²⁴

The use of JDZs in the Arctic and Southern Ocean regions will require an effective enforcement regime, particularly for the protection of the marine environment. This issue required coordination with the Arctic Council and Antarctic Treaty regimes respectively, and may include coordination with ISBA concerning oil and gas activities in the Area.

There is an issue whether the use of JDZ regimes may assist in determining a maritime boundary, particularly once oil and gas development is completed. Such a conversion from a JDZ to a future agreed boundary should only be considered as a potential outcome.

11. Potential Game Changing Events

The thesis considers potential game changing events, including political developments in the Arctic Ocean region such as the full independence of Greenland. Such events currently appear unlikely to prevent oil and gas development including JDZs. Developments relating to the Svalbard Islands, for example, may result in a multilateral JDZ.

Developments in the Southern Ocean may include increased territorial disputes relating to Antarctic claims, and the potential for unilateral oil and gas development by states which have not ratified the Environmental Protocol. The more likely outcome appears to be the potential future adoption of a multilateral JDZ regime similar to the CRAMRA proposals.

Climate change, and specifically global warming, may facilitate oil and gas development through reduction in sea-ice. A major oil spill in the Arctic or Southern Ocean regions may however limit or potentially prevent future oil and gas development, including the establishment of related JDZs.

¹²⁴ David H Anderson, 'Strategies for Dispute Resolution - Negotiating Joint Agreements' in *Modern Law of the Sea: Selected Essays* (Martinus Nijhoff, 2008) 491, 498.

Potential game changing developments may also include improved pollution control measures such that future oil and gas activities then present a substantially reduced risk to the environment.

Significant oil and gas discoveries in a disputed region may encourage new boundary agreements or JDZ agreements if no boundary can be agreed. In the long term the further development of alternative energy sources may reduce the need for JDZs, although this may be replaced by competition for other resources.

12. Conclusion and the Research Hypothesis

LOSC allows for agreement to be reached between states. The use of JDZs therefore does not conflict with LOSC, but rather offers an effective solution within it under the agreement provisions of LOSC where the boundary delimitation provisions do not resolve disputes.

The characteristics of current JDZs, and suggested best practice in relation to new JDZs have been examined. JDZs offer an effective solution to maritime boundary delimitation disputes. The analysis includes the use of JDZs:

- Addressing LOSC continental shelf boundary delimitation conflicts;
- Adapting JDZs for the Arctic and Southern Ocean regions; and
- Supporting polar regional governance.

The conclusion is that the research hypothesis is considered to be proved in respect of specific Arctic Ocean regions where current delimitation disputes apply, comprising in particular the United States and Canada boundary, the United States and Russia boundary, and a multilateral solution relating to the Svalbard Islands.

The thesis conclusion is also that the hypothesis is considered to be proved in respect of potential overlapping OCS claims in the Southern Ocean in the event that oil and gas development was permitted after 2048. The effective use of JDZs would apply on a similar basis to the CRAMRA regime, including the continental shelf and OCS extending in the Argentina/Chile/United Kingdom and the Unclaimed Zone.

The thesis also concludes that there is a strong case for better integrating JDZs into the LOSC regime, and also into integrating into the ATS regime should the current mining suspension cease. This includes issues such as governing law, and the control of pollution, where provisions have been made in JDZs in order to be recognised by state parties to LOSC.

The thesis will summarise the contributions to the research conclusions from the respective chapters, and conclude that they strongly support the hypothesis to be tested that:

The establishment of Joint Development Zones for the development of offshore oil and gas resources in the Arctic and Southern Oceans can effectively resolve competing continental shelf and outer continental shelf (OCS) claims arising under the provisions of Article 76 of the United Nations Convention on the Law of the Sea.

CHAPTER II – MARITIME BOUNDARIES AND THE LAW OF THE SEA CONVENTION

1. Evolution of Maritime Boundaries

A. Introduction

The United Nations Law of the Sea Convention (LOSC)¹ provides the essential framework of maritime boundary delimitation under the current Law of the Sea. The historical development of maritime zones and the related boundary delimitation and dispute resolution provisions are analysed below. A significant issue is that certain circumstances give rise to boundary disputes, notwithstanding LOSC maritime boundary provisions. This analysis will provide the foundation for the discussion of the legal framework and governance regimes relevant to the Polar Regions in Chapter IV, and the Arctic and Southern Ocean boundaries and disputes in Chapters IV and V.

The LOSC regimes for the EEZ and continental shelf provide that states may enter into 'provisional arrangements of a practical nature ...without prejudice to the final delimitation'.² These LOSC provisions are the basis for the use of JDZs examined in Chapter III, and the basis in the Law of the Sea for the proposed model JDZ examined in Chapter VII.

Maritime boundary delimitation has historically been the process of determining the boundary between states with opposite or adjacent coasts. Boundary delimitation has been extended to new maritime zones, such as the EEZ, continental shelf and OCS claims, which extend to the boundary with the high seas.

Maritime boundaries had historically been determined by treaties, with the practice of referring disputes to arbitration commencing in the early twentieth century. These delimitations have generally been based on an equidistance line between states with

¹ *United Nations Convention on the Law of the Sea*, opened for signature 10 December 1982, 1833 UNTS 396 (entered into force 16 November 1994) ('*LOSC*').

² *LOSC* arts 74(3) and 83(3).

adjacent or opposite coasts, which has been adjusted in several cases due to the consideration of 'special circumstances.'

Principles of delimitation were developed in the Convention on the Territorial Sea and Contiguous Zone,³ in 1958, the Convention on the Continental Shelf,⁴ in 1958, and LOSC,⁵ in 1982. LOSC has superseded the 1958 Conventions by virtue of Article 311(1).

The evolution of maritime boundaries included the development of new zones, including Continental Shelf zones originally provided by the Convention on the Continental Shelf in 1958,⁶ the EEZ regime to 200 miles from the coastal state and the OCS regime extending up to or beyond 350 nautical miles, both regimes provided for in LOSC. The development of these zones has increased the length of boundaries to be determined.

The origins of maritime boundary delimitation can be traced to the principle of the 'mid channel', where two states shared a boundary at a river under Roman law and later Anglo-Saxon law, as discussed by Rothwell and Stephens.⁷ This principle was extended to sea boundaries, where 'the mid line in the sea lying between adjacent coasts of two states was held to be the boundary of their respective maritime jurisdiction or sovereignty'.⁸

State practice developed from the early twentieth century to attempt to agree a maritime boundary by treaty, with recourse to international arbitration if such a treaty could not be agreed. Rothwell and Stevens refer to a significant example of an early arbitration in

³ *Convention on the Territorial Sea and Contiguous Zone*, opened for signature 29 April 1958, 516 UNTS 205 (entered into force 10 September 1964).

⁴ *Convention on the Continental Shelf* opened for signature 29 April 1958, 499 UNTS 311 (entered into force 10 June 1964)

⁵ *LOSC* delimitation provision are discussed in detail below.

⁶ *Convention on the Continental Shelf* opened for signature 29 April 1958, 499 UNTS 311 (entered into force 10 June 1964)

⁷ Donald R Rothwell and Tim Stephens, *The International Law of the Sea* (Hart Publishing, 2010) 2.

⁸ Thomas Wemyss Fulton, *The Sovereignty of the Sea - An Historical Account of the Claims of England to the Dominion of the British Seas, and of the Evolution of the Territorial Waters, with Special Reference to the Rights of Fishing and the Naval Salute*, (W Blackwood, 1911) 542. The initial generally accepted three mile limit of the territorial sea was historically based on the distance of a cannon shot, meant that the economic importance of such boundaries, prior to the development of new maritime zones, was originally limited.

the *Grisbadarna Arbitration* between Norway and Sweden, determining the boundary between Norwegian islands and the Swedish mainland coast.⁹

Samuel Whittemore Boggs proposed the concept of a 'median line' in 1937, as the 'line every point of which is equidistant from the nearest point or points on opposite shores.'¹⁰

The United States declared the principle of sovereignty over the Continental Shelf in the Truman Declaration.¹¹ The result of claims to the continental shelf was that substantial potential subsea resources such as oil and gas, and living resources such as sedentary fish stocks, would be affected by maritime boundary delimitation. The concept of rights over the continental shelf increased the need to resolve continental shelf maritime boundaries between states, and to determine maritime boundaries between a state's continental shelf and the high seas.

The first international effort to codify the Law of the Sea, including maritime boundary delimitation, was made in the 1930 Hague Conference for the Codification of International Law.¹² The conference did not result in a codification of maritime boundaries, however the conference contributed to the 1958 and 1982 conventions discussed below.¹³

B. UN Conventions

i) UNCLOS I (Geneva Conventions) - 1958 and Conventions - 1958

The International Law Commission (ILC) of the United Nations commenced work on the Law of the Sea in 1949, with objectives including codifying the regime of the high seas and the territorial sea.

⁹ 'Arbitral Award in the Question of the Delimitation of a Certain Part of the Maritime Boundary between Norway and Sweden' (1910) *American Journal of International Law* 226. The arbitrators considered historical use of the boundary region for fishing, the status of an earlier 1661 Treaty relating to the area, and adopted a line to pass mid-way between the Norwegian islands and the Swedish mainland coast.

¹⁰ S Whittemore Boggs 'Problems of Water Boundary Definition: Median Lines and International Boundaries Through Territorial Waters' (1937) 27 *Geographical Review* 445, 453.

¹¹ Proclamation No 2667, 'Policy of the United States with Respect to the Natural Resources of the Subsoil of the Seabed and the Continental Shelf', (1945)10 Fed. Reg. 12,305 ('Truman Proclamation').

¹² *Acts of the Conference for the Codification of International Law*, (1930), League of Nations doc. C.351.M.145 and *Report of the Second Commission*, (1930) League of Nations Publication V. Legal, 9 (C.230, M. I 17).

¹³ Tullio Treves, '1958 Conventions on the Law of the Sea', United Nations <<http://untreaty.un.org/cod/avl/ha/gclos/gclos.html>> at 3 July 2012.

The United Nations Conference on the Law of the Sea (UNCLOS I) was held in Geneva in 1958. Four treaties were concluded in 1958,¹⁴ comprising the Convention on the Territorial Sea and Contiguous Zone,¹⁵ the Convention on the Continental Shelf,¹⁶ the Convention on the High Seas,¹⁷ and the Convention on Fishing and Conservation of Living Resources of the High Seas.¹⁸

The Convention on the Territorial Sea and Contiguous Zone¹⁹ did not include agreement on the breadth of the territorial sea, however agreement was made that the contiguous zone cannot exceed 12 miles from the baseline. Tullio Treves commented that the Convention did reach agreement in detailed provisions on the main rules on the territorial sea and the contiguous zone. Its rules address, in particular, baselines, bays, delimitation between States whose coasts are adjacent or face each other, innocent passage and the contiguous zone.²⁰

The Convention on the Continental Shelf²¹ codified the sovereign right of the coastal State over resources of an area of the seabed beyond the external limit of the territorial sea which had emerged in State practice since the Truman Proclamation²² in 1945. Treves commented that the Convention “crystallizes” a relatively quick process of formation of a customary rule'. This development included the principle that the rights of the coastal State over the continental shelf do not require occupation or express

¹⁴ UNCLOS I also included the Optional Protocol of Signature concerning the Compulsory Settlement of Disputes. Optional Protocol of Signature concerning the Compulsory Settlement of Disputes, opened for signature 29 April 1958, 450 UNTS 169 (entered into force on 30 September 1962).

¹⁵ *Convention on the Territorial Sea and Contiguous Zone*, opened for signature 29 April 1958, 516 UNTS 205 (entered into force 10 September 1964).

¹⁶ *Convention on the Continental Shelf*, opened for signature 29 April 1958, 499 UNTS 311 (entered into force 10 June 1964).

¹⁷ *Convention on the High Seas*, opened for signature 29 April 1958, 450 UNTS 82 (entered into force 30 September 1962).

¹⁸ *Convention on Fishing and Conservation of the Living Resources of the High Seas*, opened for signature 29 April 1958, 559 UNTS 285 (entered into force 20 March 1966).

¹⁹ *Convention on the Territorial Sea and Contiguous Zone*, opened for signature 29 April 1958, 516 UNTS 205 (entered into force 10 September 1964).

²⁰ Treves, above n 13. The Conference was attended by 86 States, and was organized in five main committees and a plenary body. Provisions could be adopted in the committees by simple majority, with a two-thirds majority required to adopt a provision at the plenary meeting.

²¹ *Convention on the Continental Shelf*, opened for signature 29 April 1958, 499 UNTS 311 (entered into force 10 June 1964).

²² '1945 United States Federal Proclamation No 2667, Policy of the United States with Respect to the Natural Resources of the Subsoil of the Seabed and the Continental Shelf', (1945)10 Fed. Reg. 12,305 (*'Truman Proclamation'*).

proclamation. The Convention provided that the external limit on a state's jurisdiction over the continental shelf was based on exploitability.²³

The Convention included a rule on delimitation based on agreement, or in the absence of agreement, and unless justified by special circumstances, in the case of states with opposite coasts to be based on a median line, and in the case of adjacent states, to be based on an equidistance line.²⁴

Treves comments that the ICJ considered this delimitation rule as not corresponding to customary law in the *North Sea Continental Shelf Cases*.²⁵ Rothwell and Stephens comment that the *North Sea Continental Shelf Cases* adopted delimitation based on an obligation to enter into negotiations, that equitable principles were to be applied, and that the continental shelf was a natural prolongation of a coastal state's land territory and could not encroach on the natural prolongation of another state.²⁶ Treves comments that developments in the ICJ case law on delimitation have brought the Court to accept an 'equitable principles/special circumstances' method 'very similar' to the equidistance/special circumstances method of the Convention.²⁷ Analysis of ICJ decisions including the *North Sea Continental Shelf Cases* is included in Chapter IV.

The Optional Protocol of Signature concerning the Compulsory Settlement of Disputes²⁸ provided for the compulsory jurisdiction of the ICJ for all disputes

²³ The shelf was defined as "to the seabed and subsoil of the submarine areas adjacent to the coast but outside the area of the territorial sea, to a depth of 200 metres or, beyond that limit, to where the depth of the superjacent waters admits of the exploitation of the natural resources of the said areas" and "to the seabed and subsoil of similar submarine areas adjacent to the coasts of islands." The limit is unclear, as technology has allowed commercial exploitation of resources such as oil and gas to much deeper ocean depths. Treves commented that the Convention's limits, based on the 200 meters depth and on exploitability, can be considered as obsolete in light of technological progress, and was radically modified to the continental shelf and OCS limits provided in LOSC in 1982.

²⁴ *Convention on the Continental Shelf* art 6. The median line used for opposite coasts is defined as the line where every point of which is equidistant from the nearest points of the baselines from which the breadth of the territorial sea of each State is measured. The equidistance principle used for adjacent coasts is based on the line of equal distance from the nearest points of the baselines from which the breadth of the territorial sea of each State is measured.

²⁵ *North Sea Continental Shelf Cases* (Federal Republic of Germany v Denmark; Federal Republic of Germany v Netherlands) [1969] I.C.J Reports 42.

²⁶ Rothwell and Stephens, above n 7, 390.

²⁷ Treves, above n 13.

²⁸ *Optional Protocol of Signature concerning the Compulsory Settlement of Disputes*, opened for signature 29 April 1958, 450 UNTS 169 (entered into force on 30 September 1962).

concerning the interpretation or application of the Conventions, unless the parties to the dispute agree to arbitration or conciliation.²⁹

The dispute resolution measures which superseded the Protocol are an integral part of LOSC. A state's ratification of LOSC, while supporting economic rights such as exploitation of the EEZ, continental shelf and OCS, therefore also contains acceptance of specific LOSC dispute resolution provisions.

ii) UNCLOS II - 1960

The United Nations held the Second Conference on the Law of the Sea (UNCLOS II) in Geneva in 1960. UNCLOS II did not result in a new treaty or any changes to the Geneva Conventions.

iii) UNCLOS III - 1973-1982 and LOSC - 1982

The Third United Nations Conference on the Law of the Sea (UNCLOS III) was convened in New York in 1973 and was completed in 1982 with over 160 states represented. UNCLOS III resulted in the LOSC,³⁰ as a new codified law of the sea. LOSC came into force on 16 November 1994, one year after the sixtieth state ratified the treaty. The principal provisions of LOSC are summarised below.

C. Are LOSC Maritime Zones the International Customary Law of the Sea?

LOSC had 166 ratifications as at October 2014,³¹ and the Implementation Agreement relating to the Area had 145 ratifications.³² There is a threshold issue relevant to Arctic and Southern Ocean maritime boundaries, whether the provisions of LOSC relating to maritime zones and their related rights and responsibilities are binding on states which

²⁹Treves, above n 13. Treves refers to *Cameroon v. Nigeria: Equatorial Guinea intervening*. Treves commented that:

...the modest number of parties it has attracted shows that compulsory settlement of disputes in law of the sea matters, if it is to be practically relevant, must be an integral part of the instrument dealing with the substance; a lesson learned by the Third United Nations Conference on the Law of the Sea (1973-1982) in drafting the 1982 Convention.

³⁰Polar governance regimes have, in some respects, added to the law of the sea, as analysed in Chapter 4.

³¹United Nations Division for Ocean Affairs and the Law of the Sea, Chronological lists of ratifications of, accessions and successions to the Convention and the related Agreements as at 3 October 2014 <http://www.un.org/Depts/los/reference_files/chronological_lists_of_ratifications.htm> at 17 December 2014.

³²Ibid.

have not ratified LOSC, on the basis they are incorporated into customary international law.

Customary international law is described by Churchill and Lowe as the general and consistent practice adopted by states, together with *opinio juris*, generally meaning the conviction that the practice is either required or allowed by customary international law.³³ The International Court of Justice in the *North Sea Continental Shelf* cases stated this principle as follows:³⁴

A rule which, while only conventional or contractual in its origin, has since passed into the general corpus of international law, and is now accepted as such by the *opinio juris*, so as to have become binding even for countries which have never, and do not, become parties to the Convention.

Churchill and Lowe comment that states which have signed but not ratified LOSC are nevertheless required under the Vienna Convention on the Law of Treaties ('VCLT')³⁵ to refrain from acts which would defeat its object and purpose unless they make it clear that they do not intend to proceed to ratification.³⁶ Some parts of LOSC represent pre-existing customary law, or went beyond previous practice but which have entered into customary international law.

The International Court of Justice has recognized three circumstances where international conventions may form the basis of customary international law where the convention '(1) codifies existing customary international law; (2) causes customary international law to crystallize; and (3) initiates the progressive development of new customary international law.'³⁷ Jonathan I Charney commented that the negotiation and adoption of an agreement may be considered evidence of customary international law.³⁸ James W Houck commented that a treaty can therefore form the basis of custom and bind all states, including non-parties.³⁹

³³ RR Churchill and AV Lowe, *The Law of the Sea* (Manchester University Press, 3rd ed, 1999) 7.

³⁴ *North Sea Continental Shelf* cases (1969) ICJ 3, 42.

³⁵ *Vienna Convention on the Law of Treaties*, opened for signature 23 May 1969, 1155 UNTS 331 art 18 (entered into force 27 January 1980) ('VCLT').

³⁶ Churchill and Lowe, above n 33, 24.

³⁷ Martin Lishexian Lee, 'The Interrelation Between the Law of the Sea Convention and Customary International Law', (2006) 7 *San Diego International Law Journal* 405, 407.

³⁸ Jonathan I Charney, *International Agreements and the Development of Customary International Law*, (1986) 61 *Washington Law Review* 971.

³⁹ James W Houck, 'Alone on a Wide Wide Sea: A National Security Rationale for Joining the Law of the Sea Convention' (2012) 1(1) *Penn State Journal of Law & International Affairs* 1, 15.

Customary international law may not be binding on all states, however, due to the requirement of consent. This issue can apply where a particular state has persistently objected to an emerging rule of customary law.⁴⁰ In relation to the Arctic Ocean region only the United States has not ratified LOSC, however the United States is generally acting in acceptance of many LOSC provisions such as boundary delimitation. In relation to the Southern Ocean, all the Antarctic claimant states have ratified LOSC.

2. LOSC Summary of Provisions – Delimitation, Environment and Dispute Resolution

LOSC is the basis of the current law of the sea for states which have ratified the Convention. As discussed above, LOSC may also be the basis for the law of the sea for states which have not ratified the Convention, most significantly the United States, where LOSC is considered to have been absorbed into customary international law. The following is a summary of LOSC provisions most relevant to the Arctic and Southern Ocean regions, focussing on the delimitation provisions, protection of the environment, and dispute resolution.

A. Baselines

LOSC established a series of maritime zones which are measured from a defined baseline. The baseline is generally the 'low-water line along the coast as marked on large-scale charts officially recognized by the coastal State.'⁴¹ In the case of islands situated on atolls or of islands having fringing reefs, 'the baseline for measuring the breadth of the territorial sea is the seaward low-water line of the reef.'⁴²

LOSC allows the use of 'straight baselines', which connect between coastal baselines but do not follow the low water line but at some distance from the coast. Straight baselines may be used 'in localities where the coastline is deeply indented and cut into, or if there is a fringe of islands along the coast in its immediate vicinity.'⁴³ Account may be taken, in determining particular baselines, of 'economic interests peculiar to the region concerned, the reality and the importance of which are clearly evidenced by long

⁴⁰ Ibid 8.

⁴¹ LOSC art 5.

⁴² LOSC art 6.

⁴³ LOSC art 7(1).

usage.⁴⁴ LOSC requires that straight baselines not depart to any appreciable extent from the general direction of the coast.⁴⁵

LOSC includes specific provisions for bays which allow the use of a straight closing line where the distance between the low-water marks of the natural entrance points of a bay does not exceed 24 nautical miles.⁴⁶

B. Internal Waters

Internal waters are defined as all water and waterways on the landward side of the baseline, where the coastal state is free to set laws, regulate use, and use any resource. There is a right of innocent passage for vessels of other states within internal waters.

C. Territorial Sea

The territorial sea refers to the waters from the baseline out to a maximum of 12 nautical miles from the baseline.⁴⁷ LOSC therefore defines the limit of the territorial sea, whereas the prior Convention on the Territorial Sea and Contiguous Zone⁴⁸ only provided that the external limit of the contiguous zone cannot exceed 12 nautical miles from the baseline. The coastal state is free to set laws, regulate use, and use any resource in the territorial sea. Vessels are given the right of innocent passage through any territorial waters.⁴⁹ Innocent passage is defined as passing through waters in an expeditious and continuous manner,⁵⁰ and such passage must not prejudice the security of the coastal state.⁵¹ The right of innocent passage does not include activities such as fishing, or the use of military devices,⁵² and submarines are required to navigate on the surface in the territorial sea.⁵³ Coastal states may temporarily suspend innocent passage in their territorial seas where essential for the coastal state's security.⁵⁴

⁴⁴ LOSC art 7(5).

⁴⁵ LOSC art 7(3). LOSC also requires that the sea areas lying within the lines must be sufficiently closely linked to the land domain to be subject to the regime of internal waters.

⁴⁶ LOSC art 10. LOSC provides that where the distance exceeds 24 nautical miles, a straight baseline of 24 nautical miles is allowed to enclose the maximum area of water.

⁴⁷ LOSC art 3.

⁴⁸ This can be compared to original limit of the territorial sea, proposed by Cornelius Bynkershoek in 1702 in *De Jure Belli ac Pacis*, of three nautical miles.

⁴⁹ LOSC art 17.

⁵⁰ LOSC art 18.

⁵¹ LOSC art 19.

⁵² LOSC art 19(2).

⁵³ LOSC art 20.

⁵⁴ LOSC art 25(3).

LOSC provides that where the coasts of two states are opposite or adjacent to each other, neither of the two states may, without agreement, extend its territorial sea beyond the median line every point of which is equidistant from the nearest points on the baselines from which the breadth of the territorial seas of each of the two States is measured.⁵⁵

D. Islands and Low-tide Elevations

LOSC defines an island as 'a naturally formed area of land, surrounded by water, which is above water at high tide.'⁵⁶ LOSC provides that the territorial sea, the contiguous zone, the exclusive economic zone and the continental shelf of an island are determined in accordance with the provisions applicable to other land territory,⁵⁷ however rocks which cannot sustain human habitation or economic life of their own shall have no exclusive economic zone or continental shelf.⁵⁸

LOSC defines a low-tide elevation as 'a naturally formed area of land which is surrounded by and above water at low tide, but submerged at high tide.'⁵⁹ The low-water line may be used as the baseline only if this is within 12 nautical miles from the mainland or an island.⁶⁰

E. Straits Used in International Navigation

LOSC provides a regime for straits used for international navigation, however the specific straits are not named.⁶¹ The regime does not apply to straits in which passage is regulated in whole or in part by long-standing international conventions in force specifically relating to such straits.⁶² The regime allows the freedom of navigation and

⁵⁵ LOSC art 15. An exception is made 'where it is necessary by reason of historic title or other special circumstances to delimit the territorial seas of the two States in a way which is at variance therewith.' The delimitation provisions for the territorial seas have somewhat limited effect as the zone has a breadth limited to 12 nautical miles. The largest areas for potential oil and gas are in the EEZ and continental shelf zones of arctic states established by LOSC.

⁵⁶ LOSC art 121(1).

⁵⁷ LOSC art 121(2).

⁵⁸ LOSC art 121(3).

⁵⁹ LOSC art 13(1).

⁶⁰ LOSC art 13.

⁶¹ LOSC art 37.

⁶² LOSC art 35(c).

overflight solely for the purpose of transit between the high seas or an EEZ and another part of the high seas or EEZ.⁶³

The coastal state may impose sea lanes and traffic separation schemes in straits used for international navigation.⁶⁴ The coastal state may not suspend rights of innocent passage through international straits.⁶⁵

F. Archipelagic States

The archipelagic states regime applies to states which are constituted wholly by one or more archipelagos and may include other islands.⁶⁶ The regime allows these states to draw the baseline outside the islands, and treat waters behind the baseline as archipelagic waters.⁶⁷ Vessels of all states have the right of archipelagic passage through archipelagic waters.⁶⁸ The archipelagic state may designate archipelagic sea lanes (ASLs) for the safe passage of ships through narrow channels in the sea lanes.⁶⁹

The archipelagic state regime in LOSC does not apply to Canada and Russia as these states are not constituted wholly by one or more archipelagos. The state practice of drawing baselines around archipelagic waters on a similar basis to the LOSC

⁶³ LOSC art 38. In relation to the Arctic region the potential application of the regime is relevant to the North West Passage in Canadian Arctic waters, and the Northern Sea Route in Russian Arctic waters.

⁶⁴ LOSC arts 41 and 42. The coastal state may also impose rules for the safety of navigation and the regulation of maritime traffic, the prevention, reduction and control of pollution, control or prevention of fishing, and the loading or unloading of any vessel. Military vessels and aircraft may use transit passage, and submarines may transit submerged.

⁶⁵ LOSC art 45(2).

⁶⁶ LOSC art 46.

⁶⁷ LOSC art 47. The provision requires that the baselines include the main islands of the state, the ratio of the area of water to the area the land is between 1 to 1 and 9 to 1, the length of the baselines shall not exceed 100 nautical miles, except that up to 3 per cent of the baselines may have a maximum length of 125 nautical miles, and the baselines shall not depart to any appreciable extent from the general configuration of the archipelago.

⁶⁸ That right may be temporarily suspended by the archipelagic state if essential for the protection of its security. LOSC art 52(2). Foreign vessels have right of archipelagic sea lanes passage in such sea lanes and air routes for innocent passage on a similar basis to the regime of territorial waters, under article 53(12). If the archipelagic state does not designate sea lanes or air routes, the right of archipelagic sea lanes passage may be exercised through the routes normally used for international navigation.

⁶⁹ ASLs are established by means of notification to the International Maritime Organisation (IMO) as the 'competent international organisation.' The passage rights in ASLs may not be suspended. Ibid art 54 and 44. Article 54 applies the article 44 transit passage regime to the ASL, and article 44 provides there shall be no suspension of transit passage. There is no equivalent in article 53 concerning archipelagic sea lane passage, to article 52(2) allowing suspension to the right of innocent passage through archipelagic waters. Article 53(4) requires that the archipelagic state must 'include 'all normal passage routes ...used for international navigation or overflight through or over archipelagic waters and, within such routes, so far as ships are concerned, all normal navigation channels.' If the archipelagic state does not designate ASLs, the right of archipelagic sea lanes passage may be exercised through the routes normally used for international navigation. The right of archipelagic sea lanes passage in the ASL cannot be suspended.

archipelagic waters regime may, however, potentially support specific Canadian and Russian baselines claimed in the Arctic Ocean, as discussed in Chapter V.

G. Contiguous Zone

The Contiguous Zone regime was originally established under the Convention on the Territorial Sea and Contiguous Zone.⁷⁰ The zone is contiguous to the coastal state's territorial sea, may not extend beyond 24 nautical miles from the baselines from which the breadth of the territorial sea is measured.⁷¹ The coastal state may exercise the control necessary to prevent infringement or punish infringement of its customs, fiscal, immigration or sanitary laws and regulations within its territory or territorial sea.⁷²

H. Exclusive Economic Zone – Articles 55 and 74(3) and JDZs

The EEZ is defined under Article 55 as the area from the coastal state's baseline extending beyond and adjacent to the territorial sea with a combination of rights and jurisdiction of the coastal State and the rights and freedoms of other States.⁷³ The EEZ does not extend beyond 200 nautical miles from the state's baselines.⁷⁴ The coastal state has sovereign rights within the EEZ for the purpose of exploring and exploiting, conserving and managing the living and non-living resources, of the waters superjacent to the sea-bed, the sea-bed and its subsoil, and other activities for the economic exploitation and exploration of the zone.⁷⁵ The coastal state also has jurisdiction over artificial islands, installations and structures, marine scientific research, and the protection of the marine environment.⁷⁶ All states have rights of navigation and overflight, laying of submarine cables and pipelines, and other internationally lawful uses of the sea.⁷⁷ Accordingly the EEZ is a zone conferring coastal state sovereign rights over living and non-living resources to the coastal state, while retaining all other high seas freedoms to all states.

LOSC provides that the delimitation of the EEZ between states with opposite or adjacent coasts shall be effected by agreement on the basis of international law in order

⁷⁰ *Convention on the Territorial Sea and Contiguous Zone* art 24.

⁷¹ *LOSC* art 33(2).

⁷² *LOSC* art 33(1).

⁷³ *LOSC* art 55.

⁷⁴ *LOSC* art 57.

⁷⁵ *LOSC* art 56.

⁷⁶ *LOSC* art 56.

⁷⁷ *LOSC* art 58.

to achieve an equitable solution. If no agreement can be reached within a reasonable period of time, the States concerned shall resort to the procedures provided for in Part XV.⁷⁸

LOSC Article 74(3) provides that, pending agreement, states are required, 'in a spirit of understanding and co-operation, to make every effort to enter into provisional arrangements of a practical nature and, during this transitional period, not to jeopardize or hamper the reaching of the final agreement. Such arrangements shall be without prejudice to the final delimitation.'⁷⁹ This clause can include the establishment of JDZs in cases where the maritime boundary has not been agreed, as discussed in relation to the continental shelf regime below.

I. Continental Shelf and OCS – Articles 76 and 83(3) and JDZs

The maritime boundary delimitation provisions for the continental shelf and OCS are fundamental to Arctic and Southern Ocean region maritime boundary delimitations. Martin Pratt and the International Boundaries Research Unit (IBRU) illustrated the maritime boundaries described including potential conflicting claims (see Illustration 2-1).⁸⁰

The process of establishing an OCS through submissions to the CLCS is analysed in Chapter IV. The overlapping areas of state continental shelves in the Arctic and Southern Ocean regions, and the status of OCS submissions to the CLCS are analysed in Chapters V and VI. The following is a summary of the LOSC continental shelf and OCS regime subject to these further discussions.

The continental shelf under LOSC is principally defined under Article 76, and 'comprises the sea-bed and subsoil of the submarine areas that extend beyond its territorial sea throughout the natural prolongation of its land territory to the outer edge of the continental margin, or to a distance of 200 nautical miles...'⁸¹ That part of the continental shelf beyond 200 miles will be referred to as the OCS.

⁷⁸ LOSC art 74.

⁷⁹ LOSC art 74(3).

⁸⁰ Martin Pratt, LOSC Maritime Boundaries, , International Boundaries Research Unit (IBRU) <http://www.oceanstewardship.com/IOSF%202009/Presentations_2009/MPratt_2009.pdf> at 20 December 2012.

⁸¹ LOSC art76(1).

The coastal state's OCS claim must be submitted to the Commission on the Limits of the Continental Shelf (CLCS). The Commission is required to make recommendations to coastal States on matters relating to the establishment of the outer limits of their continental shelf. The limits of the shelf established by the coastal State on the basis of the recommendations are final and binding.⁸²

The 'Outer Limit Line' is the limit of the OCS, and is based on the foot of slope feature on the seabed floor, plus the greater of:

- i) The line where the sediment thickness on the seabed floor is 1% of the distance to the foot of slope; or
- ii) 60 nautical miles from the foot of slope.⁸³

This distance is then limited to the greater of:

- i) The 2500 meter isobath (water depth line) plus 100 nautical miles; or
- ii) The coast baseline plus 350 nautical miles.⁸⁴

The OCS is limited to 350 nautical miles in respect of submarine ridges, however this limit does not apply to 'submarine elevations that are natural components of the continental margin, such as its plateaux, rises, caps, banks and spurs'⁸⁵ (see Illustration 2–3).⁸⁶

The coastal state exercises sovereign rights over the continental shelf for the purpose of exploring it and exploiting its natural resources.⁸⁷ The coastal state has the exclusive right to authorise and regulate drilling on the continental shelf.⁸⁸

⁸² LOSC art 76(8).

⁸³ LOSC art 76(4).

⁸⁴ LOSC art 76(5).

⁸⁵ LOSC art 76(6). Article 78 paragraph 7 specifies the maximum length of the baselines to be used. It provides that the Coastal State shall delineate the outer limits of its continental shelf where the shelf extends beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured, by straight lines not exceeding 60 nautical miles in length connecting fixed points defined by coordinates of latitude and longitude. This prevents an OCS claim using a baseline of great length, for example preventing a baseline being claimed across the front of a large bay, from which claims of up to 350 nautical miles from that baseline could then be made.

⁸⁶ LOSC Outer Continental Shelf Provisions, GeoLimits Consulting

<<http://www.geolimits.com/services/extended-continental-shelf/continental-shelf/>> at 20 December 2012.

⁸⁷ LOSC art 77(1).

The coastal state is required under Article 82 to make payments or contributions in kind in respect of the exploitation of the non-living resources of the OCS. The payments are made to the International Seabed Authority (ISBA), which is required to distribute these amounts to state parties to LOSC on the basis of 'equitable sharing criteria, taking into account the interests and needs of developing states, particularly the least developed and the land-locked among them.'⁸⁹ The OCS is therefore significant because non-living resources, such as oil and gas, are recognised as partly a common heritage, requiring the sharing of benefits with other states.

The role of ISBA in relation to the Arctic and Southern Oceans is examined in Chapter III. The operation of Article 82 was considered by the Outer Continental Shelf Committee of the International Law Association in 2008,⁹⁰ including the role of ISBA in redistributing payments or contributions in kind made under Article 82 to landlocked and geographically disadvantaged states. The Committee commented that ISBA was not fully empowered to enforce collection of these amounts.⁹¹

The continental shelf regime overlaps the EEZ regime in certain respects up to 200 nautical miles.⁹² The EEZ and continental shelf regimes both give sovereign rights to oil

⁸⁸ LOSC art 81.

⁸⁹ LOSC art 82(4). The payment rate is 1 per cent of the value or volume of production commencing in the sixth year of production, increasing by 1 per cent for each subsequent year until the twelfth year, and 7 per cent thereafter. The payment regime applies on all production at a site after the first five years of production at that site.

⁹⁰ 'Draft Report on Article 82 of the 1982 UN Convention on Law of the Sea (UNCLOS)' (Paper presented at International Law Association, Rio de Janeiro, 20 October 2008) <<http://www.ila-hq.org/en/committees/index.cfm/cid/33>> at 15 August 2012.

⁹¹ The ISBA Council has the power to 'review the collection of all payments to be made by or to the Authority' under Article 162(2)(p) in relation to activities in the Area under LOSC Part XI. ISBA can appeal to the Sea Bed Disputes Chamber under Article 191, however the jurisdiction of the Sea Bed Disputes Chamber may then be limited to matters concerning the Area under Article 187. A state which may have a claim to payment could appeal to dispute resolution provisions under LOSC.

⁹² The continental regime overlaps the EEZ regime in certain respects up to 200 nautical miles. Significant differences between these two LOSC regimes include:

- The breadth of the EEZ is 200 nautical miles, art 57. The continental shelf can have a breadth beyond 200 miles under the OCS regime, which can extend to 350 nautical miles or potentially beyond, art 76.
- LOSC provides that the coastal state must proclaim the EEZ, art 75, whereas LOSC grants rights to the continental shelf to the coastal state to 200 nautical miles, art 76(1). The coastal state must make a submission to the CLCS and carry out its recommendations to the OCS for the area beyond 200 nautical miles, art 76(8).
- The EEZ regime provides sovereign rights to the coastal state within the EEZ over living and non-living resources of the waters superjacent to the sea-bed, and to the sea-bed and its subsoil, art 56(1)(a). These sovereign rights therefore include the water column within 200 nautical miles of the baseline. The continental shelf regime limits rights to the resources of seabed and subsoil, art 77(4).

and gas resources to 200 nautical miles from the coastal state baseline. The EEZ regime gives broader related rights over pollution and scientific research. The continental shelf regime can provide sovereign rights to resources beyond 200 nautical miles within the OCS, subject to the requirement to pay royalties to ISBA.

LOSC provides that the delimitation of the continental shelf between States with opposite or adjacent coasts shall be effected by agreement on the basis of international law, as referred to in Article 38 of the Statute of the International Court of Justice, in order to achieve an equitable solution. If no agreement can be reached within a reasonable period of time, the States concerned shall resort to the procedures provided for in Part XV.⁹³

LOSC also provides that pending agreement, in a manner similar to the related provision for the EEZ, the States concerned, 'in a spirit of understanding and cooperation, shall make every effort to enter into provisional arrangements of a practical nature and, during this transitional period, not to jeopardize or hamper the reaching of the final agreement. Such arrangements shall be without prejudice to the final delimitation under LOSC Article 83(3).⁹⁴ These arrangements can include the establishment of JDZs in cases where the maritime boundary has not been agreed.⁹⁵

J. The High Seas

The High Seas regime applies to all parts of the sea that are not included in the exclusive economic zone, territorial sea or internal waters of a state, or archipelagic waters of an archipelagic state.⁹⁶ The high seas are the primary example of *res communis*, which is the region generally not capable of being reduced to sovereign

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- The EEZ requires the coastal state to share surplus living resources with land-locked states, art 69, and geographically disadvantaged states, art 70. The continental shelf regime does not have a requirement to share resources from the continental shelf out to 200 nautical miles, however LOSC requires royalty payments from exploitation of non-living resources, and this applies only in the OCS area beyond 200 nautical miles, art 82.
 - The EEZ regime provides the coastal state with jurisdiction over marine scientific research and the protection and preservation of the marine environment, art 56(1)(a). The continental shelf regime provisions are more limited, as the coastal state only exercises sovereign rights over the continental shelf for the purpose of exploring it and exploiting its natural resources, art 77(1).

⁹³ LOSC art 83.

⁹⁴ LOSC art 83(3).

⁹⁵ Most JDZs, as examined in Chapter III, do not delimit the maritime boundary, and therefore provide that the agreement shall not prejudice a future boundary delimitation agreement.

⁹⁶ LOSC art 86. The doctrine of the freedom of the seas was originally proposed by Hugo Grotius in 1609 in *Mare Liberum*.

control.⁹⁷ LOSC provides for the freedom of the high seas for navigation, overflight, the laying of submarine cables and pipelines, the construction of artificial islands and other installations, fishing, and the conduct of scientific research.⁹⁸ The maintenance of order on the high seas is generally based on the nationality of the ship, and the consequent jurisdiction of the flag state.⁹⁹ LOSC imposes duties on the flag state including maintaining a register of ships, applying internal laws over the ship, officers, and crew, applying measures necessary to ensure safety at sea, and measures relating to the use of signals, maintenance of communications, and the prevention of collisions.¹⁰⁰

K. The Area

LOSC provides a regime in Part XI relating to the solid, liquid or gaseous mineral resources at or beneath the sea-bed.¹⁰¹ The regime applies to the 'Area', defined as 'the sea-bed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction.'¹⁰² The Area is estimated to comprise 50 per cent of the earth's surface,¹⁰³ (see Illustration 2–3).¹⁰⁴ Part XI provides that the mineral resources beyond state jurisdiction are to be used to benefit all states, and establishes a regime for exploitation of resources.

The principal clause of Part XI provides that: 'The Area and its resources are the 'common heritage of mankind.'¹⁰⁵ Part XI provides that: 'No State shall claim or exercise sovereignty or sovereign rights over any part of the Area or its resources, nor shall any State or natural or juridical person appropriate any part thereof.'¹⁰⁶ Part XI provides explanation of the common heritage principle as providing for equitable sharing of benefits to developing states and peoples who have not attained full independence.¹⁰⁷

⁹⁷ Malcolm N Shaw, *International Law* (Cambridge University Press, 6th ed, 2008) 492.

⁹⁸ LOSC art 87.

⁹⁹ LOSC art 91.

¹⁰⁰ LOSC art 94.

¹⁰¹ LOSC art 133.

¹⁰² LOSC art 1(1).

¹⁰³ Rothwell and Stephens, above n 7, 123.

¹⁰⁴ LOSC Part XI – International Seabed Area, International Seabed Authority

<http://www.isa.org.jm/en/node/399> at 19 December 2012. The precise area is still to be determined, and would require the Commission on the Limits of the Continental Shelf (CLCS) to receive submissions and make recommendations for the Outer Continental Shelf (OCS) for all states. The Area will then be the regions beyond all state OCS zones.

¹⁰⁵ LOSC art 136.

¹⁰⁶ LOSC art 137.

¹⁰⁷ LOSC art 140. Article 140 provides:

Activities in the Area shall, as specifically provided for in this Part, be carried out for the benefit of mankind as a whole, irrespective of the geographical location of states, whether coastal or

Part XI establishes ISBA as a new organisation to authorise seabed exploration and mining.¹⁰⁸ All state parties to LOSC are members of ISBA.¹⁰⁹ The structure of ISBA includes:

- The Assembly, which comprises all members of the Authority, which meets in regular annual sessions and special sessions as decided by the Assembly, or convened by the Secretary-General at the request of the Council or of a majority of the members of the Authority. The Assembly is the primary decision making body within ISBA. Decisions on questions of substance shall be taken by a two-thirds majority of members present and voting;¹¹⁰
- The Council, established as the executive body within ISBA, with the power to establish policies 'on any question or matter within the competence of the Authority', and related measures such as to 'supervise and co-ordinate the implementation of the provisions of this Part on all questions and matters within the competence of the Authority and invite the attention of the Assembly to cases of non-compliance';¹¹¹
- The Secretariat, which is the administrative body within ISBA;¹¹² and
- The Enterprise was established to carry out activities in the Area directly, together with transporting, processing and marketing of minerals recovered from the Area,¹¹³ These provisions were amended, in particular to remove the requirement for contributions to the activities of the Enterprise, as discussed in Chapter IV.

land-locked, and taking into particular consideration the interests and needs of developing states and of peoples who have not attained full independence or other self-governing status recognized by the United Nations in accordance with General Assembly resolution 1514 (XV) and other relevant General Assembly resolutions.

2. The Authority shall provide for the equitable sharing of financial and other economic benefits derived from activities in the Area through any appropriate mechanism, on a non-discriminatory basis, in accordance with article 160, paragraph 2(f)(i).

¹⁰⁸ LOSC art 153.

¹⁰⁹ LOSC art 156(2).

¹¹⁰ LOSC art 159.

¹¹¹ LOSC art 162.

¹¹² LOSC art 166.

¹¹³ LOSC art 170.

LOSC Annex III previously provided for production and net income based payments by states or companies carrying out commercial production in the Area in addition to specific fees.¹¹⁴ These provisions were, however, deleted under the changes discussed in Chapter IV.

Part XI provides for the Sea-Bed Disputes Chamber of the International Tribunal for the Law of the Sea (ITLOS) to resolve disputes relating to the Area, including disputes between state parties, disputes between state parties and ISBA, and disputes between parties to a contract relating to the Area.¹¹⁵ Disputes between state parties may also be submitted to a special chamber of the International Tribunal for the Law of the Sea, or to an ad hoc chamber of the Sea-Bed Disputes Chamber.¹¹⁶ Disputes concerning the interpretation or application of a contract can be submitted at the request of any party to the dispute, to binding commercial arbitration, unless the parties otherwise agree.¹¹⁷

The United States raised objections to the Part XI regime, and these have resulted in changes to Part XI. States are also no longer required to contribute to resource activities of the Enterprise, and ISBA's powers and responsibilities have therefore essentially been restricted to administering the deep seabed mining regime. The basis for these changes and the issue of whether they are effective on states which have ratified LOSC is analysed in Chapter IV.

L. Protection of the Marine Environment

The issue of environmental protection is of crucial importance to the Arctic and Southern Oceans, especially in the light of the failure of current oil pollution measures in relation to the Deepwater Horizon offshore oil spill in the Gulf of Mexico. Environment protection provisions for a model JDZ agreement are examined in Chapter VII, and specific implementation issues are examined in Chapter VIII.

Part XII provides the primary provisions in LOSC for protection and preservation of the marine environment. States are required to take all measures consistent with the Convention that are necessary to prevent, reduce and control pollution of the marine

¹¹⁴ LOSC annex 3 art 13.

¹¹⁵ LOSC art 187.

¹¹⁶ LOSC art 188.

¹¹⁷ LOSC art 188(2)(a).

environment from any source.¹¹⁸ These measures may be taken 'individually or jointly as appropriate.'¹¹⁹

Pollution is broadly defined and includes toxic, harmful or noxious substances,¹²⁰ pollution from vessels,¹²¹ pollution from installations and devices used in exploration or exploitation of the natural resources of the sea-bed and subsoil,¹²² and pollution from other installations and devices operating in the marine environment.¹²³

The regime includes the requirement for notification of imminent or actual damage,¹²⁴ the preparation of contingency plans against pollution,¹²⁵ and the provision of scientific and technical assistance to developing states.¹²⁶

The primary provision relating to the prevention of oil pollution concerns pollution from sea-bed activities subject to national jurisdiction:¹²⁷

Coastal States shall adopt laws and regulations to prevent, reduce and control pollution of the marine environment arising from or in connection with sea-bed activities subject to their jurisdiction and from artificial islands, installations and structures under their jurisdiction, pursuant to articles 60 and 80.

There are also, to some extent, substantive rules and standards for offshore hydrocarbon activities. These rules and standards are contained in measures such as Arctic Council's Arctic Offshore Oil and Gas Guidelines, discussed in Chapter IV,¹²⁸ and in oil and gas agreements under the 'reasonable endeavours' requirements, discussed in Chapter VII.¹²⁹

The provisions also relate to pollution from activities in the Area, and provide that 'international rules, regulations and procedures shall be established in accordance with

¹¹⁸ LOSC art 194(1).

¹¹⁹ LOSC art 194.

¹²⁰ LOSC art 194(3)(a).

¹²¹ LOSC art 194(3)(b).

¹²² LOSC art 194(3)(c).

¹²³ LOSC art 194(3)(d).

¹²⁴ LOSC art 198.

¹²⁵ LOSC art 199.

¹²⁶ LOSC art 202.

¹²⁷ LOSC art 208.

¹²⁸ Arctic Council, 'Arctic Offshore Oil and Gas Guidelines'

<<http://www.pame.is/index.php/projects/offshore-oil-and-gas>> at 27 August 2015.

¹²⁹ A D Read, 'Protection of the Marine Environment: A View from Industry' in Hazel Fox et al, *Joint Development of Offshore Oil and Gas, A Model Agreement for States for Joint Development with Explanatory Commentary*, vol 2 (British Institute of International and Comparative Law, 1990), 223.

Part XI to prevent, reduce and control pollution of the marine environment from activities in the Area.¹³⁰

States are required to adopt laws and regulations to prevent, reduce and control pollution of the marine environment by dumping,¹³¹ and endeavour to establish global and regional rules, standards and recommended practices and procedures to prevent, reduce and control such pollution.¹³² States are also required to establish international rules and standards to prevent, reduce and control pollution of the marine environment from vessels flying their flag or of their registry.¹³³

The enforcement of these LOSC measures depends on the nature of the activity. In relation to pollution from oil and gas development, such as an offshore oil production platform, the coastal state is required to enforce LOSC environmental protection measures if the seabed activity is subject to that state's jurisdiction.¹³⁴

M. Dispute Resolution

LOSC Part XV provides for the settlement of disputes on the basis that state parties shall settle any dispute between them concerning the interpretation or application of this

¹³⁰ LOSC art 209.

¹³¹ LOSC art 210(1).

¹³² LOSC art 210(4).

¹³³ LOSC art 211.

¹³⁴ LOSC requires enforcement of these environmental standards as follows:

- Coastal state enforcement applies to land based pollution, sea-bed activities subject to their jurisdiction, and from artificial islands, installations and structures under their jurisdiction, article 213.
- Coastal state enforcement applies to pollution by dumping within its territorial sea or its exclusive economic zone or onto its continental shelf, by the flag state with regard to vessels flying its flag or vessels or aircraft of its registry, and by any State with regard to loading of wastes or other matters occurring within its territory or at its off-shore terminals, article 216.
- Flag state enforcement applies to applicable international rules and standards for the prevention, reduction and control of pollution of the marine environment from vessels, and requires the state to adopt laws and regulations and take other measures necessary for implementation, article 217(1). Flag states are required to provide for the effective enforcement irrespective of where a violation occurs.
- Port state enforcement applies when a vessel is voluntarily within a port or at an off-shore terminal. A state party may undertake investigations and, where the evidence so warrants, institute proceedings in respect of any discharge from that vessel outside the internal waters, territorial sea or exclusive economic zone of that state in violation of applicable international rules and standards established through the competent international organisation or general diplomatic conference, article 218.
- Coastal state enforcement applies where a vessel is voluntarily within a port or at an off-shore terminal. The state may institute proceedings in respect of any violation of its laws and regulations adopted in accordance with this Convention or applicable international rules and standards for the prevention, reduction and control of pollution from vessels when the violation has occurred within the territorial sea or the exclusive economic zone of that state, article 220.

Convention by peaceful means.¹³⁵ LOSC provides priority to state parties to agree at any time to settle a dispute between them by any peaceful means of their own choice.¹³⁶

Dispute resolution is based on the initial obligation on the parties to exchange views.¹³⁷ A state party may invite the other party or parties to submit the dispute to conciliation in accordance with LOSC or another conciliation procedure.¹³⁸ Where no settlement has been reached under conciliation, the dispute may be submitted at the request of any party to the dispute to the court or tribunal having jurisdiction under LOSC.¹³⁹

States are free to choose when signing, ratifying or acceding to LOSC or at any time thereafter from all or some of the following means for the settlement of disputes listed in Article 287:¹⁴⁰

- The International Tribunal for the Law of the Sea (ITLOS) established under Annex VI;
- The International Court of Justice (ICJ);
- An arbitral tribunal constituted under Annex VII; and
- A special arbitral tribunal constituted under Annex VIII for specific categories of disputes comprising fisheries, environmental protection and preservation, marine scientific research and navigation, including pollution from vessels and dumping.

A state is, however, free when signing, ratifying or acceding to the Convention or at any time thereafter, to declare in writing under Article 298 that it does not accept any one or more of the procedures provided for specific categories of disputes, including 'disputes concerning the interpretation or application of articles 15, 74 and 83 relating to sea boundary delimitations'.¹⁴¹ The UN Division for Ocean Affairs and the Law of the Sea

¹³⁵ LOSC art 279.

¹³⁶ LOSC art 280.

¹³⁷ LOSC art 283.

¹³⁸ LOSC art 284.

¹³⁹ LOSC art 286.

¹⁴⁰ LOSC art 287.

¹⁴¹ LOSC art 298.

(DOALOS) maintains a listing of the declarations, including the order of preference for dispute resolution and declarations that a particular method or methods are not accepted.¹⁴² There is a significant issue whether a state party to LOSC can be forced to a dispute resolution method, or can refrain from agreement on the method and prevent resolution of the dispute. LOSC provides that a state party may be deemed to have accepted arbitration, and that if the parties to a dispute have not accepted the same procedure for the settlement of the dispute, it may be submitted only to arbitration unless the parties otherwise agree.¹⁴³ Arbitration may therefore have a 'residual compulsory role.'¹⁴⁴

There is a related issue of compulsory conciliation. LOSC requires compulsory conciliation in relation to disputed maritime boundaries.¹⁴⁵ It is not possible for a state to opt out of these conciliation procedures. It may, therefore, potentially develop that compulsory conciliation would be used for issues relating to a maritime boundary dispute. The findings of the conciliation commission are not binding, however there is a requirement to inform the other party of the reasons for not adopting the recommendations.¹⁴⁶

The court or tribunal may prescribe any provisional measures which it considers appropriate under the circumstances to preserve the respective rights of the parties to the dispute or to prevent serious harm to the marine environment, pending the final decision on the dispute.¹⁴⁷ ITLOS is given a compulsory power to make such provisional determinations pending the constitution of an arbitral panel where it considers 'prima facie the tribunal which is to be constituted would have jurisdiction and that the urgency of the situation so requires'.¹⁴⁸

¹⁴² 'Settlement of Disputes Mechanism' United Nations Division for Ocean Affairs and the Law of the Sea <http://www.un.org/Depts/los/settlement_of_disputes/choice_procedure.htm> at 17 December 2014.

¹⁴³ LOSC art 287(5).

¹⁴⁴ L Dolliver M Nelson 'Reflections on the 1982 Convention on the Law of the Sea' in David Freestone, Richard Barnes and David Ong, *The Law of the Sea: Progress and Prospects* (Oxford University Press, 2006) 35.

¹⁴⁵ LOSC Part XV Article 297 2(b) and 3(b), and Annex V Section 2.

¹⁴⁶ Seinho Yee observed that the requirement to inform the other party of the reasons for not adopting the recommendations "may induce the rejecting party to give the most thorough consideration possible to the matter. In some situations, such further consideration may change the decision of a party." Seinho Yee 'Conciliation and the 1982 UN Convention on the Law of the Sea' (2013) 44(4) *Ocean Development and International Law* 321.

¹⁴⁷ LOSC art 290.

¹⁴⁸ LOSC art 290(5).

Provisional measures were made by ITLOS in the *Southern Bluefin Tuna Cases*,¹⁴⁹ concerning Australian and New Zealand objections to Japan's experimental fishing program, and the *Case concerning Land Reclamation by Singapore in and around the Straits of Johor*¹⁵⁰ concerning land reclamation by Singapore which impacted Malaysian territorial waters. L Dolliver M Nelson commented that 'the mere existence of the Tribunal, a standing body, may also assist states to settle their disputes without resorting to litigation.'¹⁵¹ Provisional measures were also considered by ITLOS in the *Arctic Sunrise* case in November 2013. The case concerned the Russian arrest of the Greenpeace protest vessel MV *Arctic Sunrise* and the vessel's crew, which were engaged in a protest against offshore oil and gas activities in the Russian EEZ, within a three mile safety zone of the Russian *Prirazlomnaya* offshore platform. ITLOS issued provisional measures including ordering the release of the *Arctic Sunrise* and the release of the vessel's crew on posting of a bond.¹⁵²

LOSC provides that any decision rendered by a court or tribunal shall be final and shall be complied with by all the parties to the dispute, and that any such decision shall have no binding force except between the parties and in relation to that particular dispute.¹⁵³

The importance of dispute resolution in LOSC cannot be overstated, in particular of state practice relating to potential disputes. Rosenne stated as follows:

What is important - what is indeed crucial - is that there should always be in the background, as a necessary check upon the making of unjustified claims, or upon the denial of justified claims, automatically available procedures for the settlement of disputes.¹⁵⁴

LOSC provisions relating to dispute resolution also include:

¹⁴⁹ *Southern Bluefin Tuna Cases (New Zealand v. Japan; Australia v. Japan)*, *Provisional Measures*, (1999) 38 *International Legal Materials* 1624.

¹⁵⁰ *Case concerning Land Reclamation by Singapore in and around the Straits of Johor (Malaysia v. Singapore)*, *Provisional Measures* <<https://www.itlos.org/index.php?id=35&L=0>> at 9 July 2012

¹⁵¹ Nelson, above n 144, 38.

¹⁵² The *Arctic Sunrise* Case (*Netherlands v Russia*), Case No. 22, ITLOS/PV.13/C22/1. The ITLOS provisional measures generally supported the Netherlands position that Russia as the coastal State may not exercise its enforcement jurisdiction over a vessel flying the flag of a third State within its exclusive economic zone.

¹⁵³ LOSC art 296.

¹⁵⁴ S Rosenne, *Provisional Measures in International Law: The International Court of Justice and the International Tribunal for the Law of the Sea* (2005) 157, referred to in Nelson above n 144, 39.

- The general obligation that state parties shall fulfil in good faith the obligations assumed under this Convention and shall exercise the rights, jurisdiction and freedoms recognized in this Convention in a manner which would not constitute an abuse of right;¹⁵⁵ and
- LOSC does not allow any reservations or exceptions unless expressly provided in the Convention.¹⁵⁶

In relation to maritime boundary disputes, the ICJ arguably has the greatest experience, and has decided the largest number of cases. A significant substantial number of cases have, however, been referred to ad-hoc tribunals where the arbitral panel and terms of reference are agreed by the parties. Arbitration has special significance under LOSC as the default, and potentially compulsory, method of dispute resolution under Article 287(5). States may have specified, however, that no method applies to boundary delimitation under Article 298(1)(a)(i), and they are therefore not subject to compulsory arbitration.¹⁵⁷ ICJ and arbitration cases relating to maritime boundaries are examined in Chapter IV.

3. Judicial Dispute Resolution versus Boundary Agreements

The potential advantage of a maritime boundary delimitation agreement is that the solution may be acceptable to both states on the basis of acceptable compromises. A recent example is the Russia/Norway agreement in 2010 (Barents Sea Treaty).¹⁵⁸ The Norwegian claim prior to the treaty was based on equidistance, whereas the Russian claim was based on a boundary claimed on the basis of the sector principle. The dispute could potentially have been referred to a judicial process, however Russia and Norway preferred to reach their own agreement with compromises made by both states. A boundary agreement may also provide greater flexibility over essential terms. The

¹⁵⁵ LOSC art 300.

¹⁵⁶ LOSC art 309.

¹⁵⁷ LOSC reservations in relation to dispute resolution methods are listed by the United Nations Division for Ocean Affairs and the Law of the Sea, 'Settlement of disputes mechanism' <http://www.un.org/Depts/los/settlement_of_disputes/choice_procedure.htm> at 14 January 2013.

¹⁵⁸ *Treaty Between the Kingdom of Norway and the Russian Federation Concerning Maritime Delimitation and Cooperation in the Barents Sea and the Arctic Ocean*, signed 15 September 2010, <<http://treaties.un.org/doc/Publication/UNTS/No%20Volume/49095/Part/I-49095-08000002802f6f0e.pdf>> (entry into force 7 July 2011) ('*Norway/Russia Agreement*').

Australia/Indonesia treaty in 1997,¹⁵⁹ for example, provided different jurisdictions over seabed and the water column.¹⁶⁰

The use of a judicial process is subject to the uncertainty of the boundary outcome. The starting point for a delimitation as discussed in the historical background above is the equidistance principle, however there is uncertainty as to whether a court or tribunal may alter the boundary based on any special circumstances, and states may be reluctant to refer a boundary dispute to judicial process due to this uncertainty. The equidistance/special circumstances basis was provided in the 1958 Geneva Convention on the Continental Shelf. However the decision in the 1969 *North Sea Continental Shelf Cases*¹⁶¹ rejected that principle as not based in customary international law.

Another significant reason to negotiate agreements rather than submit disputes to adjudication is that states can come to detailed arrangements with respect to resources. This can include, for example, the sharing of oil and gas resources under a JDZ, or providing terms allowing for mutual access to fisheries.

The LOSC provided that delimitation 'shall be effected by agreement on the basis of international law... in order to achieve an equitable solution'. Equitable solutions are not however defined. The resulting basis of dispute resolution in LOSC was described by Churchill and Lowe as 'not very meaningful.'¹⁶² LOSC therefore essentially relies on the ICJ and arbitration decisions to determine the basis of resolution. Malcolm D Evans summarised this as follows:

Accordingly the LOSC devolves the development of rules and principles of delimitation to general international law, rather than through the terms of LOSC itself.¹⁶³

Evans analysed the factors which should be considered in maritime boundary delimitation, and concluded that only the geography of relevant coasts including islands

¹⁵⁹ *Treaty between the Government of Australia and the Government of Indonesia Establishing an Exclusive Economic Zone Boundary and Certain Seabed Boundaries*, 14 March 1997 [1997] ATNIF 4 (not yet in force).

¹⁶⁰ John Robert Victor Prescott, 'Australia – Indonesia, Report Number 6-2', in Jonathan I Charney and Robert W Smith (eds), *International Maritime Boundaries* (Martinus Nijhoff, 2002) vol 4, 2697.

¹⁶¹ *North Sea Continental Shelf Cases (Federal Republic of Germany v Denmark; Federal Republic of Germany v Netherlands)* [1969] I.C.J Reports 42.

¹⁶² Churchill and Lowe, above n 33, 191.

¹⁶³ Malcolm D Evans 'Maritime Boundary Delimitation: Where do we go from here?' in Freestone, Barnes and Ong (eds) above n 144, 138.

should justify any change to the equidistance line.¹⁶⁴ The circumstances which potentially could be considered by the ICJ, ITLOS or Annex VII arbitration panel under the 'equitable' approach are as follows:

- The geographical configuration of the area can include whether the area to be delimited is part of a larger bay. A coastal state with a concave coast may, for example, argue for a boundary beyond the equidistance line where it is 'sandwiched' between two other coastal states within a larger gulf;
- The geographical configuration may also include the issue of islands. A coastal state may, for example, argue for the full effect to be given to an island in determining the maritime boundary;
- The proportionality of coasts concerns comparing the lengths of the coasts of the respective states. A coastal state may, for example, argue that under a proportionality test it should have a boundary beyond the equidistance line if its coast runs for a considerable distance, compared to an island state;
- Economic factors have been raised in several cases including the location of fisheries, the location of oil and gas exploration concessions, and the location of oil and gas wells or reservoirs. These factors have generally been discounted however; and
- Historical factors such as use of the sea by one of the coastal states or historical claims to those areas. A coastal state may, for example, argue that an area has historically been used predominantly by its own fishing fleets, or has been subject to oil and gas exploration permits.

Examples of ICJ, ITLOS and Arbitral Tribunal decisions in which these circumstances were considered are summarised in Chapter IV.

A court or tribunal may only rule on territorial sovereignty if the jurisdictional clause in question gives it competence to do so. The potential limitations of judicial processes are apparent where the dispute includes the sovereignty of islands or land territory, where a

¹⁶⁴ Ibid 199.

state would generally not risk the loss of claimed sovereignty to a decision of a court or tribunal which has competence to rule on sovereign territory. LOSC Part XV has no provisions providing competency to rule on territorial sovereignty. The ICJ may, however, make a ruling relating to territorial sovereignty.¹⁶⁵

The use of a JDZ may be more acceptable than referring to dispute resolution procedures where the states can agree a detailed regime for the joint exploitation of natural resources. Accordingly several JDZs have been adopted, particularly in regions with potential offshore oil and gas, where the underlying maritime boundary dispute has not been referred to a dispute resolution procedure.

4. LOSC and Maritime Boundary Disputes

Principal issues which may give rise to disputed maritime boundaries include the sovereignty of landmasses, baselines and bays, delimitation of EEZ and continental shelf zones between opposite or adjacent coasts, and delimitation of the OCS based on the characteristics of the seabed. Examples of these issues in the Arctic and Southern Ocean regions are examined in Chapters V and VI.

A. Sovereignty of Landmasses

Landmasses including islands can generate EEZ, continental shelf and OCS zones under LOSC. The sovereignty of landmasses is not, however, determined under LOSC. Islands may potentially generate EEZ and continental shelves, resulting in very large potential rights over offshore oil and gas.¹⁶⁶ In more recent times disputes over sovereignty of islands include disputes between Japan and China over the Senkaku

¹⁶⁵ *Statute of the International Court of Justice*, 33 UNTS. 993 , art 36(2)(b). The Statute of the ICJ is broadly framed, and provides;

The states parties to the present Statute may at any time declare that they recognize as compulsory ipso facto and without special agreement, in relation to any other state accepting the same obligation, the jurisdiction of the Court in all legal disputes concerning ... (b) any question of international law.

¹⁶⁶ Significant examples of competing claims relating to islands, as discussed by Hazel Fox, include disputes between Indonesia and Vietnam over Natuna Islands, Canada and Denmark over Beaumont Island off the west coast of Greenland, Greece and Turkey over the Greek islands in the Aegean Sea, and the example of Japan's expenditure to preserve the Okinotoroshima coral reefs in the Pacific Ocean. Hazel Fox (ed), *Joint Development of Offshore Oil and Gas, A Model Agreement for States for Joint Development with Explanatory Commentary* (British Institute of International and Comparative Law, 1989) 35.

(Diaoyu) Islands,¹⁶⁷ and the dispute between Japan and Korea over Takeshima (Dokdo) Islands.¹⁶⁸

Article 121 of LOSC provides that islands are naturally formed areas of land surrounded by water, which are above water at high tide. Islands generate EEZ and continental shelves, except if they are 'rocks which cannot sustain human habitation or economic life of their own.'

The sovereignty of certain areas which may generate EEZ or continental shelves is also an issue as Antarctic sovereign claims are not recognised by many countries, and the status of such claims has been suspended by the Antarctic Treaty. In addition a significant area of the landmass is currently unclaimed (the Unclaimed Sector). These circumstances raise the issue of whether EEZ, continental shelf and OCS zones extend from these areas of uncertain or even absent sovereignty. The basis of Southern Ocean claims in relation to Antarctica is analysed in Chapter VI.

B. Baselines and Bays

i) LOSC Provisions

There may be an issue whether to adjust a proposed boundary owing to particular islands, also referred to as 'giving effect' to the islands. LOSC provides that an island generates EEZ, continental shelf and OCS zones,¹⁶⁹ however this does not apply to 'rocks which cannot sustain human habitation or economic life of their own.'¹⁷⁰ The issue that commonly arises is whether an uninhabited island generates an EEZ or continental shelf, and whether such an island influences a boundary based on equidistance.¹⁷¹

¹⁶⁷ 'East Asian rivalry - Protesting too much - Anti-Japanese demonstrations run the risk of going off-script' *The Economist* (London) 22 September 2012.

¹⁶⁸ 'Strained relations between Japan and South Korea - Lamé ducks and flying feathers - Domestic political upheaval in both countries makes a damaging row worse' *The Economist* (London) 8 September 2012.

¹⁶⁹ LOSC art 121(2).

¹⁷⁰ LOSC art 121(3).

¹⁷¹ One example of this issue is the Denmark (Greenland)/Iceland agreement establishing the boundaries of the continental shelf and fisheries zones in 1997. The boundary was generally based on the equidistance line between the respective coasts, giving full effect to the inhabited Icelandic island of Grimsey, while giving limited effect to the uninhabited Icelandic islet of Kolbeinsey. *Agreement between the Government of the Kingdom of Denmark, together with the Greenland Home Rule Government, on the*

There are several areas of the Arctic Ocean where state claims for baselines may be open to dispute. Tullio Scovazzi highlighted the varying state practice in applying straight baselines.¹⁷² Norway proclaimed straight baselines for its Arctic Ocean coastline. The baselines are of special interest as they were considered by the ICJ in the *Anglo-Norwegian Fisheries* case.¹⁷³ The ICJ held that the baselines claimed by Norway 'are not contrary to international law', on the basis of the geography of the coastline, economic activity including traditional fishing activities, and historic factors including absence of opposition from other states.¹⁷⁴

ii) Baselines and Ice-Covered Coasts

The use of the low water line to determine the baseline raises the issue whether this should also include the outer limit of an ice shelf.¹⁷⁵ The long term existence of the ice shelves, and therefore their use as a baseline, has come into question with the effects of global warming.¹⁷⁶

Christopher C Joyner commented that there are no distinct provisions in the traditional law of the sea for treating coastal or floating ice formations. LOSC does not provide any special regime for ice covered coastal space other than Article 234, which grants regulatory and enforcement rights to coastal states in ice-covered areas to reduce vessel source pollution within the limits of the EEZ.¹⁷⁷

one Hand, and the Government of the Republic of Iceland, on the other hand, concerning the Delimitation of the Continental Shelf and the Fishery Zones in the area between Greenland and Iceland, opened for signature 11 November 1997, 2074 UNTS 58 (entry into force 27 May 1998), and Alex G Oude Elferink, 'Current Legal Developments, Denmark/Iceland/Norway' (1998) 13(4) *The International Journal of Marine and Coastal Law* 607, 608.

¹⁷² Tullio Scovazzi 'The Baseline of the Territorial Sea: The Practice of Arctic States' in Alex G. Oude Elferink and Donald R. Rothwell (eds), *The Law of the Sea and Polar Maritime Delimitation and Jurisdiction* (Martinus Nijhoff, 2001) 69.

¹⁷³ *Anglo-Norwegian Fisheries Case* [1951] ICJ Rep 116.

¹⁷⁴ Scovazzi, above n 172, 71.

¹⁷⁵ Donald R Rothwell, *The Polar Regions and the Development of International Law* (Cambridge University Press, 1996) 262.

¹⁷⁶ This includes the examples of the collapse of the Larsen A and Larsen B Ice Shelves in the Antarctic in 1995 and 2002. Therese Greenwood, 'Canada 'Ice Shelf Disintegration Threatens Environment, Queens Study' (Press Release, 3 August 2005) <http://www.eurekalert.org/pub_releases/2005-08/quisd080305.php> at 16 June 2008.

¹⁷⁷ Christopher C Joyner, 'The Status of Ice in International Law' in Oude Elferink and Rothwell (eds), *The Law of the Sea and Polar Maritime Delimitation and Jurisdiction* (Martinus Nijhoff, 2001) 23, 25.

- In relation to sea ice, also known as pack ice,¹⁷⁸ Joyner comments that LOSC Article 5 provides that the baseline is the low waterline along the coast.¹⁷⁹
- In relation to ice shelves,¹⁸⁰ Joyner comments that owing to permanence and durability sound arguments exist for their margins serving as baselines, however due to the special characteristics and fluctuations, it may be appropriate to treat them as a unique form of territorial space deserving of unique legal treatment.¹⁸¹

Stuart B Kaye considered that edge of the ice coast should be used to establish the coastal state's baselines, to remove doubt as to the extent of the EEZ, as it directly affects shipping, fisheries and mining.¹⁸² Rothwell noted that complications would arise for any maritime zones which are delimited from ice shelf base-points as ice shelves advance or retreat. Baselines should therefore follow the outer limit of the ice-covered coast, but may be adjusted to reflect significant changes in the ice formation.¹⁸³

C. Opposite or Adjacent Coasts

The boundaries of the EEZ and continental shelf may be disputed, for example, where one state may consider the boundary should be equidistant between the two states, and the other state considers that the boundary should be based on an interpretation of a treaty, or geographical features such as the length of the respective coastlines, the determination of baselines, or the weight to be given to certain islands.

LOSC does not, however, provide for the use of equidistance in the absence of agreement, as used in the provision for the territorial sea, but refers to the use of dispute

¹⁷⁸ This is ice formed from seawater, 1-2 years old, usually with a thickness less than 6 feet and drifts unattached to land.

¹⁷⁹ Joyner, above n 177, 30.

¹⁸⁰ These are large ice structures extending beyond the land margin into ocean space, usually attached to the continental shelf or sea floor but may extend to float on the sea.

¹⁸¹ Joyner, above n 177, 34.

¹⁸² Stuart B Kaye, 'Territorial sea baselines along ice covered coasts: International practice and limits of the law of the sea' (Paper presented at Third Biennial Conference of ABLOS – Addressing Difficult Issues in the Law of the Sea, International Hydrographic Bureau, Monaco, 28–30 October 2003) 21 <www.gmat.unsw.edu.au/ablos/ABLOS03Folder/PAPER4-2.pdf> at 11 December 2012.

¹⁸³ Rothwell, above n 175, 66. Rothwell proposed that:

- The baseline follows the general direction of the outer limit of the ice-covered coast, with some allowances for advances or retreats over time,
- The waters enclosed by the baselines would be subject to the regime of internal waters, and
- The baseline be adjusted to reflect significant changes in the ice formation.

resolution measures. Examples of circumstances giving rise to disputes are examined in the analysis of ICJ and international arbitration maritime boundary delimitation cases in Chapter IV.

D. Characteristics of the Seabed and the Outer Continental Shelf

The LOSC OCS regime raises several challenges for maritime boundary delimitation. These issues are discussed further in Chapter IV in relation to the CLCS, and Chapter VI in relation to the Arctic Ocean. In brief, these issues include:

- LOSC generally provides a limit of 350 nautical miles for the OCS, however in some instances the outer limit may be beyond 350 nautical miles, as this limit does not apply to 'submarine elevations that are natural components of the continental margin, such as its plateaus, rises, caps, banks and spurs'.¹⁸⁴ The submarine elevation provision may give rise to very large claims in the Arctic discussed in Chapter V; and
- The CLCS submissions may relate to a disputed boundary. The CLCS is required not to consider an OCS submission in the cases of a 'land or maritime boundary dispute' under Annex I of the Rules of Procedure,¹⁸⁵ and there may also be issues in determining whether there is such a dispute.¹⁸⁶ The CLCS has made recommendations in relation to regions of opposite or adjacent coasts on a 'without prejudice' basis to a potential dispute.

5. Contribution to Research Conclusions

¹⁸⁴ LOSC art 76(6).

¹⁸⁵ *Rules of Procedure of the Commission on the Limits of the Continental Shelf*, UN Doc. CLCS/40 (2 July 2004) (Rules of Procedure) Rule 45 and Annex I, Rule 5.

¹⁸⁶ Donald R Rothwell, 'Issues and Strategies for Outer Continental Shelf Claims' *The International Journal of Marine and Coastal Law* 23 (2008) 185, Rothwell commented:

While having clearly indicated under Annex I of the Rules of Procedure that it will not consider submissions where a land or maritime boundary dispute exists, the Commission could find itself facing difficulties in making determinations as to whether or not there exists such a "dispute". In some instances, such as the non-recognition by an overwhelming majority of States of the territorial claims asserted over the Antarctic continent, it could be assumed that even a scientific body such as the Commission would be aware of the existence of a dispute. In other instances where there may be dormant disputes of a longstanding nature, the Commission's capacity to have an independent awareness of such a dispute, or to even make assessments as to the credibility of a dispute, is problematic.

The primary contribution is that LOSC does not itself determine EEZ, continental shelf, or OCS boundaries where states have opposite or adjacent coasts, or where the sovereignty of land masses including islands is disputed, except by recourse to dispute resolution provisions.¹⁸⁷ Islands which were previously of small economic importance may generate substantial continental shelf and OCS zones under LOSC.¹⁸⁸ Disputes may also arise over the determination of baselines, the interpretation of treaties,¹⁸⁹ and the effect given to islands.¹⁹⁰

Several Arctic and Southern Ocean states have also made reservations that maritime boundaries are not subject to compulsory dispute resolution.¹⁹¹ There may be a preference for provisional agreements such as JDZs, where the disputed EEZ, continental shelf and OCS regimes may include significant offshore oil and gas resources.¹⁹²

The EEZ and continental shelf regimes both give sovereign rights to oil and gas resources to 200 nautical miles from the coastal state baseline. The continental shelf regime can also provide sovereign rights to resources beyond 200 nautical miles based on state submissions to the CLCS and the related CLCS recommendations. The thesis hypothesis relates to continental shelf rights under LOSC Article 76 to ensure that potential JDZs address rights over the coastal state's OCS.

The Area regime may be viewed as a multilateral JDZ zone. At the present time, the potential for offshore oil and gas development beyond the continental shelf is limited

¹⁸⁷ The only sovereignty dispute in the Arctic Ocean is between Canada and Denmark concerning Hans Island, which lies in the Nares Strait between Ellesmere Island and Greenland, and which will have no significant continental shelf, EEZ or OCS maritime zones. In relation to the Southern Ocean, however, the sovereignty over parts of the Antarctic continent is disputed, which will have very large continental shelf, EEZ and OCS zones. The respective sovereignty claims are currently suspended under the terms of the Antarctic Treaty. This issue is analysed in Chapters V and VI.

¹⁸⁸ LOSC Article 121(2) provides that the territorial sea, the contiguous zone, the exclusive economic zone and the continental shelf of an island are determined in accordance with the provisions applicable to other land territory, however rocks which cannot sustain human habitation or economic life of their own shall have no exclusive economic zone or continental shelf under LOSC Article 121(3).

¹⁸⁹ This issue applies in the Arctic region in the dispute between the United States and Canada in the Beaufort Sea, relating to the 1825 Convention between Great Britain and Russia, in the *Convention between Great Britain and Russia concerning the limits of their Respective Possessions on the North-West Coast of America and the Navigation of the Pacific Ocean*, 16 February 1825, 75 Consolidated Treaty Series (CTS) 95. This dispute is of particular interest as the Beaufort Sea region has been proposed for a potential JDZ.

¹⁹⁰ An example of a dispute relating to the effect to be given to islands concerns the Canada/Denmark maritime boundary, and the effect given to Beaumont Island in the Lincoln Sea. This issue is examined in Chapter V.

¹⁹¹ The use of these reservations by Arctic and Southern Ocean states is analysed in Chapters V and VI.

¹⁹² The current use of JDZs in these circumstances is analysed in Chapter III.

due to the extreme water depths, however in the longer term this may become a significant source of oil and gas.

CHAPTER III – JOINT DEVELOPMENT ZONES AND THE LAW OF THE SEA

1. Introduction

This primary purpose of this chapter is to describe in general terms the relatively large number of JDZs which have been made between states relating to areas of disputed maritime boundaries. The focus of the analysis is the variety of geographical circumstances where JDZs have been used. These circumstances are also illustrated by the maps included in the Illustrations section in Appendix II, and the related summary of key geographical circumstances of these JDZ agreements in Appendix III. The chapter also includes in particular the JDZs which have not currently been successful, and assessment of the limitations of JDZs as a solution where there are significant political obstacles to the use of JDZs as interim compromise arrangements.

2. Principles of Joint Development and the Law of the Sea – LOSC Articles 74(3) and 83(3)

The JDZ originated in agreements relating to land boundaries. An early example which included territorial waters is the arrangement for the Svalbard Islands (Spitsbergen) which lie north east of the Norwegian coast. The Treaty Concerning the Archipelago of Spitsbergen (Svalbard Treaty) entered into force in 1925.¹ The Treaty gave sovereignty of Svalbard to Norway, but also allowed the use of resources by other countries. The Treaty applies to all resources on land as well as offshore.²

¹*Treaty between Norway, The United States of America, Denmark, France, Italy, Japan, the Netherlands, Great Britain and Ireland and the British Overseas Dominions and Sweden concerning Spitsbergen*, opened for signature 9 February 1920, 2 LNTS 8, (entered into force 14 August 1925) ('Svalbard Treaty').

² E J Molenaar, 'Fisheries Regulation in the Maritime Zones of Svalbard' (2012) 27 *The International Journal of Marine and Coastal Law* 3, 20. It is not resolved whether the Treaty applies to resources such as offshore oil and gas, as analysed in Chapter VIII. This included Russia issuing a Note Verbale in response to Norway's submission to the CLCS, which provided that the recommendations of the CLCS in response to Norway's submission should be without prejudice to the Spitzbergen Treaty. The Russian position arguably constitutes recognition of continental shelf and OCS zones about Svalbard, however it is possible that Russia will claim common rights to resources in Svalbard's maritime zones. The Mining Code adopted by Norway in 1925 did not envisage offshore hydrocarbon exploitation and is not easily tailored to it.

Later applications of the JDZ applied to oil and gas zones between Saudi Arabia (then called Najd) and Kuwait, including the Uqair Convention in 1922,³ which created a Neutral Zone in which the two states have equal rights, and the Treaty of Partition in 1965 which determined the boundary but retained joint ownership of the natural resources of the Zone.⁴

There were several bilateral agreements in the Arabian Gulf region, such as the Bahrain/Saudi Arabia Agreement in 1958,⁵ the Qatar Abu/Dhabi Agreement in 1969,⁶ and the Iran/Sharjah Agreement in 1971.⁷ There was also a bilateral agreement in the Mediterranean Sea under the Tunisia/Libya Agreement in 1988.⁸ These agreements were based on sharing oil and gas resources on either side of an agreed maritime boundary.

France and Spain made an agreement which determined the maritime boundary but agreed to a JDZ applying in the Bay of Biscay region in 1974.⁹ The more recent examples include the Australia/Timor-Leste Agreement (Timor Sea Treaty).¹⁰ China and Japan agreed to a JDZ in June 2008 in the East China Sea, however this was 'in principle' only, without detailed implementation terms. The most recent agreement was made between Malaysia and Brunei in 2009.

Article 74(3) of LOSC requires States with opposite or adjacent coasts to make every effort to enter into provisional arrangements of a practical nature pending agreement on the final delimitation of the EEZ between them in a manner consistent with international law. Article 83(3) of LOSC requires States with opposite or adjacent coasts to make

³ *Agreement concerning the boundary between Nejd and Kuwait*, opened for signature 2 December 1922, 1750 UNTS 533 (entered into force 2 December 1922) ('*Uqair Convention*').

⁴ *Kuwait-Saudi Arabia Neutral Zone Agreement*, opened for signature 7 July 1965, (1966) 60 *American Journal of International Law*, 744 (entered into force 7 July 1965) (translated by Sayed M. Hosni).

⁵ *Agreement Between the Kingdom of Saudi Arabia and the Government of Bahrain*, 22 February 1958, 1993 UNTS 8, (entered into force 22 February 1958) ('*Saudi Arabia/Bahrain Agreement*').

⁶ *Agreement Concerning settlement of Offshore Boundaries and Ownership of Islands Between Qatar and Abu Dhabi*, 20 March 1969, 2402 UNTS 54, (entered into force 20 March 1969) ('*Qatar/Abu Dhabi Agreement*').

⁷ *Memorandum of Understanding' between Iran and Sharjah*, 29 November 1971, (entered into force November 1971), at <http://www.parstimes.com/history/iran_sharjah.html> at 25 July 2012 ('*Iran/Sharjah Agreement*').

⁸ *Agreement between President Ben Ali of Libya Republic relating to the El Bouri Field*, 4 September 1988 (Not publicly released), analysed in Masahiro Miyoshi, *The Joint Development of Offshore Oil and Gas*, 34 (entered into force 4 September 1988) ('*Libya/Tunisia Agreements*').

⁹ *Convention Between the Government of the French Republic and the Government of the Spanish State on the Delimitation of the Continental Shelves of the Two States in the Bay of Biscay*, 29 January 1974, 996 UNTS 345 (entered into force [29 January 1974]) ('*France/Spain Agreement*').

¹⁰ *Timor Sea Treaty*, 20 May 2002, 2258 UNTS 3 (entered into force 2 April 2003).

every effort to enter into provisional arrangements of a practical nature pending agreement on the final delimitation of the continental shelf between them in a manner consistent with international law.¹¹ Accordingly the agreement to establish a JDZ is consistent with these LOSC provisions where a boundary cannot be agreed.

It is significant that LOSC refers to provisional arrangements, and therefore suggests an ultimate purpose of agreed boundaries rather than semi-permanent JDZs. This position is supported by the advantages of establishing clear rights and responsibilities. This is particularly important in the polar regions in relation to the enforcement of measures for the protection of the environment. The majority of JDZ agreements have been made where states have not been able to reach an agreement on the boundary.

States may alternatively submit a boundary dispute to a judicial process. The ICJ, for example, has considered a series of maritime boundary delimitations relating to the continental shelf and EEZs. The ICJ has generally adopted the basis of analysing certain factors to determine an equitable solution in maritime boundary delimitation. States may, however, consider that a decision by the ICJ may result in an unacceptable loss of coastal state sovereign rights, whereas with a JDZ they may arrive at a negotiated settlement that does not include a determination on such sovereign rights and is therefore acceptable to both states. The use of recent JDZs suggests there may be a preference to negotiate directly towards a mutually satisfactory sharing of resources from the disputed region.

3. General Structure of JDZs

There have been several discussions of the most important terms of JDZ agreements, and specific issues will be analysed in the context of a model JDZ Agreement in Chapter VII. By way of introduction, a recent analysis was made of the general structure of JDZ agreements by Batista, Ifesi-Okoye, Mahmud et al, in 2007. The authors observed that existing joint petroleum development agreements show a wide variation in structure.¹² They identified six issues as being particularly important to the structure of JDZ agreements, as follows:

¹¹ *United Nations Convention on the Law of the Sea*, opened for signature 10 December 1982, 1833 UNTS 396 (entered into force 16 November 1994) ('*LOSC*').

¹² Ana E Bastida, Adaeze Ifesi-Okoye, Salim Mahmud et al, 'Cross-border unitization and joint development agreements: an international law perspective', (2006-2007) 29 *Houston Journal of International Law* 355, 414.

1. The sharing of resources from the JDZ was considered to be a key element to the success of the joint agreement. The perception that the basis for sharing is equitable and fundamental was essential to the ongoing relationship between the two states.¹³

2. The management structure was generally of three types, comprising: a) the single state model, with one state managing on behalf of both states, including the 1958 Bahrain/Saudi Arabia agreement; b) the two states/joint venture model, with each state nominating its own concessionaire, which enters into a joint venture with the concessionaire of the other state, including the Japan/South Korea JDZ; and c) the Joint Authority model, with both states delegating power to a single authority responsible for supervision of petroleum activities, including the 1979/1990 Thailand/Malaysia agreements, 1989 Australia/Indonesia Timor Gap Treaty, 2001 Nigeria/Sao Tome and Principe agreement, and 2002 Australia/Timor Leste Timor Sea Treaty.

3. The agreements should state the applicable law, including the petroleum licensing regime, laws governing civil and criminal jurisdiction, and regulations governing health, safety and environmental issues. The petroleum licensing guidelines and other regulations may be specified in the agreement or may be established by the Joint Authority. The authors comment that criminal jurisdiction is generally based on the nationality of the individual or by other agreement, however jurisdiction may be applied by each state exercising jurisdiction in its side of an internal boundary line.

4. The agreement will either specify the basis for licensing the area of the JDZ, or will designate the Joint Authority to develop the rules for selecting contractors to undertake petroleum exploration and exploitation activities.

5. The agreement should provide the taxation regime, where: a) states may agree to adopt one state's taxation regime; b) apply the tax regime of the state that approved the contractor, or c) delegate the obligation to formulate fiscal terms to the Joint Authority. Taxation may alternatively apply at a discounted rate, with the contractor is liable for taxes only on a proportion of its profits to one state and the remainder to the other state.

¹³ Equal sharing was the most common arrangement relating to oil and gas, however variations included the 1993 Senegal/Guinea-Bissau agreement (85:15 in favour of Senegal for petroleum resources), the 2001 Nigeria/Sao Tome and Principe Agreement (60:40 in favour of Nigeria), and the 2002 Australia-Timor-Leste Timor Sea Treaty (90:10 in favour of Timor-Leste).

6. The agreements provide for a dispute resolution mechanism, which may include consultation, negotiation, conciliation, and binding commercial arbitration. The authors refer to the 2001 Nigeria/Sao Tome and Principe JDZ agreement, which provides final dispute resolution as follows: a) settlement of disputes between the Joint Authority and private interests is subject to binding commercial arbitration under UNCITRAL rules; and b) disputes arising in the work of the Joint Authority or Joint Ministerial Council to an arbitral tribunal at the Permanent Court of Arbitration.

JDZ terms which are particularly relevant to Arctic and Southern Ocean JDZs are analysed in the discussion of a Model Agreement in Chapter VII.

4. JDZ Examples

The following is an analysis of the principal JDZs established to date, with related focus on the geographical and historical circumstances giving rise to the related maritime boundary disputes, and the adaptability of JDZ agreements to these varying circumstances.¹⁴ The analysis also includes related agreements which, while allowing multilateral access to resources, do not fall within the standard definition of a JDZ.

A. Svalbard (Spitsbergen) Treaty, 1920

The Svalbard Treaty¹⁵ was signed in 1920, and entered into force in 1925 (see Illustration 3-1).¹⁶ There are currently 41 state parties to the Treaty. The Treaty gave sovereignty over the Svalbard Islands (then called the Spitsbergen Islands) to Norway, and allowed other state parties to the Treaty to have access to the resources of the islands. The Svalbard Treaty area is defined as 10° to 35° east longitude, and 74° to 81° north latitude (also known as the 'Svalbard Box').¹⁷ The Svalbard Treaty provided that

¹⁴ The list of JDZs is not exhaustive, and excludes JDZs which do not relate to significant ocean areas, for example the limited area of the Ems estuary between the Netherlands and Germany, under the *Treaty between the Kingdom of the Netherlands and the Federal Republic of Germany concerning Arrangements for Co-operation in the Ems Estuary*, 8 April 1960, 509 UNTS 64 (entered into force 1 August 1963) ('*Ems-Dollard Treaty*'). For a listing of European agreements for development of coal, natural gas and petroleum across national borders, see Masahiro Miyoshi, Clive Schofield (ed), 'The Joint Development of Offshore Oil and Gas in relation to Maritime Boundary Delimitation', (1999) 2(5) IBRU Maritime Briefing 1.

¹⁵ *Svalbard Treaty* art 1.

¹⁶ Peter Johan Schei and R. Douglas Brubaker, Fridtjof Nansen Institute
<http://www.fni.no/doc&pdf/PJS-DB-2006-JANSROP1.PDF> at 14 December 2012.

¹⁷ *Svalbard Treaty* art 1.

Norway should be free to maintain suitable measures to ensure the preservation of flora and fauna of the Svalbard Islands and their territorial waters.¹⁸

A significant point is that the Treaty should be considered as a form of sister agreement to a JDZ, rather than a JDZ as defined in Chapter 1. The Treaty allows multilateral access to resources, however the region concerned was considered *terra nullius* in the two decades prior to entry into force, and did not provide for the pooling of state claims to resources. The Treaty also lacks the detailed terms for management of the zone generally required under the definition of a JDZ.

Norway adopted straight baselines in 2001 around the Svalbard Islands, and adopted a 12 nautical mile territorial sea around the islands in 2003.¹⁹ Norway declared a 200 mile continental shelf in 1985 which applied to mainland and island coasts, and announced that it was opening an area to oil and gas exploration in the continental shelf around the islands. The Soviet Union and the United Kingdom protested the declaration. No oil or gas concessions have been granted in this area as at December 2014.

The Svalbard Treaty may arguably allow multilateral joint access to maritime zones such as the continental shelf. However there were essentially no maritime zones beyond the 3 nautical mile territorial sea at the time the Svalbard Treaty was opened for signature in 1920. There was no interest or ability to extract offshore oil and gas at that time, and the Svalbard Treaty was principally concerned with the coal resources of the islands and the surrounding fisheries. On this basis, as neither the continental shelf nor the EEZ are addressed in the Svalbard Treaty, it can be argued that the rights of Norway in these maritime zones under the law of the sea are not abrogated. The Norwegian government has argued that all the privileges and obligations of a coastal state under LOSC also in respect to its Svalbard territory.²⁰

The European Union has not accepted Norwegian claims over an EEZ relating to Svalbard. E J Molenaar commented that the acceptance by other states that Norway can

¹⁸ *Svalbard Treaty* art 2.

¹⁹ Ida Caracciolo, *Unresolved controversy: the legal situation of the Svalbard Islands maritime areas; an interpretation of the Paris Treaty in light of UNCLOS 1982*, (paper presented at International Boundary Research Unit Conference, The State of Sovereignty, Durham, 2009)

<http://www.dur.ac.uk/resources/ibru/conferences/sos/ida_caracciolo_paper.pdf> at 16 February 2010.

²⁰ Torbjørn Pedersen and Tore Henriksen, 'Svalbard's Maritime Zones: The End of Legal Uncertainty' (2009) 24 *The International Journal of Marine and Coastal Law* 141, 145.

negotiate maritime zones about Svalbard did not extend to excluding other states access to the continental shelf and OCS surrounding Svalbard.²¹ Robin Churchill and Geir Ulfstein considered that Norway has sovereignty over Svalbard and all maritime areas around the Svalbard, but that the Svalbard Treaty applies to all such areas.²²

The applicability of the Svalbard Treaty is therefore not yet determined, and there are strong arguments that the regime of joint access to resources under the Treaty should also apply to the continental shelf. The issue of rights to oil and gas resources of the continental shelf and OCS of Svalbard is one of the most significant areas of potential conflicting claims to oil and gas resources, and is examined in Chapter VIII.

B. Saudi Arabia/Kuwait – Neutral Zone, 1922, Delimitation Agreement – Partitioned Neutral Zone, 1965

Saudi Arabia (then called Najd) and Kuwait signed the Treaty of al-Uqair in December 1922,²³ (see Illustration 3–2).²⁴ The Agreement created a Neutral Zone in which the two states have equal rights. Saudi Arabia and Kuwait later agreed to partition the Neutral Zone in 1965.²⁵ A Supplementary Agreement made in 1969 included detailed coordinates for the delimitation.²⁶ The area was renamed the Partitioned Neutral Zone, however the existing JDZ arrangements were retained. Accordingly the area became an example of an agreed boundary, while retaining the existing JDZ in respect of the continued sharing of resources. The enforcement powers of each state, including provisions for the protection of the environment, therefore apply on their respective sides of the agreed boundary.

²¹ Molenaar, above n 2, 20. This included Russia issuing a Note Verbale in response to Norway's submission to the CLCS, which provided that the recommendations of the CLCS in response to Norway's submission should be without prejudice to the Spitzbergen Treaty. The Russian position arguably constitutes recognition of continental shelf and OCS zones about the Svalbard islands, however it is possible that Russia will claim common rights to resources in Svalbard's maritime zones.

²² Robin Churchill and Geir Ulfstein, *Marine Management in Disputed Areas: The Case for the Barents Sea* (Routledge, 1992) 40.

²³ *Agreement concerning the boundary between Nejd and Kuwait*, 2 December 1922, 1750 UNTS 531 (entered into force 2 December 1922) ('*Treaty of al-Uqair*').

²⁴ Source: United States Energy Information Administration <http://www.eia.gov/countries/cab.cfm?fips=sa> at 14 December 2012.

²⁵ *Agreement on the partition of the Neutral Zone*, 7 July 1965, 1750 UNTS 48, (entered into force 7 July 1965) ('*Saudi Arabia/Kuwait Agreement*').

²⁶ *Supplementary agreement to the above-mentioned Agreement confirming the determination of the boundary line dividing the Saudi-Kuwaiti Neutral Zone*, 18 December 1969, 1750 UNTS 62, (entered into force 18 December 1969) ('*Saudi Arabia/Kuwait Supplementary Agreement*').

There is substantial oil production in the JDZ region, and it was reported in 2012 that Saudi Arabia and Kuwait have output capacity of 610,000 barrels per day.²⁷ The JDZ includes land areas and offshore areas.

Kuwait granted the original oil concession to American Independent Oil Company (AMINOIL), and Saudi Arabia granted the oil concession to Getty Oil. Aminoil and Getty agreed to the equal division of the costs of drilling on wells where both parties agreed. In 1960 Aminoil and Getty concluded a joint operating agreement which established a Joint Operating Committee to carry out all production on their behalf. In December 1957 Saudi Arabia signed a concession agreement in relation to the offshore area from the Neutral Zone, and Kuwait signed a similar agreement in 1958, with both agreements signed with the Japan Petroleum Trading Company. The agreements referred to the joint sovereignty over resources in the zone.²⁸

C. Saudi Arabia/Bahrain Agreement, 1958

Saudi Arabia and Bahrain agreed in 1958 to establish the boundary for the continental shelf in the Persian Gulf between the two states.²⁹ The Agreement established a JDZ of about 358 square miles in the Abu Safa oilfield area, to the north of Bahrain and east of the Saudi Arabian coast (see Illustration 3–3).³⁰

The Agreement provides that income from the area was to be shared equally. The area is subject to Saudi Arabian sovereignty and administration, including determination of the manner in which oil and gas operations are carried out.³¹

²⁷ 'Kuwait, Saudi boost Neutral Zone output Arab Times', *Arab Times* (Kuwait), 27 April 2012, at <<http://www.arabtimesonline.com/NewsDetails/tabid/96/smId/414/ArticleID/153052/reftab/73/t/Kuwait-Saudi-boost-Neutral-Zone-output/Default.aspx>> at 1 August 2012.

²⁸ Isa Huneidi 'Saudi/Kuwait Joint Development', in Hazel Fox (ed), *Joint Development of Offshore Oil and Gas, A Model Agreement for States for Joint Development with Explanatory Commentary* (British Institute of International and Comparative Law, 1989), 77. Huneidi analysed the history of these agreements and commented that:

To sum up, the main attraction of these pioneering agreements, and particularly the onshore ones, is their combination of maximum flexibility and utter simplicity as compared to the high degree of sophistication and complexity which characterises the Model Agreement.

²⁹ *Agreement Between the Kingdom of Saudi Arabia and the Government of Bahrain*, 22 February 1958, 1993 UNTS 8, (entered into force 22 February 1958) ('*Saudi Arabia/Bahrain Agreement*')

³⁰ Masahiro Miyoshi, 'The Joint Development of Offshore Oil and Gas in relation to Maritime Boundary Delimitation' (1999) 2(5) *IBRU Maritime Briefing* 30.

³¹ *Saudi Arabia/Bahrain Agreement* art 2.

The Agreement provided for Saudi Arabian sovereignty over the JDZ, accordingly Saudi Arabian measures apply in the area.³² The production from the JDZ has been reported as 332 million barrels of oil.³³ The Agreement did not contain specific measures for the protection of the environment. Saudi Arabia and Bahrain share the 300,000 barrels per day production of the Abu Safah offshore field.³⁴

D. Qatar/Abu Dhabi Agreement – Al-Bunduq Field, 1969

Qatar and Abu Dhabi made an agreement in 1969 relating to the area of the El Bunduq oil field.³⁵ The El Bunduq oilfield lies to the east of the peninsular state of Qatar and to the north of Abu Dhabi (see Illustration 3–4).³⁶ The agreement did not change the general maritime boundary, and the El Bunduq oil field lies on the Abu Dhabi side of the boundary. The Agreement provided that all rights to the El Bunduq oilfield were to be exercised on an equal basis.³⁷ The ruler of Abu Dhabi was the licensing authority, and the field is operated by Abu Dhabi Marine Areas (ADMA) under specific terms of the Agreement.³⁸ All profits were to be divided on an equal basis.³⁹

The Agreement provides an enclave for Dayyinah Island to place the island in Abu Dhabi territory, while granting Qatar 50 per cent of rights to the El Bunduq oil field on the Abu Dhabi side of the boundary.⁴⁰

The Agreement provides that Abu Dhabi was the licensing authority, accordingly Abu Dhabi measures apply in the area.⁴¹ The Agreement does not contain specific measures for the protection of the environment. The field commenced operations in 1975 and the estimated oil reserves were 95 million barrels.⁴²

³² Ibid.

³³ Fox above n 28, 54.

³⁴ 'Saudi Arabia', United States Energy Administration, at <<http://www.eia.gov/countries/cab.cfm?fips=SA>> at 1 August 2012.

³⁵ *Agreement Concerning Settlement of Offshore Boundaries and Ownership of Islands Between Qatar and Abu Dhabi*, 20 March 1969, 2402 UNTS 54, (entered into force 20 March 1969) ('*Qatar/Abu Dhabi Agreement*')

³⁶ Ali A. El-Hakim, *The Middle Eastern States and the Law of the Sea* (1980) 96.

³⁷ *Qatar/Abu Dhabi Agreement* art 6.

³⁸ Ibid art 7.

³⁹ Ibid.

⁴⁰ United States Department of State, International Boundary Study, Series A, Limits in the Seas, No. 18, Continental Shelf Boundary Abu Dhabi – Qatar, (1970)

<<http://www.state.gov/documents/organization/61608.pdf>> at 20 December 2012.

⁴¹ Ibid

⁴² Fox above n 28, 55.

E. Iran/Sharjah (United Arab Emirates) MOU – Abu Musa Island, 1971

Iran and Sharjah issued a Memorandum of Understanding (MOU) in 1971,⁴³ concerning the small island of Abu Musa and its territorial waters in the Persian Gulf (see Illustration 3–5).⁴⁴ Sharjah is a member of the United Arab Emirates.⁴⁵ Military forces of Iran had occupied the smaller Tunb islands, and occupied the northern area of Abu Musa at the time of the MOU.⁴⁶ The MOU provided for Iranian sovereignty over the occupied northern part of the island and related coastal state sovereign rights.⁴⁷ Exploitation of petroleum resources of the island and its territorial sea continued to be conducted by the Buttes Gas and Oil Company,⁴⁸ under an existing agreement with Sharjah, with the company to pay half the revenues to Iran and half the revenues to Sharjah.⁴⁹

Iran effectively cancelled the sovereignty and coastal state sovereign rights provisions of the MOU in 1992 by declaring sovereignty and applying its jurisdiction over the island, and in particular denying access to non-UAE nationals. Iran agreed to continue to apply the 1971 MOU later in 1992, and the revenue sharing provisions appear to remain in place at 2013. Abu Musa continues to be subject to the dispute between Sharjah and Iran.⁵⁰ The circumstances of the JDZ are somewhat similar to the United Kingdom/Argentina MOU relating to the JDZ to the south west of the Falkland Islands which was cancelled by Argentina in 2007. This is because Abu Musa is the source of political tension continuing in 2013, and the dispute also concerns island sovereignty and coastal state sovereign rights.

Abu Musa has an area of 12.8 square kilometres, however it has significant strategic importance located in the Arabian Gulf leading to the Strait of Hormuz. There are also

⁴³ *Memorandum of Understanding' between Iran and Sharjah*, 29 November 1971, <http://www.parstimes.com/history/iran_sharjah.html> at 25 July 2012, (entered into force 29 November 1971) ('*Iran/Sharjah Agreement*').

⁴⁴ Miyoshi, above n 30, 11.

⁴⁵ The Memorandum of Understanding was made shortly before the United Kingdom ended its protectorate role in the UAE, 'Dispute resumes between Iran and United Arab Emirates over island of Abu Musa' International Boundaries Research Unit, 3 May 2012, <https://www.dur.ac.uk/ibru/news/boundary_news/?itemno=14513&rehref=%2Fibru%2Fnews%2F&resubj=Boundary+news+Headlines> at 8 February 2013.

⁴⁶ *Ibid* 10.

⁴⁷ *Iran/Sharjah Agreement* art 2(a).

⁴⁸ Buttes Gas and Oil Company is now a subsidiary of Crescent Petroleum.

⁴⁹ *Iran/Sharjah Agreement* art 4.

⁵⁰ 'A Tiny Island is where Iran Makes a Stand' *New York Times* (New York), 1 May 2012, at <http://www.nytimes.com/2012/05/01/world/middleeast/dispute-over-island-of-abu-musa-unites-iran.html?_r=1> at 25 July 2012.

reported to be significant oil and gas reserves surrounding the island in the JDZ area. The Mubarek oilfield in the territorial zone began producing in 1974, and had estimated oil reserves of 100 million barrels in 1989.⁵¹ The Mubarek oilfield was reported in 2013 to have produced 100 million barrels of oil and 300 billion cubic feet of natural gas.⁵²

F. France/Spain Agreement – Bay Of Biscay, 1974

France and Spain agreed in 1974,⁵³ to a delimitation and JDZ applying in the Bay of Biscay region (see Illustration 3–6).⁵⁴ The French claim was based on the midpoint of the deepest portion of the ocean trough, whereas the Spanish claim was based on equidistance. The agreed maritime boundary allows France an ocean area beyond the equidistance line.⁵⁵ The JDZ is an area of about 814 square miles which straddles part of the boundary. It has been suggested that this may have been more favourable to France in part due to the weaker diplomatic position of Spain under the Franco administration.⁵⁶

The JDZ is defined as a region where specific procedures apply for the award of licences for the exploration and exploitation of the natural resources of the zone.⁵⁷ The Agreement provides a special Annex determining exploration and exploitation, which requires exploration to be undertaken by companies of both nationalities linked by partnership agreements.⁵⁸ The states are required to reach agreement in respect of deposits of natural resources which straddle the boundary.⁵⁹ France and Spain retain sovereign rights over resources and exercise their own laws in their part of the JDZ.

The Agreement is an example of a maritime boundary delimitation with no sharing of coastal state sovereign rights. The JDZ allows a partner from the other state to explore

⁵¹ Fox, above n 28, 56.

⁵² 'The Mubarek Field', Crescent Petroleum, <http://www.crescent.ae/html/mubarek_field.html> at 11 April 2013.

⁵³ *Convention Between the Government of the French Republic and the Government of the Spanish State on the Delimitation of the Continental Shelves of the Two States in the Bay of Biscay*, 29 January 1974, 996 UNTS 345 (entered into force 5 April 1975) ('*France/Spain Agreement*').

⁵⁴ Miyoshi, above n 30, 31.

⁵⁵ *Ibid.*

⁵⁶ Jonathan I. Charney and Lewis M. Alexander (eds), *International Maritime Boundaries*, (Martinus Nijhoff, 1993) vol 1, 13.

⁵⁷ *France/Spain Agreement*, art 2(1).

⁵⁸ *Ibid* annex 2 arts 3 and 5.

⁵⁹ *Ibid* annex 2 art 4.

and exploit resources in the JDZ together with a partner from the state with sovereignty in that part of the zone.

The States are required to make every effort to prevent the exploration of the continental shelf and exploitation of its natural resources from interfering with the ecological equilibrium and with the legitimate uses of the marine environment. The states are required to consult together to achieve this purpose.⁶⁰ Oil and gas exploration has been undertaken in the Bay of Biscay, however as at 2014, no significant finds have been made.

G. Sudan/Saudi Arabia Agreement – Common Zone, 1974

Sudan and Saudi Arabia agreed to a Common Zone JDZ in 1974 in respect of the seabed and subsoil of the Red Sea between the two countries.⁶¹ The Agreement defines the areas from the respective coasts to the 100 meter isobath (depth) line as sovereign to each state,⁶² and the common zone is defined as the area between these areas.⁶³ The Agreement is unusual in that the northern and southern boundaries of the Common Zone are not defined (see Illustration 3–7).⁶⁴

The agreement provides for equal sovereign rights for each state within the Common Zone.⁶⁵ Activities are to be undertaken by a Joint Commission including surveying, applications for licences and concessions, and supervision of exploitation.⁶⁶ There are also specific provisions for resources which straddle the Common Zone and either state's EEZ, requiring the Joint Commission to determine an equitable share of the proceeds of exploitation.⁶⁷

⁶⁰ Ibid art 7.

⁶¹ *Agreement Between Sudan and Saudi Arabia Relating to the Joint Exploitation of the Natural Resources of the Seabed and Subsoil of the Common Zone*, 16 May 1974, 952 UNTS 198 (entered into force 16 May 1974), ('Sudan/Saudi Arabia Agreement')

⁶² *Sudan/Saudi Arabia Agreement* arts 3 and 4.

⁶³ Ibid art 6.

⁶⁴ Miyoshi, above n 30, 33.

⁶⁵ *Sudan/Saudi Arabia Agreement* art 5.

⁶⁶ Ibid art 7.

⁶⁷ Ibid art 14.

Compared to the France/Spain Bay of Biscay Agreement, the Sudan/Saudi Arabia Agreement does not establish a maritime EEZ or continental shelf boundary between the two states, and instead provides for equal sovereign rights applying in the JDZ.⁶⁸

Fox commented that the Agreement was the first to establish a Joint Commission to control activities in the JDZ, compared to earlier agreements which generally adopted concurrent licensing regimes with joint ventures licenced by both states.⁶⁹ The Agreement provides that it shall not affect the status of the high seas or obstruct navigation within the limits provided by international law.⁷⁰ The Agreement does not contain provisions for the protection of the marine environment.

Research was conducted from 1969 to 1981 on the Atlantis 2 Deep site in the Common Zone, initiated by Sudan and supported by the Saudi Sudanese Commission for the Exploitation of the Red Sea Resources. The Commission awarded a licence in 2010 to the Saudi Arabian company, Manafie International Company Ltd.⁷¹ The licence allows exploitation of copper, zinc, gold and silver over 30 years. The potential revenue of the site is estimated at up to USD 8.2 billion from copper, zinc, silver, and gold, and up to USD 2.9 billion from manganese and cobalt.⁷²

The Common Zone has not had significant oil and gas development activity, and the JDZ may become significant as the first JDZ to relate to seabed mineral resources rather than oil and gas.⁷³ The related Atlantis 2 Deep (A2D) site has been described as follows, 'With regard to the law of the sea, the A2D is, next to the Timor Gap, one of the most relevant resource deposits worldwide.'⁷⁴

H. Japan/South Korea Agreement, 1974

⁶⁸ Ibid art 5.

⁶⁹ Fox et al, above n 28.

⁷⁰ *Sudan/Saudi Arabia Agreement*, 16 May 1974, 952 UNTS 198 (entered into force 16 May 1974) art 15.

⁷¹ Government of Southern Sudan Natural Resources Management Group, 'Sudan Saudi Arabia Sign Mining License' (Press Release, 31 May 2010)

<<http://www.ssudan-nrmg.org/nrmg/index.php?start=30>> at 31 July 2012.

⁷² Christine Bertram, Anna Krättschell, Killian O'Brien et al, 'Metalliferous Sediments in the Atlantis II Deep – Assessing the Geological and Economic Resource Potential and Legal Constraints' (2011) *Kiel Working Paper* no. 1688.

⁷³ Ibid. The area concerned is considered to hold significant resources of copper, zinc, silver, gold, manganese and cobalt. In the longer term, however, significant shortages may apply to other non-oil and gas resources, for example rare earths elements (REE).

⁷⁴ Ibid.

Japan and the Republic of Korea (South Korea) made an agreement in 1974 in respect of the disputed southern region of the continental shelf in the Yellow Sea and the East China Sea.⁷⁵ The JDZ concerns overlapping claims, where Korea's claim is based on an extension of the continental shelf, and Japan's claim is based on an equidistance line between Japan and Korea. The Agreement provides that nothing in the Agreement shall be regarded as determining the question of sovereign rights over all or any portion of the JDZ, or prejudicing the position of either party with respect to the delimitation of the continental shelf.⁷⁶ The Agreement established a JDZ for the development of petroleum resources in the overlapping area (see Illustration 3–8).⁷⁷

China considered that it had a potential claim to the JDZ area, and protested the Agreement.⁷⁸ The Agreement is therefore significant as an early example where there are more than two state parties with potential claims to the JDZ area, and accordingly where a JDZ has not fully resolved disputes for a particular area, which would require a multilateral agreement between all the states with continental shelf claims. The Agreement requires the parties to agree on measures to be undertaken to prevent and remove pollution of the sea resulting from exploration or exploitation of natural resources in the JDZ.⁷⁹

Miyoshi commented that prior to 1990 negotiations with oil companies were not successful. He considered the limitation of the Agreement to be the requirement for an agreement between oil companies from both countries for particular projects in the JDZ.⁸⁰ There has however been significant more recent exploration. The Korean National Oil Corporation (KNOC) reported that in 2002 it conducted seismic acquisition programs and drilled seven wells, three of which discovered oil and gas. KNOC, Japan Petroleum Exploration Co. Ltd and Teikoku Oil have conducted a joint study on petroleum potentials in the JDZ area from 2004.⁸¹

⁷⁵ *Agreement between Japan and the Republic of Korea concerning the Joint Development of the Southern part of the Continental Shelf adjacent to the Two Countries*, 30 January 1974, 1225 UNTS 104 (entered into force 22 June 1978) ('*Japan/Korea Agreement*').

⁷⁶ *Japan/Korea Agreement* art 28.

⁷⁷ Miyoshi, above n 30, 13.

⁷⁸ Fox et al, above n 28, 59.

⁷⁹ *Japan/Korea Agreement*, art 20.

⁸⁰ Masahiro Miyoshi, 'Japan South Korea Joint Development', in Fox et al, above n 28, 96. No development had been undertaken in the JDZ to that date, possibly because there were no compensation arrangements for potential damage to fisheries.

⁸¹ Korea National Oil Corporation (KNOC) - Operations - Korea, <http://www.knoc.co.kr/ENG/sub03/sub03_1_1_4.jsp> at 2 October 2012.

I. United Kingdom/Norway Agreement – Frigg Field Reservoir, 1976

In 1976, the United Kingdom and Norway agreed to a JDZ relating to the unitisation of a common petroleum deposit at the Frigg oilfield which straddled the continental shelf between the two countries.⁸² The JDZ followed an earlier 1965 agreement on the delimitation of the continental shelf maritime boundary.⁸³ The JDZ provided that the proceeds derived from the field, and the costs of development, were to be allocated according to that portion of the deposit lying within the jurisdiction of the respective parties, generally resulting in a 60 per cent share to Norway, and 40 per cent share to the United Kingdom (see Illustration 3–9).⁸⁴ Accordingly the JDZ was made for the purpose of effective exploitation of an oil and gas field where the boundary had previously been agreed, and is an example of the broader use of JDZs for economically efficient exploitation of oil and gas, rather than to determine a maritime boundary or to share resources where a boundary cannot be agreed.⁸⁵ Unitisation agreements are therefore less relevant to resolution of potential resource conflicts. Similar unitisation agreements in the North Sea include the Statfjord,⁸⁶ and Murchison,⁸⁷ agreements between the United Kingdom and Norway, and the Markham agreement between the United Kingdom and the Netherlands.⁸⁸

The Agreement was intended to allow unitisation of the field as a single deposit irrespective of the maritime boundary. The agreement was made to conserve and make the best use of resources, prevent disputes between different parties, pool technical

⁸² *Agreement Between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of the Kingdom of Norway relating to the Exploitation of the Frigg Field reservoir and the Transmission of Gas therefrom to the United Kingdom*, 10 May 1976, 1098 UNTS 4 (entered into force 22 July 1977) ('United Kingdom/Norway Agreement').

⁸³ *Agreement between the United Kingdom and Norway relating to the delimitation of the Continental Shelf between the Two Countries*, 10 March 1965, 551 UNTS 214 (entered into force 29 June 1965).

⁸⁴ University of Aberdeen – Politics Economics and Society

<http://www.abdn.ac.uk/historic/energyarchive/pdf/Pol%20Ec%20&%20Soc.pdf>

⁸⁵ For reference on common petroleum deposits that straddle international boundaries see: William T. Onorato, 'Apportionment of an International Common Petroleum Deposit' (1977) 26(2) *The International and Comparative Law Quarterly* 324.

⁸⁶ *Agreement between the Government of the Kingdom of Norway and the Government of the United Kingdom of Great Britain and Northern Ireland relating to the exploitation of the Statfjord Field Reservoirs and the offtake of petroleum therefrom*, 16 October 1979, 1254 UNTS 379.

⁸⁷ *Agreement between the Government of the Kingdom of Norway and the Government of the United Kingdom of Great Britain and Northern Ireland relating to the exploitation of the Murchison Field Reservoir and the offtake of petroleum therefrom*, 16 October 1979, 1254 UNTS 173.

⁸⁸ *Agreement between the Government of the United Kingdom of Great Britain and Northern Ireland and the Netherlands relating to the exploitation of the Markham Field Reservoirs and the offtake of petroleum therefrom*, 26 May 1992, 1731 UNTS 155.

information, means and equipment, and reduce and rationalise the costs of exploitation.⁸⁹

The Agreement requires the resources of the Frigg field to be apportioned by agreement on the basis of the proportions of reserves on the United Kingdom and Norwegian sides of the maritime boundary.⁹⁰ Activities were to be undertaken by licensees of both states under a single Unit Operator which must be approved by both states.⁹¹

The United Kingdom and Norway retain their jurisdiction over activities in their respective continental shelf areas.⁹² The two states are required to ensure that the exploitation of gas, installations or pipelines do not cause pollution to the marine environment and coastline of each state.⁹³

J. Malaysia/Thailand Agreement – Joint Development Area, 1979 and 1990

The Agreement between Malaysia and Thailand was made in 1979,⁹⁴ and established a JDZ for a disputed area of approximately 7,250 square kilometres in the Gulf of Thailand which was subject to continental shelf claims by both states (see Illustration 3–10).⁹⁵ The 1979 Agreement was followed by the 1990 Agreement on the constitution and other matters relating to the establishment of the Malaysia-Thailand Joint Authority.⁹⁶ David M Ong commented that the 1990 Agreement was the culmination of over 10 years negotiation, and that the 1979 Agreement was essentially an expression of interest.⁹⁷

⁸⁹ Keith W Blinn et al, *International Petroleum Exploration and Exploitation Agreements* (The Barrows Company Inc, 1986) 210.

⁹⁰ *United Kingdom/Norway Agreement*, art 2(2).

⁹¹ *Ibid* art 5.

⁹² *Ibid* art 29(2).

⁹³ *Ibid* art 23.

⁹⁴ *Memorandum of Understanding between the Kingdom of Thailand and Malaysia on the Establishment of a Joint Authority for the Exploitation of the Resources of the Sea-Bed in a Defined Area of the Continental Shelf of the two countries in the Gulf of Thailand*, 21 September 1979, reprinted in Jonathan I Charney and Lewis M Alexander (eds), *International Maritime Boundaries* (Martinus Nijhoff, 1993) vol 1, 1099 (entered into force 24 October 1979) ('*Thailand/Malaysia Agreement*').

⁹⁵ Miyoshi, above n 30, 15.

⁹⁶ *Agreement between the Government of Malaysia and the Government of the Kingdom of Thailand on the Constitution and Other Matters relating to the Establishment of the Malaysia-Thailand Joint Authority*, 30 May 1990

<<http://cil.nus.edu.sg/1990/1990-agreement-between-the-government-of-malaysia-and-the-government-of-the-kingdom-of-thailand-on-the-constitution-and-other-matters-relating-to-the-establishment-of-the-malaysia-thailand-joint-autho/>> on 15 January 2013 (entered into force 30 May 1990).

⁹⁷ David M. Ong, '1979 and 1990 Malaysia Thailand Joint Development Agreements: A Model for International Legal Cooperation in Common Offshore Petroleum Deposits?' (1999) 14(2) *The International Journal of Marine and Coastal Law* 213.

The maritime boundary dispute arose as Thailand claimed a continental shelf with the Thai island of Ko Losin as a base point, whereas Malaysia did not accept that the island could be used as a baseline.⁹⁸ The two states were therefore not able to agree on a boundary, but wanted to provide for the joint exploitation of non-living resources of the seabed and subsoil.

The 1979 Agreement provided that the maritime boundary and sovereign rights of the states are not prejudiced by the Agreement.⁹⁹ The Malaysia-Thailand Joint Authority was established with equal membership from each state, and exercises all powers necessary for the exploration and exploitation of the resources of the JDZ.¹⁰⁰ The Agreement requires the states and the Joint Authority to reach agreement in relation to resources which straddle the JDZ so that expenses and benefits are equitably shared.¹⁰¹ Each state's rights in respect of prevention and control of marine pollution are extended to the JDZ resulting in an overlapping jurisdiction for protection of the environment.¹⁰²

The JDZ is significant because of prior oil and gas licences in the JDZ area. The BIICL Review notes difficulties integrating the JDZ with exploration licences granted before the creation of the JDZ.¹⁰³ Ian Townsend-Gault commented that Thailand was, however, willing to accept that the related fields were subject to the JDZ.¹⁰⁴ The JDZ is also significant because part of the area is claimed by Vietnam, referred to as the Tripartite Overlapping Claim Area. The JDZ is in current production, including 10 million barrels produced from Block A-18 of the Cakerawala oilfield in 2010.¹⁰⁵

K. Iceland/Norway Agreement – Jan Mayen Island Treaty Area, 1981

⁹⁸ Tara Davenport, 'Joint Development in Asia: Lessons for sustainable Peace in the South China Sea', (Paper presented at 8th Asian Law Institute Conference, Kyushu, 26 and 27 May 2011) at <<http://cil.nus.edu.sg/wp/wp-content/uploads/2011/06/TaraDavenport-ASLI-Joint-Development-as-a-tool-for-peace-4-April-2011-v2.pdf>> at 1 August 2012.

⁹⁹ *Thailand/Malaysia Agreement* art 5.

¹⁰⁰ *Ibid* arts 3(3) and 3(4).

¹⁰¹ *Ibid* art 3(3).

¹⁰² *Ibid* art 4(1).

¹⁰³ Fox et al, above n 28, 62. Thailand granted the concessions to Triton Petroleum Corporation ('Triton').

¹⁰⁴ Ian Townsend-Gault, 'The Impact of a Joint development Zone on Previously Granted Interests' in Hazel Fox (ed), *Joint Development of Offshore Oil and Gas, A Model Agreement for States for Joint Development with Explanatory Commentary* (British Institute of International and Comparative Law, 1990), vol 2, 106. Triton had not agreed as at the time of the BIICL Review.

¹⁰⁵ Malaysia Thailand Joint Authority, 'Milestone and Progress of Malaysia Thailand Joint Authority' <<http://www.mtja.org/chronicle>> at 25 July 2012.

Iceland and Norway entered into an Agreement in relation to the Continental Shelf in 1981,¹⁰⁶ which included a JDZ area (see Illustration 3–11).¹⁰⁷ The Agreement followed agreements on the EEZ in 1980 and 1981,¹⁰⁸ which generally provided a 200 nautical mile EEZ to Iceland, generally based on Iceland's size relative to Norway's Jan Mayen Island, rather than being based on equidistance.¹⁰⁹

The continental shelf boundary between Iceland and the Norwegian island of Jan Mayen was referred to a Conciliation Commission.¹¹⁰ The Commission did not recommend a new continental shelf boundary, but instead recommended that the same line as the EEZ boundary should apply, together with a JDZ overlapping the EEZ boundary.¹¹¹

Iceland and Norway entered into the Agreement in 1981,¹¹² establishing a JDZ based on the recommendations of the Conciliation Commission. The Agreement provided that the continental shelf boundary is the same as the EEZ, accordingly the Agreement does establish state sovereignty and a final boundary for competing continental shelf claims.¹¹³

The JDZ extends approximately 12,720 square kilometres on the Icelandic side of the maritime boundary, and 32,750 square kilometres on the Norwegian side. The JDZ provides that a 25 per cent share in petroleum activities from the JDZ inside the boundary of one state shall go to the other state.¹¹⁴

¹⁰⁶ *Agreement between Norway and Iceland on the Continental Shelf between Iceland and Jan Mayen*, signed 22 October 1981, 2124 UNTS 262, (entered into force 2 June 1982), (*Norway/Iceland Agreement*).

¹⁰⁷ Arctic Economics <http://arcticecon.wordpress.com/tag/maritime-boundary/> at 14 December 2012.

¹⁰⁸ *Norway/Iceland Agreement*.

¹⁰⁹ Alex G Oude Elferink 'Arctic Maritime Delimitations' in Alex G Oude Elferink and Donald R Rothwell (eds), *The Law of the Sea and Polar Maritime Delimitation and Jurisdiction* (Martinus Nijhoff, 2001) 179, 183.

¹¹⁰ Miyoshi, above n 30, 34. Iceland claimed a continental shelf based on its coast, and Norway claimed a continental shelf based on the Norwegian Jan Mayen Island.

¹¹¹ Report and Recommendation to the Governments of Iceland and Norway of the Conciliation Commission on the Continental Shelf Area between Iceland and Jan Mayen (1981) 20 ILM 825.

¹¹² *Norway/Iceland Agreement*.

¹¹³ *Ibid* art 1.

¹¹⁴ *Ibid* arts 5 and 7. Each state is required to share the costs of surveys on the same percentage basis. In relation to the costs of exploration, Norway is required to seek that the costs of exploration are met by the companies contracting to undertake the developments up until commercial finds are declared. Iceland is not required to participate in these costs of exploration on the Norwegian side however, but may subsequently choose to participate in development if it meets its percentage of the exploration costs. Each country is required to meet its percentage share of costs for the further development of the field after a commercial discovery is declared in proportion to its percentage interest in production.

The Agreement provides for the unitisation of deposits which straddle the JDZ and either country's OCS outside the JDZ.¹¹⁵ The environmental protection provisions of each state apply on their respective sides of the boundary.¹¹⁶

L. Vietnam/Cambodia Agreement, 1982 – Historic Waters

Vietnam and Cambodia entered into a JDZ agreement in 1982.¹¹⁷ The Agreement relates to a JDZ for the historic waters of the continental shelf between Cambodia and Vietnam as adjoining states (see Illustration 3–12).¹¹⁸ The Agreement is an 'in principle' agreement, as there is no detailed JDZ regime established, and provides that the boundary is to be delimited in the future.¹¹⁹ The Agreement states that 'The exploitation of natural resources in this zone will be decided by common agreement.'¹²⁰

The boundary issue is primarily affected by the large Vietnamese island of Phu Quoc near the coast. Sovereignty of Phu Quoc was also claimed by Cambodia.¹²¹ The historic waters JDZ area is a rectangular area south west of Phu Quoc, giving Cambodia rights beyond the equidistance line nearer the coast, and Vietnam rights beyond the equidistance line further from the coast. The Agreement does not contain provisions for the protection of the marine environment.

The Agreement is significant because it was related to Cambodia's agreement to Vietnamese sovereignty of Phu Quoc Island. Vietnam gained Cambodian agreement to Vietnamese sovereignty over the island, while the JDZ gave Cambodia equal rights to the sea area beyond the island coast. The Agreement was made during the Vietnamese occupation of Cambodia. There is a significant issue as to whether there will be ongoing Cambodian acceptance of the agreement.

¹¹⁵ *Norway/Iceland Agreement* art 8.

¹¹⁶ *Ibid* arts 5 and 6.

¹¹⁷ *Agreement on Historic Waters of Vietnam and Kampuchea*, 7 July 1982, *International Maritime Boundaries*, vols 2-3, 2364, (entered into force 7 July 1982) ('*Vietnam/Cambodia Agreement*').

¹¹⁸ Nguyen Hong Thao 'Joint Development in the Gulf of Thailand' [1999] *IBRU Boundary and Security Bulletin* 79, 80.

¹¹⁹ *Vietnam/Cambodia Agreement* art 2.

¹²⁰ *Ibid* art 3.

¹²¹ John Robert Victor Prescott and Clive H Schofield, 'Undelimited Maritime Boundaries of the Asian Rim in the Pacific Ocean', *IBRU Maritime Briefing* (2001) 9. The likely equidistance line extends south westwards from Phu Quoc, then generally southwest influenced by either the Cambodian Dapond Reef low tide elevation, or Cambodian Poulo Wai island to the north, and the Vietnamese Tho Chu Island to the south. Cambodia had a claim based on sovereignty Phu Quoc. Cambodia also had a claim due to the French colonial boundary made by the French Governor-General Jules Brevié in 1939, which extended southwest from Phu Quoc. The determination of the equidistance line is also subject to classification of islands islets and reefs.

M. Tunisia/Libya Agreements, 1988

Tunisia and Libya made two agreements relating to JDZs in 1988.¹²² The agreements have not been made public. Masahiro Miyoshi describes one agreement as establishing a JDZ in two parts, divided approximately by a line running close to the boundary indicated by the 1982 ICJ decision.¹²³ The JDZ is on the Tunisian side of the equidistance line between the two states, and the agreement provides for a joint Tunisian/Libyan exploration company (see Illustration 3–13).¹²⁴ Miyoshi describes the second agreement as providing Tunisia with 10 per cent of the income from the El Bouri oilfield on the Libyan continental shelf. Fox commented that the result of the agreements is similar to the system of joint exploration proposed by Judge Evensen, one of the dissenting judges in the ICJ case.¹²⁵

The Agreement followed the ICJ decision in the case between the Tunisia and Libya over the continental shelf boundary.¹²⁶ The ICJ declined to apply the equidistance principle in the case, applying 'equitable principles and taking into account all relevant circumstances.' Following the case, Tunisia and Libya entered into a related boundary agreement in 1988.¹²⁷ It is not known whether the agreements contain provisions for the protection of the marine environment.

The activities in the JDZ have since been undertaken by the Libyan-Tunisian Joint Oil Company, which is jointly owned by Tunisia and Libya. Oil and gas activities may have been disrupted by the 2011 revolution in Libya, however exploration activities by the

¹²² *Agreement between President Ben Ali of Tunisia and Colonel Qadhafi of the Libyan Arab Jamahiriya relating to the El Bouri Field*, 4 September 1988 (Not publicly released), analysed in Miyoshi, above n 30, 34 ('*Libya/Tunisia Agreement*').

¹²³ Miyoshi, above n 30, 34.

¹²⁴ Sonde Resources <<http://www.sonderesources.com/operations/international/tunisia-libya>> at 12 February 2013.

¹²⁵ Fox et al, above n 28, 63.

¹²⁶ *Case brought by the Republic of Tunisia and the Socialist People's Libyan Arab Jamahiriya over their Continental Shelf Boundary* [1982] ICJ Rep 18.

¹²⁷ *Agreement between the Libyan Arab Socialist People's Jamahiriya and the Republic of Tunisia to Implement the Judgment of the International Court of Justice in the Tunisia/Libya Continental Shelf Case*, 8 August 1988, United Nations Delimitation Treaties Infobase <<http://www.un.org/Depts/los/legislationandtreaties/pdffiles/treaties/LBY-TUN1988CS.pdf>> at 25 July 2012, (entered into force 8 August 1988) ('*Libya/Tunisia Agreement*').

Canadian company Sonde Resources Corp include a 768,000 acre Joint Oil Block crossing the maritime border of Tunisia and Libya.¹²⁸

N. Australia/Indonesia Agreement – Timor Gap Treaty, 1989

Australia and Indonesia entered into an agreement to establish a JDZ in 1989 ('Timor Gap Treaty').¹²⁹ The JDZ comprised three zones (see Illustration 3–14).¹³⁰ Following the independence of Timor-Leste (East Timor), the Timor Gap treaty was replaced by the Timor Sea Treaty and related agreements between Australia and Timor-Leste discussed below.¹³¹

The region has been referred to as the Timor Gap, as no related treaty was negotiated with Portugal, and the boundary in the region was left undetermined under the 1972 maritime boundary agreement between Australian and Indonesia.¹³² Australia's claim was based on prolongation of the continental shelf. Indonesia's claim was based on equidistance of the opposite coasts.¹³³ The Treaty did not delimit the maritime boundary, and provided that it did not prejudice the position of either state under a permanent continental shelf delimitation.¹³⁴

The Treaty established a Zone of Cooperation with three areas. Area A was the central area between the two opposite coasts, with a joint control regime, and providing for equal revenue sharing between the two countries. Area B was on the Australian side, with Australian control and revenue sharing with Indonesia, and Area C was on the Indonesian side, with Indonesian control and revenue sharing with Australia.¹³⁵ The

¹²⁸ Sond Resources, *Tunisia/Libya*, <<http://www.sonderesources.com/operations/international/tunisia-libya>> at 25 July 2012. Sonde Resources Corp is a sole contractor under a Joint Oil Block Exploration and Production Sharing Agreement with the Libyan-Tunisian Joint Oil Company

¹²⁹ *Treaty between Australia and the Republic of Indonesia in the Zone of Cooperation in an Area between the Indonesian Province of East Timor and Northern Australia*, 11 December 1989, 1654 UNTS 106, (entered into force 9 February 1991, terminated on independence of Timor-Leste in April 2003) ('*Timor Gap Treaty*').

¹³⁰ 'Timor Sea Treaty' Australian Agreements, Treaties and Negotiated Settlements database (ATNS) <<http://www.atns.net.au/objects/Timor.JPG>> at 5 February 2013.

¹³¹ *Timor Sea Treaty*, 20 May 2002, 2258 UNTS 3 (entered into force 2 April 2003) ('*Timor Sea Treaty*').

¹³² *Agreement between the Government of the Commonwealth of Australia and the Government of the Republic of Indonesia Establishing Certain Seabed Boundaries in the Area of the Timor and Arafura Seas Supplementary to the Agreement of 18 May 1971*, 9 October 1972, 974 UNTS 319 (entered into force 8 November 1973) ('*Australia/Indonesia Boundary Agreement*').

¹³³ Mark Valencia and Masahiro Miyoshi, 'Southeast Asian Seas: Joint Development of Hydrocarbons in overlapping Claim Areas' (1996) 16 *Ocean Development and International Law* 211, 229.

¹³⁴ *Timor Gap Treaty* art 2(3) (entered into force 9 February 1991).

¹³⁵ *Ibid* art 2(2).

Treaty established a Ministerial Council with overall authority for the management of activities in Area A,¹³⁶ and a Joint Authority for management of activities in Area A.¹³⁷

The Treaty required the states to cooperate to prevent and minimise pollution of the marine environment arising from exploration and exploitation in Area A.¹³⁸ The Joint Authority was responsible for issuing regulations relating to environmental protection,¹³⁹ and developing a contingency plan for combatting pollution.¹⁴⁰

The Treaty is significant as many countries did not recognize Indonesian sovereignty over Timor-Leste, and therefore raised the issue of whether a bilateral treaty should be binding on the two countries concerned where the basis is not accepted by the majority of states.¹⁴¹ The Treaty was also significant as the precursor to the Timor Sea Treaty relating to the same region, made following the independence of Timor-Leste.¹⁴²

O. Malaysia/Vietnam Agreement, 1992

Malaysia and Vietnam agreed to establish a JDZ over a 'Defined Area' in 1992.¹⁴³ The Defined Area related to the overlapping claims of the two states, and the Agreement provided for exploration and exploitation of petroleum resources in the Defined Area 'pending final delimitation of the boundary lines of their continental shelves'.¹⁴⁴ The Defined Area has a length over 100 nautical miles, and width less than 10 nautical miles (see Illustration 3–15).¹⁴⁵

The Area runs in a south east to north west direction between the 1971 continental shelf claim of South Vietnam (now Vietnam), and the 1979 continental shelf claim of

¹³⁶ Ibid art 6(1).

¹³⁷ Ibid art 8. The Joint Authority was subject to control of the Ministerial Council.

¹³⁸ Ibid art 18(1).

¹³⁹ Ibid art 18(1)(j).

¹⁴⁰ Ibid art 18(2).

¹⁴¹ *Case Concerning East Timor (Portugal v Australia)* [1995] ICJ Rep 90. Portugal was the former colonial power over Timor-Leste, and had challenged the Agreement before the International Court of Justice (ICJ) on the basis that the Indonesian occupation of Timor-Leste was illegal under international law. The ICJ declined to exercise jurisdiction in the absence of Indonesia.

¹⁴² *Timor Sea Treaty*.

¹⁴³ *Memorandum of Understanding between Malaysia and the Socialist Republic of Vietnam for the Exploration and Exploitation of Petroleum in a Defined Area of the Continental Shelf Between the Two Countries*, 5 June 1992, National University of Singapore - Centre for International Law <<http://cil.nus.edu.sg/rp/il/pdf/1992%20MOU%20between%20Malaysia%20and%20Vietnam%20for%20the%20Exploration%20and%20Exploitation%20of%20Petroleum-pdf.pdf>> at 31 July 2012 (entered into force 4 June 1993) ('*Malaysia/Vietnam Agreement*').

¹⁴⁴ *Malaysia/Vietnam Agreement* art 2(1).

¹⁴⁵ Miyoshi, above n 30, 15.

Malaysia, with the north west boundary adjoining the boundary of the Thailand/Malaysia 1979 JDZ. The Malaysian boundary claim relating to this area was made on the basis of giving effect to Redang Island without adjustment for Vietnamese offshore islands. The Vietnamese claim was made on the basis of an equidistance line between the Malaysian and Vietnamese mainlands without adjustment for offshore islands.¹⁴⁶

A related commercial agreement between the Malaysian state oil company Petronas,¹⁴⁷ and the Vietnamese state oil company Petrovietnam,¹⁴⁸ was made in 1993 to establish the Co-ordination Committee to implement the 1992 Agreement.

The Agreement provided that Malaysia and Vietnam would nominate Petronas and Petrovietnam respectively to undertake operations in the Defined Area.¹⁴⁹ Miyoshi comments that 'as Vietnam was not well prepared for the scheme of co-operation with Malaysia, Petronas was to carry out all joint development operations and provide Petrovietnam with an equal share of the net revenue.'¹⁵⁰ Malaysia had entered into a continuance of a 1989 Production Sharing Contract (PSC) signed by Petronas, however this was modified to add Petrovietnam as a party.¹⁵¹ The Agreement did not contain provisions for the protection of the environment. The related tax returns are prepared under Malaysian tax rules. Half the tax is then paid to Malaysia, and half paid to Vietnam.¹⁵² The first petroleum was produced from the Bunga Kekwa field in the Defined Zone in 1997.¹⁵³

¹⁴⁶ Jonathan I Charney, et al. *International Maritime Boundaries* (Martinus Nijhoff, 1998) vol 3, 2335.

¹⁴⁷ Petroliam Nasional Berhad, ('Petronas').

¹⁴⁸ Petrovietnam Oil and Gas Group ('Petrovietnam').

¹⁴⁹ *Malaysia/Vietnam Agreement* art 3.

¹⁵⁰ Masahiro Miyoshi, *Seabed Petroleum in the East China Sea: Law of the Sea Issues and the Prospects for Joint Development* <http://www.wilsoncenter.org/sites/default/files/Miyoshi_Masahiro.pdf> at 31 July 2012, 9. It has also been argued that similar to the position between Malaysia and Vietnam, the differences in the regulatory and management capacities of Australia and East Timor were also a significant impetus for East Timor to enter into the 2002 Australia-East Timor JDA, 'Conference on Joint Development and the South China Sea', (Conference Report, at Conference on Joint Development and the South China Sea, Singapore, 16–17 June 2011), <<http://cil.nus.edu.sg/wp/wp-content/uploads/2011/06/Report-of-CIL-Conference-on-Joint-Development-and-the-South-China-Sea-2011-04.08.2011.pdf>> at 31 July 2012.

¹⁵¹ Lan-Anh T Nguyen, *Joint Development between Malaysia and Vietnam*

<<http://cil.nus.edu.sg/wp/wp-content/uploads/2011/06/Session-5-Lan-Anh-Joint-development-between-Malaysia-Vietnam-pdf.pdf>> at 31 July 2012.

¹⁵² This arrangement differs from the Malaysia/Thailand JDZ, where tax is determined in separate tax returns under each state's tax rules, with half the tax calculated then paid to the respective government.

¹⁵³ Nguyen, above n 151.

P. Guinea-Bissau/Senegal Agreement, 1993

Guinea-Bissau and Senegal entered into an agreement in 1993 to establish a JDZ.¹⁵⁴ The Agreement establishes the 'Area' as the maritime zone extending from the coastal boundary between the two states at Cape Roxo, in an arc to seaward extending from Cape Roxo between 268° and 220° (see Illustration 3–16).¹⁵⁵

The background to the JDZ Agreement included an international arbitration tribunal award in 1989, and related decision of the ICJ in 1990. The background to the dispute was an agreement in 1960 between the colonial powers France and Portugal to delimit the maritime boundary as extending at an angle of 240° to the south west from the land boundary. Senegal and Guinea-Bissau submitted a dispute to an Arbitration Tribunal as to whether the Agreement of 1960 had the force of law, and if not, to define the maritime boundary. The Arbitration Tribunal held that the 1960 Agreement had the force of law to define the territorial sea, contiguous zone and continental shelf, but did not define the EEZ as this area had been developed after the 1960 Agreement.¹⁵⁶

The JDZ Agreement established an International Agency for the exploitation of the zone.¹⁵⁷ The JDZ agreement is unusual in that the division of fishery resources provides a 50 per cent share to each state, whereas resources from the continental shelf are shared 85 per cent to Senegal, and 15 per cent to Guinea-Bissau.¹⁵⁸

Senegal and Guinea-Bissau entered into a related Protocol in 1995 for organisation and operations of the Management and Cooperation Agency under the 1993 Agreement.¹⁵⁹ The Protocol also contains provisions for the protection of the marine environment.¹⁶⁰

¹⁵⁴ *Agreement on Management and Cooperation between the Government of the Republic of Guinea-Bissau and the Government of the Republic of Senegal*, 14 October 1993, 1993 UNTS 64, (entered into force 21 December 1995), ('*Guinea-Bissau/Senegal Agreement*').

¹⁵⁵ Miyoshi, above n 30, 39.

¹⁵⁶ *Arbitral Award of 31 July 1989 (Guinea-Bissau v. Senegal)*, Summaries of the Decisions, *World Court Digest*, Max Planck Institute for Comparative Public Law and International Law <http://www.mpil.de/ww/en/pub/research/details/publications/institute/wcd.cfm?fuseaction_wcd=aktdat&aktdat=dec0202.cfm> at 3 August 2012. Guinea-Bissau instituted proceedings against Senegal in 1989 concerning the validity of the arbitral award, and proceedings in 1991 requesting the ICJ to delimiting the maritime boundary. The ICJ cases were discontinued following the Agreement for the JDZ in 1993.

¹⁵⁷ *Guinea-Bissau/Senegal Agreement*, art 4.

¹⁵⁸ *Ibid* art, 2. The ratio can also be changed depending on the proportions of resources discovered.

¹⁵⁹ *Protocol to the Agreement between the Republic of Guinea-Bissau and the Republic of Senegal concerning the organization and Operation of the Management and Cooperation Agency Established by the Agreement of 14 October 1993*, 14 October 1993, 1993 UNTS 66 (entered into force 21 December 1995) ('*Guinea-Bissau/Senegal Protocol*').

¹⁶⁰ *Ibid* art 23.

The Protocol requires the state parties to cooperate with the Agency to prevent or minimise pollution,¹⁶¹ and states that the Agency shall lay down regulations to protect the marine environment in the Area.¹⁶²

Q. Jamaica/Columbia Agreement – Joint Regime Area, 1993

Jamaica and Columbia made an Agreement in 1993 to establish the 'Joint Regime Area'.¹⁶³ The Area is to the northwest of the agreed maritime boundary (see Illustration 3–17).¹⁶⁴ The Area is defined as a 'zone of joint management, control, exploration and exploitation of the living and non-living resources'.¹⁶⁵ The Area is provided to be 'pending the determination of the jurisdictional limits of each Party in the Area.' The Area excludes two 12 nautical mile zones around the Serranilla Banks and Baja Nuevo Island.¹⁶⁶ The maritime boundary approximates an equidistance line between the two states measured from the main Jamaican island, and not from the small cays in the south or from archipelagic straight baselines.¹⁶⁷ The Agreement provides that within the Area the states may carry out activities for the protection and preservation of the marine environment.¹⁶⁸

The JDZ is significant as Columbia has agreed a JDZ in view of Jamaica's claimed archipelagic baselines, which include uninhabited rocks. Such rocks may not be used for ordinary baselines,¹⁶⁹ however this restriction does not apply to archipelagic states.

Mention may also be made of two ICJ cases concerning maritime delimitations in the proximity of the Joint Regime Area. The 2007 *Maritime Delimitation between Nicaragua and Honduras in the Caribbean Sea*, which determined the maritime boundary between Nicaragua and Honduras to the west of the Jamaica/Columbia Joint Regime Area. The boundary determined by the ICJ did not overlap the Joint Regime

¹⁶¹ Ibid art 23(1).

¹⁶² Ibid art 23(2).

¹⁶³ *Maritime Delimitation Treaty between Jamaica and the Republic of Columbia*, 12 November 1993, 1776 UNTS 17 (entered into force 14 March 1994) ('*Jamaica/Columbia Treaty*').

¹⁶⁴ Miyoshi, above n 30, 24.

¹⁶⁵ *Jamaica/Columbia Treaty* art 3(1).

¹⁶⁶ Ibid art 3(1).

¹⁶⁷ 'Jamaica's Maritime Claims and Boundaries', 125 *Limits in the Seas*, United States Department of State <<http://www.state.gov/documents/organization/57677.pdf>> at 3 August 2012.

¹⁶⁸ *Jamaica/Columbia Treaty* art 2(d).

¹⁶⁹ *LOSC* art 121(3).

Area.¹⁷⁰ The *Territorial Dispute and Maritime Delimitation between Nicaragua and Colombia* case in 2012 concerned the maritime boundary to the south-east of the Jamaica/Columbia Joint Regime Area. The maritime boundary determined by the ICJ also did not overlap the Joint Regime Area.¹⁷¹

R. Argentina/United Kingdom Agreement – Area of Special Cooperation – South West Atlantic, 1995

Argentina and the United Kingdom issued a Joint Declaration to establish a JDZ in the South West Atlantic in 1995.¹⁷² The JDZ was to the south west of the Falkland (Malvinas) Islands (see Illustrations 3–18,¹⁷³ and 6–5).¹⁷⁴ The JDZ agreement was however cancelled by Argentina in 2007,¹⁷⁵ and the JDZ is a significant example of how JDZ agreements are subject to the political climate in the countries concerned.

Both the United Kingdom and Argentina claim sovereignty over the Falkland Islands. The Argentine claim is based on succession to the rights of Spain, territorial integrity, continental contiguity, occupation, and protest against the United Kingdom's claim. The United Kingdom's claim is based on discovery, the nationality of the islanders living there, and their rights to self-determination. The Falkland Islands were the location of an armed conflict between the United Kingdom and Argentina in 1982. Argentina invaded the islands in 1982, and the United Kingdom recaptured the islands later in that year.¹⁷⁶

Argentina declared a claim to the continental shelf about the islands. In November 1986 the United Kingdom declared a 200 mile continental shelf, which was implemented in November 1991 by the Governor of the Falklands in a proclamation establishing a 400,000 square kilometre continental shelf claim.¹⁷⁷

¹⁷⁰ *Territorial and Maritime Dispute Between Nicaragua and Honduras in the Caribbean Sea (Nicaragua v. Honduras)* [2007] ICJ Rep 145.

¹⁷¹ *Territorial and Maritime Dispute (Nicaragua v. Colombia)*, [2012] ICJ 624.

¹⁷² *Argentina/United Kingdom: Joint Declaration on Cooperation over Offshore Activities in the South West Atlantic*, 27 September 1995, 35 ILM 301 (*Argentina/United Kingdom Agreement*).

¹⁷³ Patrick Armstrong and Vivian Forbes, 'The Falkland Islands and their Adjacent Maritime Area' (1995) 2(3) *IBRU Maritime Briefing*, 27.

¹⁷⁴ Source: 'Argentina and UK claims to maritime jurisdiction in the South Atlantic and Southern Oceans,' IBRU, <https://www.dur.ac.uk/ibru/resources/south_atlantic/> at 20 February 2013.

¹⁷⁵ 'Argentina Ends Falklands Oil Deal', *BBC News*, 28 March 2007 <<http://news.bbc.co.uk/2/hi/americas/6501693.stm>> at 27 July 2012.

¹⁷⁶ Malcolm N Shaw, *International Law* (Cambridge University Press, 6th ed, 2008) 532.

¹⁷⁷ *Falkland Islands Continental Shelf Proclamation*, 17 February 1997, No.1 of 1991, <<http://www.falklands.info/history/95proc.html>> at 14 August 2012.

Diplomatic relations between Argentina and the United Kingdom were restored in 1989 following the restoration of democracy in Argentina. Both countries continue to claim sovereignty over the Falkland Islands and the continental shelf,¹⁷⁸ however improved relations made possible the Joint Declaration in 1995 establishing a Zone of Cooperation of about 20,000 square kilometres extending on both sides of the Falklands continental shelf boundary.

The Declaration provided that exploration and exploitation of hydrocarbons by the offshore oil and gas industry was to be carried out in accordance with sound commercial principles and good oil field practice, drawing upon the Governments' experience both in the South West Atlantic and in the North Sea.¹⁷⁹ The Declaration established a Joint Commission, composed of delegations from both countries.¹⁸⁰ The Joint Commission was responsible for the administration of the JDZ.¹⁸¹ The Declaration provided for coordinated activities in up to 6 tranches of about 3,500 square kilometres.¹⁸² The Declaration provided that it did not change the respective positions of Argentina or the United Kingdom in respect of sovereignty or territorial and maritime jurisdiction.¹⁸³

The Declaration included provisions for the protection of the environment. The Commission was required to submit to both Governments' recommendations and proposed standards for the protection of the marine environment of the South West Atlantic, taking into account relevant international conventions and recommendations of competent international organisations.¹⁸⁴

The Agreement was repudiated by Argentina in 2007.¹⁸⁵ It is understood this was due to the proposed sharing of resources from the Argentine area. The development is

¹⁷⁸ T W Walde and Andrew McHardy, 'Introductory Note, Argentina - United Kingdom: Joint Declaration on Cooperation over Offshore Activities in the South West Atlantic' (1996) 35 ILM 301.

¹⁷⁹ *Argentina/United Kingdom Agreement* art 2.

¹⁸⁰ *Ibid* art 2(a).

¹⁸¹ *Ibid* art 4(b). The roles of the Joint Commission included coordinating activities in the tranches as areas for special cooperation by the establishment of a sub-committee charged with functions including encouraging commercial activities in each tranche by means such as joint ventures, seeking nominations from companies for each tranche, to be offered upon terms appropriate for a challenging environment, making recommendations on proposals made to the two Governments by companies for development projects in each tranche, and seeking close coordination in regard to all aspects of future operations.

¹⁸² *Argentina/United Kingdom Agreement* art 2(b).

¹⁸³ *Ibid* art 1.

¹⁸⁴ *Ibid* art 4(a).

¹⁸⁵ 'Argentina Ends Falklands Oil Deal', *BBC News*, 28 March 2007, at <<http://news.bbc.co.uk/2/hi/americas/6501693.stm>> at 27 July 2012.

significant as it demonstrates that JDZs require continued political support for successful implementation.¹⁸⁶

The United Kingdom made a partial submission to the CLCS in respect of an OCS for the Falkland Islands, South Georgia and the South Sandwich Islands on 11 May 2009.¹⁸⁷ The submission extends to an ocean area south of 60 degrees South latitude, and so potentially within the area subject to the Antarctic Treaty. The submission noted overlapping claims, and requested that the 'partial submission and the recommendations of the Commission made in respect of it will not prejudice matters relating to the delimitation of boundaries.'¹⁸⁸

Argentina made an OCS submission to the CLCS including the Southern Ocean on 21 April 2009.¹⁸⁹ The Argentine OCS submission included the continental shelf extending from the Falklands Islands.

The Falkland Islands region is currently of interest for potential offshore oil and gas. The Falkland Oil and Gas Limited had exploration permits at 2012 to the south and south-east of the Falkland Islands. These permits are adjacent to the prior JDZ area to the south-west of the Islands, but do not extend into that JDA area.¹⁹⁰

S. Nigeria/São Tome and Principe Agreement, 2001

¹⁸⁶ Foreign and Commonwealth Office, Country Profile, 'South America and South Atlantic Islands Falkland Islands (British Overseas Territory)', 27 July 2008 < www.fco.gov.uk >.

¹⁸⁷ United Kingdom *Submission in respect of the Falkland Islands, and of South Georgia and the South Sandwich Islands*, 11 May 2009, <http://www.un.org/Depts/los/clcs_new/submissions_files/submission_gbr_45_2009.htm> at 15 February 2010.

¹⁸⁸ *Ibid* 3. The United Kingdom's submission states:

'In accordance with Article 76 paragraph 10 and Article 9 of Annex II of the Convention, and paragraph 2(a) of Annex 1 to the Commission's Rules of Procedure (CLCS/40/Rev.1), the UK wishes to inform the Commission that the subject of this partial submission is also the subject of a submission by Argentina. In accordance with paragraph 2(b) of Annex I to the Commission's Rules of Procedure, the UK wishes to inform the Commission that, in its view, this partial submission and the recommendations of the Commission made in respect of it will not prejudice matters relating to the delimitation of boundaries between the UK and any other State. The United Kingdom has no doubt about its sovereignty over the Falkland Islands, South Georgia and the South Sandwich Islands and the surrounding maritime areas.'

¹⁸⁹ Outer Limits of the Continental Shelf – Argentine Submission, <http://www.un.org/Depts/los/clcs_new/commission_submissions.htm> at 9 January 2013.

¹⁹⁰ Falkland Oil and Gas Limited, Investor Presentation, November 2011, <<http://www.fogl.com/fogl/uploads/companypresentations/CorporatePresentationnonUSviewer.pdf>> at 3 December 2012, and Falkland Islands Department of Mineral Resources, 'Exploration History' <http://www.bgs.ac.uk/falklands-oil/exp_history.html> at 3 December 2012.

Nigeria entered into a Joint Development Agreement with São Tome and Principe in 2001.¹⁹¹ The JDZ lies between the Nigerian Coast and two islands, and extends to the south west (see Illustration 3–19).¹⁹²

São Tome and Principe comprises two main islands in the Gulf of Guinea south of Nigeria. São Tome and Principe claimed an EEZ and continental shelf based on archipelagic status and Nigeria claimed a median line adjusted for relevant circumstances being the respective coastal lengths.¹⁹³

The Agreement provides for joint control of the exploration for and exploitation of resources, aimed at achieving optimum commercial utilisation, with sharing of all benefits and obligations arising from development activities carried out in the Zone, with 60 per cent allocated to Nigeria, and 40 per cent allocated to São Tome and Principe.¹⁹⁴ The Agreement provided that nothing contained in the Agreement should be interpreted as a renunciation of any right or claim relating to the whole or any part of the Zone by either country.¹⁹⁵

The Agreement establishes a Joint Authority, subject to directions from the Council, to be responsible for the management of activities relating to exploration for and exploitation of the resources in the Zone, including the division of the Zone into contract areas, and the negotiation, tendering for, and issue and supervision of contracts with respect to such areas, entering into development contracts with contractors, subject to the approval of the Council, and oversight and control of the activities of contractors.¹⁹⁶

¹⁹¹ *Treaty between the Federal Republic of Nigeria and the Democratic Republic of São Tome and Principe on the Joint Development of Petroleum and Other Resources, in respect of the Areas of the Exclusive Economic Zones of the Two States*, 21 February 2001 (entered into force 16 January 2003), United Nations - Delimitations Treaties Infobase

<<http://http://www.un.org/Depts/los/legislationandtreaties/statefiles/nga.htm>> at 29 July 2012

(*Nigeria/São Tome and Principe Treaty*).

¹⁹² David A Colson and R W Smith, 'Nigeria and São Tome and Principe, Report No. 4-10', in Jonathan I Charney, David A Colson, Lewis M Alexander (eds) et al, *International Maritime Boundaries* (Martinus Nijhoff, 2005) vol 5, 3638.

¹⁹³ *Ibid* 3640.

¹⁹⁴ *Nigeria/São Tome and Principe Treaty* art 3(1).

¹⁹⁵ *Ibid* art 4(1).

¹⁹⁶ *Ibid* art 9(6).

The day to day administration for the Council, Authority and JDZ is carried out by a Secretariat established by the Authority.¹⁹⁷ The Agreement requires the Authority to prepare the regulatory and tax regimes for exploration and exploitation of petroleum in the Zone.¹⁹⁸ The Agreement requires unitisation of deposits extending beyond the Zone.¹⁹⁹

The Agreement requires that petroleum and other resources of the Zone shall be exploited having due regard to the protection of the marine environment, and in a manner consistent with generally accepted good oilfield and fisheries practice.²⁰⁰ The Joint Authority is required to undertake the prevention or remedying of pollution.²⁰¹ There are substantial drilling activities reported in the JDZ, by Chevron, Addax Petroleum, Anadarko and Sinopec.²⁰²

T. Thailand/Cambodia MOU, 2001 – Overlapping Claims Area

Thailand and Cambodia entered into a Memorandum of Understanding in respect of the Overlapping Claims Area.²⁰³ The region of the overlapping claims comprises approximately 7500 square nautical miles (see Illustration 3–20).²⁰⁴ The overlapping region was divided into two areas. The two states agreed to attempt through further negotiations to define the maritime boundary in the northern area, whereas the states would enter into further negotiations for joint development of the southern area.²⁰⁵

The principal differences between the two claims was that Thailand's claim was based on giving full effect to Thailand's Ko Kut Island to establish the boundary, whereas the

¹⁹⁷ Ibid art 14(1).

¹⁹⁸ Ibid art 21(1).

¹⁹⁹ Ibid art 31(1).

²⁰⁰ Ibid art 3(4).

²⁰¹ Ibid arts 9(6) and 38. These measures include provisions relating to any petroleum spillage or event likely to cause pollution and requiring remedial measures beyond the capacity of the operator; discharge into the sea of large quantities of petroleum from an installation or pipeline, collisions at sea involving damage to an installation or pipeline, and evacuation of personnel from an installation due to force majeure, distress or other emergency.

²⁰² 'Drilling Activities in the Joint Development Zone', Nigeria - São Tome and Principe Joint Development Authority

<http://n-stpjda.com/nstpjda/?page_id=82> at 3 August 2012.

²⁰³ *Memorandum of Understanding between the Royal Thai Government and the Royal Government of Cambodia regarding the Area of their Overlapping Maritime Claims to the Continental Shelf*, 18 June 2001

<http://tncbcc.rtarf.mi.th/pdf/pdf_cam190/07.pdf> at 9 April 2013, ('*Thailand/Cambodia MOU*').

²⁰⁴ Somjade Kongrawd, 'Thailand and Cambodia Maritime Disputes'

<<http://www.navy.mi.th/judge/Files/Thailand%20Cambodia.pdf>> at 9 April 2013.

²⁰⁵ Davenport, above n 98, 21.

Cambodia claim did not give effect to the island, and extends across the island on the basis that the Franco-Siamese Boundary Treaty of 23 March 1907,²⁰⁶ which returned the island to Thailand, established the boundary on the island.

John R V Prescott and Clive H Schofield commented that both claims were likely to be subject to criticism, due to their selective use of island base-points, however Cambodia's claim was 'extremely difficult to sustain' as the claimed boundary gave the Thai island of Ko Kut adjacent to the land boundary no effect.²⁰⁷

The Overlapping Claims Area was estimated to contain up to 11 trillion cubic feet of natural gas, and an underdetermined quantity of oil. Cambodia is reported to have granted conditional licences to Idemitsu and Conocco Phillips.²⁰⁸

The MOU did not set out details of the proposed revenue sharing. Cambodia proposed dividing the disputed area in a checkerboard pattern, creating at least fourteen different blocks. Revenues and management of the blocks would be shared equally. Thailand proposed that the disputed area be divided into three parts running north-south, with the revenue from the central area to be shared equally. The share would be 80/20 to Thailand from the western side, and 80/20 to Cambodia from the eastern side.²⁰⁹

Thailand cancelled the MOU in 2009.²¹⁰ However the *Bangkok Post* has since reported improving Thailand/Cambodia relations in 2011, including renewed Thailand interest in applying the JDZ.²¹¹ Accordingly the JDZ may become an example of a stalled JDZ, which may potentially return into force depending on political changes in Thailand.

²⁰⁶ Franco-Siamese Boundary Treaty of 23 March 1907, (1907) US Foreign Relations 2:1003; UK Cmd. 3578 (1907).

²⁰⁷ Prescott and Schofield, above n 121, 13.

²⁰⁸ 'Oil and Gas blocks' Open Development – Cambodia,

<<http://www.opendevdevelopmentcambodia.net/briefings/oil-and-gas-concessions/>> at 11 April 2013.

²⁰⁹ 'The struggle between Thailand and Cambodia over oil and gas resources' CLC Asia, 16 September 2010

<<http://www.clc-asia.com/the-struggle-between-thailand-and-cambodia-over-oil-and-gas-resources/>> at 24 April 2013.

²¹⁰ 'Thailand-Cambodia dispute: Key points' BBC News, 11 November 2009

<<http://news.bbc.co.uk/2/hi/asia-pacific/8354489.stm>> at 9 April 2013.

²¹¹ 'Oil, Gas and Improving Thai Cambodian Relations' *Bangkok Post*, 18 Nov 2011

<<http://www.bangkokpost.com/business/economics/266790/oil-gas-and-improving-thai-cambodian-relations>> at 9 April 2013.

U. Australia/Timor-Leste Agreement – Timor Sea Treaty, 2002, Sunrise IUA, 2003, and Certain Maritime Arrangements in the Timor Sea (CMATS), 2007

i) Timor Sea Treaty

The Agreement between Australia and Timor-Leste concerns oil and gas in an area of the Timor Sea between the two states (Timor Sea Treaty).²¹² The Agreement is based on the earlier agreement made between Australia and Indonesia in the same region (Timor Gap Treaty) discussed above.²¹³ The Timor Sea Treaty entered into force in 2003.

Australia's claim is based on the natural prolongation of the continental shelf in the Timor Sea. The Timor-Leste claim was based on equidistance between the respective coastlines.²¹⁴ Clive Schofield commented that Australia withdrew from the maritime boundary jurisdiction of the ICJ and ITLOS in March 2002, two months prior to independence of Timor-Leste.²¹⁵

The Timor Sea Treaty established a Joint Petroleum Development Area (JPDA) with joint control of exploration and exploitation.²¹⁶ The JPDA is equivalent to the shared 'Area A' of the prior Australia and Indonesia Timor Gap Treaty (see Illustration 3–21).²¹⁷ Petroleum production from the JPDA is shared 90 per cent to Timor-Leste and 10 per cent to Australia.²¹⁸ This ratio is based on Australian recognition of development needs of Timor-Leste.²¹⁹

The sovereignty of either country in respect of the JPDA is not affected by the Treaty, which provides that it shall not prejudice the position of either state in a permanent continental shelf delimitation.²²⁰ The provisions require the unitisation of reservoirs of

²¹² *Timor Sea Treaty*.

²¹³ *Ibid*.

²¹⁴ Valencia and Miyoshi, above n 133, 229.

²¹⁵ Clive Schofield 'Minding the Gap: The Australia-East Timor Treaty on Certain Maritime Arrangements in the Timor Sea (CMATS)' (2007) 22(2) *International Journal of Marine and Coastal Law* 201.

²¹⁶ *Timor Sea Treaty* art 3(a).

²¹⁷ Australian Government

http://www.ret.gov.au/resources/upstream_petroleum/jpdaandgreater sunrise/Pages/default.aspx at 14 December 2012.

²¹⁸ *Timor Sea Treaty* art 4(a).

²¹⁹ *Ibid*. The prior Australia Indonesia Agreement shared petroleum resources on the basis of 50 per cent to each state.

²²⁰ *Timor Sea Treaty* art 2(b).

petroleum that extend across the boundary of the JPDA.²²¹ The administration of the JPDA is based on a three tier system as follows:²²²

- The Ministerial Council consists of government ministers of both countries. The Council can consider any matter referred to it by Australia or Timor-Leste. Any matter not resolved by the Council can be referred to the dispute resolution procedures;²²³
- The Joint Commission is the policy making level of administration, and consists of commissioners appointed by Australia and Timor-Leste. It is required to establish policies and regulations relating to petroleum activities in the JPDA and oversee the work of the Designated Authority;²²⁴ and
- The Designated Authority is required to carry out the day-to-day regulation and management of petroleum activities.²²⁵

The Treaty requires Australia and Timor-Leste to cooperate to protect the marine environment of the JPDA so as to prevent and minimise pollution from petroleum activities.²²⁶ The Treaty provides more detail than earlier JDZ agreements in relation to the environment including allowing the Designated Authority specific related powers.²²⁷

²²¹ Ibid art 9. These reservoirs are to be treated as a single entity for management and development purposes. Australia and Timor-Leste are required to work expeditiously and in good faith to reach agreement on the manner in which the deposit will be most effectively exploited and on the equitable sharing of the benefits arising from such exploitation.

²²² Ibid art 6(a).

²²³ Ibid art 6(d).

²²⁴ Ibid art 6(c).

²²⁵ Ibid art 6(b). The Designated Authority is initially designated by the Joint Commission, however after three years it shall be the Timor-Leste Government Ministry responsible for petroleum activities or, if so decided by the Ministry, a Timor-Leste statutory authority. It is unusual for one state to have control of such an authority, however this basis is consistent with the 90 per cent allocation of petroleum production to Timor-Leste under the Agreement.

²²⁶ Ibid art 10(a).

²²⁷ Ibid arts 10(b) and 10(c). Article 10(c) and (d) provide:

(c) The Designated Authority shall issue regulations to protect the marine environment in the JPDA. It shall establish a contingency plan for combating pollution from petroleum activities in the JPDA.

(d) Limited liability corporations or limited liability entities shall be liable for damage or expenses incurred as a result of pollution of the marine environment arising out of petroleum activities within the JPDA in accordance with:

(i) Their contract, licence or permit or other form of authority issued pursuant to this Treaty; and
(ii) The law of the jurisdiction (Australia or East Timor) in which the claim is brought.

Gillian Triggs and Dean Bialek highlighted several important changes between the terms of the Timor Sea Treaty and the prior Timor Gap Treaty.²²⁸ These changes included that Timor-Leste derives 90 per cent of the income from the JPDA, and the Joint Commission has two members appointed by Timor-Leste, and Australia appoints one member, giving Timor-Leste control of measures including contracts with third parties for oil and gas development.

ii) Sunrise International Unitisation Agreement (Sunrise IUA), 2003

A related issue concerned the Sunrise and Troubadour offshore oil and gas fields, known as the 'Greater Sunrise' field, which straddled the JPDA, extending to the east beyond the JPDA area. Australia and Timor-Leste signed the Agreement for the Unitisation of the Sunrise and Troubadour Fields, (Sunrise International Unitisation Agreement or Sunrise IUA) in 2003.²²⁹ Timor-Leste was not however satisfied with the revenue share and did not ratify the Agreement. The Agreement was ratified by Timor-Leste in 2007 at the same time as the Treaty on Certain Maritime Arrangements in the Timor Sea (CMATS).²³⁰ The CMATS Treaty, discussed below, essentially modified the revenue share from the Greater Sunrise field to 50 per cent to both states.

Schofield commented that the failure to ratify resulted in the decision by Woodside Energy Ltd not to proceed with the Sunrise project in 2005.²³¹ Schofield also observed that the Sunrise IUA was made on the basis that Australia did not want to extend the JPDA eastwards, as that may have implied some level of recognition of Timor-Leste sovereignty over the seabed resources outside the JPDA.²³² Schofield noted that Australia may also have considered that such an expansion, or 'widening the Gap', could

²²⁸ Gillian Triggs and Dean Bialek, 'The New Timor Sea Treaty and Interim Arrangements for Joint Development of Petroleum resources of the Timor Gap' (2002) 3 *Melbourne Journal of International Law* 322.

²²⁹ *Agreement between the Government of Australia and the Government of the Democratic Republic of Timor-Leste relating to the Unitisation of the Sunrise and Troubadour Fields*, 6 March 2003, [2007] ATS 11 (entered into force 23 February 2007) ('*Australia/Timor-Leste - Sunrise IUA*'). The Agreement deemed 20.1 per cent of the resources of the Greater Sunrise field to be within the JPDA, with 90 per cent of that income to Timor-Leste under the Timor Sea Treaty. Timor-Leste would therefore have received 18.1 per cent of revenue from the field.

²³⁰ *Treaty between Australia and the Democratic Republic of Timor-Leste on Certain Maritime Arrangements in the Timor Sea*, 12 January 2006, [2007] ATS 12, (entered into force 23 February 2007) ('*Australia/Timor-Leste - CMATS Treaty*').

²³¹ Schofield, above n 215, 197.

²³² *Ibid* 202.

have impacted Australia's 1972 maritime boundary treaty with Indonesia.²³³ The 1972 Agreement was based on a boundary determined by the extension of the Australian continental shelf, rather than the more southerly median line between the respective coasts. Accordingly the Sunrise IUA and the CMATS treaty are drafted as a revenue sharing arrangement, with Timor-Leste not obtaining Australian recognition of sovereign rights to the east or west of the JPDA.

iii) CMATS Treaty, 2006

Australia and Timor-Leste signed the Treaty on Certain Maritime Arrangements in the Timor Sea (CMATS),²³⁴ in 2006. CMATS entered into force on 23 February 2007. CMATS combine with the Sunrise IUA and the Timor Sea Treaty to create a JDZ for the Greater Sunrise field, including the area of the field which was outside the JPDA, with equal sharing of benefits, compared to the 90 per cent/10 per cent sharing basis of the Timor Sea Treaty. The related area is subject to the Timor Sea Treaty administration provisions.

CMATS is unusual in establishing a 'water column jurisdiction' line, corresponding with the southern border of the JPDA, providing Australian control over the water column south of the line, and Timor-Leste control north of the line, including the entire JPDA.²³⁵ Australia therefore relinquished rights similar to the EEZ, but has not relinquished seabed rights, consistent with the continental shelf claim based on prolongation of the shelf.

Extensive oil and gas operations are underway in the JDZ, and a summary of the petroleum production profit sharing data between Timor-Leste and Australia during the

²³³ *Agreement between the Government of the Commonwealth of Australia and the Government of the Republic of Indonesia establishing certain seabed boundaries in the area of the Timor and Arafura Seas, Supplementary to the Agreement of 18 May 1971, 9 October 1972, 974 UNTS 320 (entered into force 8 November 1973). The 1972 treaty was based on Australian right to seabed resources based on prolongation of the continental shelf from the Australian coast. The Australian position was based on the 1958 Geneva Convention on the Continental Shelf, where a coastal state has rights over the continental shelf, defined in Article 1 as referring to '(a) to the seabed and subsoil of the submarine areas adjacent to the coast but outside the area of the territorial sea, to a depth of 200 metres or, beyond that limit, to where the depth of the superjacent waters admits of the exploitation of the natural resources of the said areas; (b) to the seabed and subsoil of similar submarine areas adjacent to the coasts of islands.'*

²³⁴ *Australia/Timor-Leste - CMATS Treaty*, 12 January 2006, [2007] ATS 12 (entered into force 23 February 2007).

²³⁵ *Ibid* art 8.

time frame of December 2004 through July 2009 revenue summaries were published in July 2009.²³⁶

The future of the JDZ is however uncertain. The issue became public with media reports in 2013 that the Timor-Leste government was considering cancelling the JDZ agreements.²³⁷ Timor-Leste is understood to require a pipeline from the Greater Sunrise gas field to a processing plant on its coast, which would provide employment and infrastructure. Woodside Petroleum Limited, the principal operator of the field, has stated that such a pipeline would not be commercially viable, and would prefer to build an offshore floating platform. There is a related issue that the Greater Sunrise field would be within Timor-Leste territory if the boundary was based on the equidistance line.²³⁸ This issue developed into referral by Timor-Leste to international arbitration.²³⁹ The arbitration was pursuant to the dispute resolution procedures of the Timor Sea Treaty.²⁴⁰ The related proceedings were listed at the Permanent Court of Arbitration (PCA) in 2014,²⁴¹ however Timor-Leste agreed to suspend the arbitration in September 2014.²⁴²

V. China/Japan Agreement – East China Sea, 2008

China and Japan agreed to a JDZ in June 2008 in the East China Sea.²⁴³ The Agreement was released as a brief statement by Chinese Foreign Ministry Spokesperson Jiang Yu, with no detailed treaty, and therefore awaits a binding agreement to confirm the JDZ.

²³⁶ Revenue Watch Institute, *Timor Sea Designated Authority First Tranche Petroleum and Profit Oil* (2009) <http://www.revenuewatch.org/training/resource_center/timor-sea-designated-authority-first-tranche-petroleum-and-profit-oil> at 15 August 2012.

²³⁷ 'Timor may walk away from gas treaty with Australia', *ABC*, 17 October 2012, <<http://www.abc.net.au/news/2012-10-15/an-timor-to-walk-away-from-treaty/4313128>> at 10 April 2013. Rothwell commented on the effect of the potential cancellation as follows:

When a treaty has been concluded in good faith between two countries, if one of those countries is to unilaterally break the terms of that treaty, that in my view does have a significant impact upon the ongoing relationship between two countries and will inevitably lead to a lack of confidence as to the ability of those countries to reach a new treaty arrangement.

²³⁸ 'Timor-Leste and Australia – Bugs in the Pipeline' *The Economist* (London) 8 June 2013, 52.

²³⁹ Bob Carr, Australian Minister for Foreign Affairs, 'Arbitration under the Timor Sea Treaty' (Press Release, 3 May 2013) <http://foreignminister.gov.au/releases/2013/bc_mr_130503.html> at 17 June 2013.

²⁴⁰ *Timor Sea Treaty*, annex B under art 23.

²⁴¹ *Arbitration under the Timor Sea Treaty (Timor-Leste v. Australia)*, Permanent Court of Arbitration, <http://www.pca-cpa.org/showpage.asp?pag_id=1403> at 18 December 2014.

²⁴² 'East Timor spy row: Australia, East Timor postpone ICJ case to seek 'amicable settlement' *ABC News*, 7 September 2014 <<http://www.abc.net.au/news/2014-09-06/icj-postpones-australia-etimor-spy-row-case/5724918>> at 18 December 2014.

²⁴³ Jiang Yu, Chinese Foreign Ministry 'China, Japan reach principled consensus on East China Sea issue' (Press Release, 18 June 2009), at <<http://www.china-embassy.org/eng/fyrth/t466632.htm>> at 29 July 2009.

Schofield and Townsend-Gault observed that the Japanese claim had been based on equidistance between baselines of the two states, while the Chinese claim had been based on natural prolongation of the Chinese coast. The JDZ straddles the median line, however the majority of the JDZ is on the Japanese side of the median line.²⁴⁴ Accordingly the Agreement may be considered to be a compromise between the Japanese median claim and the Chinese prolongation claim (see Illustration 3–22).²⁴⁵ This is an 'in principle agreement' and as at 2012, the detailed implementation is under development. The Agreement does not contain provisions for the protection of the environment.

The JDZ area does not include the disputed Senkaku (Diaoyu) islands. James Manicom commented that development of the JDZ had been held up over a pre-existing field.²⁴⁶ Manicom commented that subsequent events relating to the disputed Senkaku islands had halted all movement toward formalising the 2008 consensus.²⁴⁷

W. Malaysia/Brunei Agreement, 2009

Malaysia and Brunei Darussalam established a JDZ in 2009.²⁴⁸ The agreement was made in an exchange of letters, however the letters have not been released publicly.²⁴⁹

²⁴⁴ Clive Schofield and Ian Townsend-Gault, 'Choppy Waters Ahead in 'a sea of peace cooperation and friendship'? - Maritime Joint Development in the East China Sea', (Paper presented at the International Boundary Research Unit Conference, Durham, 2 April 2009)
<http://www.dur.ac.uk/ibru/conferences/sos/programme/2_april/track2_session4/#schofield> at 16 February 2010.

²⁴⁵ 'East China Sea Gas Fields' *The Japan Times*
<http://www.japantimes.co.jp/text/nn20080619a1.html> at 14 December 2012.

²⁴⁶ James Manicom, 'China's Claims to an Extended Continental Shelf in the East China Sea: Meaning and Implications', (2009) 9(14) *China Brief* 9. Manicom stated:
The primary barrier to the finalization of a treaty appears to be political. Japanese media reports that Tokyo is reluctant to proceed as long as the development of the Tianwaitian field continues. China maintains that Tianwaitian was not included in the June Consensus, and thus CNOOC's continued production at the field should not disrupt joint development.

²⁴⁷ These events included the ramming of Japanese Coast Guard cutters by a Chinese fishing boat in 2010, and the subsequent arrest of the Chinese captain by Japan, James Manicom, 'Disputed Claims in the East China Sea', interview by Chris Acheson, The National Bureau of Asian Research, Seattle, 25 July 2011, <<http://www.nbr.org/research/activity.aspx?id=159>> at 3 April 2013.

²⁴⁸ *Exchange of Letters between Malaysia and Brunei Darussalam*, 16 March 2009, (not publicly released), referred to in Jeffrey J Smith, 'Brunei and Malaysia resolve outstanding maritime boundary issues' [2010] 1 *Law of the Sea Reports*
<<http://www.asil.org/losreports/LOSReportsVol12010w6Smith.pdf>> at 1 August 2012.

²⁴⁹ International Boundaries Research Unit 'Details Emerge of the 2009 Brunei-Malaysia Maritime Agreement' (2010), <http://www.dur.ac.uk/ibru/news/boundary_news/?itemno=10047&rehref=%2Fibru%2Fnews%2F&resubj=Boundary+news%20Headlines> at 15 August 2012. It is not known if the Agreement contains provisions for the protection of the environment.

The agreement is understood to provide Brunei with sovereign rights to offshore Blocks L and M, and that Malaysia would participate to jointly develop the oil and gas resources for 40 years (see Illustration 3–23).²⁵⁰ The International Boundaries Research Unit (IBRU) commented that the area was previously a source of potential conflict,²⁵¹ including the incident in 2003 when a Malaysian naval vessel forced an oil-field exploration vessel from the area.²⁵²

The JDZ is also significant as Malaysia and Brunei submitted claims to the UN Commission on the Limits of the Continental Shelf (CLCS) shortly after conclusion of the agreement.²⁵³ Brunei made a preliminary submission to the CLCS,²⁵⁴ while Malaysia made a joint submission with Vietnam.²⁵⁵ Actions of the CLCS are required not to prejudice matters relating to delimitation of boundaries between states with opposite or adjacent coasts.²⁵⁶ Accordingly the JDZ agreement is likely to have facilitated the CLCS examination of Malaysia and Brunei's OCS submissions.²⁵⁷

5. Principal JDZ Outcomes

A. Conflict Resolution by Resource Sharing

JDZs have been made where conflict has occurred prior to the agreement, including the JDZs between Iran/Sharjah in 1971, and the United Kingdom/Argentina in 1995. In both cases significant political tensions continue in 2014, and JDZs have not resolved

²⁴⁹ Smith, above n 248.

²⁵⁰ 'The Brunei Malaysia Dispute' *Din Merican* Internet website, <<http://dinmerican.wordpress.com/2010/05/09/malaysia-brunei-relations-a-tale-of-two-oil-blocks/>> at 14 December 2012.

²⁵¹ International Boundaries Research Unit, above n 240.

²⁵² Smith, above n 248.

²⁵³ *Ibid.*

²⁵⁴ *Brunei Darussalam's Preliminary Information concerning the Outer Limits of its Continental Shelf*, United Nations Division for Ocean Affairs and the Law of the Sea Department <www.un.org/Depts/los/clcs_new/submissions_files/preliminary/brn2009preliminaryinformation.pdf> at 1 August 2012.

²⁵⁵ *Joint Submission to the Commission on the Limits of the Continental Shelf pursuant to Article 76, paragraph 8 of the United Nations Convention on the Law of the Sea 1982 in respect of the Southern part of the South China Sea*, Malaysia and Vietnam, <www.un.org/Depts/los/clcs_new/submissions_files/submission_mysvnm_33_2009.htm> at 1 July 2012.

²⁵⁶ *LOS* annex II art 9.

²⁵⁷ The JDZ may also be significant as an example of an agreement to a JDZ in exchange for agreement on sovereignty for land territory. IBRU reported that Malaysia may have agreed to the JDZ to obtain sovereignty over the town of Limbang, however as at August 2012, this issue has not been confirmed by either state. 'Details emerge of the 2009 Brunei-Malaysia maritime agreement' (2010) International Boundaries Research Unit.

<http://www.dur.ac.uk/ibru/news/boundary_news/?itemno=10047&rehref=%2Fibru%2Fnews%2F&resubj=Boundary+news%20Headlines> at 15 August 2012. Limbang is located in Limbang province, which largely separates the eastern and western portions of Brunei's land territory on the island of Borneo.

these conflicting claims. JDZs have also been made in areas of potential conflict, most notably the China/Japan Agreement of 2008. The JDZ was, however, made on an 'in principle' basis, and did not contain detailed provisions. The JDZ has also been overshadowed by the current dispute between China and Japan over sovereignty of the Senkaku (Diaoyu) Islands outside the JDZ area.²⁵⁸

The JDZ agreement may provide for revenue sharing on another basis than equally between two states. This issue may be relevant to the Southern Ocean because of the limited international recognition of Antarctic claims. It is significant that the OCS regime under LOSC Article 83 requires royalty payments or contributions in kind to ISBA in respect of the exploitation of the non-living resources as discussed in Chapter II. The regime for the Area under LOSC Part XI established the Enterprise to carry out exploration and exploitation activities in the Area.²⁵⁹ Examples of other sharing arrangements in JDZ agreements include the Australia/Timor Leste Timor Sea Treaty,²⁶⁰ the Iceland/Norway agreement relating to the Jan Mayen Island region,²⁶¹ and the Senegal/Guinea-Bissau agreements.

The successful implementation of JDZs to resolve resource conflicts generally requires continued political support.²⁶² The United Kingdom/Argentina Agreement was repudiated by Argentina in 2007.²⁶³ Acceptance of a JDZ may imply some level of recognition that the other state has some basis for rights in a disputed area, as the cancellation appears based on rejection of any United Kingdom sovereignty over the Falkland Islands (Malvinas Islands). The cancellation may have also related to Argentina's submission to claim to the CLCS in 2009. The submission included the

²⁵⁸ There are also JDZs where resource issues did not significantly affect relations between the respective states, such as the JDZ between France and Spain in the Bay of Biscay.

²⁵⁹ LOSC art 170.

²⁶⁰ *Timor Sea Treaty* art 4(a). The Timor Sea Treaty provided that petroleum production from Area A is shared 90 per cent to Timor-Leste and 10 per cent to Australia. The circumstances of the sharing arrangement result from the Timor-Leste's establishment as a new state, and Australia's agreement to make a contribution to Timor-Leste's economic development.

²⁶¹ *Norway/Iceland Agreement*, 22 October 1981, 2124 UNTS 262, (entered into force 2 June 1982). The Iceland/Iceland/Norway agreements for Jan Mayen provide 25 per cent sharing from each county from the part of the JDZ on their side of the maritime boundary.

²⁶² *Country Profile, South America and South Atlantic Islands Falkland Islands (British Overseas Territory)*, Foreign and Commonwealth Office, 27 July 2008 <<http://www.fco.gov.uk/en/travel-and-living-abroad/travel-advice-by-country/country-profile/south-america/falkland-islands/>> at 15 August 2012.

²⁶³ 'Argentina Ends Falklands Oil Deal', *BBC News*, 28 March 2007 <<http://news.bbc.co.uk/2/hi/americas/6501693.stm>> at 27 July 2012.

continental shelf relating to the Falklands, South Georgia, South Sandwich Islands, and part of the coast of Antarctica.²⁶⁴

B. Effective regimes for access to resources

JDZs can provide sovereignty to one state, with sharing of benefits to the other state. These JDZs are likely the most effective for exploration and exploitation as involving minimal changes to one state's oil and gas regime. This includes agreements between Saudi Arabia/Bahrain in 1958, Qatar/Abu Dhabi in 1969, Iran/Sharjah in 1971, and Malaysia/Brunei in 2009.

Certain JDZs require specific companies to carry out oil and gas exploration and development. This should be an efficient approach as ownership and rights to resources are established by shareholdings in the company. Examples include the Tunisia/Libya Agreement in 1988, which requires the joint Tunisian-Libyan exploration company, and the Malaysia/Vietnam Agreement in 1992, which requires Malaysian state oil and gas company Petronas.

The Svalbard Treaty gave sovereignty over the Svalbard islands to Norway, and allowed other countries access to the resources of the Svalbard islands.²⁶⁵ Norwegian sovereignty has certain advantages, as administration of the island is clearly under one state's authority. This may allow more effective protection of the environment, and is relevant as the states with sovereign claims to Antarctic territory may potentially exercise such authority with respect to multilateral joint development.

The Treaty is also potentially significant for the Southern Oceans, as it allows multilateral access to resources, which would have been provided in the Antarctic and related area of the Southern Ocean under the unratified Convention on the Regulation of Antarctic Mineral Resource Activities (CRAMRA).²⁶⁶ The proposed CRAMRA regime is examined in Chapter IV.

²⁶⁴ This issue is also relevant to the potential use of JDZs to avoid conflicts in the Southern Oceans because of the conflicting nature of the overlapping United Kingdom Antarctic territory with Antarctic territories of Argentina and Chile in Chapter VIII.

²⁶⁵ *Svalbard Treaty*.

²⁶⁶ *Convention on the Regulation of Antarctic Mineral Resource Activities*, opened for signature 2 June 1988, not in force, (1988) 27 ILM 868 (CRAMRA).

C. Protecting the Environment

The protection of the environment is a significant issue in the Arctic and Southern Oceans. The current issue is that competitive pressure for resources has already resulted in Arctic Ocean oil and gas drilling. The issue is arguably less urgent in relation to the Southern Ocean, as the Protocol on Environmental Protection to the Antarctic Treaty (Environmental Protocol) should suspend exploration and oil and gas development by state parties until at least 2048.²⁶⁷

The JDZ examined above in many cases provide a requirement for the protection of the environment but do not contain detailed codes to enforce this objective. The detailed terms of the protection of the environment would generally be contained in exploration and development licences or PSCs, which are generally not publicly available.²⁶⁸

The Australia/Timor-Leste Timor Sea Treaty²⁶⁹ provides a recent example of the development of environment protection measures from the general requirements in the respective treaty, through to implementation in a Mining Code and PSC. The Model Contract issued by the Timor Sea Joint Development Authority (TSJDA) provides a general requirement to protect the environment.²⁷⁰ The Model Contract also provides

²⁶⁷ *Protocol on Environmental Protection to the Antarctic Treaty*, opened for signature 4 October 1991, 30 I.L.M. 1455 (entered into force 14 January 1998) ('*Environmental Protocol*'). After 50 years a review conference may decide to modify the current mining prohibition, provided that at least $\frac{3}{4}$ of the current Antarctic Treaty Consultative Parties (ATCP) agree, a legal regime for controlling mining is in force, and the sovereign interests of parties are safeguarded.

²⁶⁸ A D Read 'Protection of the Marine Environment: A View from Industry' in Fox, above n 104, 223. Read commented that issues relating to protection of the environment include:

- Prevention, including the use of oil-tight or gas-tight equipment, and well control and prevention of blow-outs;
- Reporting spills and follow up, including reporting by operators and authorities, process for investigation, and prevention of incidents in the future;
- Environmental impact assessment, including consideration of potential effects of a project at the planning stage, and its use as the basis for operations and environmental monitoring;
- Operational discharges, including water used in production, drilling fluids and chemicals, equipment oils and chemicals, and waste disposal;
- Marine support aspects, including procedures for tankers, floating production storage and offloading vessels (FPSOs), sub-sea equipment, and offshore support vessels;
- Contingency planning, including reporting, responsibilities, equipment and personnel;
- Fishery aspects, including interference during exploration, and permanent loss of access during development; and
- Compensation regime, including whether liabilities are limited, whether compensation is provided by insurance or specific funds, and whether guarantees are provided by parent companies, governments or financial institutions.

²⁶⁹ *Timor Sea Treaty*, art 7(a).

²⁷⁰ *Petroleum Mining Code for the Joint Development Area*, Article 12(2), Timor-Leste Institute for Development Monitoring and Analysis. The measures provide:

that the Designated Authority may make regulations relating to environmental protection.²⁷¹

The Draft Regulations for the Exploration and Exploitation of Petroleum in the Joint Petroleum Development Area set out the related detailed requirements for protecting the environment.²⁷² This includes the requirement for Environment Impact Assessments (EIA), including description of the proposed activity, description of the environment that may be effected by the proposed activity, impact assessment; and management strategies.²⁷³

One development that may significantly improve environmental protection for Arctic and Southern Ocean JDZs is the incorporation in the JDZ terms of a regional Arctic Ocean environmental code, for example under the auspices of the Arctic Council, and the adoption of Southern Ocean measures similar to the environmental protection provisions in CRAMRA. The issue of the effective incorporation of these provisions in a model JDZ is analysed in Chapter VII.

6. Contribution to Thesis Conclusions

The principal contribution of this summary of existing JDZs to the thesis conclusions is that due to the number of active JDZs in regions with disputed maritime boundaries, it

In particular, an Authorised Person shall carry out Authorised Activities in such a manner as is required by sub-Section 12.1 to ... (a) protect the environment in and about the Authorised Area, ensure that Authorised Activities result in minimum ecological damage or destruction, and clean up pollution;

<<http://www.laohamutuk.org/Oil/PetRegime/JPDA%20PMC%208-05.pdf>> at 10 August 2012.

²⁷¹ These measures include:

- (vi) the control of the flow or discharge, and the prevention of the escape, of Petroleum, water or drilling fluid, or a mixture of water and drilling fluid with Petroleum or any other matter;
- (vii) the clean-up or other remedying of the effects of the escape of Petroleum;
- (viii) the prevention of damage to Petroleum-bearing strata;
- (ix) the prevention of waste or escape of Petroleum;

²⁷² *Draft Regulations for the Exploration and Exploitation of Petroleum in the Joint Petroleum Development Area*, Designated Authority for the Joint Petroleum Development Area

<<http://www.laohamutuk.org/Oil/PetRegime/NPALaw/TechRegs/TSDATechRegs2ndDraft16Jun08.pdf>> (*Timor Sea Draft Regulations*).

²⁷³ *Timor Sea Draft Regulations* art 124. The Regulations also require Environment Management Plans, including:

- Detailed Environmental Assessment with details of the environmental impacts and risks for the activity and evaluation of all the impacts and risks;
- Implementation strategy including measures to ensure that the environmental performance objectives and standards in the Environment Management Plan are met and an up-to-date emergency response manual and spill contingency plan; and
- Recording, monitoring and reporting information about the petroleum activity.

is clear that JDZs can effectively resolve resource conflicts where it is unlikely a boundary can be agreed for some longer period of time, as well as used where the boundary can be agreed. The use of JDZs has included circumstances where the dispute relates to sovereignty over land and island territory, and has included regions where there may potentially be offshore oil and gas reserves in the disputed boundary region.

The geographical and other circumstances where JDZs have been adopted can broadly be categorised on the basis of the issues which caused one or more of the respective states to depart from a boundary claim based on an equidistance line. These issues include historical background or treaties, sovereignty of islands, weight to be given to islands in determining a maritime boundary, prolongation of the continental shelf, and unitisation for specific fields, summarised as follows:

Table 3–1 Current JDZ Circumstances

	Agreement	Geographical Circumstances	Code
1.	Svalbard Treaty, 1920, ²⁷⁴	Multilateral access to resources of Svalbard islands under Svalbard Treaty 1920	H, M, IS
2.	Saudi Arabia/Kuwait Neutral Zone, 1922, ²⁷⁵ Agreement, 1965, ²⁷⁶	Adjoining states	H
3.	Saudi Arabia/Bahrain, 1958, ²⁷⁷	Coastline and Island	IE
4.	Qatar/Abu Dhabi, 1969, ²⁷⁸	Opposite coasts	IS
5.	Iran/Sharjah (United Arab Emirates), 1971, ²⁷⁹	Opposite coasts	IS
6.	France/Spain, Bay of Biscay, 1974, ²⁸⁰	Adjoining coasts, France mid-point of ocean trough, Spain equidistance, effectively sharing potential fields	PCS, U
7.	Sudan/Saudi Arabia –Common Zone, 1974, ²⁸¹	Opposite coasts	PCS
8.	Japan/Korea, 1974, ²⁸²	Opposite coasts, Japan equidistance, Korea, continental shelf	PCS
9.	United Kingdom/Norway – Frigg Field, 1977, ²⁸³	Included as a unitisation example, boundary previously agreed. Opposite coasts, effectively sharing field	U
10.	Malaysia/Thailand – Joint Development Area, 1979, ²⁸⁴ and 1990, ²⁸⁵	Adjoining coasts, Thailand claimed island as base for continental shelf	IE

²⁷⁴ *Svalbard Treaty*.

²⁷⁵ *Uqair Convention*.

²⁷⁶ *Saudi Arabia/Kuwait Agreement*.

²⁷⁷ *Saudi Arabia/Bahrain Agreement*.

²⁷⁸ *Qatar/Abu Dhabi Agreement*.

²⁷⁹ *Memorandum of Understanding' between Iran and Sharjah*, 29 November 1971, <http://www.parstimes.com/history/iran_sharjah.html> at 25 July 2012 ('*Iran/Sharjah MOU*').

²⁸⁰ *France/Spain Agreement*.

²⁸¹ *Sudan/Saudi Arabia Agreement*.

²⁸² *Japan/Korea Agreement*.

²⁸³ *United Kingdom/Norway Agreement*.

11.	Iceland/Norway – Jan Mayen Island Treaty Area, 1981, ²⁸⁶	Island continental shelf	IE
12.	Cambodia/Vietnam Agreement, 1982, ²⁸⁷	Adjoining coasts, issue of Cambodian islands affecting equidistance	IE
13.	Tunisia/Libya Agreements, 1988, ²⁸⁸	Adjoining coasts following ICJ decision using equitable principles	CL
14.	Australia/Indonesia – Timor Gap Treaty, 1989, ²⁸⁹	Opposite coasts, Australia, prolongation continental shelf, Indonesia, equidistance	PCS
15.	Malaysia/Vietnam, 1992, ²⁹⁰	Opposite coasts, Vietnam equidistance on mainlands, Malaysia equidistance using Redang island	IE
16.	Guinea-Bissau/Senegal, 1993, ²⁹¹	Adjacent coasts, 1960 agreement between colonial powers France and Portugal compared to equidistance	H
17.	Columbia/Jamaica, 1993, ²⁹²	Claimed archipelagic baseline and opposite coast	A
18.	United Kingdom/Argentina Joint Declaration South West Atlantic, 1995, ²⁹³	Island sovereignty issue	IS
19.	Nigeria/São Tome and Principe, 2001, ²⁹⁴	Island and opposite coast, Nigeria, length respective coasts, Sao Tome archipelagic baseline,	CL
20.	Thailand/Cambodia MOU, 2001, ²⁹⁵	Effect to be given to Thailand's Ko Kut island, interpretation of 1907 France Siamese treaty	H, IE
21.	Australia/Timor-Leste – Timor Sea Treaty, 2002, ²⁹⁶ Sunrise IUA, 2003, ²⁹⁷ CMATS, 2007, ²⁹⁸	Opposite coasts, Australia, prolongation continental shelf, Timor-Leste, equidistance	PCS, U
22.	China/Japan Agreement – East China Sea, 2008, ²⁹⁹	China on natural prolongation continental shelf, Japan, equidistance	PCS
23.	Malaysia/Agreement, 2009, ³⁰⁰	Adjoining coasts	LS

²⁸⁴ *Thailand/Malaysia Agreement.*

²⁸⁵ *1990 Agreement between Malaysia and Thailand on the constitution and other matters relating to the establishment of the Malaysia-Thailand Joint Authority.*

²⁸⁶ *Norway/Iceland Agreement.*

²⁸⁷ *Vietnam/Cambodia Agreement.*

²⁸⁸ *Libya/Tunisia Agreements.*

²⁸⁹ *Timor Gap Treaty.*

²⁹⁰ *Malaysia/Vietnam Agreement.*

²⁹¹ *Guinea-Bissau/Senegal Agreement.*

²⁹² *Jamaica/Columbia Treaty.*

²⁹³ *Argentina/United Kingdom Joint Declaration.*

²⁹⁴ *Nigeria/São Tome and Principe Agreement.*

²⁹⁵ *Thailand/Cambodia Agreement.*

²⁹⁶ *Timor Sea Treaty.*

²⁹⁷ *Australia/Timor-Leste - Sunrise IUA.*

²⁹⁸ *CMATS Treaty.*

²⁹⁹ Jiang Yu, Chinese Foreign Ministry 'China, Japan reach principled consensus on East China Sea issue' (Press Release, 18 June 2009), at <<http://www.china-embassy.org/eng/fyrth/t466632.htm>> at 29 July 2009.

³⁰⁰ *Exchange of Letters between Malaysia and Brunei Darussalam*, 16 March 2009, (not publicly released), referred to in Jeffrey J. Smith, 'Brunei and Malaysia resolve outstanding maritime boundary issues' [2010] 1 *Law of the Sea Reports*

<<http://www.asil.org/losreports/LOSReportsVol12010w6Smith.pdf>> at 1 August 2012.

³⁰⁰ 'Details Emerge of the 2009 Brunei-Malaysia Maritime Agreement' (2010) International Boundaries Research Unit

<http://www.dur.ac.uk/ibru/news/boundary_news/?itemno=10047&rehref=%2Fibru%2Fnews%2F&resubj=Boundary+news%20Headlines> at 15 August 2012. It is not known if the Agreement contains provisions for the protection of the environment.

Code	Basis for claims other than equidistance
A	Archipelago claim
CL	Coast length
H	Historical circumstances or prior treaty
IE	Islands effect
IS	Islands sovereignty
LS	Land sovereignty
M	Multilateral claims
PCS	Prolongation of continental shelf
U	Unitising oil or gas field

In the Arctic Ocean region the use of JDZs has included the Svalbard Treaty, as early as 1920,³⁰¹ and the Iceland/Norway Agreement in the Jan Mayen area, in 1981.³⁰² In the Southern Ocean, a form of JDZ may potentially apply in the area beyond state jurisdiction, and a form of JDZ was proposed in the CRAMRA regime for Antarctic and Southern Ocean mineral development.³⁰³

The use of JDZs should be considered as interim solutions to resolve resource conflicts pending final boundary delimitation, as well as where the boundary can be agreed, consistent with LOSC Article 83(3).³⁰⁴ JDZs should not be viewed as a perfect solution, and there are certainly specific examples of failure of a JDZ, such as United Kingdom/Argentina JDZ in the south-west Atlantic, or the currently arrested development of the Japan/China JDZ. This was best described by Schofield, stating that JDZs are 'no panacea'.³⁰⁵ The majority of JDZs, however, are still in force.

The primary solution to a disputed boundary is to agree the boundary as an approximate median line between the respective claims, as this clearly establishes sovereignty over sea areas, and simplifies carrying out activities such as oil and gas development. A recent example is the Norway/Russia treaty in 2010, where the states essentially agreed on a maritime boundary based on the median line between the respective claims.³⁰⁶

³⁰¹ *Svalbard Treaty*.

³⁰² *Norway/Iceland Agreement*.

³⁰³ CRAMRA. The proposed minerals regime is now prohibited by the Protocol on Environmental Protection to the Antarctic Treaty.

³⁰⁴ One proposal which may facilitate future final boundary delimitation proposed ultimate authority state up to the median line of JDZ areas, however this has generally not been implemented in current JDZs.

³⁰⁵ Clive H Schofield, 'No Panacea?: Challenges in the application of provisional arrangements of a practical nature' in Nordquist, M H and Moore, J N (eds), *Maritime Border Diplomacy* (Martinus Nijhoff, 2012) 151. A summary presentation is available at <<http://www.virginia.edu/colp/pdf/Bali-Schofield.pdf>> at 9 April 2013.

³⁰⁶ *Treaty Between the Kingdom of Norway and the Russian Federation Concerning Maritime Delimitation and Cooperation in the Barents Sea and the Arctic Ocean*, 15 September 2010, UNTS Registration No 49095, Norwegian Government, Office of the Prime Minister, <<http://www.regjeringen.no/en/dep/smk/press-center/Press-releases/2010/treaty.html?id=614254>> at 20 February 2012 (entered into force 7 July 2011). The treaty is discussed in Chapter V.

The majority JDZ examples in this chapter, however, support a state practice of JDZs operating successfully in disputed seas, the defining characteristic is where the two states concerned enjoy friendly and cooperative relations, where the JDZ is considered to provide a fair sharing of oil and gas resources, and where there are no other sovereignty disputes.

CHAPTER IV – POLAR REGIMES: LEGAL FRAMEWORKS AND GOVERNANCE MECHANISMS

1. Introduction

The Chapter will analyse the principal legal regimes and institutions that have a significant role in maritime boundary delimitation and the development of JDZs in the Arctic and Southern Oceans.

The Commission on the Limits of the Continental Shelf was established under LOSC to make recommendations to coastal states on the establishment of OCS limits.¹

The International Tribunal for the Law of the Sea, International Court of Justice, and LOSC Arbitral Tribunals are significant as alternative methods of resolving maritime boundary disputes.

The International Seabed Authority was established under Part XI of LOSC to provide the regime for development of mineral resources of the high seas regions beyond state jurisdiction, known as the Area.²

The Arctic Council is an inter-governmental organisation established in 1996.³ The Arctic Council may have a significant role in regional governance, particularly with respect to the protection of the Arctic environment.

The chapter concludes with analysis of the Antarctic Treaty, including the unratified Convention on the Regulation of Antarctic Mineral Resource Activities (CRAMRA),⁴

¹ The analysis includes the basis of OCS claims based on submission by states, and recommendations by the CLCS.

² The regime was primarily developed for mineral resources such as manganese on the sea-bed, however the regime is becoming relevant to offshore oil and gas, and will apply to several areas in the Arctic and Southern Ocean regions.

³ Declaration on the Establishment of the Arctic Council, 19 September 1996 < <http://arctic-council.org/article/about> > at 5 June 2008. The Arctic Council was established by Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden and the United States.

and the Protocol on Environmental Protection to the Antarctic Treaty (Environmental Protocol).⁵

2. The Commission on the Limits of the Continental Shelf

A. The Role of the CLCS

The CLCS was established under LOSC Article 76 and Annex II to analyse submissions from coastal states, and make related recommendations to establish the limits of the OCS.⁶ The coastal state is required to provide geographical data to support an OCS submission. The coastal state is required to establish the OCS on the basis of a CLCS recommendation, and these boundaries are final and binding.⁷ The Scientific and Technical Guidelines of the CLCS,⁸ and the Rules and Procedures of the CLCS,⁹ were established to assist the process of the CLCS.¹⁰

The CLCS does not delimit maritime OCS boundaries between states with opposite or adjacent coasts. The CLCS must be assured that its recommendations will not prejudice matters relating to the delimitation of boundaries.¹¹ Rothwell notes that other states may

⁴ *Convention on the Regulation of Antarctic Mineral Resource Activities*, opened for signature 2 June 1988, not in force, (1988) 27 ILM 868 ('CRAMRA'). CRAMRA would have allowed development of Antarctic mineral resources including oil and gas.

⁵ *Protocol on Environmental Protection to the Antarctic Treaty*, opened for signature 4 October 1991, 30 ILM 1455 (entered into force 14 January 1998) ('*Environmental Protocol*'). The Environmental Protocol currently prohibits minerals development until at least 2048.

⁶ LOSC annex II art 3 states the functions of the CLCS as follows:

(a) To consider the data and other material submitted by coastal States concerning the outer limits of the continental shelf in areas where those limits extend beyond 200 nautical miles, and to make recommendations in accordance with article 76 and the Statement of Understanding adopted on 29 August 1980 by the Third United Nations Conference on the Law of the Sea;

(b) To provide scientific and technical advice, if requested by the coastal State concerned during preparation of such data.

⁷ LOSC annex II art 7.

⁸ UN Document CLCS/11 of 13 May 1999; CLCS/11/Add.1 of 03 September 1999; CLCS/11/Corr.1 of 24 February 2000, Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf,

<http://www.un.org/Depts/los/clcs_new/commission_documents.htm#Guidelines> at 13 May 2008.

⁹ UN Document CLCS/40 Rev. 1 of 17 April 2008, Rules and Procedures of the Commission on the Limits of the Continental Shelf,

<http://www.un.org/Depts/los/clcs_new/commission_documents.htm#Rules%20of%20Procedure> at 25 February 2013.

¹⁰ Alex G Oude Elferink 'The Continental Shelf beyond 200 Nautical Miles: The relationship between the CLCS and Third Party Dispute Settlement' in Alex G Oude Elferink and Donald R Rothwell (eds), *Oceans Management in the 21st Century: International Frameworks and Responses* (2004) 107. The CLCS is not empowered to challenge a coastal state's declaration following a CLCS recommendation, however other states may challenge such declarations under LOSC dispute resolution procedures.

¹¹ Rules of Procedure of the Commission on the Limits of the Continental Shelf, UN Doc CLCS/40 (2 July 2004, < <http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N08/309/23/PDF/N0830923.pdf>> at 25 February 2010. Annex 1 of the CLCS Rules of Procedure. Annex I art 2 provides:

respond to an OCS submission, and this becomes an element in the CLCS considerations.¹² The CLCS may, however, make a recommendation on the OCS boundary without prejudice to maritime boundaries, where the other state agrees to this process.¹³

The process of the CLCS is a technical evaluation of OCS submissions, rather than a legal evaluation or interpretation, and the members of the CLCS are experts in geology, geophysics or hydrology.¹⁴ However the members of the CLCS nevertheless have to engage in a level of legal interpretation, as the limits and definition of the continental shelf are contained in a legal instrument.

LOSC provides that a portion of revenue from the OCS is to be paid to ISBA as a production based royalty.¹⁵ ISBA is required to distribute these amounts under 'equitable sharing criteria' for the distribution of the payments or contributions in kind,¹⁶ and prioritise 'the least developed and land-locked' states.¹⁷

In case there is a dispute in the delimitation of the continental shelf between opposite or adjacent States, or in other cases of unresolved land or maritime disputes, related to the submission, the Commission shall be:

- (a) Informed of such disputes by the coastal States making the submission; and
- (b) Assured by the coastal States making the submission to the extent possible that the submission will not prejudice matters relating to the delimitation of boundaries between States.

¹² Donald R Rothwell, 'Issues and Strategies for Outer Continental Shelf Claims' 23 (2008) *International Journal of Marine and Coastal Law* 185, 190.

¹³ This approach is examined in relation to the Australian submission to the CLCS discussed below.

¹⁴ Rothwell, above n 12, 189.

¹⁵ LOSC art 82. Commencing from the sixth year of operations, payment must be made at 1% of the value or volume of production at the site, increasing by 1% each year to 7% from the 12th year onwards. A developing state which is a net importer of a mineral resource produced from its continental shelf is exempt from making these payments in respect of that mineral resource.

¹⁶ LOSC art 82(4).

¹⁷ The Outer Continental Shelf Committee of the International Law Society (ILS) noted the requirement to prioritise 'the least developed and land-locked' states for payments from ISBA relating to the OCS, compared to the requirement for income to be equitably shared on a non-discriminatory basis for payments relating to the Area. The chair and co-rapporteurs of the International Law Society comprised Dolliver Nelson, David Ong and Alex G Oude Elferink. LOSC art 140(2), and 'Report on Article 82 of the 1982 UN Convention on Law of the Sea', International Law Association Rio De Janeiro Conference (2008) Outer Continental Shelf

<<http://www.ila-hq.org/en/committees/index.cfm/cid/33>> at 4 December 2012. The Outer Continental Shelf Committee conclusions included the following:

- The obligation to make 'payments or contributions in kind' rests solely with the coastal state.
- The term 'all' production at a site refers to the gross, rather than net, value of the total production of the non-living resources obtained from that site.
- The designation of a production 'site' for the exploitation of the nonliving resources beyond 200M limit is within the discretion of the coastal State concerned, however this does not allow the coastal state to escape its obligation to make payments under Article 82(1).
- The coastal state has the choice of making 'payments or contributions in kind' to fulfil its obligation under Article 82, but it cannot decide to make a combined 'payment' and 'contribution in kind'.

The National Oceanography Centre summarised state submissions to the CLCS at 2013 on a global map (see Illustration 4–1).¹⁸

B. OCS Limits

The CLCS analyses the submissions by examining the data supplied by each state, including seabed features including the foot of slope feature, sediment thickness on the seabed floor, the 2500 meter isobath depth line, submarine ridges, and submarine elevations, and requires extensive hydrographical surveys. As discussed in Chapter II, a significant issue arises in respect of 'submarine elevations.'¹⁹ This issue relates to the Russian, Danish and Greenland government OCS submissions and the anticipated Canadian final OCS submission, and is analysed in Chapter V.

C. Progress and Outlook for the CLCS

A significant issue is the progress of the CLCS in reviewing state submissions under the time limits provided under LOSC, and the issue of whether the CLCS is adequately resourced to review the expected number of submissions. Rothwell commented that the original time limit for CLCS submissions provided in Annex II Article 2 was 10 years

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- Developing states that are net importers of the resources concerned are exempt from making the required payments or contributions in kind under Articles 82(1) and 82(2).
 - The procedure through which the 'equitable sharing criteria' is to be developed by the ISBA for the distribution of the payments or contributions under Article 82 must be pursued separately from the criteria for the equitable sharing of the financial and other economic benefits from mining activities within the Area, because of the need to prioritise the 'least developed and land-locked' developing States within this set of criteria (for Article 82 payments or contributions).
 - Regardless of whether the interests of 'peoples' or 'territories' that have not achieved full independence are taken into account in the development of the 'equitable sharing criteria' within the ISBA, these entities will not be able to benefit from the payments or contributions in kind made by coastal States under Article 82, until they become 'States Parties' to the 1982 UNCLOS.
 - In the event of disputes arising from the interpretation and application of Article 82, the scope for the ISBA to engage the coastal State within the dispute settlement procedures of the 1982 UNCLOS is limited to seeking an advisory opinion from the Sea-Bed Disputes Chamber. States Parties on the other hand, can utilize the dispute settlement procedures under Part XV against the coastal State concerned to 'settle any dispute between them concerning the interpretation or application of this Convention'.

¹⁸ 'Continental Shelf beyond 200 Nautical Miles', National Oceanography Centre, Southampton <http://www.unclosuk.org/downloads/Full_183_subs-Oct2012.pdf> at 12 February 2013.

¹⁹ LOSC art 76(6). Article 76(6) refers to submarine elevations 'that are natural components of the continental margin such as its plateaux, rises, caps, banks and spurs. This issue is crucial to OCS claims relating to the Lomonosov and Mendeleev ridges in the Arctic Ocean. Submarine elevations which can form part of the continental shelf are not limited to the 350 nautical mile limit.

from entry into force for each state,²⁰ as provided in Annex II.²¹ The limit was extended in 2001 and then in 2008, and currently provides that original signatories to LOSC, and states which ratified LOSC prior to 13 May 1999, to merely notify their intention to make OCS submissions to the CLCS by 13 May 2009.²²

The CLCS Rules of Procedure provide that OCS submissions are lodged with the UN Secretary General, and then notified to the CLCS and member states. Other states may lodge a *note verbale* in response to the submission, which becomes an element in CLCS considerations.²³

RR Churchill and AV Lowe commented that the OCS provisions in LOSC have been widely adopted in state practice declaring maritime boundaries adopting the '200 mile plus margin' limit based on LOSC Article 76,²⁴ including OCS declarations by Canada, Japan, Jamaica, Russia and South Africa.²⁵ Churchill and Lowe describe claims inconsistent with the Article 76 formula as scarce,²⁶ and concluded that 'It would be difficult to argue that any continental shelf claim consistent with the Article 76 formula

²⁰ Rothwell, above n 12, 185. Rothwell reviews whether the CLCS is adequately resourced to review current and expected OCS claims, given the deadlines on LOSC signatories to make their claims and the number of submissions likely to be received in the next several years.

²¹ The original time limit for CLCS submissions provided in Annex II Article 2 was 10 years from entry into force for each state. This deadline was 16 November 2004 for states which ratified LOSC before entry into force on 16 November 1994. In relation to other states, LOSC art 308(2) provided:

'For each State ratifying or acceding to this Convention after the deposit of the sixtieth instrument of ratification or accession, the Convention shall enter into force on the thirtieth day following the deposit of its instrument of ratification or accession, subject to paragraph 1.'

²² The first extension was made in 2001 to 13 May 2009 for states where LOSC entered into force prior to 13 May 1999, and 10 years after ratification for states which become parties to LOSC after that date. Decision regarding the date of commencement of the ten-year period for making submissions to the Commission on the Limits of the Continental Shelf set out in article 4 of Annex II to the United Nations Convention on the Law of the Sea, Meeting of States Parties, Eleventh Meeting, (New York), 14-18 May 2001 (29 May 2001) ('SPLOS/72') at

<<http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N01/387/64/PDF/N0138764.pdf?OpenElement>> at 8 January 2013. The second extension was further extended to allow original signatories to LOSC, and states which ratified LOSC prior to 13 May 1999, to merely notify their intention to make OCS submissions to the CLCS by 13 May 2009. Decision regarding the workload of the Commission on the Limits of the Continental Shelf and the ability of States, particularly developing States, to fulfil the requirements of article 4 of annex II to the United Nations Convention on the Law of the Sea, as well as the decision contained in SPLOS/72, paragraph (a), Meeting of States Parties, United Nations Convention on the Law of the Sea, Eighteenth Meeting, New York, 13-20 June 2008, <<http://daccessdds.un.org/doc/UNDOC/GEN/N08/398/76/PDF/N0839876.pdf>> at 24 October 2008.

²³ The underlying hydrographical data is not made public by the CLCS.

²⁴ RR Churchill and AV Lowe, *The Law of the Sea* (Manchester University Press, 3rd ed, 1999) 149. Australia has also adopted the Article 76 OCS formula by adopting the recommendations of the CLCS. *Seas and Submerged Lands (Limits of Continental Shelf) Proclamation 2012*. The proclamation was made pursuant to the *Seas and Submerged Lands Act 1973* (Cth).

²⁵ *Ibid.*

²⁶ *Ibid.* 150. Churchill and Lowe commented that these claims were made by states including Ecuador, Chile and Iceland, and these declarations were protested by other states.

was not compatible with customary international law.²⁷ The ICJ considered the relationship between Article 76 and customary international law in the *Territorial Dispute and Maritime Delimitation (Nicaragua v. Colombia)* case. The ICJ held that the definition of the continental shelf set out in Article 76, paragraph 1 forms part of customary international law. On this basis, the fact that Colombia was not a party to LOSC did not relieve Nicaragua of its obligations under Article 76.²⁸

D. The CLCS and JDZs

CLCS recommendations do not resolve maritime boundary disputes, which can arise, for example, where coastal states have opposite or adjacent coasts or sovereignty of land masses or islands is disputed. The provisions of LOSC Article 83 for delimitation of the continental shelf between States with opposite or adjacent coasts will apply.

The CLCS may address the challenges presented by boundary disputes in specific cases, such as the recommendations made in response to the Australian OCS submission in 2004. The submission included Heard and Macquarie islands, which not only included an un-delimited maritime boundary between Australia and France, but which also extended into the Antarctic Treaty area, and was therefore potentially subject to the prohibition on states asserting sovereignty under Article 4(2) of the Antarctic Treaty.²⁹ However, given the absence of protest to this part of the Australian claim, the better view is likely that where the continental shelf is associated with landmasses not governed by the Antarctic Treaty, Article IV does not apply.

The CLCS made recommendations without prejudice to future delimitation between Australia and France, and France had agreed to this procedure. Accordingly the CLCS was able to determine the OCS limit of the continental shelf based on the geographical characteristics of the seabed, while Australia and France are still to determine the dividing line between their overlapping continental shelves within the limits of the OCS.

²⁷ Ibid.

²⁸ *Territorial Dispute and Maritime Delimitation (Nicaragua v. Colombia)* [2012] ICJ Rep 624, 666 and 669.

²⁹ Australian submission through the Secretary-General to the Commission on the Limits of the Continental Shelf, pursuant to article 76, paragraph 8, of the Convention, 15 November 2004 at <http://www.un.org/Depts/los/clcs_new/submissions_files/aus04/Documents/aus_doc_es_web_delivery.pdf> at 18 February 2010.

Rothwell commented that the CLCS should be aware of non-recognition of claims to Antarctic sovereignty by the majority of states as a 'dispute'.³⁰ As the CLCS will not rule on areas except on a non-prejudice basis to any dispute, there is an incentive for states to jointly approach the CLCS for recommendations to define the outer boundary of the OCS, with the final maritime boundary delimitation of the OCS to be made at a later date. CLCS Rules of Procedure provide for joint submissions.³¹ Five joint submissions had been made to the CLCS as at 2013.³²

E. The CLCS and Polar Issues

The CLCS faces several challenges in determining the OCS for states in the Arctic and Southern Ocean regions. The respective disputes are analysed in Chapters V and VI, however the disputes may include:

- The classification of submarine elevations, including the related Russian, Danish and Greenland government, and anticipated final Canadian OCS claims extending along the Lomonosov Ridge, (see Illustration 5–1 and 5–9);³³

³⁰ Rothwell, above n 12, 190.

³¹ Rules of Procedure of the Commission on the Limits of the Continental Shelf, UN Doc CLCS/40/Rev.1 <<http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N08/309/23/PDF/N0830923.pdf?OpenElement>> at 5 December 2012. Annex I article 4 provides:

Joint or separate submissions to the Commission requesting the Commission to make recommendations with respect to delineation may be made by two or more coastal States by agreement:

- (a) Without regard to the delimitation of boundaries between those States; or
- (b) With an indication, by means of geodetic coordinates, of the extent to which a submission is without prejudice to the matters relating to the delimitation of boundaries with another or other States Parties to this Agreement.

³² Submissions, through the Secretary-General of the United Nations, to the Commission on the Limits of the Continental Shelf, pursuant to article 76, paragraph 8, of the United Nations Convention on the Law of the Sea of 10 December 1982, <http://www.un.org/Depts/los/clcs_new/commission_submissions.htm . at 25 August 2015. There were 77 submissions as at this date. The joint submissions are as follows:

Joint submission by France, Ireland, Spain and the United Kingdom of Great Britain and Northern Ireland - in the area of the Celtic Sea and the Bay of Biscay,

Joint submission by the Republic of Mauritius and the Republic of Seychelles - in the region of the Mascarene Plateau,

Joint submission by the Federated States of Micronesia, Papua New Guinea and Solomon Islands - concerning the Ontong Java Plateau,

Joint submission by Malaysia and Viet Nam - in the southern part of the South China Sea (this area is to the east of the Malaysia Vietnam JDZ reviewed in Chapter III, and does not overlap the JDZ area),

Joint submission by France and South Africa - in the area of the Crozet Archipelago and the Prince Edward Islands

Joint Submission by Cabo Verde, The Gambia, Guinea, Guinea-Bissau, Mauritania, Senegal and Sierra Leone - in respect of areas in the Atlantic Ocean adjacent to the coast of West Africa.

³³ This issue relates to the classification of submarine elevations 'that are natural components of the continental margin such as its plateaux, rises, caps, banks and spurs.' and are therefore not limited to 350 nautical miles under Article 76(6). Martin Pratt, 'Potential Arctic Maritime Boundary Delimitations' –

- The OCS may extend from adjacent coastal states where the maritime boundary is disputed. This issue may arise in the Arctic Ocean region between the United States and Russia in the Bering Sea (see Illustration 5–5),³⁴ or between the United States and Canada in the Beaufort Sea (see Illustration 5–6);³⁵
- The OCS may lie between opposite coasts. This situation may arise in the Arctic Ocean region, where Canada or Denmark potentially adopt a median line from the Russian coast and Russia uses an OCS extending beyond the median line (see Illustration 5–1);³⁶
- The OCS depending on the sovereignty of islands and whether the islands generate continental shelf and OCS zones under LOSC. LOSC Article 121 provides that islands generate EEZ and continental shelves, except if they are 'rocks which cannot sustain human habitation or economic life of their own'.³⁷ This issue may arise in the Arctic Ocean region between the United States and Russia in the Chukchi Sea (see Illustration 5–5);³⁸ and
- State sovereignty over the respective coast is disputed. This may apply due to non-recognition of Antarctic claims by other states, or where several states claim sovereignty (see Illustrations 6–1 and 6–3).³⁹

The CLCS may potentially be requested to make a recommendation where there is no current dispute, but where a dispute may arise at a later date.⁴⁰ This issue arose in

Source: <IBRU <http://www.dur.ac.uk/resources/ibru/arctic.pdf>> at 14 December 2012, and 'Potential Polar Claims – Lomonosov Ridge' – Chuck Carter and Paul Morin – Wired Magazine, <http://www.wired.com/science/planetearth/magazine/16-02/mf_continentalshelf_feud> at 22 February 2013.

³⁴ The United States has used a median line basis, and Russia may potentially use sector line.

³⁵ 'Beaufort Sea' Government of Canada <<http://publications.gc.ca/Collection-R/LoPBdP/BP/bp322-e.htm>> at 14 December 2012. Canada's use of the sector line is based on a historical treaty.

³⁶ Pratt, above n 33.

³⁷ LOSC art 121(3).

³⁸ 'Bering Sea' United States Department of State <<http://www.state.gov/p/eur/rls/fs/128740.htm>> at 14 December 2012. The United States may consider the Russian Herald Island does not affect the position of a median line or generate continental shelf and OCS zones.

³⁹ 'Antarctic Region', Perry Castaneda Library, University of Texas at Austin <http://www.lib.utexas.edu/maps/islands_oceans_poles/antarctic_region_pol_2005.pdf> at 14 December 2012, and 'Non-Living Resources of the Continental Shelf Beyond 200 Nautical Miles: Speculations on the Implementation of Article 82 of The United Nations Convention on the Law of the Sea,' ISA Technical Study No. 5, <www.isa.org.jm/files/documents/EN/Pubs/TechStudy5.pdf> at 12 February 2013, 21. This may apply in the Antarctic Peninsula and Weddell Sea region where claims by Chile, Argentina and the United Kingdom overlap.

respect of the Russian submission on the CLCS in relation to the Barents and Bering Seas. The CLCS recommended that Russia provide charts and coordinates of the outer limits of the continental shelf following entry into force of maritime boundaries with Norway and the United States.⁴¹

This issue may potentially also arise where a Russian OCS submission was accepted by the CLCS which extended to the North Pole on a sector basis, and the Danish and Greenland government OCS submission, and the anticipated final Canadian OCS submission, overlapped the Russian OCS.⁴²

The progress and outlook for the CLCS in the Southern Ocean includes the issues of recognition of Antarctic claims, and the suspension of claims under the Antarctic Treaty.⁴³ The role of the CLCS in relation to the Arctic Ocean region is analysed in Chapter V, and the Southern Ocean in Chapter VI.

3. The International Court of Justice, International Tribunal for the Law of the Sea, and Arbitral Tribunals

There are alternative methods of dispute resolution for maritime boundary disputes. LOSC Article 83 concerns the delimitation of the continental shelf between states with opposite or adjacent coasts.⁴⁴ Article 83(1) provides that the 'delimitation shall be

⁴⁰ Rothwell, above n 12, 191.

⁴¹ Ibid 201.

⁴² Denmark made a submission to the CLCS in respect of the northern continental shelf of Greenland on 15 December 2014: Submission by the Kingdom of Denmark <http://www.un.org/depts/los/clcs_new/submissions_files/submission_dnk_76_2014.htm> at 25 August 2015.

⁴³ Donald R Rothwell, 'Legal Challenges for Maritime Operations in the Southern Ocean' (Paper presented at the 2012 Comité Maritime International Beijing Conference, Beijing, 18 October 2012). Rothwell described these threshold issues as follows:

Antarctic claimants have sought to assert maritime claims, consistent with their status as "coastal States" under the law of the sea. Yet doubt remains as to whether there exist "coastal States" in Antarctica, given that each of the seven territorial claims to the continent remain contested and in any event the active assertion of claims has been effectively suspended during the life of the Antarctic Treaty.

⁴⁴ LOSC art 83. Article 83 provides:

1. The delimitation of the continental shelf between States with opposite or adjacent coasts shall be effected by agreement on the basis of international law, as referred to in Article 38 of the Statute of the International Court of Justice, in order to achieve an equitable solution.
2. If no agreement can be reached within a reasonable period of time, the States concerned shall resort to the procedures provided for in Part XV.
3. Pending agreement as provided for in paragraph 1, the States concerned, in a spirit of understanding and cooperation, shall make every effort to enter into provisional arrangements of a practical nature and, during this transitional period, not to jeopardize or hamper the reaching of the final agreement. Such arrangements shall be without prejudice to the final delimitation.

effected by agreement on the basis of international law, as referred to in Article 38 of the Statute of the International Court of Justice, in order to achieve an equitable solution'. Article 83(2) provides that 'if no agreement can be reached within a reasonable period of time, the states concerned shall resort to the procedures provided for in Part XV.'

LOSC Part XV Article 287 provides that a state may choose methods of dispute resolution on ratifying LOSC. The methods of dispute resolution in relation to a maritime boundary under LOSC are the ICJ, ITLOS, or an Arbitral Tribunal constituted in accordance with of LOSC Annex VII.⁴⁵

LOSC allows the adoption of JDZs as provisional arrangements. Article 83(3) provides that states 'shall make every effort to enter into provisional arrangements of a practical nature ... Such arrangements shall be without prejudice to the final delimitation.'

Negotiating a JDZ allows the parties to come to an agreement which is satisfactory to both parties, and may be preferred by states compared to a solution imposed on the parties by a court or arbitration procedure.

A. The International Court of Justice

The ICJ has jurisdiction to consider disputes in relation to continental shelf claims between states with adjacent or opposite coasts under LOSC Article 83. The threshold issue is whether the states concerned in a dispute have submitted to ICJ jurisdiction for boundary delimitation, or are only required to submit to ICJ resolution by agreement:

4. Where there is an agreement in force between the States concerned, questions relating to the delimitation of the continental shelf shall be determined in accordance with the provisions of that agreement.

⁴⁵ LOSC art 287. Article 287 provides:

1. When signing, ratifying or acceding to this Convention or at any time thereafter, a State shall be free to choose, by means of a written declaration, one or more of the following means for the settlement of disputes concerning the interpretation or application of this Convention:
 - (a) the international Tribunal for the Law of the Sea established in accordance with Annex VI;
 - (b) the International Court of Justice;
 - (c) an arbitral tribunal constituted in accordance with Annex VII;
 - (d) a special arbitral tribunal constituted in accordance with Annex VIII for one or more of the categories of disputes specified therein.

There is also a special arbitral tribunal constituted in accordance with Annex VIII of LOSC for fishing, navigation, protection of the environment and scientific research which may be relevant to specific matters relating to the continental shelf, other than dispute over the delimitation of the continental shelf

- Article 36(1) of the Statute of the ICJ provides the ICJ with jurisdiction over cases concerning treaties such as LOSC. Article 36(2) provides that states can opt to accept ICJ jurisdiction under Part XV of LOSC in advance of a dispute arising. Churchill and Lowe refer to the case concerning the *Land and Maritime Boundary between Nigeria and Cameroon* in 1994,⁴⁶ where both states had made the related declarations using 'Optional Clause declarations',⁴⁷
- LOSC Part XV Article 298(1) provides that states can opt out of compulsory dispute resolution of certain categories of disputes which include delimitation. This applies to the jurisdiction of the ICJ together with the other compulsory dispute resolution methods under LOSC.⁴⁸ Churchill and Lowe comment that 'Surprisingly, few states have, as yet, invoked the optional exception under article 298';⁴⁹ and
- Disputing states may bring a case to the ICJ by mutual agreement, as in the *North Sea Continental Shelf* cases.⁵⁰

The ICJ has considered the delimitation of the continental shelf in a series of cases,⁵¹ including the principal cases summarised below:⁵²

⁴⁶ *Case concerning the Land and Maritime Boundary between Nigeria and Cameroon (Nigeria v Cameroon)* [2002] ICJ Rep 94.

⁴⁷ Churchill and Lowe, above n 24, 452.

⁴⁸ UN register of state reservations at

<http://www.un.org/Depts/los/convention_agreements/convention_declarations.htm> at 6 December 2012.

States in the Arctic Ocean region which have invoked the exception in relation to maritime boundary delimitation are Canada, Denmark, Iceland, Norway and Russia. States with Antarctic claims which have invoked the exception are Argentina, Australia, Chile, France, and Norway.

⁴⁹ Churchill and Lowe, above n 24, 456. The United Nations provides a register of state reservations at:

<http://www.un.org/Depts/los/convention_agreements/convention_declarations.htm> at 5 December 2012.

Australia limited the ICJ jurisdiction in the Declaration of 21 March 2002 under articles 287 and 298 of the United Nations Convention on the Law of the Sea, as follows:

'The Government of Australia further declares, under paragraph 1 (a) of article 298 of the United Nations Convention on the Law of the Sea done at Montego Bay on the tenth day of December one thousand nine hundred and eighty-two, that it does not accept any of the procedures provided for in section 2 of Part XV (including the procedures referred to in paragraphs (a) and (b) of this declaration) with respect of disputes concerning the interpretation or application of articles 15, 74 and 83 relating to sea boundary delimitations as well as those involving historic bays or titles.'

⁵⁰ *North Sea Continental Shelf Cases (Federal Republic of Germany v Denmark; Federal Republic of Germany v The Netherlands)* [1969] ICJ Rep 1, 39.

⁵¹ Donald R Rothwell and Tim Stephens, *The International Law of the Sea* (Hart Publishing, 2010) 393, refers to 13 cases as at 2013, and ICJ 'List of Cases referred to the Court since 1946 by date of introduction',

<<http://www.icj-cij.org/docket/index.php?p1=3&p2=2>> at 8 February 2013.

- The *North Sea Continental Shelf* cases in 1969,⁵³ determined under customary law, concerned the maritime boundary between Germany, Denmark and the Netherlands.⁵⁴ The ICJ held that the delimitation should be effected by agreement in accordance with equitable principles and relevant circumstances, and that the equidistance method should not apply. These circumstances should include the natural prolongation of each state's territory;⁵⁵ The cases are particularly significant for the conclusion that customary international law required i) state practice of those states whose interests were affected by the custom, and ii) *opinio juris*, a belief that the practice amounts to a legal obligation. It should be noted that customary international law may not be binding on states which are persistent objectors, as analysed by Churchill and Lowe.⁵⁶
- The *Tunisia/Libya Continental Shelf* case in 1982,⁵⁷ concerned the maritime boundary between Tunisia and Libya.⁵⁸ The ICJ applied an equitable solution and special circumstances approach, taking into account the position of the Tunisian coast and giving half effect to the Kerkennah islands;⁵⁹

⁵² Previously considered in: John Abrahamson, 'Joint Development of Seabed Resources and the United Nations Convention on the Law of the Sea', Research Paper for Monash University LLM (1996) 14.

⁵³ *North Sea Continental Shelf Cases (Federal Republic of Germany v Denmark; Federal Republic of Germany v The Netherlands)* [1969] ICJ Rep 1, 39.

⁵⁴ Denmark and the Netherlands submitted that the equidistance principle should apply, where the boundary would be determined halfway between a series of points on the baselines of the countries concerned. Germany submitted however that each coastal state was entitled to a just and equitable share.

⁵⁵ The states subsequently agreed on a delimitation which allowed Germany a larger continental shelf than would have applied under the equidistance principle based on the concavity of the German coast. *Treaty between the Kingdom of Denmark and the Federal Republic of Germany concerning the delimitation of the continental shelf under the North Sea*, opened for signature 28 January 1971, 857 UNTS 109 (entered into force 7 December 1972); *Treaty between the Kingdom of the Netherlands and the Federal Republic of Germany concerning the delimitation of the continental shelf under the North Sea*, 28 January 1971, 857 UNTS 131 (entered into force 7 December 1972); and *Protocol to the Treaties of 28 January 1971 between the Federal Republic of Germany and Denmark and the Kingdom of the Netherlands, respectively, concerning the delimitation of the continental shelf under the North Sea*, opened for signature 28 January 1971, 857 UNTS 155 (entered into force 28 January 1971) (related agreement to amend the Netherland Denmark maritime boundary).

⁵⁶ Churchill and Lowe, above n 24, 8.

⁵⁷ *Case Concerning the Continental Shelf (Tunisia/Libyan Arab Jamahiriya)* 1982 ICJ Rep. 18.

⁵⁸ Libya submitted that the boundary should be based on the natural prolongation of the African continental platform northward, and Tunisia submitted that the boundary should be based on the natural prolongation of the African continental platform eastward. The ICJ considered the coastlines, islands, prolongation of the land boundary, and proportionality between the respective coastlines and continental shelf areas.

⁵⁹ The boundary was a nearly perpendicular line near the coast, which then changed to give effect to the Tunisian coast. The outer boundary was the median line giving Tunisian Kerkennah islands full effect.

- The *Gulf of Maine* case in 1984,⁶⁰ determined under customary law,⁶¹ concerned determining the single maritime boundary between the United States and Canada.⁶² The ICJ applied equitable criteria and relevant circumstances, including the greater length of the respective United States coastline;⁶³
- In the *Libya/Malta Continental Shelf* case in 1985,⁶⁴ the ICJ considered the delimitation of the maritime boundary between Libya and Malta.⁶⁵ The ICJ applied equitable principles and taking account of all relevant circumstances, which included the geography of the coastlines, and the need to prevent excessive disproportion between the continental shelf and the length of their respective coastlines;⁶⁶
- In the *Greenland/Jan Mayen* case between Denmark and Norway in 1993,⁶⁷ the ICJ considered the single maritime boundary between Greenland, belonging to Denmark, and Jan Mayen Island belonging to Norway.⁶⁸ The fishing boundary was determined under customary international law,⁶⁹ and the continental shelf boundary was determined under the Convention on the Continental Shelf.⁷⁰ The combined boundary was based on an 'equitable solution in the light of relevant

⁶⁰ *Case Concerning Delimitation of the Maritime Boundary in the Gulf of Maine Area (Canada/United States of America)* 1984 ICJ Rep 246.

⁶¹ Both states were party to the 1958 *Continental Shelf Convention*, however the ICJ determined that the Convention could not be used to determine a combined continental shelf and fishing boundary.

⁶² The United States submitted that there should be an allocation of Georges Bank to the United States due to consideration of natural resources and for conservation purposes. Canada submitted that the equidistance principle should determine the maritime boundary.

⁶³ The ICJ determined the boundary as a perpendicular line from the respective coasts, becoming a median line adjusted for the longer United States coast, giving half effect to Seal Island. The ICJ was not requested to determine sovereignty over Seal Island itself, which lies on the Canadian side of the maritime boundary. This issue remains unresolved in 2013.

⁶⁴ *Case Concerning the Continental Shelf (Libyan Arab Jamahiriya/Malta)* [1985] ICJ Rep 13.

⁶⁵ Malta submitted that the delimitation should be based on the median line between Libya and Malta. Libya submitted that the delimitation should be based on the natural prolongation of the African continent into and under the Mediterranean Sea. The ICJ determined that natural prolongation did not apply under customary international law, but also rejected Malta's proposed use of the median line.

⁶⁶ The ICJ used two lines, a median between Libya and the general coast of Italy, without giving effect to Malta, and a median between Libya and Malta. The ICJ determined the boundary on the basis of an equitable solution to be three quarters between these two lines in the direction of Malta.

⁶⁷ *Maritime Delimitation in the Area between Greenland and Jan Mayen (Denmark v Norway)*, [1993] ICJ Rep 38.

⁶⁸ Denmark submitted that Greenland should have a full 200 mile boundary, leaving Jan Mayen Island with a 50 mile boundary towards Greenland. Norway submitted that equidistance principle should apply.

⁶⁹ The ICJ held that LOSC EEZ provisions reflected customary law.

⁷⁰ *Convention on the Continental Shelf*, opened for signature 29 April 1958, 499 UNTS 311 (entered into force 10 June 1964). The Convention was in force between both states.

circumstances', including lengths of respective coasts and location of fishery resources;⁷¹

- In the *Qatar/Bahrain* case in 2001,⁷² the ICJ considered the sovereignty of islands and the related maritime boundary in the Arabian Gulf.⁷³ The ICJ stated that it should 'first provisionally draw an equidistance line and then consider whether there are circumstances which must lead to an adjustment of that line,' and determined the maritime boundary broadly on equidistance and sovereignty over the respective islands;⁷⁴
- The *Land and Maritime Boundary Case between Cameroon and Nigeria* in 2002,⁷⁵ concerned issues including sovereignty of the Bakassi Peninsula and the related maritime boundary in the Gulf of Guinea, and the land boundary extending into Lake Chad.⁷⁶ The ICJ determined that Cameroon should have

⁷¹ The boundary was broadly midway between the 200 nautical mile boundary for Greenland and the equidistant line.

⁷² *Case Concerning Maritime Delimitations and Territorial Questions Between Qatar and Bahrain (Qatar v Bahrain)* [2001] ICJ Rep 40.

⁷³ The ICJ held that Qatar had sovereignty over Zubarah, and Janan islands, and Bahrain had sovereignty over Hawar and Qit'at Jaradah islands. The ICJ did not give effect to the islands in determining the maritime boundary as this was considered to be disproportionate. The ICJ also rejected Bahrain's submission that it was an archipelagic state.

⁷⁴ Robert Volterra, 'Recent Developments in Maritime Boundary Delimitations: reflections on certain aspects of the two UNCLOS cases,' (Paper presented at ABLOS 2001 Conference, UN Advisory Board on the Law of the Sea, Monaco, 18-19 October 2001) <<http://www.gmat.unsw.edu.au/ablos/#ABLOS01>> at 6 December 2012. Volterra commented that the island Qit'at Jaradah was 'bulldozed into the sea' by Qatar, however Bahrain brought satellite photographic evidence that the feature had become an island again 'through natural accretion', with a very small area above the sea at high tide. Volterra notes that at 10 years it is the longest running maritime boundary case considered by the ICJ

⁷⁵ *Land and Maritime Boundary between Cameroon and Nigeria (Cameroon v Nigeria, Equatorial Guinea intervening)* [2002] ICJ Rep 303.

⁷⁶ Nigeria contended that prior agreements did not apply as final delimitations, and that Nigerian settlement and occupation should establish sovereignty. Cameroon contended that the concavity of the Gulf of Guinea in general, and of Cameroon's coastline in particular, creates a virtual enclavement of Cameroon, which constitutes a special circumstance to be taken into account in the delimitation process. Cameroon also contended that Equatorial Guinea's Bioko Island constituted a relevant circumstance as it reduced the seaward projection of Cameroon's coastline. The ICJ did not accept these contentions as concavity of coast did not relate to boundary area but rather Bioko Island area, and that third state.

sovereignty over the Bakassi Peninsula,⁷⁷ and adopted the equidistance line for the Gulf of Guinea;⁷⁸

- The *Maritime Delimitation between Nicaragua and Honduras in the Caribbean Sea* in 2007 determined the maritime boundary between Nicaragua and Honduras.⁷⁹ The ICJ awarded sovereignty of four islands to Honduras, and determined the boundary generally based on a line formed by bisecting the angle created by the linear approximations of coastlines adjusted for the 12-mile breadth of territorial sea around the four islands.
- The *Black Sea* case in 2009, determined under LOSC, concerned the delimitation of the maritime boundary between Romania and Ukraine in the Black Sea.⁸⁰ The ICJ approach was to determine a provisional equidistance line, and then analyse if any special circumstances should alter that line.⁸¹ The ICJ essentially did not consider any circumstances should alter the equidistance line;
- The *Territorial Dispute and Maritime Delimitation between Nicaragua and Colombia* case in 2012 concerned the maritime boundary relating to maritime features, including islands and low tide elevations in the Caribbean Sea.⁸² The

⁷⁷ The ICJ determined the boundary as extending from a tri-point in Lake Chad (Chad, Cameroon and Nigeria boundaries), essentially based on prior agreements including the Milner-Simon Declaration of 1919, southward to the mouth of the River Ebeji, then to the bifurcation of the River Ebeji into separate streams. The sovereignty of the Bakassi Peninsula was primarily based on the Anglo-German Treaty of 1913, *Agreement between the United Kingdom and Germany respecting (1) the Settlement of the Frontier between Nigeria and the Cameroons, from Yola to the Sea, and (2) the Regulation of Navigation on the Cross River*, 11 March 1913, TS 013/1913 231 (entered into force 11 March 1913) ('Anglo-German Treaty of 1913').

⁷⁸ *Land and Maritime Boundary between Cameroon and Nigeria (Cameroon v Nigeria, Equatorial Guinea intervening)* [2002] ICJ Rep 303, 447. The ICJ did not accept the Nigerian contention that the Court could not redistribute oil concessions through maritime delimitation. The ICJ stated:

Overall, it follows from the jurisprudence that, although the existence of an express or tacit agreement between the parties on the siting of their respective oil concessions may indicate a consensus on the maritime areas to which they are entitled, oil concessions and oil wells are not in themselves to be considered as relevant circumstances justifying the adjustment or shifting of the provisional delimitation line. Only if they are based on express or tacit agreement between the parties may they be taken into account.

⁷⁹ *Territorial And Maritime Dispute Between Nicaragua And Honduras In The Caribbean Sea* (Nicaragua V. Honduras) [2007] ICJ Rep 145.

⁸⁰ *Maritime Delimitation in the Black Sea (Romania v Ukraine)*, [2009] ICJ Rep. 61.

⁸¹ The ICJ considered the coasts and maritime area, the disproportion between the length of coasts, the enclosed nature of the Black Sea, the effect of the presence of Serpents Island, the conduct of the parties, and security considerations of the parties.

⁸² *Territorial Dispute and Maritime Delimitation (Nicaragua v. Colombia)* [2012] ICJ Rep 624 <<http://www.icj-cij.org/docket/index.php?p1=3&p2=3&case=124&code=nicol&p3=5>> at 6 May 2013. The ICJ held that the 1928 Treaty between Columbia and Nicaragua did not apply, as the 'San Andrés Archipelago' in the Treaty did not conclusively apply to islands in the ICJ case. *Treaty concerning*

ICJ principally held that disparity in coastal lengths was a relevant factor to adjust a provisional equidistance line in favour of Nicaragua;⁸³ and

- The *Case concerning Maritime Delimitation between the Republic of Peru and the Republic of Chile (Peru v. Chile)* was decided by the ICJ on 27 January 2014.⁸⁴ Peru requested the ICJ to determine the maritime boundary.⁸⁵ The ICJ held that the boundary extended for 80 nautical miles west from the land boundary under tacit maritime boundary agreement as evidenced by the 1954 *Special Maritime Frontier Zone Agreement*.⁸⁶ The boundary then extended in a south westerly direction based on equidistance line between the two states.⁸⁷

Table 4 – 1 ICJ Maritime Boundary Delimitation Cases

Territorial Questions at Issue between Colombia and Nicaragua, 24 March 1928, 105 LNTS 337. The ICJ held that one feature of the Quitasueño group, 'QS32', qualified as an island, to which sovereignty could apply. The other features in the group were held to be low tide elevations, which would not support sovereignty. The ICJ held that Colombia had sovereignty over the islands at Albuquerque, Bajo Nuevo, East-Southeast Cays, Quitasueño, Roncador, Serrana and Serranilla, principally based on Colombia's acts of administration with respect to the islands. Two cases between Nicaragua and Colombia were referred to the ICJ in 2013. The *Alleged Violations of Sovereign Rights and Maritime Spaces in the Caribbean Sea (Nicaragua v. Colombia)* case concerns the violations of Nicaragua's sovereign rights and maritime zones declared by the Court's Judgment of 19 November 2012, at <<http://www.icj-cij.org/docket/files/155/17806.pdf>> at 21 August 2015. The *Question of the Delimitation of the Continental Shelf between Nicaragua and Colombia beyond 200 nautical miles from the Nicaraguan Coast (Nicaragua v. Colombia)* case concerns the delimitation of the boundaries between, on the one hand, the continental shelf of Nicaragua beyond the 200-nautical-mile limit from the baselines from which the breadth of the territorial sea of Nicaragua is measured, and on the other hand, the continental shelf of Colombia, at <<http://www.icj-cij.org/docket/files/154/17530.pdf>> at 21 August 2015.

⁸³ The line determined by the ICJ was constructed using a 3:1 ratio between Nicaraguan and Colombian base points. The effectiveness of the ICJ ruling is in question, however, as Columbia announced its withdrawal from ICJ jurisdiction. Juan Manuel Santos, President of Columbia, announced:

The borders between nations cannot be in the hands of a court of law. They must be drawn by agreement between the countries involved.

'Colombia pulls out of International Court over Nicaragua' *BBC News*, 28 November 2012, <<http://www.bbc.co.uk/news/world-latin-america-20533659>> at 6 May 2013.

⁸⁴ *Maritime Dispute (Peru v. Chile)* (To be reported) (Case pending at 2013) <<http://www.icj-cij.org/docket/index.php?p1=3&p2=1&code=&case=137&k=88>> at 6 May 2013.

⁸⁵ The issue relates to a) an area next to the coast, where Chile claims the boundary to follow the circle of latitude based on declarations signed with Peru and Ecuador in 1952 and 1954, and Peru claims the boundary is the equidistance line, and b) the adjacent area which Chile considers high seas, and Peru claims as continental shelf. 'Chile-Peru spat over sea border' *BBC News*, 17 January 2008, <<http://news.bbc.co.uk/2/hi/americas/7194854.stm>> at 9 May 2013.

⁸⁶ *Special Maritime Frontier Zone Agreement* (Chile, Ecuador and Peru) 4 December 1954, 2274 UNTS 527 (entered into force 21 September 1967).

⁸⁷ The ICJ summarised its analysis as based on determining a provisional equidistance line unless there were compelling reasons to prevent this, analysis of whether there were relevant circumstances which may call for an adjustment to achieve an equitable result, and then a disproportionality test whether the result would be markedly disproportionate from the lengths of the respective coasts.

The following is a summary of ICJ maritime boundary delimitation cases based on a table by Rothwell and Stephens:⁸⁸

Year	Case Name	Parties	Boundary	Reference
1969	<i>North Sea Continental Shelf</i>	<i>Germany v Denmark, Germany v Netherlands</i>	Continental Shelf	[1969] ICJ Rep 3
1978	<i>Aegean Sea Continental Shelf</i>	<i>Greece v Turkey</i>	Continental Shelf	[1978] ICJ Rep 3
1982	<i>Case concerning the Continental Shelf</i>	<i>Tunisia v Libyan Arab Jamahiriya</i>	Continental Shelf	[1982] ICJ Rep 18
1984	<i>Case Concerning Delimitation Of The Maritime Boundary In The Gulf Of Maine Area</i>	<i>Canada v United States</i>	Single Continental Shelf and Fisheries Boundary	[1984] ICJ Rep 246
1985	<i>Case concerning the Continental Shelf</i>	<i>Libyan Arab Jamahiriya v Malta</i>	Continental Shelf	[1985] ICJ Rep 13
1992	<i>Land, Island and Maritime Frontier Dispute</i>	<i>El Salvador v Honduras, Nicaragua intervening</i>	Territorial Sea and Continental Shelf	[1992] ICJ Rep 351
1993	<i>Maritime Delimitation in the Area Between Greenland and Jan Mayen</i>	<i>Denmark v Norway</i>	Continental Shelf and Fisheries Boundary	[1993] ICJ Rep 38
1995	<i>Maritime Delimitation between Guinea-Bissau and Senegal</i>	<i>Guinea-Bissau v Senegal</i>	Single Continental Shelf and Fisheries Boundary	[1995] ICJ Rep 423
2001	<i>Maritime Delimitation and Territorial Questions between Qatar and Bahrain</i>	<i>Qatar v Bahrain</i>	Single Continental Shelf and Fisheries Boundary	[2001] ICJ Rep 40
2002	<i>Land and Maritime Boundary between Cameroon and Nigeria</i>	<i>Cameroon v Nigeria, Equatorial Guinea intervening</i>	Single Continental Shelf and Fisheries Boundary	[2002] ICJ Rep 303
2007	<i>Maritime Delimitation between Nicaragua and Honduras in the Caribbean Sea</i>	<i>Nicaragua v Honduras</i>	Single Continental Shelf and Fisheries boundary	[2007] ICJ Rep 145
2008	<i>Sovereignty over Pedra Branca/Pulau Batu Puteh, Middle Rocks and South Ledge</i>	<i>Malaysia v Singapore</i>	Territorial Sea	[2008] ICJ Rep 153
2009	<i>Maritime Delimitation in the Black Sea</i>	<i>Romania v Ukraine</i>	Single Continental Shelf and Fisheries Boundary	[2009] ICJ Rep 142
2012	<i>Territorial Dispute</i>	<i>Nicaragua v Colombia</i>	Island sovereignty,	[2012] ICJ Rep 624

⁸⁸ Rothwell and Stephens, above n 51, 393, and ICJ 'List of Cases referred to the Court since 1946 by date of introduction' <<http://www.icj-cij.org/docket/index.php?p1=3&p2=2> > at 8 February 2013.

	<i>and Maritime Delimitation</i>			
2013	<i>Maritime Dispute</i>	<i>Peru v. Chile</i>	Maritime boundary	[2014] (To be reported)

The ICJ delimitation decisions have developed from the original equitable principles/relevant circumstances approach,⁸⁹ including the *North Sea Continental Shelf* cases in 1969,⁹⁰ and the *Tunisia/Libya Continental Shelf* case in 1982,⁹¹ towards the standard three-step approach applied in the *Black Sea* case in 2009.⁹² The ICJ commenced with determining the equidistance line, analysed if this should be altered due to special circumstances, and then checked that the outcome avoids disproportionate results.

Rothwell and Stephens commented that natural prolongation of the coast has 'faded from significance' as a special circumstance, however factors such as disparity in the length of coasts, their direction and configuration, and associated geographical features such as islands, reefs, atolls, bays and peninsulas are relevant circumstances, and the court may consider them to be 'special circumstances' affecting the boundary delimitation.⁹³ Fisheries are generally not a relevant circumstance unless the ICJ has been requested to determine a fisheries boundary as in the *Greenland/Jan Mayen* case.⁹⁴ Traditional fishing grounds may be a special circumstance but only if 'altogether exceptional.'⁹⁵

The ICJ stated that oil deposits could be a relevant factor in the *Tunisia/Libya Continental Shelf* case in 1982, where concessions near the land boundary supported agreement to a maritime boundary.⁹⁶ The ICJ also considered oil concessions in the

⁸⁹ Hazel Fox et al, *Joint Development of Offshore Oil and Gas, A Model Agreement for States for Joint Development with Explanatory Commentary* (British Institute of International and Comparative Law, 1989) 32. The result was described in the BIICL Report as the 'very unsatisfactory' provision in Article 83(1) of LOSC:

The delimitation of the continental shelf between States with opposite or adjacent coasts shall be effected by agreement on the basis of international law as referred to in Article 38 of the Statute of the International Court of Justice in order to achieve an equitable solution...This provision is so widely drafted that it gives few guidelines to any tribunal. It may even be said that it enables a tribunal to reach a decision *ex aequo et bono*.

⁹⁰ *North Sea Continental Shelf Cases (Federal Republic of Germany v Denmark; Federal Republic of Germany v The Netherlands)* [1969] ICJ Rep 1, 39.

⁹¹ *Case Concerning the Continental Shelf (Tunisia/Libyan Arab Jamahiriya)* [1982] ICJ Rep 18.

⁹² *Case Concerning Maritime Delimitation in the Black Sea (Romania v Ukraine)*, [2009] ICJ Rep 61.

⁹³ Rothwell and Stephens, above n 51, 402.

⁹⁴ *Maritime Delimitation in the Area between Greenland and Jan Mayen (Denmark v Norway)*, [1993] ICJ Rep 38.

⁹⁵ Rothwell and Stephens, above n 51, 406.

⁹⁶ *Case Concerning the Continental Shelf (Tunisia/Libyan Arab Jamahiriya)* [1982] ICJ Rep 18, 84.

Gulf of Maine case in 1984,⁹⁷ and the *Libya/Malta Continental Shelf* case in 1985,⁹⁸ but found no evidence of agreement in those cases. The ICJ stated in the *Cameroon Nigeria* case that the presence of oil concessions would not be a circumstance to justify shifting a provisional delimitation line, unless the concessions showed express or tacit approval to a boundary between the parties.⁹⁹ The ICJ position has been followed in recent arbitration cases.¹⁰⁰

Rothwell and Stephens analysed the development of ICJ decisions together with the increasing application by the ICJ of treaty law. In the *North Sea Continental Shelf* cases in 1969,¹⁰¹ the ICJ determined that the continental shelf described in the Convention on the Continental Shelf was considered to have become part of customary international law,¹⁰² and the continental shelf was an inherent right of a coastal state.¹⁰³ The case is significant as a crystallisation of customary international law in respect of the continental shelf. This approach may be applied in future to LOSC OCS and Area regimes.

Customary international law was also considered in the *Tunisia/Libya Continental Shelf* case in 1982,¹⁰⁴ as Libya was not a party to the Convention on the Continental Shelf. In the *Gulf of Maine* case between the United States and Canada in 1984,¹⁰⁵ the court applied customary international law as it was requested to determine a single fisheries

⁹⁷ *Case Concerning Delimitation of the Maritime Boundary in the Gulf of Maine Area (Canada/United States of America)* 1984 ICJ Rep 246, 310.

⁹⁸ *Case Concerning the Continental Shelf (Libyan Arab Jamahiriya/Malta)* [1985] ICJ Rep 13, 28.

⁹⁹ *Land and Maritime Boundary between Cameroon and Nigeria (Cameroon v Nigeria, Equatorial Guinea intervening)* [2002] ICJ Rep 303, 448. The ICJ found no evidence of state agreement arising from the oil concessions.

¹⁰⁰ *Delimitation of the Maritime Boundary between Guinea and Guinea-Bissau (Guinea and Guinea Bissau)* (1986) 25 ILM 252, 281, *Case concerning Delimitation of Maritime Areas between Canada and the French Republic (St. Pierre et Miquelon)*, (1992) 31 ILM 1149, 1175, *Arbitration between Barbados and Trinidad and Tobago, relating to the delimitation of the exclusive economic zone and the continental shelf between them (Barbados/Trinidad and Tobago)*, Award (2006) 45 ILM 800, 856, and *Guyana v Suriname (Award of the Arbitral Tribunal)*, (2009) 47 ILM 164, 221.

¹⁰¹ *North Sea Continental Shelf Cases (Federal Republic of Germany v Denmark; Federal Republic of Germany v The Netherlands)* [1969] ICJ Rep 1, 39.

¹⁰² Rothwell and Stephens, above n 51, 107.

¹⁰³ *North Sea Continental Shelf Cases (Federal Republic of Germany v Denmark; Federal Republic of Germany v The Netherlands)* [1969] ICJ Rep 3, 19. The ICJ stated:

The rights of the coastal state in respect of the area of the continental shelf that constitutes a natural prolongation of its land territory into and under the sea exist ipso facto and ab initio, by virtue of its sovereignty over the land, and as an extension of it in an exercise of sovereign rights for the purpose of exploring the seabed and exploiting its natural resources. In short, there is here an inherent right.

¹⁰⁴ *Case Concerning the Continental Shelf (Tunisia/Libyan Arab Jamahiriya)* 1982 ICJ Rep 18.

¹⁰⁵ *Case Concerning Delimitation of the Maritime Boundary in the Gulf of Maine Area (Canada/United States of America)* 1984 ICJ Rep 246. Both states were parties to the Convention on the Continental Shelf.

and continental shelf boundary. The *Greenland/Jan Mayen* case between Denmark and Norway in 1993,¹⁰⁶ was the first time the court had to apply the Convention on the Continental Shelf as treaty law. The ICJ observed that case must still require consideration of customary law.

Rothwell and Stephens commented that only as recently as 2002 in the *Land and Maritime Boundary Case between Cameroon and Nigeria*¹⁰⁷ did the ICJ consider a case where LOSC was binding on both parties to the dispute, and that the court's treatment in the case highlighted that treaty law was closely aligned with customary international law in relation to maritime boundaries.¹⁰⁸ There has been a limited number of ICJ maritime boundary case since in 2009, which may suggest a continued interest by states in negotiated settlement of disputes including the use of JDZs.¹⁰⁹

The ICJ is also concerned with matters that relate to the exercise of state jurisdiction, such as the protection of the marine environment. In the *Whaling in the Antarctic* case,¹¹⁰ the ICJ determined that the Japanese Whale Research Programme is a breach of Japan's obligations under international treaties, including the International Convention for the Regulation of Whaling.¹¹¹

B. The International Tribunal for the Law of the Sea

¹⁰⁶ *Maritime Delimitation in the Area between Greenland and Jan Mayen (Denmark v Norway)* 1993, ICJ Rep 38.

¹⁰⁷ *Land and Maritime Boundary Case between Cameroon and Nigeria (Cameroon v Nigeria, Equatorial Guinea intervening)* [2002] ICJ Rep 303.

¹⁰⁸ Rothwell and Stephens, above n 51, 396.

¹⁰⁹ ICJ 'List of Cases referred to the Court since 1946 by date of introduction' <<http://www.icj-cij.org/docket/index.php?p1=3&p2=2> > at 8 February 2013.

¹¹⁰ *Whaling in the Antarctic (Australia v. Japan)* ICJ Pending Cases <<http://www.icj-cij.org/docket/index.php?p1=3&p2=1&code=aj&case=148&k=64> > at 5 September 2012.

¹¹¹ The action was brought by Australia on 1 June 2010. The case follows a successful Australian court action by the public interest organisation Humane Society International against the Japanese whaling company Kyodo Senpaku Kaisha Ltd. in the Australian Federal Court in *Humane Society International Inc v Kyodo Senpaku Kaisha Ltd* [2008] FCA 3. The Federal Court held that Japanese whaling was in breach of the *Australian Environmental Protection and Biodiversity Conservation Act 1999* (Cth), which prohibits whaling in areas including the EEZ extending from the Australian Antarctic Territory coast. Christopher C Joyner examined the case in Christopher C Joyner, 'Potential Challenges to the Antarctic Treaty' in Paul Arthur Berkman et al (eds) *Science Diplomacy: Antarctica, Science and the Governance of International Spaces* (Smithsonian Institution Scholarly Press, 2011). Joyner considered that Japan 'and 147 other states' would continue to consider the Southern Ocean as high seas, and Australian environmental legislation therefore unenforceable due to high seas freedoms under LOSC.

The ITLOS dispute resolution regime was established under LOSC Part XV to provide a court of judges and related procedures.¹¹² LOSC Annex VI provides the ITLOS statute including detailed procedures.¹¹³ The jurisdiction of ITLOS includes all disputes referred to it under the terms of LOSC, and therefore includes disputes referred under Part XV.¹¹⁴

ITLOS has considered one maritime boundary case to date in the *Bangladesh/Myanmar* case in 2012, relating to the maritime boundary in the Bay of Bengal.¹¹⁵ ITLOS determined a maritime boundary generally based on equidistance, giving effect to the Bangladeshi St Martin's Island.¹¹⁶ The case was very significant as the first judicial decision delimiting an OCS boundary.

ITLOS decisions have been relevant to the Southern Ocean in matters besides boundary delimitation. These cases include the preservation of the Antarctic environment in the *Camouco*, *Monte Confurco* and *Volga* 'prompt release' cases from 1997 to 2002,¹¹⁷ concerning vessels seized due to fishing contrary to the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR),¹¹⁸ and the *Southern Bluefin Tuna* cases in 1999,¹¹⁹ concerning a Japanese experimental fishing program contrary to the 1993 Convention for the Conservation of Southern Bluefin Tuna (CCSBT).¹²⁰

¹¹² The ITLOS court of judges has a similar role to the Permanent Court of Arbitration panel of arbitrators. The PCA has however resolved more boundary delimitation disputes than ITLOS at 2013, as discussed below.

¹¹³ LOSC Annex VI art 3. ITLOS comprises a court of 21 judges, who are required to be nationals of different states, and no more than three members may be from the same geographical group. Decisions are made by the majority of tribunal judges present under LOSC Annex VI art 29(1).

¹¹⁴ LOSC Annex VI art 21.

¹¹⁵ International Tribunal for the Law of the Sea, (Press Release, 29 January 2010) ITLOS/Press 142 <http://www.itlos.org/start2_en.html> at 18 February 2010.

¹¹⁶ International Tribunal for the Law of the Sea, Case No. 16, ITLOS Reports 2012, to be published, (Press Release, 14 March 2012) ITLOS/Press 175 <<http://www.itlos.org/index.php?id=108>> at 7 September 2012.

¹¹⁷ *Camouco (Panama v France)* (Prompt Release), ITLOS Case No. 5, (2000) 39 ILM 666, *Monte Confurco (Seychelles v France)* (Prompt Release), ITLOS Case No. 6, 125 ILR 203, and *Volga (Russian Federation v Australia)* (Prompt Release) ITLOS Case No. 11, (2003) 42 ILM 159. The Prompt Release Cases from 1997 to 2002 concerned the prompt release of vessels, which concern the right of crews of vessels to be released for a reasonable legal bond which is forfeited in the event of future non-compliance with legal proceedings or used to satisfy local court judgements. Rothwell reviewed the decisions in Donald R Rothwell, 'Building on the Strengths and Assessing the Challenges: The Role of Law of the Sea Institutions' (2004) *Ocean Development and International Law*, 35(2), 131, 137. The cases are significant in relation to the Southern Oceans, as the three cases concerned vessels seized due to alleged illegal fishing within CCAMLR to preserve and protect the Antarctic environment. ITLOS considered that the related bonds should not take into account environmental concerns.

¹¹⁸ *Convention on the Conservation of Antarctic Marine Living Resources*, opened for signature 20 May 1980, 1329 UNTS 47 (entered into force 7 April 1982) ('CCAMLR').

¹¹⁹ *Southern Bluefin Tuna Cases (Australia v Japan; New Zealand v Japan)* Provisional Measures, Cases No. 3 and 4, 17 August 1999 (1999) 38 ILM 1624. The cases concerned efforts by Australia and New

ITLOS procedures have provided provisional orders as a form of injunctive relief pending a settlement. These cases are significant in demonstrating the potential capabilities of ITLOS. These cases include the *MOX Plant* case,¹²¹ where Ireland sought provisional orders from ITLOS in 2001 to prevent export of MOX through the Irish Sea, the *Straits of Johor* case,¹²² where Malaysia sought the suspension of land reclamation work by Singapore in 2005, and the *Arctic Sunrise* case in 2013 where the Netherlands sought the release by Russia of the Greenpeace protest vessel *MV Arctic Sunrise*, and the release of the vessel's crew.¹²³

ITLOS has therefore not been widely adopted by states to date to resolve maritime boundary delimitation disputes.¹²⁴ There has been greater use of the ICJ, and arbitral panels constituted in accordance with Annex VII of LOSC,¹²⁵ for maritime delimitation disputes.

C. International Arbitration

Zealand to halt Japan's experimental fishing program (EFP). ITLOS held that it had jurisdiction and imposed interim orders restricting size of catches, and prohibiting any parties engaging in EFPs. However the matter was then referred to arbitration and the interim orders were removed. The tribunal held that was an agreement to settle a dispute, and this precluded an arbitration procedure under LOSC. The CCSBT does not however contain a clear intention to replace the arbitration procedures of Part XV of LOSC.

¹²⁰ *Convention for the Conservation of Southern Bluefin Tuna*, opened for signature 10 May 1993, 1819 UNTS 360 (entry into force 20 May 1994).

¹²¹ *MOX Plant Case (Ireland v United Kingdom)* (2002) 41 ILM 405. The MOX Plant Case in 2001 concerned the mixed oxide fuel (MOX) produced at the United Kingdom's nuclear facility at Sellafield. MOX is a blend of plutonium and natural or depleted uranium. Ireland sought provisional orders from ITLOS in November 2001 to prevent export of MOX through the Irish Sea pending a referral to arbitration under Annex VII of LOSC. The Arbitral Tribunal however held that there were 'substantial doubts' whether its jurisdiction could be established due to the possibility of litigation at the European Court of Justice, and suspended proceedings pending resolution of the European Community law issues relating to the case.

¹²² *Case concerning Land Reclamation by Singapore in and around the Straits of Johor (Malaysia v. Singapore)*, decision of 1 September 2005, 27 Reports of International Arbitral Awards, 133.

¹²³ *The Arctic Sunrise Case (Netherlands v Russia)*, Case No. 22, ITLOS/PV.13/C22/1. The ITLOS provisional measures were made on the basis of the Netherlands position that Russia as the coastal State may not exercise its enforcement jurisdiction over a vessel flying the flag of a third State within its exclusive economic zone. However it is important to emphasise that such ITLOS provisional measures are without prejudice to the substantive issue.

¹²⁴ ITLOS may be arguably be expected to have a significant role in future maritime delimitation cases depending on i) the number of declarations under art. 287 choosing it as a preferred forum, and ii) the number of cases begun under Annex VII arbitration but then transferred to ITLOS by agreement between the parties.

¹²⁵ These cases support an effective role for ITLOS in relation to maritime boundary disputes and environmental disputes, providing that the parties have accepted ITLOS jurisdiction..

LOSC Part XV provides that a state may refer a dispute to arbitration under Annex VII.¹²⁶ Several delimitation cases have been decided by the Permanent Court of Arbitration (PCA),¹²⁷ and several cases have been referred to the PCA since LOSC came into force.¹²⁸

International arbitrations concerning maritime boundary delimitation have generally been decided by an ad-hoc arbitral tribunal, where the composition and terms of reference were determined by the parties. International arbitrations include the following awards:

- The *Grisbadarna* case in 1909,¹²⁹ concerned the boundary in the territorial sea between the coasts of Norway and Sweden. The PCA tribunal's decision referred to acts carried out by Sweden,¹³⁰ and the absence of objections by Norway. The tribunal stated in respect of Sweden that 'she not only thought she was exercising her right but even more that she was performing her duty';¹³¹

¹²⁶ LOSC annex VII art 11. A list of arbitrators is maintained by the Secretary General of the United Nations. The arbitration panel of five members will consist of one arbitrator appointed by each state, and three arbitrators agreed by both states. The award of the arbitration tribunal is final unless the parties had agreed in advance to an appeal procedure. The members are to be 'preferably' selected from a list of arbitrators maintained by the UN Secretary-General.

¹²⁷ The Permanent Court of Arbitration has considered five of the six cases that have been arbitrated under Annex VII of UNCLOS as at 2012. Permanent Court of Arbitration, 'Ad Hoc Arbitration Under Annex VII of the United Nations Convention on the Law of the Sea', <http://www.pca-cpa.org/showpage.asp?pag_id=1288> at 14 January 2013. The cases are as follows:

- *Bangladesh v. India*, (maritime boundary delimitation case), instituted in October 2009 and decided on 7 July 2014;
- *Ireland v. United Kingdom ('MOX Plant Case')*, instituted in November 2001 and terminated through a tribunal order issued on June 6, 2008;
- *Malaysia v. Singapore*, instituted in July 2003 and terminated by an award on agreed terms rendered on September 1, 2005;
- *Barbados v. Trinidad and Tobago*, (maritime boundary delimitation), instituted in February 2004 and decided by a final award rendered on April 11, 2006; and
- *Guyana v. Suriname*, (maritime boundary delimitation), instituted in February 2004 and decided by a final award rendered on September 17, 2007.

¹²⁸ Churchill and Lowe, above n 24, 451. The Permanent Court of Arbitration (PCA) provides a standing panel of arbitrators and related procedures. The two PCA cases since LOSC came into force were the Barbados and Trinidad and Tobago Arbitration, and the Guyana and Suriname Arbitration.

¹²⁹ *Maritime Boundary Dispute between Norway and Sweden*, Permanent Court of Arbitration, (1910) 4 *American Journal of International Law* 226 ('*Grisbadarna case*').

¹³⁰ These acts included the maintenance of a light-boat and a large number of navigational beacons.

¹³¹ Nuno Sergio Marques Antunes, 'Estoppel, Acquiescence and Recognition in Territorial and Boundary Dispute Settlement' (2000) 2(8) *IBRU Boundary & Territory Briefing* 8. Antunes described Sweden's reliance on Norway inaction gave rise to an estoppel which precluded Norway from claiming title over the Grisbadarna Banks.

- The *Anglo-French Continental Shelf* case in 1977,¹³² concerned delimitation of the continental shelf in the English Channel extending westward to the Atlantic Ocean.¹³³ The Court of Arbitration held that the maritime boundary was generally the median line between the United Kingdom and France, extending into the Atlantic Ocean, giving the Scilly Islands half effect, and the Channel Islands no effect,¹³⁴
- The *Beagle Channel* arbitration in 1977,¹³⁵ concerned the maritime boundary between Chile and Argentina in the Beagle Channel as it enters the Atlantic Ocean. The issues included the interpretation of the *Boundary Treaty* of 1881.¹³⁶ The arbitration tribunal determined that Chile had sovereignty over Picton, Lennox and Nueva islands, and that the boundary was to be located in the middle of the channel north of the islands;¹³⁷
- The *Dubai/Sharjah Border* arbitration in 1981,¹³⁸ concerned the land and maritime boundary between Dubai and Sharjah, within the United Arab Emirates. In relation to the maritime boundary the tribunal adopted a boundary based on equidistance, with effect given to Abu Musa Island claimed by Sharjah,¹³⁹
- The *Guinea/Guinea-Bissau Maritime Boundary* case in 1985,¹⁴⁰ concerned the delimitation of the territorial waters, EEZ and continental shelf between Guinea

¹³² *Delimitation of the Continental Shelf (United Kingdom of Great Britain and Northern Ireland and the French Republic)* (1979) 18 ILM 379 ('*Anglo French Continental Shelf Case*').

¹³³ The United Kingdom submitted that the boundary should be the median line between the Channel Islands and the French coast. France submitted that the boundary should be the median line between the United Kingdom and French coasts without giving effect to the Channel Islands.

¹³⁴ The Court of Arbitration provided a 12 nautical mile enclave around the Channel Islands.

¹³⁵ *Beagle Channel Arbitration between the Republic of Argentina and the Republic of Chile* (1977) 52 ILR 93 ('*Beagle Channel Arbitration*').

¹³⁶ *Boundary Treaty between the Argentine Republic and Chile*, opened for signature 23 July 1881, 159 CTS 45 (entered into force 23 July 1881) ('*Argentine Chile Boundary Treaty*').

¹³⁷ The case would also have limited Argentina's claims made on a sector basis to the Antarctic continent, however the subsequent Treaty of Peace and Friendship in 1984 established the maritime boundary extending south from the South American continent from the Drake Passage further to the west. *Treaty of Peace and Friendship of 1984 between Chile and Argentina*, opened for signature 29 November 1984 1399 UNTS 102 (entry into force 2 May 1985).

¹³⁸ *Dubai Sharjah Border Arbitration (Dubai v Sharjah)* (1993) 91 ILR 543.

¹³⁹ This was made notwithstanding dispute over sovereignty of Abu Musa Island between Sharjah and Iran.

¹⁴⁰ *Delimitation of the Maritime Boundary between Guinea and Guinea-Bissau (Guinea and Guinea Bissau)* (1986) 25 ILM 252.

and Guinea-Bissau on the West African coast.¹⁴¹ The Court of Arbitration held that equidistance was unsatisfactory as it would exaggerate the effect of certain coastal features, and would make an enclave in respect of Guinea;¹⁴²

- The *Case Concerning the Delimitation of Maritime Area between Canada and the French Republic*,¹⁴³ decided in 1992, related to the EEZ and continental shelf of the French territory of Saint Pierre and Miquelon.¹⁴⁴ The tribunal awarded France a 24 nautical mile zone on the west of the islands, and a narrow corridor extending 188 nautical miles to the south extending to the high seas;¹⁴⁵
- In the *Eritrea/Yemen* arbitration¹⁴⁶ in 1999, the PCA tribunal considered the maritime boundary delimitation between Eritrea and Yemen in the Red Sea. The tribunal generally provided a median line adjusted for mid-sea islands.¹⁴⁷ Barbara Kwiatkowska commented that the arbitration panel therefore reaffirmed the approach of the ICJ on the governing role of equidistance;¹⁴⁸
- The *Barbados/Trinidad and Tobago* arbitration in 2006,¹⁴⁹ was referred to the PCA, applying compulsory arbitration under LOSC article 286 concerning the

¹⁴¹ Guinea-Bissau submitted that the boundary should be based on equidistance. Guinea submitted however that the equidistance principle would favour Guinea-Bissau.

¹⁴² The general coastline of West Africa was therefore considered, and the maritime boundary was made perpendicular to the baseline.

¹⁴³ *Case Concerning the Delimitation of Maritime Area between Canada and the French Republic (Canada and the French Republic)*, (1992) 31 ILM 1145.

¹⁴⁴ The French islands of Saint Pierre and Miquelon are located between the Canadian coast of Newfoundland and Labrador to the north, and the Canadian coast of Nova Scotia to the south.

¹⁴⁵ The representatives of Canada and France both dissented from the decision.

¹⁴⁶ *Eritrea/Yemen Arbitration (Eritrea and Yemen)* (2001) 40 ILM 983. The maritime boundary decision was the second phase of the dispute, and the Panel had already ruled on the sovereignty of four islands in the related area in the first phase. The states differed as to the effect to be given to certain islands in the Red Sea. The tribunal adopted a median line based on opposite coasts in the northern sector of the dispute, a modified median line giving mid-sea islands partial effect in the middle sector, and a median line based on opposite coasts in the southern sector.

¹⁴⁷ Volterra, above n 74. Volterra commented that the Tribunal also made provisions to allow access to traditional fishing grounds for Eritrean fishermen while seeming to limit access by Yemeni fishermen. Volterra considered this issue appears not fully resolved by the Tribunal.

¹⁴⁸ Barbara Kwiatkowska commented as follows:

It confirms prominence of a single all-purpose maritime boundary and the governing role of equidistance (median line) as the equitable boundary between the opposite states. Thereby, the *Eritrea/Yemen* Award reaffirms pronouncements of the *1993 Denmark v. Norway (Jan Mayen)* Judgment on uniformity of the effects of the treaty and customary law of equitable maritime delimitation in the case of opposite coasts.

Barbara Kwiatkowska, 'The Eritrea/Yemen Arbitration: Landmark Progress In The Acquisition Of Territorial Sovereignty and Equitable Maritime Boundary Delimitation' [2000] *IBRU Boundary and Security Bulletin* 66.

¹⁴⁹ *Arbitration between Barbados and Trinidad and Tobago, relating to the delimitation of the exclusive economic zone and the continental shelf between them (Barbados/Trinidad and Tobago)*, Award (2006)

EEZ and continental shelf boundary. The tribunal applied the provisional equidistance line, with adjustment in the eastern area based on relevant circumstances, including relevant coasts and their projection, proportionality, and treaties;¹⁵⁰

- The *Guyana and Suriname* arbitration in 2007,¹⁵¹ was referred to the PCA under LOSC article 286. The case concerned the maritime boundary in the Atlantic Ocean.¹⁵² The tribunal modified the median line for the territorial sea, due to navigation as a special circumstance, used a provisional equidistance line for the EEZ and continental shelf, and determined there were no relevant circumstances to adjust that line;¹⁵³ and
- The *Bay of Bengal* arbitration in 2014,¹⁵⁴ was made by the PCA under the default arbitration provisions, as neither country had chosen a dispute resolution measure. India had argued that equidistance should apply. Bangladesh argued that equidistance was not appropriate as it had a concave coastline, and would also result in a cut off between the boundaries with India and Myanmar. There was also an issue of disputed sovereignty over New Moore Island. The adjusted

45 ILM 800. Barbados had claimed a boundary near the Trinidad and Tobago coast in the eastern area due to Barbados' traditional fishing activities. Trinidad and Tobago had claimed an area beyond the equidistance line in the eastern area. The claims were not accepted by the arbitral panel. The arbitral panel also determined a single boundary line for the delimitation of both the continental shelf and the EEZ in the eastern area, without prejudice to the question of the separate legal existence of the EEZ and the continental shelf. The presence of oil concessions did not adjust the equidistance line in the absence of estoppel or acquiescence.

¹⁵⁰ These adjustments resulted in a small extension adjusted in favour of Trinidad and Tobago at the eastern end of the boundary.

¹⁵¹ *Guyana v Suriname (Award of the Arbitral Tribunal)*, (2009) 47 ILM 164.

¹⁵² Suriname argued that the delimitation should be based on a de facto agreement between the Netherlands and the United Kingdom extending at north 10° east from the mouth of the Corentyne River (the land boundary was not agreed). Guyana argued that the delimitation line should follow an 'historical equidistance line' extending at north 34° east from the same point.

¹⁵³ The Tribunal held that the relevant coastlines did not present any marked concavity or convexity or difference in proportionality. The Tribunal also did not accept the relevance of the conduct of the Parties in the delimitation, including the June 2000 'CGX incident' concerning the drilling rig *C E Thornton* and two support vessels engaged by CGX Resources Inc. under a Guyanese offshore oil concession. The *C E Thornton* and support vessels were ordered to leave the disputed area by two Surinamese naval vessels. The Tribunal commented on the role of equidistance as follows:

'In the course of the last two decades international courts and tribunals dealing with disputes concerning the delimitation of the continental shelf and the exclusive economic zone have come to embrace a clear role for equidistance.'

The tribunal also held that the oil practice of the parties, including the granting of concessions, should not be taken into account.

¹⁵⁴ *Bay of Bengal Maritime Boundary Arbitration (Bangladesh v India) Award* (2014), <http://www.pca-org.org/showpage.asp?pag_id=1376> at 18 October 2014.

the provisional equidistance line substantially in favour of Bangladesh. The PCA did not give a detailed explanation of the amount of the adjustment.

Tim Stevens commented that states may have a preference for arbitration over judicial settlement for environmental disputes, as states may have greater confidence over a process they substantially control.¹⁵⁵

Significant environmental cases decided by the PCA included the *Trail Smelter* case,¹⁵⁶ which assisted in establishing the polluter pays principle in relation to pollution extending beyond state boundaries, and the *Bering Sea Fur Seals* case,¹⁵⁷ which considered whether protection of the fur seal was an international duty. More recent cases under Annex VII of LOSC included the *Southern Bluefin Tuna* case,¹⁵⁸ and the *MOX Plant* case,¹⁵⁹ discussed above. Stevens commented that there are potential gaps and overlaps in current arbitration and judicial remedies, and there was a related issue of 'forum shopping' between alternative dispute resolution regimes.¹⁶⁰

International arbitration is also significant for JDZ Model Agreements examined in Chapter VII, in that international arbitration has been adopted for dispute resolution, including the determination of rights and responsibilities between states, and relations with oil and gas companies and contractors.

Table 4–2 International Maritime Boundary Delimitation Arbitrations

The following table is a summary of the selected international arbitrations, including PCA, ITLOS and ad-hoc arbitration panels:

Year	Case Name and Forum	Parties	Boundary	Reference
1909	<i>Grisbadarna case</i> – PCA	<i>Norway v Sweden</i>	Territorial Sea	(1910) 4 American Journal of International Law 226
1977	<i>Anglo-French</i>	<i>United Kingdom v</i>	Continental Shelf	(1979) 18 ILM 379

¹⁵⁵ Tim Stephens, *International Courts and Environmental Protection* (Cambridge University Press, 2009) 28.

¹⁵⁶ *Trail Smelter* case (Canada/United States) (1938 and 1941) 3 RIAA 1911.

¹⁵⁷ *Bering Sea Fur Seals* case, (Great Britain/United States) 1893) 1 Moore 827.

¹⁵⁸ *Southern Bluefin Tuna* cases (*Australia v Japan*; *New Zealand v Japan*) Provisional Measures, Cases No. 3 and 4, 17 August 1999 (1999) 38 ILM 1624.

¹⁵⁹ *MOX Plant* case (*Ireland v United Kingdom*) (2002) 41 ILM 405.

¹⁶⁰ Stephens, above n 155, 28.

	<i>Continental Shelf case – Ad hoc</i>	<i>France</i>		
1977	<i>Beagle Channel Arbitration – Ad hoc</i>	<i>Argentina v Chile</i>	Territorial Sea	(1977) 52 ILR 93
1981	<i>Dubai/Sharjah Border Arbitration – Ad hoc</i>	<i>Dubai v Sharjah</i>	Territorial Sea and Continental Shelf	(1993) 91 ILR 543
1985	<i>Guinea/Guinea-Bissau Maritime Boundary – Ad hoc</i>	<i>Guinea v Guinea-Bissau</i>	Territorial Sea, EEZ and continental shelf	(1986) 25 ILM 252
1992	<i>Delimitation of Maritime Area between Canada and the French Republic – Ad hoc</i>	<i>Canada v France</i>	EEZ and continental shelf	(1992) 31 ILM 1145
1999	<i>Eritrea/Yemen Arbitration – PCA</i>	<i>Eritrea v Yemen</i>	Island sovereignty, territorial Sea, EEZ and continental shelf	(2001) 40 ILM 983
2006	<i>Barbados/Trinidad and Tobago Arbitration – PCA</i>	<i>Barbados v Trinidad and Tobago</i>	EEZ and continental shelf	(2006) 45 ILM 800
2007	<i>Guyana/ Suriname Arbitration – PCA</i>	<i>Guyana v Suriname</i>	Territorial Sea, EEZ and continental shelf	(2009) 47 ILM 164
2014	<i>Bay of Bengal Maritime Boundary Arbitration</i>	<i>Bangladesh v India</i>		<i>Award of 7 July 2014</i>

4. The International Seabed Authority (ISBA) and the Arctic and Southern Ocean Regions

A. Introduction

The International Seabed Authority (ISBA) was established under LOSC Part XI to develop the Area, which is defined as the sea-bed and ocean floor and subsoil beyond the limits of national jurisdiction.¹⁶¹ As discussed in Chapter II, LOSC declares the Area and its resources to be the common heritage of mankind,¹⁶² and defines these resources to include all solid, liquid or gaseous mineral resources in the Area at or beneath the seabed.¹⁶³ The Enterprise was established to carry out exploration and exploitation activities in the Area, and for transporting, processing and marketing of resources from the Area.¹⁶⁴ Exploration and development in the Area may be undertaken by the Enterprise established under LOSC Annex IV, or other entities which are licenced by ISBA.

¹⁶¹ LOSC Part XI.

¹⁶² LOSC art 136.

¹⁶³ LOSC art 133.

¹⁶⁴ LOSC art 170.

The Area regime was principally established for deep seabed mining of poly-metallic nodules including manganese, polymetallic sulphides and ferromanganese crusts located on the deep seabed. The regime would, however, also apply to oil and gas development, which may arise beyond the continental shelf in the longer term with related developments in technology.¹⁶⁵ Such activities would principally relate to the abyssal plain, which is generally defined as the seabed below 2,000 meters water depth.¹⁶⁶

This depth should be considered in the light of the 2010 Deepwater Horizon offshore oil spill, where environmental measures failed at the Macondo well in the Gulf of Mexico at a water depth of 1,259 metres.¹⁶⁷ Environmental protection measures will be of extreme importance for any oil and gas development at the water depths in the Area.

The Area regime may be considered as a form of JDZ, where activities will be carried out by the Enterprise, states, and also by oil and gas companies licenced by ISBA, without being subject to any state's sovereignty. The Area regime can be considered as a decision by countries to pool rights over resources beyond coastal state jurisdictions, and the undertaking of a form of joint management by ISBA. There is an issue whether this would be an effective model for the Arctic and Southern Oceans, in that oil and gas exploration and exploitation will be carried out in environmentally very sensitive areas, and may be assisted by integration with environmental administrations in adjacent areas, such as the Arctic Council and Antarctic Treaty regimes. This issue is examined in Chapter VIII.

B. 1994 Implementation Agreement

The Part XI regime was substantially modified by the 1994 Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea

¹⁶⁵Though the related drilling was not in the Area, an example of deep water drilling was the Transocean Ltd semi-submersible rig *Deepwater Horizon* drilling an oil and gas well for BP in the U.S. Gulf of Mexico, to 35,050 feet depth, (more than six miles) while operating in 4,130 feet (1259 meters) of water. Reported in *Scandinavian Oil and Gas Magazine*, 3 September 2009, at <http://www.scandoil.com/moxie-bm2/news/transoceans-deepwater-horizon-drills-worlds-deepes.shtml>.

¹⁶⁶Chris Park, *A Dictionary of Environment and Conservation* (Oxford University Press, 2007) <http://oxfordindex.oup.com/search?q=abyssal> at 8 February 2013.

¹⁶⁷The *Deepwater Horizon* rig was later involved in the Macondo oil spill in the Gulf of Mexico in 2010, indicating that offshore environmental protection technology currently lags significantly behind offshore drilling technology.

(Implementation Agreement).¹⁶⁸ The Implementation Agreement was made in response to concerns expressed by United States with the Part XI regime.¹⁶⁹ Bernard H Oxman commented that these changes included the ISBA decision making process, Finance Committee, licence applications to ISBA, and the activities of the Enterprise.¹⁷⁰

Churchill and Lowe note that the Implementing Agreement abolished production ceilings and preferential treatment of the Enterprise, and that pioneer investors were approved in 1998.¹⁷¹ Rothwell notes that the Area regime has developed in important respects including the finalisation in 2000 of the Regulation on Prospecting and Exploration for Polymetallic Nodules in the Area (Mining Code),¹⁷² which addresses a

¹⁶⁸ *Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982*, opened for signature 28 July 1994, 1994 UNTS 42 (entered into force provisionally 16 November 1994) (1994 Implementation Agreement).

¹⁶⁹ John Turner, 'Accession to the 1982 Law of the Sea Convention and Ratification of the 1994 Agreement Amending Part XI of the Law of the Sea Convention,' Testimony before the Senate Environment and Public Works Committee, 23 March 2004, Senate Treaty Document 103-39; Senate Executive Report 108-10. Turner was the Assistant Secretary of State, Oceans and International Environmental and Scientific Affairs, in testimony before the United States Senate Environment and Public Works Committee, examined how many of the United States issues with LOSC and the International Seabed Authority have been addressed by this Agreement

¹⁷⁰ Bernard H Oxman, 'The 1994 Agreement and the Convention' (1994) 88(4) *The American Journal of International Law* 687. Oxman commented that the Implementation Agreement:

- Amended the ISBA decision making process to guarantee the United States a seat on the decision making body of the ISBA, as the State on the date of entry into force of the Convention having the largest economy in terms of gross domestic product, 1994 Implementation Agreement, Annex, Section 3 paragraph 15.
- Provided a revised voting mechanism, where no substantive obligation can be imposed on a state, and no amendment can be adopted without the consent of the state which has major economic interests, section 3 paragraphs 5, 9, 10 and 15. Two of the chambers are likely to be controlled by major industrialised states, the United States is guaranteed a seat on one of the chambers, and decisions cannot be made if blocked by the majority in any one of the chambers.
- Provided that decisions shall be based on recommendations of the Finance Committee, and the United States and other major contributors are guaranteed seats on the Finance Committee which requires consensus for decisions. States would no longer be required to contribute funds to finance the Enterprise. Annex, Section 2 para 7, Sections 3 para 4, 7 and 9, section 9 para 8.
- Allowed reasonable access for approving applications, addressing previous concerns that applications could be blocked for political reasons. In relation to administration and concerns over issuing regulations impeding operations, ISBA has been restricted to administering the deep seabed mining regime, Annex section 1 para 9, section 6 para 3, section 7 para 1.
- Prohibits the mandatory transfer of technology and production ceilings, section 5 para 2 and section 6 para 7.
- Provides that activities of the Enterprise are subject to the same LOSC requirements as commercial enterprises, and allows the United States and other investors to block activation of the Enterprise unless it conducts operations through joint ventures that accord with sound commercial principles. Annex section 2 para 2 and para 4.

¹⁷¹ Churchill and Lowe, above n 24, 251. The pioneer investors are the Government of India, the Institut Français pour l'exploitation de la Mer, Association Française pour l'étude et la Recherche des Nodules, Deep Ocean Resources Development company, Yuzhmorgeologiya, China Ocean Mineral Research and Development Association, INTROCEANMETAL Joint Organisation.

¹⁷² International Seabed Authority, 'Decision of the Assembly relating to the regulations on prospecting and exploration for poly-metallic nodules in the Area' (13 July 2000) UN Doc. ISBA/6/A/18 ('Mining Code').

range of administrative, contractual, legal, and technical issues.¹⁷³ The Mining Code concerns poly-metallic nodules, and a new code would be required for oil and gas development. The development of the Mining Code and the approval of pioneer investors are significant as this demonstrates ISBA's developing capacity to develop and implement a regulatory regime. The Authority has to date issued Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area (adopted 13 July 2000) which was later updated and adopted 25 July 2013; the Regulations on Prospecting and Exploration for Polymetallic Sulphides in the Area (adopted 7 May 2010) and the Regulations on Prospecting and Exploration for Cobalt-Rich Crusts (adopted 27 July 2012).¹⁷⁴

LOSC Annex III prior to the Implementation Agreement allowed the contractor to elect between a production-based charge,¹⁷⁵ or production based charge combined with a share of net proceeds.¹⁷⁶ The LOSC Part XI regime was essentially a royalty regime on production, and did not prevent the respective state most closely connected to the oil company from taxing that company on its related income from the Area.

Following the changes under the Implementation Agreement, ISBA's consent to authorise production is made on a 'first come, first served' basis, and this consent is based on financial and technical capabilities of the applicant. ISBA's responsibilities and powers have also been amended by eliminating the requirement for contributions from operators for the assistance to developing countries. States are also no longer required to contribute to resource activities of the Enterprise. ISBA's powers and responsibilities have therefore essentially been restricted to administering the deep seabed mining regime.

The broader significance of the Implementation Agreement goes beyond the changes to the Part XI regime. The changes establish LOSC as able to adapt to changing member

¹⁷³ Rothwell, above n 117, 136. These issues include the rights and obligations of prospectors and explorers, including the Enterprise, environmental protection, confidentiality, contracts with the ISBA, and dispute settlement.

¹⁷⁴ International Seabed Authority, Mining Code, <<http://www.isa.org.jm/en/mcode>> at 11 August 2014.

¹⁷⁵ LOSC annex 3 art 13(5). Production based charge, at a rate to years 1-10 of commercial production of 5 per cent, and years 11 to the end of commercial production of 12 per cent.

¹⁷⁶ LOSC annex 2 art 13(6). Production based charge combined with a share of net proceeds, with the production based payment based on the period of commercial production from 2 per cent to 4 per cent, together with share of net proceeds, based on return on investment and period of production, from 35 per cent to 70 per cent.

interests, address issues of non-members, and promote LOSC as customary international law.

C. Recent Developments

Prospects for commercial mining of the deep sea-bed have initially not been optimistic, principally as the related costs were uncompetitive when compared to land based mining.¹⁷⁷ There have been several significant developments, however,¹⁷⁸ including the approval of Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area,¹⁷⁹ and ISBA has signed exploration contracts with thirteen pioneer investors as at 2013.

D. ISBA and the Polar Regions

It is early in the development process for the Area regime. As technology improves, however, and with global warming potentially enabling greater access to the Arctic and Southern Ocean regions, the prospects for oil and gas activities in the Area may be expected to improve over the longer time frame.

In relation to the potential for JDZs in the Arctic Ocean, the Area regime itself is a form of JDZ. The Area is also very relevant to JDZs between states with overlapping OCS claims. This is because environmental protection in the Arctic Ocean is likely to be

¹⁷⁷ Tullio Scovazzi, 'Mining, Protection of the Environment, Scientific Research and Bioprospecting: Some Considerations of the Role of the International Sea-Bed Authority', (2004) 19(4) *The International Journal of Marine and Coastal Law* 363, 380.

¹⁷⁸ Edwin Egede 'African States and Participation in Deep Seabed Mining: Problems and Prospects' (2009) 24 *The International Journal of Marine and Coastal Law* 683, 695. Egede analyses developments which may allow local participation in the Area as envisaged by LOSC, together with technological contribution by the parent corporation. This includes the development of models for strategic alliances and cooperative efforts, and also the potential for intra-African cooperation. He also identifies the joint collaboration between India and Norwegian and Finnish companies, and the German University of Siegen, in the development of seabed mining technology. Edwin Egede analysed issues relating to the participation of African states in deep seabed mining including financial and technological constraints. He referred to the Republic of Nauru and the Kingdom of Tonga establishing a transnational cooperation with subsidiary companies sponsored by each state, with the ultimate parent company the United States corporation Nautilus Minerals Inc. The Indian Ministry of Earth Sciences has stated the intention to play a 'nodal role for Antarctic/Arctic and Southern Ocean research'. Indian Ministry of Earth Sciences <<http://dod.nic.in>> at 26 February 2010. The Ministry has been conducting deep seabed exploration using the research vessel *Sagar Kanya*. Of direct relevance to oil and gas exploration and development in the Arctic Ocean and the ISBA Area, the Ministry has also commenced a research project into gas hydrates. A large proportion of potential hydrocarbons in the Arctic Ocean is expected to be in gas hydrate form.

¹⁷⁹ Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area (the Mining Code) at <<http://www.isa.org.jm/files/documents/EN/Regs/MiningCode.pdf>> at 24 February 2010. ISBA was required by Article 145 of LOSC to adopt appropriate rules, regulations and procedures for measures including the prevention, reduction and control of pollution and other hazards to the marine environment.

strengthened by adopting one mining and environmental code for all operation in the Arctic Ocean, whether in the Area, or in a JDZ region subject to overlapping claims.

The Area regime is significant to at least two specific areas in the Arctic Ocean shown in the Arctic Boundary Map prepared by the International Boundaries Research Unit (IBRU) (see Illustration 5–1),¹⁸⁰ and one area in the western Norwegian Sea.¹⁸¹ These regions are likely to be beyond current or potential Arctic state OCS submissions to the CLCS.¹⁸²

The Area regime is significant to the Southern Ocean beyond present or potential OCS claims by states with Antarctic claims (see Illustration 6–3).¹⁸³ The application of the regime to the Southern Ocean should however be considered in conjunction with the provisions of the Antarctic Treaty, and specifically the prohibition on resource development under the Environmental Protocol.¹⁸⁴ The application of the Area regime to Arctic and Southern Oceans is examined in Chapters V and VI.

5. The United Nations Regional Seas Programme

The United Nations Environmental Program (UNEP) established the Regional Seas Program to address the accelerating degradation of the world's oceans and coastal areas.¹⁸⁵ The Regional Seas programs are intended to provide for sound environmental management to be coordinated and implemented by countries sharing a common body of water.¹⁸⁶ Neither the Antarctic Treaty nor the Arctic Council are regional seas

¹⁸⁰ Pratt, above n 33.

¹⁸¹ The Area regime may also apply in the western Norwegian Sea between the Norwegian coast and Jan Mayen Island subject to hydrographical surveys. The term 'loopholes' has also been used in relation to areas of the High Seas where there are no state EEZ regimes, and relates to conflicts in relation to fishing stocks. However if a region is subject to a state's OCS, then that region will not be subject to the Area regime for access to mineral resources. In relation to loopholes as the absence of state EEZ regimes, see William V Dunlap, 'Straddling Stocks in the Barents Sea Loophole' (1996-1997) *IBRU Boundary and Security Bulletin* 76.

¹⁸² Alex G Oude Elferink and Donald R Rothwell 'Challenges for Polar Maritime Delimitation and Jurisdiction' in Alex G Oude Elferink and Donald R Rothwell (eds), *The Law of the Sea and Polar Maritime Delimitation and Jurisdiction* (Martinus Nijhoff, 2001) 351.

¹⁸³ 'Non-Living Resources of the Continental Shelf Beyond 200 Nautical Miles: Speculations on the Implementation of Article 82 of The United Nations Convention on the Law of the Sea,' ISA Technical Study No. 5, <www.isa.org.jm/files/documents/EN/Pubs/TechStudy5.pdf> at 12 February 2013, 21.

¹⁸⁴ Protocol on Environmental Protection to the Antarctic Treaty, opened for signature 4 October 1991, 30 ILM 1455 (entered into force 14 January 1998) (*Environmental Protocol*).

¹⁸⁵ This is to be achieved through the sustainable management and use of the marine and coastal environment, by engaging neighbouring countries in comprehensive and specific actions to protect their shared marine environment.

¹⁸⁶ United Nations Environment Programme (UNEP), at <http://www.unep.org/regionalseas/about/default.asp> at 24 February 2010

As at 2010, more than 140 countries participate in the 13 Regional Seas programs, and six of the programs are administered by UNEP. UNEP programs include the Black Sea, Wider Caribbean, East

programmes and neither are part of UNEP. The principal relevance of UNEP is the possible future application to the Arctic.

The first Regional Seas Program under UNEP was made in 1975, when 16 Mediterranean countries and the European Community adopted the Mediterranean Action Plan (MAP),¹⁸⁷ followed by the 1976 Convention for the Protection of the Mediterranean Sea against Pollution (Barcelona Convention).¹⁸⁸

Regional measures are provided for under LOSC for 'Enclosed or Semi-Enclosed' seas.¹⁸⁹ LOSC Article 123 provides that '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.'¹⁹⁰ Paul Akiwumi and Terttu

Asian Seas, Eastern Africa, South Asian Seas, ROPME Sea Area, Mediterranean, North-East Pacific, North-West Pacific, Red Sea and Gulf of Aden, South-East Pacific, Pacific, and Western Africa.

¹⁸⁷ MAP also includes the following Protocols addressing specific aspects of Mediterranean environmental conservation:

- Dumping Protocol (from ships and aircraft)
- Prevention and Emergency Protocol (pollution from ships and emergency situations)
- Land-based Sources and Activities Protocol
- Specially Protected Areas and Biological Diversity Protocol
- Offshore Protocol (pollution from exploration and exploitation)
- Hazardous Wastes Protocol
- Protocol on Integrated Coastal Zone Management (ICZM).

¹⁸⁸ *Convention for the Protection of the Mediterranean Sea Against Pollution* in 1976, opened for signature 16 February 1976, 1102 UNTS 27 (entry into force 12 February 1978) ('Barcelona Convention'). Revised as the *Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean* in 1995, opened for signature 10 June 1995 (entered into force 9 July 2004). Text at <http://www.unep.ch/regional_seas/regions/med/t_barcel.htm> at 7 December 2012.

¹⁸⁹ LOSC art 122. Article 122 defines enclosed or semi-enclosed areas as follows:

For the purposes of this Convention, "enclosed or semi-enclosed sea" means a gulf, basin or sea surrounded by two or more States and connected to another sea or the ocean by a narrow outlet or consisting entirely or primarily of the territorial seas and exclusive economic zones of two or more coastal States.

¹⁹⁰ LOSC art 123. Article 123 provides for cooperation of states bordering enclosed or semi-enclosed seas:

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

- (a) to coordinate the management, conservation, exploration and exploitation of the living resources of the sea;
- (b) to co-ordinate the implementation of their rights and duties with respect to the protection and preservation of the marine environment;
- (c) to coordinate their scientific research policies and undertake where appropriate joint programmes of scientific research in the area;
- (d) to invite, an appropriate, other interested States or international organizations to cooperate with them in furtherance of the provisions of this article.

Melvasalo commented on the emphasis placed on capacity building,¹⁹¹ among the policy revisions in 1993.¹⁹²

In the Arctic Ocean region, states adopted the Arctic Environmental Protection Strategy (AEPS) in 1991.¹⁹³ The Arctic Council is not part of the regional seas programme; however the regional approach and measure taken to address environmental protection on a regional cooperative basis are consistent with the regional seas programme. In the future, however, the Arctic Council may potentially resolve to become part of UNEP.

In the Southern Ocean region the Environmental Protocol to the Antarctic Treaty,¹⁹⁴ establishes the Committee for Environmental Protection (CEP). As with the Arctic Council, these measures are not part of the regional seas programme; however the approach is consistent with regional seas programme objectives.

6. The Arctic Council

A. Introduction

¹⁹¹ Paul Akiwumi and Terttu Melvasalo, 'UNEP's Regional Seas Programme: approach, experience and future plans' (1998) 22(3) *Marine Policy* 229. They comment that UNEP regional plans require:

- Environmental assessment: The causes of environmental problems as well as their magnitude and impact on the region are assessed.
- Environmental management: Training on environmental impact assessment; management of coastal lagoons; estuaries and mangrove ecosystems; control of industrial, agricultural and domestic wastes; and formulation of contingency plans for dealing with pollution emergencies.
- Environmental legislation: Elaboration of specific technical protocols, primarily providing the legal framework for joint regional and national actions.
- Institutional arrangements: The permanent or interim Secretariat for the action plan.
- Financial arrangements: As a general rule, UNEP, along with appropriate United Nations and other organisations, provides 'seed money' (i.e. catalytic financing) in the early stages of the Regional Programme. The governments of the region gradually assume full financial responsibility as the programme develops.

¹⁹² The 1993 changes included emphasis on:

- Integrated coastal area management.
- Formulation, adoption, and implementation of pollution control measures.
- Direct assistance to governments in defining and implementing policies and measures to mitigate or eliminate pollution problems.
- Development and testing of procedures for environmental impact assessment.
- Training of policy-makers, environmental managers, scientists and technicians in subjects relevant to the protection of coastal and marine areas.
- Raising public awareness on environmental problems in coastal and marine areas.
- Strengthening linkages between existing action plans through interregional activities, exchange of information and transfer of experiences.

¹⁹³ The Member States are Canada, Denmark (including Greenland and Faroe Islands), Finland, Iceland, Norway, Russian Federation, Sweden and the United States.

¹⁹⁴ *Protocol on Environmental Protection to the Antarctic Treaty*, opened for signature 4 October 1991, 30 ILM. 1455 (entered into force 14 January 1998) ('*Environmental Protocol*').

The Arctic Council is an inter-governmental organisation originally established by Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden and the United States, at a meeting in Ottawa in 1996.¹⁹⁵ Membership of the Arctic Council includes these eight governments as voting members, together with observer states,¹⁹⁶ indigenous community permanent participants,¹⁹⁷ and non-government observers.¹⁹⁸

The five Arctic coastal states declared their support for the Law of the Sea to resolve boundary issues in the Ilulissat Declaration in 2008. The Declaration stated that Arctic Council members 'remain committed to this legal framework and to the orderly settlement of any possible overlapping claims.'¹⁹⁹ Accordingly while the Arctic Council is a forum for promoting cooperation in certain measures discussed below for the Arctic Ocean region, the members do not propose to establish a separate legal regime, such as a regime independent of the dispute resolution provisions of LOSC, for the resolution of maritime boundaries and competing offshore claims.

B. Protection of the Environment

¹⁹⁵ Declaration on the Establishment of the Arctic Council, 19 September 1996 < <http://arctic-council.org/article/about> > at 5 June 2008.

¹⁹⁶ The observer states, as at January 2014, are France, Germany, The Netherlands, Poland, Spain, United Kingdom, China, Italy, Japan, Korea, Singapore and India.

¹⁹⁷ The declaration establishing the Arctic Council made in Ottawa in 1996 stated that:

The purpose of the Arctic Council is to promote cooperation, coordination and interaction among the Arctic States, with the involvement of the Arctic indigenous communities and other Arctic inhabitants on common Arctic issues, in particular issues of sustainable development and environmental protection in the Arctic.

There is a current issue concerning the membership of indigenous peoples. The Russian government suspended the Russian Association of Indigenous People of the North ('RAIPON') which is Permanent Participant of the Arctic Council from 1 November 2011 to 20 April 2012. 'RAIPON's Activities Suspended' Arctic Council Indigenous Peoples Secretariat (17 November 2012) <<http://www.arcticpeoples.org>> at 8 February 2013. RAIPON received approval to renew its activities in 2013, however, following Russian Federal Ministry of Justice approval of amendments in the organisation's statutes.

¹⁹⁸ The Arctic Council previously included ad-hoc participants which were required to request permission for their presence at each individual meeting. The ad-hoc participants requested full observer status in 2009, and the Arctic Council confirmed these states as permanent observers in 2013.

¹⁹⁹ Ilulissat Declaration, Arctic Ocean Conference, 27-29 May 2008,

<<http://www.ambottawa.um.dk/en/servicemenu/News/theilulissatdeclarationarcticcoceanconference.htm>> at 5 June 2008. The representatives of the Canadian, Denmark, Norway, Russian Federation and United States governments, at a meeting at Ilulissat in Greenland in May 2008, declared that:

Notably, the law of the sea provides for important rights and obligations concerning the delineation of the outer limits of the continental shelf, the protection of the marine environment, including ice-covered areas, freedom of navigation, marine scientific research, and other uses of the sea. We remain committed to this legal framework and to the orderly settlement of any possible overlapping claims.

The Arctic Council has a significant role in respect of the Arctic environment. The six related working groups are the Arctic Contaminants Action Plan,²⁰⁰ Arctic Monitoring and Assessment Programme,²⁰¹ Conservation of Arctic Flora and Fauna,²⁰² Emergency Prevention, Preparedness and Response,²⁰³ Protection of the Arctic Marine Environment,²⁰⁴ and the Sustainable Development Working Group.²⁰⁵ The Arctic Council also commissioned the Arctic Climate Impact Assessment to study of the effects of climate change in the Arctic.²⁰⁶

i) Arctic Offshore Oil and Gas Guidelines

In relation to offshore oil and gas, the Arctic Council published the Arctic Offshore Oil and Gas Guidelines.²⁰⁷ The guidelines include environmental impact statements, environmental monitoring, safety and environmental management, operating practices, emergencies, decommissioning, and site clearance. The guidelines do not contain

²⁰⁰ Arctic Council, Working Groups, <<http://www.arctic-council.org/index.php/en/about-us/working-groups>> at 25 August 2015. The Arctic Contaminants Action Plan (ACAP). The Arctic Council states:

The goal of ACAP continues to be to reduce emissions of pollutants into the environment in order to reduce the identified pollution risks. ACAP also encourages national actions for Arctic State governments to take remedial and preventive actions relating to contaminants and other releases of pollutants. ACAP acts as a strengthening and supporting mechanism to encourage national actions to reduce emissions and other releases of pollutants.

²⁰¹ Ibid. The Arctic Monitoring and Assessment Programme (AMAP). The Arctic Council states AMAP's objective as:

...providing reliable and sufficient information on the status of, and threats to, the Arctic environment, and providing scientific advice on actions to be taken in order to support Arctic governments in their efforts to take remedial and preventive actions relating to contaminants.

²⁰² Ibid. Conservation of Arctic Flora and Fauna (CAFF). The Arctic Council states:

CAFF's mandate is to address the conservation of Arctic biodiversity, and communicate the findings to the governments and residents of the Arctic, helping to promote practices which ensure sustainability of the Arctic's living resources.

²⁰³ Ibid. Emergency Prevention, Preparedness and response (EPPR). The Arctic Council states:

The mandate of the EPPR Working Group is to deal with the prevention, preparedness and response to environmental emergencies in the Arctic. Members of the Working Group exchange information on best practices and conducts projects (e.g. development of guidance and risk assessment methodologies, response exercises, training etc.)

²⁰⁴ Ibid. Protection of the Arctic Marine Environment (PAME). The Arctic Council states:

PAME's mandate is to address policy and non-emergency pollution prevention and control measures related to the protection of the Arctic marine environment from both land and sea-based activities. These include coordinated action programmes and guidelines complementing existing legal arrangements.

²⁰⁵ Ibid. Sustainable Development Working Group (SDWG). The Arctic Council states:

The objective of the SDWG is to protect and enhance the economies, culture and health of the inhabitants of the Arctic, in an environmentally sustainable manner. Currently the Sustainable Development Working Group is involved in projects in the areas of children and youth, health, telemedicine, resource management, cultural and ecological tourism, and living conditions in the Arctic.

²⁰⁶ *Arctic Climate Impact Assessment* (2005) Cambridge University (ACIA).

²⁰⁷ Arctic Council, Arctic Offshore Oil and Gas Guidelines, 2009, <<http://www.arctic-council.org/index.php/en/about/documents/category/233-3-energy>> at 24 August 2012.

detailed implementation measures, and are therefore not as comprehensive as the regime proposed for the European Union examined in Chapter X.

ii) Arctic Marine Oil Pollution Preparedness and Response

The state parties to the Arctic Council concluded the Agreement on Cooperation on Marine Oil Pollution, Preparedness and Response in the Arctic in May 2013.²⁰⁸ The Agreement introduces a binding regime for Arctic Marine Oil Pollution Preparedness and Response (MOPPR).²⁰⁹ MOPPR is the Arctic regional implementation of the OPRC Convention.²¹⁰ The Agreement is a significant development for oil and gas development in the Arctic Ocean region. MOPPR principal requirements are for national systems for pollution preparedness and response, notification to other parties of oil pollution incidents, monitoring Arctic maritime areas for possible oil pollution incidents, and coordination of joint response operations.²¹¹

C. Safety – Arctic SAR Agreement

A significant development of the Arctic Council is the promotion of binding legal regimes, commencing with the Agreement on Cooperation on Aeronautical and Maritime Search and Rescue ('Arctic SAR Agreement') in 2011.²¹² The Agreement commits the state parties to coordinate assistance to those in distress, and to cooperate with each other in undertaking SAR operations.²¹³ The Agreement is consistent with LOSC Article 98, which imposes the duty to render assistance and requires every

²⁰⁸ *Agreement on Cooperation on Marine Oil Pollution, Preparedness and Response in the Arctic*, 13 May 2013, <<http://www.arctic-council.org/eppr/agreement-on-cooperation-on-marine-oil-pollution-preparedness-and-response-in-the-arctic/>> at 21 January 2014 (not yet in force).

²⁰⁹ Arctic Council, Senior Arctic Officials (SAO) Report to Ministers, Nuuk, Greenland, May 2011, 4.

²¹⁰ *Ibid.*

²¹¹ Arctic Council, Protection of the Arctic Marine Environment Working Group, The Arctic Ocean Review Project, Phase II Report 2011-2013 <<http://www.arctic-council.org/index.php/en/oceans/arctic-ocean-review/396-phase-ii-of-the-arctic-ocean-review-project>> at 21 December 2012. The Report describes MOPPR as follows:

The Agreement commits the Parties to establish and maintain national systems for pollution preparedness and response in the Arctic, to notify other Parties of oil pollution incidents, to deploy available resources to monitor Arctic maritime areas (including, in some circumstances, high seas areas) for possible oil pollution incidents, to facilitate information exchange and assistance in oil spill preparedness and response operations, to coordinate joint response operations and cooperate in joint exercises and joint reviews of operations. The Parties will also complete a related non-binding operations manual that their respective national oil spill response organizations and agencies will use for further guidance in any joint operations.

²¹² *Agreement on Cooperation on Aeronautical and Maritime Search and Rescue (SAR) in the Arctic*, 12 May 2011 <<http://www.treaty-accord.gc.ca/text-texte.aspx?id=105240>> at 17 April 2013 (entered into force 19 January 2013).

²¹³ The Agreement defines an area of the Arctic for each state in which it will have lead responsibility in organising responses to SAR incidents regardless of the nationality or status of persons in the emergency.

coastal State to promote adequate and effective search and rescue on and above the sea, including the use of appropriate regional agreements.²¹⁴

D. Navigation – Polar Code

The Arctic Council also has a significant role in coordination of Arctic navigation. The related climate development is the thinning of sea ice due to global warming, with the result that use of the Arctic Ocean for shipping routes is expected to increase. The International Maritime Organisation (IMO) has developed the Polar Code as a mandatory code to harmonise ship construction, training and navigation for activities in the Polar Regions.²¹⁵ The Polar Code developed into the Guidelines for Ships Operating in Ice Covered Waters of the International Maritime Organisation.²¹⁶ Lawson W Brigham commented that a key strategy of the Polar Code was to build on existing IMO rules.²¹⁷

The Arctic Council may also have a role in resolving current disputes concerning the Northwest Passage and the Northern Sea Route examined in Chapter V.²¹⁸ Resolving these issues will be significant for the development of Arctic Ocean JDZs and the coordinated protection of the environment.²¹⁹

²¹⁴ The defined regions of responsibility generally extend to the North Pole on a sector basis, with no overlapping responsibility at the North Pole. The regions of responsibility are also consistent with the unratified United States/Russia boundary agreement. The regions of responsibility are illustrated at 'Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic', Arctic Portal Library <<http://library.arcticportal.org/1474/>> at 17 April 2013. The Agreement provides, however, that "the delimitation of search and rescue regions is not related to and shall not prejudice the delimitation of any boundary between States or their sovereignty, sovereign rights or jurisdiction."

²¹⁵ *Guidelines for Ships Operating in Ice Covered Waters*, International Maritime Organisation, DE 45/27/Add.2 (International Maritime Organisation, 2002) (Report to the Maritime Safety Committee, Sub-Committee on Ship Design and Equipment 45th session). The guidelines are based on the proposed International Code of Safety for Ships in Polar Waters (POLAR Code).

²¹⁶ Rob Huebert, 'Article 234 and Marine Pollution Jurisdiction in the Arctic' in Oude Elferink and Rothwell above n 174.

²¹⁷ Lawson W Brigham, 'The emerging International Polar Navigation Code' in Davor Vidas (ed), *Protecting the Polar Marine Environment – Law and Policy for Pollution Prevention* (Cambridge University Press, 2000) 244, 249. Brigham stated that "The Polar Code was never intended to duplicate or replace existing standards for international safety, pollution prevention and training."

²¹⁸ Although the likely areas for JDZs are not located in the disputed straits, it will be important to resolve straits navigation issues with the Northwest Passage and the Northern Sea Route to support offshore oil and gas activities in the Arctic Ocean. Accordingly this is not seen as an area for a JDZ solution, but rather for coordination by the Arctic Council.

²¹⁹ Igor Stepanov, *Legal Implications for the Northern Sea Route and Westward in the Barents Sea*, (Fridtjof Nansen Institute, 2005) 12. Igor Stepanov commented that if the United States, Canada and Russia were all members of a future Arctic Ocean Regional Seas Agreement common environmental regulations could be applied to the Northwest Passage and the Northern Sea Route to protection of the environment, while the navigation disputes over the application of an international straits regime could await future resolution.

7. The Antarctic Treaty and Antarctic Treaty System

A. Introduction

The Antarctic continent is subject to territorial claims by Argentina, Australia, Chile, France, New Zealand, Norway, and the United Kingdom. Several of the claims are based on exploration and discovery, together with continued expeditions, technical research, and the maintenance of permanent scientific bases.

Antarctica was the subject of proposals for internationalisation, and the establishment of an international commons for scientific research and preservation of the environment. The International Geophysical Year held from 1957 to 1958 was a program of scientific cooperation between twelve countries, and concluded with the signing of the Antarctic Treaty in 1959.²²⁰ The Antarctic Treaty arose due to concerns over security and the development of scientific research during the Cold War.²²¹

B. Essential Terms

The Antarctic Treaty suspends sovereignty claims relating to Antarctica under Article 4(2),²²² and provides as follows:

No acts or activities taking place while the present Treaty is in force shall constitute a basis for asserting, supporting or denying a claim to territorial sovereignty in Antarctica or create any rights of sovereignty in Antarctica. No new claim, or enlargement of an existing claim, to territorial sovereignty in Antarctica shall be asserted while the present Treaty is in force.

This provision is the basis for 'frozen sovereignty', under which existing and future claims are not recognized or denied while the Antarctic Treaty is in force. The Antarctic Treaty, together with related agreements, is known as the Antarctic Treaty System (ATS). Related agreements discussed below include the Convention on the

²²⁰ *Antarctic Treaty*, opened for signature 1 December 1959, 402 UNTS 71, (entered into force 23 June 1961).

²²¹ Donald R Rothwell, *The Polar Regions and the Development of International Law* (Cambridge University Press, 1996) 66. Rothwell commented that factors contributing to the Conference and the Antarctic Treaty included interest in the internationalisation of the continent and the New Zealand proposal for United Nations trusteeship, agreement between Australia, New Zealand and the United Kingdom on the free development of science and that the continent should not be used for military purposes, interest in Antarctica by states such as India with no previous activity in the continent, and a 'Gentlemen's Agreement' among the seven countries with sovereignty claims in Antarctica to abandon political debate and contested territorial claims during the International Geophysical Year.

²²² *Antarctic Treaty*, opened for signature 1 December 1959, 402 UNTS 71, art 4(2) (entered into force 23 June 1961).

Conservation of Antarctic Marine Living Resources (CCAMLR),²²³ the Convention on the Regulation of Antarctic Mineral Resource Activities (CRAMRA)²²⁴ (not in force), and the Protocol on Environmental Protection to the Antarctic Treaty ('Environmental Protocol').²²⁵

The primary membership of the Antarctic Treaty comprises Antarctic Treaty Consultative Parties (ATCP), which may participate in decision making at Antarctic Treaty Consultative Meetings (ATCM). The twelve original signatories are ATCPs, and sixteen states have also been accorded ATCP status based on their activities promoting scientific research.²²⁶ Twenty two states have ratified the treaty as non-consultative parties:²²⁷ The ATCM meetings include ATCPs, non-consultative parties, observers, and invited experts. Measures are legally binding on the ATCPs once they have been approved by all ATCPs.²²⁸

Table 4–3 Antarctic Treaty Membership

Country	Consultative Party	Non-Consultative	Comments
Argentina	23/06/61		Claimant State, Original Signatory
Australia	23/06/61		Claimant State, Original Signatory
Chile	23/06/61		Claimant State, Original Signatory

²²³ *Convention on the Conservation of Antarctic Marine Living Resources* ('CCAMLR'), opened for signature 20 May 1980, 1329 UNTS 47 (entered into force 7 April 1982) (1982).

²²⁴ *Convention on the Regulation of Antarctic Mineral Resource Activities*, 2 June 1988, not in force, (1988) 27 ILM 868 (The Convention was superseded by the Protocol on Environmental Protection to the Antarctic Treaty) ('CRAMRA').

²²⁵ *Protocol on Environmental Protection to the Antarctic Treaty*, opened for signature 4 October 1991, 30 ILM 1455 (entered into force 14 January 1998) ('*Environmental Protocol*').

²²⁶ Australian Antarctic Division <<http://www.antarctica.gov.au/antarctic-law-and-treaty/treaty-partners>> at 21 August 2012. Consultative Parties are those Parties entitled to participate in Antarctic Treaty Consultative Meetings. These are the original 12 signatories to the Antarctic Treaty, and those that demonstrate their interest in Antarctica by "conducting substantial research activity there. Sixteen of the acceding countries have had their activities in Antarctica recognised according to this provision, and consequently there are now 28 Consultative Parties in all. The other 22 Non-Consultative Parties are invited to attend the Consultative Meetings but do not participate in the decision-making process.'

²²⁷ Australian Antarctic Division <<http://www.antarctica.gov.au/antarctic-law-and-treaty/treaty-partners>> at 21 August 2012, and United States Department of State, 'The Antarctic Treaty', <www.state.gov/s/l/treaty/depository/index.htm#ANTARCTICA> at 2 September 2015. The related notes to the table are as follows:

- (1) Following the dissolution of the USSR, which was an original signatory state, Russia assumed the rights and obligations of being a party to the Treaty.
- (2) The German Democratic Republic was united with the Federal Republic of Germany on 2 October 1990. GDR acceded to the Treaty on 19/11/74 and was recognised as an ATCP on 05/10/87.
- (3) The Czech and Slovak Republics inherited Czechoslovakia's obligations as a non-consultative party with effect from 1 January 1993, the date of their accession to the Treaty.

²²⁸ Secretariat of the Antarctic Treaty, 'The Antarctic Treaty Consultative Meeting (ATCM)' <http://www.ats.aq/e/ats_meetings_atcm.htm> at 2 September 2015.

Country	Consultative Party	Non-Consultative	Comments
France	16/09/60		Claimant State, Original Signatory
New Zealand	01/11/60		Claimant State, Original Signatory
Norway	24/08/60		Claimant State, Original Signatory
United Kingdom	31/05/60		Claimant State, Original Signatory
Belgium	26/07/60		Original Signatory
Japan	04/08/60		Original Signatory
Russian Federation	02/11/60		Succeeding state (1)
South Africa	21/06/60		Original Signatory
United States	18/08/60		Original Signatory
Brazil	12/09/83	16/05/75	Acceding state
Bulgaria	25/05/98	11/09/78	Acceding state
China	07/10/85	08/06/83	Acceding state
Ecuador	19/11/90	15/09/87	Acceding state
Finland	09/10/89	15/05/84	Acceding state
Germany	03/03/81	05/02/79	Acceding state (2)
India	12/09/83	19/08/83	Acceding state
Italy	05/10/87	18/03/81	Acceding state
Netherlands	19/11/90	30/03/67	Acceding state
Peru	09/10/89	10/04/81	Acceding state
Poland	29/07/77	08/06/61	Acceding state
Korea (ROK)	09/10/89	28/11/86	Acceding state
Spain	21/09/88	31/03/82	Acceding state
Sweden	21/09/88	24/04/84	Acceding state
Ukraine	27/5/04	28/10/02	Acceding state
Uruguay	07/10/85	11/01/80	Acceding state
Austria		25/08/87	Acceding state
Canada		04/05/88	Acceding state
Colombia		31/01/89	Acceding state
Cuba		16/08/84	Acceding state
Czech Republic		14/06/62	Succeeding state (3)
Korea (DPRK)		21/01/87	Acceding state
Denmark		20/05/65	Acceding state
Estonia		17/5/01	Acceding state
Greece		08/01/87	Acceding state
Guatemala		31/07/91	Acceding state
Hungary		27/01/84	Acceding state
Papua New Guinea		16/03/81	Succeeding state
Romania		15/09/71	Acceding state
Slovak Republic		14/06/62	Succeeding state (3)
Switzerland		15/11/90	Acceding state
Turkey		24/01/96	Acceding state
Venezuela		24/03/99	Acceding state
Belarus		27/12/06	Acceding state
Monaco		31/05/08	Acceding state
Portugal		29/1/10	Acceding state
Malaysia		31/10/11	Acceding state
Pakistan		1/3/12	Acceding state

Article 9 provides for the procedure for ATCMs, and establishes that recommendations can be made by governments in furtherance of the principles and objectives of the Treaty. The recommendations may have binding effect to the extent they create regulations and impose related obligations on ATCPs to implement them under national legislation.

A significant issue is the criteria for ATCP status. Rothwell comments that this issue has helped to fuel criticism that the Treaty is a ‘club’ for states that were original signatories, or those which have the economic and scientific capacity to mount credible Antarctic scientific research programmes.²²⁹

Article 11 provides for dispute resolution on the basis of peaceful settlement of disputes by the parties, who may adopt measures such as negotiation, enquiry, mediation, conciliation, arbitration, judicial settlement, or other peaceful means of their own choice.²³⁰ A dispute can be referred to the ICJ by agreement.

Article 12 provides that the terms of the treaty may be amended by a majority of state parties after a period of 30 years after entry into force.²³¹

The Secretariat of the Antarctic Treaty was established in 2003 by the Antarctic Treaty Consultative Meeting.²³² A significant issue for the Southern Ocean is the effectiveness of the ATCM system and the Secretariat to enforce measures such as the Environmental Protocol.

²²⁹ Rothwell, above n 221, 89.

²³⁰ *Antarctic Treaty*, opened for signature 1 December 1959, 402 UNTS 71, art XI(1) (entered into force 23 June 1961).

²³¹ On this basis such a termination can be done from 1991 onwards.

²³² Antarctic Treaty, Measure 1 (2003), XXVI Antarctic Treaty Consultative Meeting (Spain) <http://www.ats.aq/devAS/ats_meetings_meeting_measure.aspx?lang=e> at 22 August 2012. The Measure requires the Secretariat to:

1. Provide assistance to the Parties, in particular to the host Governments of the ATCMs and other meetings held under the Antarctic Treaty and the Protocol on Environmental Protection to the Antarctic Treaty (the Protocol) in respect of arrangements for and reports of such meetings.
2. Provide in close cooperation with the host government administrative assistance to the Committee for Environmental Protection in respect of the functions entrusted to that Committee by the Protocol.
3. Facilitate and coordinate communications and exchange of information amongst Parties on all exchanges and modifications required under the Antarctic Treaty and the Protocol.
4. Assist the ATCM to review information exchange requirements with a view to facilitating timely and responsive exchanges with Parties.
5. Based upon information received from Parties, establish data-bases relevant to the operation of the Antarctic Treaty and the Protocol, and ensure publication as appropriate.
6. Circulate to the Parties information received from one or more Parties of activity in Antarctic by non-Parties.
7. Ensure the necessary coordination with all elements of the Antarctic Treaty System and those international bodies with which the ATCM has entered into contact.
8. Maintain the records of the ATCMs and of other Meetings under the Antarctic Treaty and the Protocol and facilitate the availability of information about the Antarctic Treaty System.
9. Prepare reports on its activities carried out in implementing of its functions and present them to the ATCM.
10. Perform such other functions relevant to the purpose of the Antarctic Treaty and Protocol as may be determined by the ATCM.

C. Geographical Scope

The Antarctic Treaty applies to 'the area south of 60° south latitude ... but nothing in the present Treaty shall prejudice or in any way affect the rights, or the exercise of the rights, of any State under international law with regard to the high seas within that area.'²³³

There is an issue whether the high seas, south of 60° south, is covered by the ATS. This issue depends on whether the ATS has no application to the high seas, or does have application, but does not affect any state's high seas rights. Rothwell commented that the Antarctic Treaty area of application south of 60° south potentially conflicts with the 'ecosystem' approach of the Environmental Protocol, which seeks to protect the Antarctic environments, and the dependent and associated ecosystems.²³⁴ This also contrasts with CCAMLR,²³⁵ which applies to the Antarctic marine living resources of the area south of 60° south latitude, and Antarctic marine living resources of the area 'between that latitude and the Antarctic Convergence.'²³⁶ On this basis the ATS including the Environmental Protocol should apply to the high seas south of 60° south.

The ATS should also potentially apply to activities north of 60° south, if the activities impacted the ecosystem south of 60° south.²³⁷ This view is supported by the likely intention of the parties to the Environmental Protocol to protect the entire Antarctic ecosystem.²³⁸

On this basis the ATS should apply to the South Shetland and South Orkney Islands, located south of 60° south latitude. The ATS should also apply to the continental shelf

²³³ *Antarctic Treaty*, opened for signature 1 December 1959, 402 UNTS 71, art 6 (entered into force 23 June 1961).

²³⁴ Rothwell, above n 221, 142.

²³⁵ The geographical scope of *CCAMLR* is significant as part of the Antarctic Treaty regime.

²³⁶ The Antarctic Convergence is an approximate, and to some degree moving boundary, where the cold waters of the Antarctic region meet the warmer waters of the subantarctic.

²³⁷ *Ibid.*

²³⁸ Patrizia Vigni, 'The Interaction between the Antarctic Treaty System and the Other Relevant Conventions Applicable to the Antarctic Area - A Practical approach versus Theoretical Doctrines' [2000] 4 *Max Planck Yearbook of United Nations Law*, 481, 528.

and OCS of the South Sandwich Islands, the OCS of Heard Island and McDonald Islands, and the OCS of Macquarie Island, which partially extend south of 60° south.²³⁹

D. Expansion –The Antarctic Treaty System and Related Agreements

The Antarctic Treaty System (ATS) means the Antarctic Treaty, the measures in effect under that Treaty, its associated separate international instruments in force and the measures in effect under those agreements.²⁴⁰ The Antarctic Treaty includes an agreed mechanism in Article IX for extending the scope of the Treaty through recommending 'measures in furtherance of the principles and objectives of the Treaty.' This capacity to expand the scope of the ATS includes agreements which are relevant to potential oil and gas development.

i) Agreed Measures, 1964

The Agreed Measures for the Conservation of Antarctic Fauna and Flora (Agreed Measures),²⁴¹ provided measures to protect endemic and native wildlife and plants, prohibited taking or killing flora and fauna without a permit, and required states to avoid the pollution of the coastal waters. The Agreed Measures were superseded by more recent conventions discussed below.²⁴² Ruth Davis and Edmund Lee highlighted that the Agreed Measures were significant as the first time the Antarctic Treaty exercised some form of control over the maritime areas in the Antarctic region.²⁴³

ii) Convention for the Conservation of Antarctic Seals, 1972

The Convention for the Conservation of Antarctic Seals (CCAS),²⁴⁴ applies to all species of seal in the sea south of 60° south. CCAS prohibits the killing or taking of seals otherwise than in accordance with the Convention, and provides absolute

²³⁹ Stuart B Kaye and Donald R Rothwell 'Southern Ocean Boundaries and Maritime Claims: Another Antarctic Challenge for the Law of the Sea?' (2002) 33 *Ocean Development & International Law* 359, 370.

²⁴⁰ *Environmental Protocol* art 2.

²⁴¹ *Agreed Measures for the Conservation of Antarctic Fauna and Flora*, opened for signature 2 June 1964, 17 UST 996, modified in 24 UST 1802 (entered into force 1 November 1982) ('*Agreed Measures*').

²⁴² *Decision 1 (2011) - ATCM XXXIV - CEP XIV*, Antarctic Treaty Secretariat 1 July 2011, <http://www.ats.aq/devAS/info_measures_listitem.aspx?lang=e&id=491> at 22 August 2012.

²⁴³ Ruth Davis and Edmund Lee, 'Marine Environmental Protection and the Southern Ocean' in Oude Elferink and Rothwell above n 175, 210.

²⁴⁴ *Convention for the Conservation of Antarctic Seals*, opened for signature 1 June 1972, 1080 UNTS. 175 (entered into force 11 March 1978) ('*CCAS*').

protection for certain species. CCAS requires state parties to regulate their own nationals and flag vessels.

iii) Convention on the Conservation of Antarctic Marine Living Resources, 1982

The Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR),²⁴⁵ concerns conservation of living resources such as fish stocks. There has, arguably, been a level of general acceptance by the international community of CCAMLR, based on the membership of ATCP countries and acceptance by other states, which supports the application of those parts of the ATS directly relating to the Southern Ocean.²⁴⁶ CCAMLR is significant to the jurisdictional framework of the Southern Ocean, supporting the application of the ATS regime to the Southern Ocean south of 60° south.

iv) Convention on the Regulation of Antarctic Mineral Resources (Not in Force), 1988

The Convention on the Regulation of Antarctic Mineral Resources (CRAMRA)²⁴⁷ would have allowed and regulated resource activities such as oil and gas development in Antarctica and the Southern Ocean. CRAMRA was signed by 19 states,²⁴⁸ however CRAMRA was not ratified by any state party, and has therefore not come into force.²⁴⁹ CRAMRA was effectively overturned by the suspension of such activities under the

²⁴⁵ *Convention on the Conservation of Antarctic Marine Living Resources*, opened for signature 20 May 1980, 1329 UNTS 47 (entered into force 7 April 1982) ('CCAMLR').

²⁴⁶ This issue relates to the scope of the prohibition on minerals activities under the *Environmental Protocol*.

²⁴⁷ *Convention on the Regulation of Antarctic Mineral Resource Activities*, 2 June 1988, not in force, (1988) 27 ILM 868 (The Convention was superseded by the Protocol on Environmental Protection to the Antarctic Treaty) ('CRAMRA').

²⁴⁸ New Zealand Ministry of Foreign Affairs and Trade, Treaties and International Law, 'Convention on the Regulation of Antarctic Mineral Resource Activities'

<<http://www.mfat.govt.nz/Treaties-and-International-Law/01-Treaties-for-which-NZ-is-Depositary/0-Antarctic-Mineral-Resource.php>> at 22 April 2013.

The signatories were New Zealand, Argentina, Brazil, Chile, China, Czechoslovakia, Denmark, Finland, German Democratic Republic, Japan, Norway, Poland, Sweden, South Africa, South Korea, Union of Soviet Socialist Republics, United Kingdom, United States of America and Uruguay.

²⁴⁹ CRAMRA was open to any state party to the Antarctic Treaty. Article 62 provided that the Convention was to enter into force following ratification by 16 ATCP states. CRAMRA has however not been ratified by any state, and has not come into force. CRAMRA has effectively been abandoned in favour of suspension of all Antarctic mineral activities under the Environmental Protocol.

Environmental Protocol.²⁵⁰ CRAMRA is therefore not part of the ATS because it is not in force.

Significant provisions of CRAMRA would have regulated offshore oil and gas activities in Antarctica. The objectives and general principles of the Convention were 'to ensure that Antarctica shall continue forever to be used exclusively for peaceful purposes and shall not become the scene or object of international discord.'²⁵¹ Vicuna described the development of internationalised regimes for Antarctica, including the CRAMRA proposals, and commented that these developments were based on the concept of international ownership of the Antarctic regions and their resources.²⁵² The geographical scope was the continent of Antarctica and all Antarctic islands, including all ice shelves, south of 60° south latitude, and the seabed and subsoil of adjacent offshore areas up to the deep sea bed.²⁵³ CRAMRA would therefore have extended to potential OCS claims by states with Antarctic claims, but would not have applied to the high seas beyond state jurisdiction.

CRAMRA provided that it would not prejudice any legal position under the Antarctic Treaty. CRAMRA would also prohibit mineral resources activities outside the CRAMRA framework, and prohibit exploration and development activities in any areas designated as protected under the Antarctic Treaty or CRAMRA.²⁵⁴

CRAMRA included provisions for the protection of the Antarctic environment. Article 4 contained principles for approval of Antarctic mineral resource activities. This was based on the assessment of possible impacts, including that the proposed activity would

²⁵⁰ The suspension of minerals activities under the *Environmental Protocol* is subject to potential changes by state parties analysed in Chapter X.

²⁵¹ CRAMRA Article 2(1) provides:

This Convention is an integral part of the Antarctic Treaty system, comprising the Antarctic Treaty, the measures in effect under that Treaty, and its associated separate legal instruments, the prime purpose of which is to ensure that Antarctica shall continue forever to be used exclusively for peaceful purposes and shall not become the scene or object of international discord. The Parties provide through this Convention, the principles it establishes, the rules it prescribes, the institutions it creates and the decisions adopted pursuant to it, a means for:

- a) assessing the possible impact on the environment of Antarctic mineral resource activities;
- b) determining whether Antarctic mineral resource activities are acceptable;
- c) governing the conduct of such Antarctic mineral resource activities as may be found acceptable; and
- d) ensuring that any Antarctic mineral resource activities are undertaken in strict conformity with this Convention.

²⁵² Francisco Orrego Vicuna, *Antarctic Mineral Exploitation: The Emerging Legal Framework* (Cambridge University Press, 2009) 6.

²⁵³ CRAMRA art 5.

²⁵⁴ CRAMRA art 3.

have no significant adverse effects on the environment, and the capacity to respond effectively to accidents with potential environmental effects.²⁵⁵ Christopher C Joyner comments that CRAMRA 'supplied innovative environmental protection provisions' including the principle that one might not proceed with mineral activities unless sufficient information were available, and the existence of sufficient information had to be verified by agreement of all parties.²⁵⁶ A significant clause was that the operator of a minerals activity was strictly liable for damages including environmental damage.²⁵⁷ The Antarctic Mineral Resources Commission would have been established to regulate minerals activities, with membership including ATCPs.²⁵⁸ Mineral activities would have been subject to inspection by the Commission or its observers.²⁵⁹

²⁵⁵ CRAMRA art 4. Article 4 provided:

1. Decisions about Antarctic mineral resource activities shall be based upon information adequate to enable informed judgments to be made about their possible impacts and no such activities shall take place unless this information is available for decisions relevant to those activities.
2. No Antarctic mineral resource activity shall take place until it is judged, based upon assessment of its possible impacts on the Antarctic environment and on dependent and on associated ecosystems, that the activity in question would not cause:
 - a) significant adverse effects on air and water quality;
 - b) significant changes in atmospheric, terrestrial or marine environments;
 - c) significant changes in the distribution, abundance or productivity of populations of species of fauna or flora;
 - d) further jeopardy to endangered or threatened species or populations of such species; or
 - e) degradation of, or substantial risk to, areas of special biological, scientific, historic, aesthetic or wilderness significance.
3. No Antarctic mineral resource activity shall take place until it is judged, based upon assessment of its possible impacts, that the activity in question would not cause significant adverse effects on global or regional climate or weather patterns.
4. No Antarctic mineral resource activity shall take place until it is judged that:
 - f) technology and procedures are available to provide for safe operations and compliance with paragraphs 2 and 3 above;
 - g) there exists the capacity to monitor key environmental parameters and ecosystem components so as to identify any adverse effects of such activity and to provide for the modification of operating procedures as may be necessary in the light of the results of monitoring or increased knowledge of the Antarctic environment or dependent or associated ecosystems; and
 - h) there exists the capacity to respond effectively to accidents, particularly those with potential environmental effects.
5. The judgments referred to in paragraphs 2, 3 and 4 above shall take into account the cumulative impacts of possible Antarctic mineral resource activities both by themselves and in combination with other such activities and other uses of Antarctica.

²⁵⁶ Christopher C Joyner, *Governing the Frozen Commons – The Antarctic Regime and Environmental Protection* (University of South Carolina Press, 1998) 78.

²⁵⁷ CRAMRA art 8.

²⁵⁸ CRAMRA art 18. Article 22 required a three quarters majority for most decisions of the Commission. Article 23 established the Scientific, Technical and Environmental Advisory Committee to advise the Commission, and Article 33 would establish the Secretariat for the implementation of the Convention. Membership would also include other parties actively engaged in substantial scientific, technical or environmental research in the area, and parties sponsoring Antarctic mineral resource exploration or development.

²⁵⁹ CRAMRA art 12.

In relation to prospecting, a sponsoring state would ensure that its operators maintained the necessary financial and technical means to comply, and maintain financial capacity for liability for damages.²⁶⁰ Any party could lodge with the Regulatory Committee an application for an exploration permit on behalf of an Operator.²⁶¹ Applications would be examined by a Regulatory Committee which would establish a management scheme.²⁶² The scheme would have prescribed the specific terms and conditions for exploration and development of the mineral resources.²⁶³ The tax and royalty regime was to be specified in the scheme.²⁶⁴

In relation to development, the sponsoring state would lodge an application for a development permit with the Regulatory Committee on behalf of the operator.²⁶⁵ CRAMRA also set out the terms for examination of applications and the issue of Development Permits.²⁶⁶

Dispute settlement procedures were based upon negotiation, enquiry, mediation, conciliation, arbitration, judicial settlement or other peaceful means of choice. If the dispute could not be resolved then it could be referred to the Arbitral Tribunal.²⁶⁷

Australia and France announced in May 1989 that they would not ratify the agreement, which pre-empts the possibility of the Convention coming into force. Joyner commented that:

There was a fear that CRAMRA, by default or design, would become the slippery slope leading to exploitation and development of mineral resources in the Antarctic.²⁶⁸

CRAMRA is significant as a potential framework for the cooperative development of minerals development within the Antarctic Treaty regime. A Southern Ocean JDZ with a multilateral cooperative framework, which may provide a solution for resolving potential resource disputes, is discussed in Chapter VIII.

²⁶⁰ CRAMRA art 37.

²⁶¹ CRAMRA art 44.

²⁶² CRAMRA art 45.

²⁶³ CRAMRA arts 46 and 47.

²⁶⁴ CRAMRA art 47(k)(ii). The taxation regime could include 'payments in the nature of and similar to taxes, royalties or payments in kind.'

²⁶⁵ CRAMRA art 53.

²⁶⁶ CRAMRA art 54.

²⁶⁷ CRAMRA art 57.

²⁶⁸ Joyner, above n 256, 78.

v) **Protocol on Environmental Protection, 1991**

The Protocol on Environmental Protection to the Antarctic Treaty (Environmental Protocol or Madrid Protocol),²⁶⁹ applies to the 'Antarctic Treaty area' defined as the area to which the provisions of the Antarctic Treaty apply in accordance with Article VI of that Treaty.²⁷⁰ The Protocol came into force in January 1998.²⁷¹ The Protocol was ratified by 35 states as at 2014.²⁷²

Christopher C Joyner and Ethel R Theis considered the circumstances surrounding the Australian and French announcements not to ratify CRAMRA, and instead to support the Environmental Protocol.²⁷³ The development of the Environmental Protocol was principally sponsored by France and Australia, but also included work by Belgium and Italy in drafting a basic negotiating document known as the 'Proposal of the Four', and by Norway with its 'Andersen document',²⁷⁴ and subsequent support by New Zealand. The circumstances relating to non-ratification of CRAMRA included four serious pollution incidents in early 1989, which highlighted the risks to the Antarctic and Southern Ocean environment.²⁷⁵

²⁶⁹ The potential for changes to the *Environmental Protocol* is analysed in Chapter X.

²⁷⁰ *Environmental Protocol* art 1(b).

²⁷¹ *Environmental Protocol* art 4 provides that the Environmental Protocol supplements the Antarctic Treaty, and does not modify or amend that treaty. Nothing in the Protocol is to derogate from the rights and obligations of its parties to other international instruments within the Antarctic Treaty System.

²⁷² The Environmental Protocol has been ratified as at 2014 by 35 states, Senate Standing Committees on Foreign Affairs, Defence and Trade, Inquiry into Australia's future activities and responsibilities in the Southern Ocean and Antarctic waters, Submission by the Department of Foreign Affairs and Trade, 27 June 2014, and Ecolex, Treaties - Record Details
<<http://www.ecolex.org/ecolex/ledge/view/RecordDetails?id=TRE-001120&index=treaties>> at 13 August 2014.

²⁷³ Christopher C Joyner and Ethel R Theis, *Eagle over the Ice – The U.S. in the Antarctic* (University Press of New England, 1997) 57.

²⁷⁴ Australian Antarctic Division, 'Cooperative spirit steers Antarctic meeting'
<<http://www.antarctica.gov.au/about-us/publications/australian-antarctic-magazine/issue-23-december-2012/cooperative-spirit-steers-antarctic-meeting>> at 22 April 2013, and Felipe Gonzalez, Bob Hawke and Michel Rocard, 'Call to restart the ratification process of the Madrid Protocol,' Antarctic Treaty Secretariat Antarctic Treaty Secretariat, 'Call to restart the ratification process of the Madrid Protocol,' <www.ats.aq/documents/ATCM34/att/ATCM34_att086_e.doc> at 22 April 2013.

²⁷⁵ The Argentine supply ship *Bahia Paraiso* collided with rocks near the US Palmer Research Station on the Antarctic Peninsula spilling 250,000 gallons of diesel fuel, on 28 January 1989. The British supply ship HMS *Endurance* collided with an iceberg near Deception Island in Esperanza Bay creating an oil spill on 7 February 1989. The Peruvian research vessel BIC *Humboldt* ran aground in Fildes Bay off King George Island and leaked oil on 28 February 1989. This was followed by the largest Arctic oil spill to date, when the US owned tanker *Exxon Valdez* collided with a reef off Prince William Sound in Alaska spilling 11 million barrels of oil on 24 March 1989.

Article 3(1) of the Environmental Protocol provides the fundamental environmental principles for all Antarctic activities.²⁷⁶

The protection of the Antarctic environment and dependent and associated ecosystems and the intrinsic value of Antarctica, including its wilderness and aesthetic values and its value as an area for the conduct of scientific research, in particular research essential to understanding the global environment, shall be fundamental considerations in the planning and conduct of all activities in the Antarctic Treaty area.

Article 6 requires cooperation among the parties, including cooperation and exchange of information in relation to environmental matters, and cooperation with states adjacent to the Treaty area to ensuring that activities in the Antarctic Treaty area do not have adverse environmental impacts on those areas.

Article 7 is the core provision of the Environmental Protocol relating to mineral resources, and provides: 'Any activity relating to mineral resources, other than scientific

²⁷⁶ *Environmental Protocol*, art 3(2). Article 3(2) provides:

'2. To this end:

(a) activities in the Antarctic Treaty area shall be planned and conducted so as to limit adverse impacts on the Antarctic environment and dependent and associated ecosystems;

(b) activities in the Antarctic Treaty area shall be planned and conducted so as to avoid:

(i) adverse effects on climate or weather patterns;

(ii) significant adverse effects on air or water quality;

(iii) significant changes in the atmospheric, terrestrial (including aquatic), glacial or marine environments;

(iv) detrimental changes in the distribution, abundance or productivity of species or populations of species of fauna and flora;

(v) further jeopardy to endangered or threatened species or populations of such species; or

(vi) degradation of, or substantial risk to, areas of biological, scientific, historic, aesthetic or wilderness significance;

(c) activities in the Antarctic Treaty area shall be planned and conducted on the basis of information sufficient to allow prior assessments of, and informed judgments about, their possible impacts on the Antarctic environment and dependent and associated ecosystems and on the value of Antarctica for the conduct of scientific research; such judgments shall take account of:

(i) the scope of the activity, including its area, duration and intensity;

(ii) the cumulative impacts of the activity, both by itself and in combination with other activities in the Antarctic Treaty area;

(iii) whether the activity will detrimentally affect any other activity in the Antarctic Treaty area;

(iv) whether technology and procedures are available to provide for environmentally safe operations;

(v) whether there exists the capacity to monitor key environmental parameters and ecosystem components so as to identify and provide early warning of any adverse effects of the activity and to provide for such modification of operating procedures as may be necessary in the light of the results of monitoring or increased knowledge of the Antarctic environment and dependent and associated ecosystems; and

(vi) whether there exists the capacity to respond promptly and effectively to accidents, particularly those with potential environmental effects;

(d) regular and effective monitoring shall take place to all assessment of the impacts of ongoing activities, including the verification of predicted impacts;

(e) regular and effective monitoring shall take place to facilitate early detection of the possible unforeseen effects of activities carried on both within and outside the Antarctic Treaty area on the Antarctic environment and dependent and associated ecosystems.

research, shall be prohibited.²⁷⁷ Rothwell comments that the exemption for scientific research may have the potential for a facade of science used to exploit the exemption for minerals activity, in a similar manner to alleged whaling in the Southern Ocean, however the inspection regime of the Antarctic Treaty should make this unlikely.²⁷⁸

Environmental Impact Assessments (EIAs) were to be carried out on activities under ‘scientific research programmes, tourism and all other governmental and non-governmental activities’ requiring notice under the Antarctic Treaty.²⁷⁹ The provisions for regular and effective monitoring were consistent with the Antarctic Treaty inspection provisions.²⁸⁰

A comprehensive environmental evaluation was required for activities that have more than a minor or transitory impact.²⁸¹ This is a significant step in the control of potential

²⁷⁷ *CRAMRA* art 7. This is consistent with ‘the designation of Antarctica as a Special Conservation Area and other measures adopted under the Antarctic Treaty system to protect the Antarctic environment and dependent and associated ecosystems.’

²⁷⁸ Rothwell, above n 221, 143. There is an issue as to when scientific research as to minerals ends and where minerals prospecting begins. Scientific research permitted under the Environmental Protocol is quite limited under Article 3, and should be limited in scope and non-damaging to the Antarctic environment.

²⁷⁹ *CRAMRA* art 8. Article 12 establishes the Committee for Environmental Protection. This is an expert body which can provide advice on environmental matters and which also reports to the Antarctic Treaty’s ATCMs.

²⁸⁰ Related provisions are set out in Article 14 which states that observers are designated by any Antarctic Treaty Consultative Party who shall be nationals of that Party; and any observers designated at Antarctic Treaty Consultative Meetings to carry out inspections under procedures established by an Antarctic Treaty Consultative Meeting.

²⁸¹ *CRAMRA* Annex 1. Article 3(2) of the Annex requires the evaluation to include:

- (a) a description of the proposed activity including its purpose, location, duration and intensity, and possible alternatives to the activity, including the alternative of not proceeding, and the consequences of those alternatives;
- (b) a description of the initial environmental reference state with which predicted changes are to be compared and a prediction of the future environmental reference state in the absence of the proposed activity;
- (c) a description of the methods and data used to forecast the impacts of the proposed activity;
- (d) estimation of the nature, extent, duration, and intensity of the likely direct impacts of the proposed activity;
- (e) consideration of possible indirect or second order impacts of the proposed activity;
- (f) consideration of cumulative impacts of the proposed activity in the light of existing activities and other known planned activities;
- (g) identification of measures, including monitoring programs, that could be taken to minimise or mitigate impacts of the proposed activity and to detect unforeseen impacts and that could provide early warning of any adverse effects of the activity as well as to deal promptly and effectively with accidents;
- (h) identification of unavoidable impacts of the proposed activity;
- (i) consideration of the effects of the proposed activity on the conduct of scientific research and on other existing uses and values;
- (j) an identification of gaps in knowledge and uncertainties encountered in compiling the information required under this paragraph;
- (k) a non-technical summary of the information provided under this paragraph; and

pollution risks, as it requires a prior analysis of risks from Antarctic activities which can be examined by other parties to the Protocol.²⁸²

Annex IV contains provisions for the prevention of marine pollution.²⁸³ Rothwell comments that the article applies to each party to the Protocol and also ships flying its flag or other ships supporting its activities in the Antarctic Treaty area.²⁸⁴ The Protocol provides for Antarctic specially protected and specially managed areas, and requires management plans to manage the activities of these areas.²⁸⁵

The Protocol includes provisions concerning liability from environmental emergencies.²⁸⁶ This includes preventative measures,²⁸⁷ contingency plans,²⁸⁸ and response actions,²⁸⁹ and liability for damages.²⁹⁰ An operator that fails to take prompt and effective response action to environmental emergencies arising from its activities is liable to pay the costs of response actions taken by state parties.

The Environmental Protocol may be modified prior to 2048 by unanimous agreement of all Consultative Parties to the Antarctic Treaty.²⁹¹ The Protocol may also be modified after 2048 to remove the ban on resource development by the majority of all Parties, including three quarters of the twelve Consultative Parties at the time of adoption of the Protocol in 1998.²⁹² The prohibition cannot however be removed unless there is a binding regime in effect which fully safeguards the interests of all states referred to in Article IV of the Antarctic Treaty. These provisions may potentially be used at some future date if there is a consensus to carry out Southern Ocean oil and gas development.

(1) the name and address of the person or organisation which prepared the Comprehensive Environmental Evaluation and the address to which comments thereon should be directed.

²⁸² Annex II contains specific provisions relating to the preservation of Antarctic flora and Fauna, and Annex III contains provisions for waste disposal and management.

²⁸³ Environmental Protocol annex IV.

²⁸⁴ Rothwell, above n 221, 146.

²⁸⁵ *Environmental Protocol*, annex V.

²⁸⁶ *Ibid* annex VI.

²⁸⁷ *Ibid* annex VI art 3.

²⁸⁸ *Ibid* annex VI art 4.

²⁸⁹ *Ibid* annex VI art 5.

²⁹⁰ *Ibid* annex VI art 6. Annex VI also requires that when a State operator should have taken prompt and effective response action but did not, and no response action was taken by any Party, the State operator is liable to pay the costs of the response action which should have been undertaken, into a fund established under the Protocol. The article also provides strict liability for these damages, with the operator are responsible to pay damages regardless of culpability or fault.

²⁹¹ *Environmental Protocol* art 25(1) and *Antarctic Treaty* art 12(1). Article 12(1)(a) of the Antarctic Treaty requires the unanimous agreement of the Contracting Parties whose representatives are entitled to participate in the meetings provided for under Article IX.

²⁹² *Environmental Protocol* arts 25(4). Article 25(5) requires there to be a binding legal regime on Antarctic mineral resource activities is in force for a change to the prohibition on resources development.

The Environmental Protocol therefore should suspend exploration and oil and gas development in the Southern Ocean south of 60° south latitude by state parties, however there is an issue if a state considers that these activities are treated as 'high seas' rights. This issue results in a potential for oil and gas development by states which do not recognise Antarctic territorial claims of other states. The prohibition in Article 7 of the Environmental Protocol governs a specific subject matter in relation to Article VI of the Antarctic Treaty, and parties to the Antarctic Treaty and Environmental Protocol should observe the prohibition on mineral resource activities. Non-parties to the Antarctic Treaty and the Environmental Protocol may consider that the seabed off Antarctica would be part of the Area, and thereby subject to the common heritage of mankind and administration by ISBA.

There is also an issue whether states may conduct unilateral oil and gas exploration in the Southern Ocean. It has been reported that the Russian government research ship *Akademik Aleksandr Karpinsky* had collected data on regional oil and gas reserves.²⁹³ The investigation of the Antarctic mineral, hydrocarbon and other natural resources was also included in Russian report to the XXXIV Antarctic Treaty Consultative Meeting in 2011.²⁹⁴ These issues may have a significant future impact in the event of such developments, and are analysed as a potential game changing event in Chapter X.

8. Contribution to Thesis Conclusions

The primary conclusion is the significance of the determination of the outer limits of the continental shelf by the CLCS, which uses geographical criteria to make recommendations in response to state submissions. The recommendations made by the CLCS to date are arguably unprecedented in the extent of the boundaries being established.²⁹⁵ This process is therefore the dominant feature of the current period of

²⁹³ Ellie Fogarty, 'Antarctica: Assessing and Protecting Australia's National Interests' (2011) <<http://www.isn.ch/isn/Digital-Library/Publications/Detail/?ots591=0c54e3b3-1e9c-be1e-2c24-a6a8c7060233&lng=en&ord582=grp2&id=132284>> at 24 August 2012, Scott Joblin, 'Oil and Ice: Petroleum Extraction in Antarctica', *RIA Novosti* (2010)

<<http://en.rian.ru/valdai/20100906/160481450.html>> at 24 August 2012, and Irina Gan, 'Russia and Antarctica' in Ann-Marie Brady (ed), *The Emerging Politics of Antarctica* (2013) 130, 135.

²⁹⁴ Russian Federation, 'On strategy for the development of the Russian Federation activities in the Antarctic for the period until 2020 and longer-term perspective', Report to the XXXIV Antarctic Treaty Consultative Meeting, Buenos Aires 2011, Agenda Item ATCM 5,

<http://www.ats.aq/devAS/ats_meetings_doc_database.aspx?lang=e&menu=2> at 24 August 2012.

²⁹⁵ The CLCS had made eighteen recommendations as at September 2013,

<http://www.un.org/depts/los/clcs_new/commission_submissions.htm> at 10 September 2013.

boundary delimitation. The CLCS has made several recommendations which were declared not to effect existing boundary disputes, as discussed above, and the determination of boundary in relation to states with opposite or adjacent coasts will therefore still require judicial resolution or a boundary agreement.

In relation to maritime boundary dispute resolution, the related decisions of the ICJ, ITLOS and arbitration tribunals discussed above indicate a trend in judicial dispute resolution to adopt a more standard approach in the *Black Sea (Romania/Ukraine)* case in 2009,²⁹⁶ and international arbitration including the *Guyana/Suriname Arbitration* in 2007.²⁹⁷ This includes the ICJ use of the three step approach, based on determining the equidistance line, then analysing if this should be altered due to special circumstances, and then checking that the outcome avoids disproportionate results.

The state parties to the Arctic Council declared their support for the law of the sea to resolve boundary issues in 2008. An important role in the near future is the coordination of measures for the protection of the marine environment, particularly the Arctic Offshore Oil and Gas Guidelines,²⁹⁸ and the Agreement on Cooperation on Marine Oil Pollution, Preparedness and Response in the Arctic (MOPPR).²⁹⁹ In the long term, the significance of the Arctic Council may be as a focus of regional governance, including the future possibility of a binding international treaty regime. This may be required to establish an effective enforcement regime in the event of future offshore oil and gas development and the related oil pollution risks, and the likely increased use of the Canadian Northwest Passage and the Russian Northern Sea Route for international shipping.

The Antarctic Treaty is primarily important for the current suspension of sovereignty claims, which has very successfully enabled peaceful cooperation by many states in this region. The Environmental Protocol is significant as an international regime to protect the ecosystem, and prohibits minerals development until at least 2048. The prohibition on minerals development may now be seen as a wise decision, with the benefit of

²⁹⁶ *Maritime Delimitation in the Black Sea (Romania v Ukraine)*, [2009] ICJ Rep. 61.

²⁹⁷ *Guyana v Suriname* (Award of the Arbitral Tribunal), (2009) 47 ILM 164.

²⁹⁸ Arctic Council, Arctic Offshore Oil and Gas Guidelines, 2009, <<http://www.arctic-council.org/index.php/en/about/documents/category/233-3-energy>> at 24 August 2012.

²⁹⁹ *Agreement on Cooperation on Marine Oil Pollution, Preparedness and Response in the Arctic*, 13 May 2013, <<http://www.arctic-council.org/eppr/agreement-on-cooperation-on-marine-oil-pollution-preparedness-and-response-in-the-arctic/>> at 21 January 2014 (not yet in force).

hindsight, given the very limited effectiveness of environmental protection measures in the Deepwater Horizon offshore oil spill.

In the longer time frame, the technology and related implementation measures to protect the marine environment may be expected to substantially improve. In this event, the CRAMRA proposals, which would have implemented a form of JDZ for Antarctic minerals development, may potentially become significant as the basis for a future Southern Ocean JDZ.

CHAPTER V – THE ARCTIC OCEAN REGION – MARITIME BOUNDARIES AND POTENTIAL OIL AND GAS

1. Introduction to Arctic Continental Shelf and Outer Continental Shelf Claims

This chapter is a summary of the maritime boundaries and related continental shelf and OCS claims of states in the Arctic Ocean, commencing with the United States, and moving in an easterly direction about the North Pole for the states with Arctic coasts. The summary sets out the location and legal basis for the existing claims in the region to provide the necessary background for the analysis of potential joint venture opportunities.

One threshold issue is the extent to which Arctic states have accepted dispute resolution procedures under LOSC.¹ No Arctic state has accepted compulsory arbitration under LOSC in relation to maritime boundary delimitation provided under LOSC Article 298.

Table 5–1 Arctic State LOSC Dispute Resolution Declarations

The choices made by states with Arctic claims and dispute resolution declarations on LOSC dispute resolution provisions are summarised in the following table:

	ITLOS	ICJ	Arbitration Annex VII	Special Arbitration annex VIII	Exception declared under LOSC Section 298 type of dispute - Boundary delimitation is (a)
United States	NR-LOSC	N/A	N/A	N/A	N/A
Canada	1	-	1	-	1(a), (b) and (c)
Denmark	-	1	Not accepted for any 298 dispute	-	Declared for all categories
Norway	-	1	-	-	Declared for all categories
Iceland	NCF	NCF	NCF	NCF	Interpretation of article 83 submitted to

¹ 'Settlement of Disputes Mechanism' United Nations Division for Ocean Affairs and the Law of the Sea <http://www.un.org/Depts/los/settlement_of_disputes/choice_procedure.htm> at 9 July 2012.

					conciliation
Russia	Prompt release cases	-	1	Fisheries, marine environment, scientific research and navigation	1(a), (b) and (c)

In the above table, 'NR-LOSC' means that the state has not ratified LOSC. 'NCF' means that no choice of forum was made.

2. Arctic Ocean Baselines and Ice-Covered Coasts

There is a threshold issue of whether ice-covered coasts have influenced Arctic maritime boundaries. Ice shelves in the Arctic Ocean region do not extend significantly from the respective coasts, and do not significantly affect coastal state baselines. Global warming appears to have accelerated the disappearance of the Arctic ice shelves, and so the related baseline issue may cease to be significant in this region.²

The principal ice shelves in the Arctic Ocean region are attached to the north coast of Ellesmere Island in Canada.³ The ice shelves do not significantly depart from the coast of Ellesmere Island. Pharand analysed the two remaining major ice shelves, and commented that the Milne ice shelf extended two miles beyond the related fjord entrance, and the Ward Hunt ice shelf extended four miles beyond the fjord entrance. Pharand therefore commented that 'ice shelves in the Canadian Arctic cause little, if any, legal difficulty.'⁴ Canada declared baselines in relation to the Arctic coast in 1985.⁵

There are ice shelves which may affect baselines in the Svalbard Islands. Pharand commented that a larger ice shelf extending from Nordanslandet Island (Nordaustlandet) extended three to four miles from land.⁶ The Norwegian territorial waters decree in 1975 may not have used the edge of glaciers to determine the baseline,

² For example, it was reported in 2013 that the Canadian Milne ice shelf would now be likely to break up. 'Eye on the Arctic – Understanding the Milne ice shelf' Radio Canada International, 9 August 2013 <<http://www.rcinet.ca/en/2013/08/09/eye-on-the-arctic-understanding-the-milne-ice-shelf/>> at 17 October 2013.

³ These are the Alfred Ernest, Milne, Ward Hunt and Smith ice shelves. The process of global warming has also reduced Canadian ice shelves similar to the Antarctic, including the break-up of the McClintock ice shelf from 1963 to 1966, Ayles ice shelf in 2005, and Markham ice shelf in 2008.

⁴ Donat Pharand, *The law of the sea of the Arctic: With special reference to Canada* (1973) 187.

⁵ *Territorial Sea Geographical Coordinates (Area 7) Order of 10 September 1985*, SOR/85-872, Canada Gazette, Part II 2 October 1985.

⁶ Pharand, above n 4, 188. Pharand is likely to be referring to the Bråsvellbreen glacier relating to the extending into the sea at the south of Nordaustlandet Island.

however Kaye commented that the accuracy of the charts has been questioned and this conclusion is therefore uncertain.⁷

Kaye argued that Russian baselines declared in 1985 were made with reference to the eastern and western ends of the Polyarny Glacier ice feature on the Severnaya Zemlya Islands.⁸ Kaye also commented that this may be the only baseline explicitly relating to an ice feature in modern practice at that date. There was no clear United States practice on whether ice features can be used to determine baselines, and no clear Danish practice on this issue in respect of Greenland. Reference was made to the edge of the ice shelf in Australia's submission to the CLCS, discussed in Chapter VI.

3. Arctic State OCS Submissions to the CLCS – Lomonosov and Alpha/Mendelev Ridges

A significant issue in delimitation is the status of OCS submissions to the CLCS. These OCS submissions establish the outer limits of state rights, and the potential overlapping claims of these increased areas of state rights may be included in potential JDZs in these regions. Submissions and expected submissions to the CLCS relating to the Arctic Ocean region are as follows:⁹

Table 5–2 Arctic State Submissions to the CLCS

Country	Ratified LOSC ¹⁰	Arctic Ocean CLCS Submission Lodged, Due ¹¹ or	CLCS Recommendation	Arctic Ocean recommendation adopted by State
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⁷ Stuart B Kaye, 'Territorial sea baselines along ice covered coasts: International practice and limits of the law of the sea' (Paper presented at Third Biennial Conference of ABLOS – Addressing Difficult Issues in the Law of the Sea, International Hydrographic Bureau, Monaco, 28–30 October 2003) 15 <www.gmat.unsw.edu.au/ablos/ABLOS03Folder/PAPER4-2.pdf> at 11 December 2012. The issue relates to the Russian baseline points 218 and 219. Kaye comments that US Geographer raised the issue of accuracy of the charts. The Norwegian baseline declaration was made in the *Royal Decree of 25 September 1970 concerning the Delimitation of the Territorial Waters of Parts of Svalbard*.

⁸ Ibid.

⁹ The deadline for OCS submissions for states such as Canada and Denmark, which did not ratify LOSC prior to 13 May 1999, is determined under LOSC art 308(2):

'For each State ratifying or acceding to this Convention after the deposit of the sixtieth instrument of ratification or accession, the Convention shall enter into force on the thirtieth day following the deposit of its instrument of ratification or accession, subject to paragraph 1.'

¹⁰ United Nations Division for Ocean Affairs and the Law of the Sea, Chronological Lists of Ratifications of, Accessions and Successions to the Convention and Related Agreements, United Nations Division for Ocean Affairs and the Law of the Sea, <http://www.un.org/Depts/los/reference_files/chronological_lists_of_ratifications.htm> at 24 October 2008.

¹¹ United Nations Division for Ocean Affairs and the Law of the Sea, <http://www.un.org/Depts/los/clcs_new/clcs_home.htm> at 8 June 2012.

		Preliminary Information ¹²		Legislation
Canada	7 November 2003	Originally due 6 December 2013, Preliminary Submission in respect of the Arctic on 6 December 2013 provided that its final submission would be submitted at a later date in accordance with article 4 of Annex II of LOSC and the eighteenth Meeting of States Parties to the Law of the Sea (SPLOS/183).		
Denmark - (Greenland)	16 November 2004, entered into force 16 December 2004	15 December 2014		
Norway	24 June 1996, entered into force 24 July 1996	27 November 2006	27 March 2009	
Russia	12 March 1997	20 December 2001	14 June 2002. ¹³ further submission requested by the CLCS	
United States	LOSC not yet ratified			

Significant developments include the agreement between Norway and Russia on a maritime boundary in the Barents Sea in 2010,¹⁴ and a tentative agreement between Canada and Denmark on the maritime boundary in the Lincoln Sea in 2012.¹⁵ The most significant anticipated development is likely to be the CLCS recommendation on the revised Russian submission for the claimed OCS extending to the North Pole. Other

¹² United Nations Division for Ocean Affairs and the Law of the Sea, Preliminary information indicative of the outer limits of the continental shelf beyond 200 nautical miles, <http://www.un.org/Depts/los/clcs_new/commission_preliminary.htm> at 8 June 2012.

¹³ United Nations Commission on the Limits of the Continental Shelf 'Statement by the Chairman of the Commission on the Limits of the Continental Shelf on the progress of work in the Commission' (24-28 June 2002) UN Doc. CLCS/34, 33.

¹⁴ *Treaty Between the Kingdom of Norway and the Russian Federation Concerning Maritime Delimitation and Cooperation in the Barents Sea and the Arctic Ocean*, 15 September 2010, 2791 UNTS I-49095, (entered into force 7 July 2011), Registration No 49095, Norwegian Government, Office of the Prime Minister, <<http://www.regjeringen.no/en/dep/smk/press-center/Press-releases/2010/treaty.html?id=614254>> at 20 February 2012.

¹⁵ Government of Canada, Foreign Affairs and International Trade Canada, 'Canada and Kingdom of Denmark Reach Tentative Agreement on Lincoln Sea Boundary', (Press Release, 28 November 2012) <<http://www.international.gc.ca/media/aff/news-communications/2012/11/28a.aspx?view=d>> at 14 January 2013.

significant developments are the Danish and Greenland government OCS submission made on 15 December 2014, the anticipated final OCS submissions for Canada, the potential for a United States OCS submission in respect of the Chukchi Sea region in the event the United States ratifies LOSC.

Canada stated in its 2013 partial submission in relation to the Atlantic Ocean that its submission in relation to the Arctic would be submitted at a later date in accordance with article 4 of Annex II of LOSC and the eighteenth Meeting of States Parties to the Law of the Sea (SPLOS/183).¹⁶ Canada then lodged the Preliminary Information concerning the outer limits of the continental shelf of Canada in the Arctic Ocean on 6 December 2013.¹⁷ The International Boundaries Research Unit (IBRU) summarised current and potential OCS claims in the Arctic Ocean region on a related map (see Illustration 5-1).¹⁸

The most significant features affecting the current Russian OCS submission and Danish (Greenland) OCS submissions, and the anticipated Canadian Arctic OCS submission, are the Lomonosov and Alpha/Mendeleev Ridges,¹⁹ (see Illustrations 5-7,²⁰ and 5-8).²¹ The Ridges may potentially support the OCS of the respective states extending beyond 350 miles.

The extent of the potential Russian, Canadian and Danish OCS relating to Lomonosov and Alpha/Mendeleev Ridges will be determined under the more specific provisions for 'oceanic ridges', 'submarine ridges', and 'submarine elevations':

¹⁶ Partial Submission of Canada to the Commission on the Limits of the Continental Shelf regarding its continental shelf in the Atlantic Ocean, Executive summary, 3.

¹⁷ Preliminary Information concerning the outer limits of the continental shelf of Canada in the Arctic Ocean, <http://www.un.org/depts/los/clcs_new/commission_preliminary.htm> at 10 August 2014. The filing of the preliminary information satisfied the time period in article 4 of Annex II of the Convention, read in conjunction with decision SPLOS/183 adopted at the eighteenth meeting of States Parties to the Convention.

¹⁸ Martin Pratt, 'Potential Arctic Maritime Boundary Delimitations'

Source: <<http://www.dur.ac.uk/resources/ibru/arctic.pdf>> at 24 January 2015.

¹⁹ The Alpha Ridge extends from the Canadian Arctic coast towards the Mendeleev Ridge extending to the Russian coast.

²⁰ 'Potential Polar Claims – Lomonosov Ridge' – Chuck Carter and Paul Morin – Wired Magazine, <http://www.wired.com/science/planetearth/magazine/16-02/mf_continentalshelf_feud> at 22 February 2013.

²¹ Ron Macnab, 'Submarine Elevations and Ridges: Wild Cards in the Poker Game of UNCLOS Article 76' (2008) 39(2) *Ocean Development & International Law* 223, 226.

- If the ridges are 'oceanic ridges', they are excluded from the continental margin under Article 76(3), and so these features do not support an OCS. 'Oceanic ridges' are not defined in LOSC;
- If the ridges are 'submarine ridges', the OCS is limited to 350 nautical miles under Article 76(6); and
- If the Lomonosov and Mendeleev Ridges are 'submarine elevations that are natural components of the continental margin', the OCS is limited to the 2500 meter isobath line plus 100 nautical miles, under Article 76(6). These limits may exceed 350 nautical miles. 'Submarine elevations' are not defined in LOSC.

The difficulty in interpretation for the CLCS is generally in classifying undersea structures between these categories. The United States has commented on the Lomonosov Ridge,²² and the Mendeleev Ridge,²³ and concluded they were not related to the continental margins.²⁴

Ron Macnab considered whether 'submarine elevations' should be considered natural prolongations of the continental shelf, and notes that the CLCS has confirmed it will analyse each claim on a case by case basis. Macnab commented on the expected revised Russian OCS submission which may be made on the basis that the Lomonosov Ridge is a submarine elevation, and particularly commented on the difficulty of such a claim that the ridge is a natural prolongation of the continental shelf when there are significant breaks between the ridge and the principal Russian continental shelf.²⁵

²² United States of America: Notification Regarding the Submission made by the Russian Federation to the Commission on the Limits of the Continental Shelf, Ref. No. CLCS.01.2001.LOS/USA (18 March 2002) 3. The United States commented as follows:

The Ridge is a freestanding feature in the deep, oceanic part of the Arctic Ocean Basin, and not a natural component at the continental margins at either Russia or any other State.

²³ The United States commented as follows:

The Alpha-Mendeleev Ridge System in the surface expression of a single continuous geologic feature that formed on oceanic crust at the Arctic Ocean basin by volcanism over a "hot spot." (A "hot spot" is a magma source rooted in the Earth's mantle that is persistent for at least a few tens of millions of years and intermittently produces volcanoes on the overlying Earth's crust as it drifts across the hot spot during continental drift.) The Alpha-Mendeleev hot spot was formed by magma that was funneled from a hot spot to the spreading axis that created the Amerasian Basin of the Arctic Ocean 130 to 120 million years ago, and built a volcanic ridge about 35 km thick on the newly formed oceanic crust.

²⁴ Ibid. The United States concluded:

Both aeromagnetic and bathymetric data show that the ridges extend entirely across the Arctic Ocean, which characteristic aeromagnetic expression ends at the continental margins at both ends and is absent from adjacent continental shelves.

²⁵ Macnab, above n 21, 223.

4. Arctic Ocean Region – Offshore Oil and Gas

Research on the full potential offshore oil and gas in the Arctic Ocean region is underway, including offshore drilling programmes from the United States Alaskan coast and the Russian Siberian coast.²⁶ Reports to date indicate that very large potential oil and gas fields may be present based on sedimentary basins, as discussed by Macnab, Paul Neto and Rob van de Poll.²⁷ The authors discuss oil and gas survey results presented prior to 2001. Their analysis indicated considerable potential for oil in several areas subject to further exploration, and for gas in gas hydrate form in several large areas extending further north. Green and Kaplan considered that the significant part of oil and gas reserves in the sedimentary basins of the Arctic may be within the 200 mile EEZ of the states with coastlines.²⁸ Michael D Max and Allan Lowrie commented that large reserves of natural gas hydrates in the Arctic Ocean basin may exist outside the 200 mile EEZ limits. Hydrocarbon resources in the form of gas hydrates may therefore be relevant to OCS claims of the Arctic states, and also to the Area potentially to be developed by the International Seabed Authority (ISBA).²⁹

The equipment needed for exploratory drilling of Arctic resources under the ice cap is at the planning stage of development. The European Union had proposed construction of the *Aurora Borealis*, as the first ice breaker and drilling platform intended to take samples beneath the central Arctic ice.³⁰ The project was deferred by the German Council of Science and Humanities in 2010, however, with the Council stating that 'more partners would have to agree to financing'.³¹

²⁶ For a general summary of current Arctic oil and gas developments see: Ernst & Young, Arctic Oil and Gas (2013)
<[http://www.ey.com/Publication/vwLUAssets/Arctic_oil_and_gas/\\$FILE/Arctic_oil_and_gas.pdf](http://www.ey.com/Publication/vwLUAssets/Arctic_oil_and_gas/$FILE/Arctic_oil_and_gas.pdf)> at 2 October 2013.

²⁷ Ron Macnab, Paul Neto and Rob van de Poll 'Cooperative Preparations for Determining the Outer Limit of the Juridical Continental Shelf in the Arctic Ocean' (2001) *Boundary and Security Bulletin* 86.

²⁸ Arthur R Green and Anatoly A Kaplan 'The Geological Framework and Hydrocarbon Potential of Sedimentary Basins of the Arctic' in *Proceedings of the Twelfth World Petroleum Congress* (1987) vol 2, 79.

²⁹ Michael D Max and Allan Lowrie, 'Natural Gas Hydrates: Arctic and Nordic Sea Potential' in Tore O Vorren et al (eds) (1993) *2 Arctic Geology and Petroleum Potential, Proceedings of the Norwegian Petroleum Society Conference* 27.

³⁰ European Science Foundation '*Aurora Borealis - European Research Icebreaker*' (2012)
<<http://www.eri-aurora-borealis.eu/en/home/>> at 26 June 2008.

³¹ 'German Council of Science and Humanities recommends Building of Polarstern II', Alfred Wegener Institute for Polar and Marine Research, 15 November 2010, <http://www.awi.de/index.php?id=71&type=123&cHash=af826958c7ce4c8027a9bed5bc4467b4&L=0&tx_list_pi1%5Buid%5D=830&filename=awi.pdf> at 14 June 2013. The Council recommended proceeding with the *Polarstern II*, a new research icebreaker vessel without drilling capabilities.

Kenneth J Bird and his colleagues of the United States Geological Survey (USGS) issued the Circum-Arctic Resource Appraisal (CARA) Estimates of Undiscovered Oil and Gas North of the Arctic Circle in 2008 (USGS Appraisal),³² including potential oil resources (see Illustration 5–2),³³ and potential gas resources (see Illustration 5–3).³⁴ IBRU have released a related map with Arctic delimitations together with combined oil and gas reserves based on the USGS Appraisal (see Illustration 5–4).³⁵ These surveys are principally based on the location and general characteristics of sedimentary basins. Exploratory drilling will be required to more accurately map potential hydrocarbons particularly in the central Arctic region.

5. State Boundary Claims and Agreements

The following analysis of Arctic maritime boundaries is based in part on the research by IBRU 'Maritime jurisdictions and boundaries in the Arctic region' in 2008.³⁶ The IBRU map is included in the illustrations (see Illustration 5–1).³⁷

Sovereignty over land and island features in the Arctic region is generally now agreed,³⁸ unlike the status of Antarctic claims analysed in Chapter VI. There have however been previous disputes as to sovereignty as discussed below. The status of land claims in the Arctic is also not static. In particular, there is an expectation of future full independence of Greenland from Denmark, which will alter governance regimes relating to Greenland's potential offshore oil and gas resources.

A. United States/Russia (Bering Sea and Chukchi Sea)

The United States and Russia have an unresolved maritime boundary in the Bering and Chukchi Seas extending to the Arctic Ocean (see Illustration 5–5).³⁹ The United States and Russia signed the Agreement on the Maritime Boundary on 1 June 1990 ('1990

³² Kenneth J Bird et al, 'Circum-Arctic Resource Appraisal: Estimates of Undiscovered Oil and Gas North of the Arctic Circle' U.S. Geological Survey Fact Sheet 2008-3049, <<http://pubs.usgs.gov/fs/2008/3049/>> at 5 November 2012.

³³ Ibid.

³⁴ Ibid.

³⁵ Ibid.

³⁶ Pratt, above n 18.

³⁷ Ibid.

³⁸ The exception is the dispute between Denmark and Canada concerning Hans Island discussed below.

³⁹ 'Bering Sea' United States Department of State <<http://www.state.gov/p/eur/rls/fs/128740.htm>> at 14 December 2012.

Agreement'),⁴⁰ to delimit the boundary from the Bering Sea to the Arctic Ocean. The Soviet Union and successor Russian governments have not however ratified the Agreement.⁴¹ In an exchange of diplomatic notes in 1991 and 1992 the two states agreed to apply the Agreement provisionally.⁴² The Russian Assembly rejected a bill to approve the continued application of the 1990 Agreement in 1997.⁴³

The circumstances of the 1990 Agreement included the prior United States purchase of substantial territories from the Russian Empire in 1867,⁴⁴ ('Alaska Purchase'),⁴⁵ including the definition of the western boundary.⁴⁶ This was interpreted by the Soviet Union as establishing the boundary based on connecting 'rhumb lines', which cross meridians lines at the same angle,⁴⁷ and by the United States as arcs of great circles.⁴⁸ The result was an area of overlapping claims in the Bering Sea of approximately 21,000

⁴⁰ *Agreement between the United States of America and the Union of Soviet Socialist Republics on the Maritime Boundary*, opened for signature 1 June 1990, (not entered into force at 18 December 2012) United States–Department of State <<http://www.state.gov/documents/organization/125431.pdf>> at 10 January 2013 ('*United States/Russia 1990 Agreement*').

⁴¹ United States ratification was made on 16 September 1991.

⁴² Alex G Oude Elferink 'Arctic Maritime Delimitations: The Preponderance of Similarities with Other Regions' in Alex G Oude Elferink and Donald R Rothwell (eds), *The Law of the Sea and Polar Maritime Delimitation and Jurisdiction* (Martinus Nijhoff, 2001) 183.

⁴³ United States Department of State, Fact Sheet, Bureau of European and Eurasian Affairs, Washington, 20 May 2003, <<http://www.state.gov/p/eur/rls/fs/20922.html>> at 14 March 2008. The report stated that Russia advised the United States on 13 January 1992 that it 'continues to perform the rights and fulfil the obligations flowing from the international agreements' signed by the Soviet Union

⁴⁴ Elizabeth G Verville, United States–Soviet Union, Report Number 1–6, in Jonathan I Charney, and Lewis M Alexander (eds), *International Maritime Boundaries* (Martinus Nijhoff, 1993) vol 1, 447.

⁴⁵ *Treaty concerning the Cession of the Russian Possessions in North America by his Majesty the Emperor of all the Russias to the United States of America*, 30 March 1867, 15 Stat 539, ('*Alaska Purchase*').

⁴⁶ *Alaska Purchase*, art 1. Article 1 of the Alaska Purchase defined The western boundary extending from midway between what are now the Diomed Islands, generally extending southwest through the Bering Sea, between the midpoints of specified islands and land territories, and intersections of specific lines of longitude:

'The western limit within which the territories and dominion conveyed are contained passes through a point in Behring's Straits on the parallel of sixty-five degrees thirty minutes north latitude, at its intersection by the meridian which passes midway between the islands of Krusenstern or Ignalook, and the island of Ratmanoff, or Noonarbook, and proceeds due north without limitation, into the same Frozen Ocean. The same western limit, beginning at the same initial point, proceeds thence in a course nearly southwest, through Behring's Straits and Behring's Sea, so as to pass midway between the northwest point of the island of St. Lawrence and the southeast point of Cape Choukotski, to the meridian of one hundred and seventy-two west longitude; thence, from the intersection of that meridian, in a southwesterly direction, so as to pass midway between the island of Attou and the Copper Island of the Kormandorski couplet or group, in the North Pacific Ocean, to the meridian of one hundred and ninety-three degrees west longitude, so as to include in the territory conveyed the whole of the Aleutian Islands east of that meridian.'

⁴⁷ The rhumb line is the line crossing all meridians of longitude at the same angle.

⁴⁸ The arc of the great circle is a part of a circle drawn on the earth's surface, with the centre at the centre of the earth. The great circle is used in navigation as the shortest path between two points on the earth's surface.

square nautical miles. Verville describes the outcome of the 1990 Agreement as allowing to each country one half of the disputed areas of the Bering Sea.⁴⁹

It may be considered that the United States gave up a potential claim to several islands close to the Russian coast under the 1990 Agreement, including the Wrangel and Herald islands.⁵⁰ Oude Elferink comments that these islands were not part of the United States purchase from Russia under the 1867 Treaty, and so the potential United States claim to the islands appeared to be based only on exploration.⁵¹ The United States received approximately 70 per cent of the Bering Sea under the 1990 Agreement. The Agreement provided for small 'special areas', to transfer EEZ rights from the state with a coast within 200 nautical miles to the state with a more distant coast, to prevent the fishery resources of these areas being subject to neither state's jurisdiction.⁵² The transfers of rights to the United States were the 'eastern special areas' relating to Wrangel Island, Cape Navarin, and Medny Island regions, and transfer of rights to Russia for the 'western special area' relating to the Attu Island region. This is similar to the 'special area' under the Norway/Russia Barents Sea Treaty.⁵³

In relation to the application of the LOSC continental shelf provisions, it is significant that as of December 2014, the United States has not yet ratified LOSC, and accordingly may not be bound by its terms to the extent they are not considered to be part of international customary law.

Oil and Gas

Green and Kaplan indicate potential oil and gas in the Bering and Chukchi Seas.⁵⁴ Bird et al and the USGS Appraisal⁵⁵ indicated potential oil reserves in the Bering and

⁴⁹ Verville, above n 44, 451. The 1990 Agreement is of particular interest as it was negotiated at a time of adversarial political relations between the two countries.

⁵⁰ The islands included Wrangel Island, Herald Island, and Copper Island.

⁵¹ Alex G Oude Elferink, 'Arctic Maritime delimitations' in Oude Elferink and Rothwell, above n 42, 182.

⁵² United States/Russia 1990 Agreement, art 3, and United States, Department of State, 'Message From The President Of The United States Transmitting the Agreement Between The United States Of America And The Union of Soviet Socialist Republics on the Maritime Boundary, with Annex, Signed at Washington, June 1, 1990,' vii and ix

<<http://www.state.gov/documents/organization/125431.pdf>> at 10 January 2013.

⁵³ *Treaty Between the Kingdom of Norway and the Russian Federation Concerning Maritime Delimitation and Cooperation in the Barents Sea and the Arctic Ocean*, opened for signature 15 September 2010, 2791 UNTS I-49095 (entry into force 7 July 2011).

⁵⁴ Green and Kaplan, above n 28, 81. These areas include Norton Sound off the Alaska coast into the Bering Sea, and two basins to the north in the Chukchi Sea.

⁵⁵ Bird, above n 32.

Chukchi Seas,⁵⁶ (see Illustration 5–2),⁵⁷ and potential gas reserves north of the Bering Sea, extending to the Arctic Ocean, and the Chukchi Sea,⁵⁸ (see Illustration 5–3).⁵⁹

B. United States Arctic Coast and OCS – Alaska

United States sovereignty of Alaska is based upon acquisition of Russian rights to Alaska in 1867 Treaty.⁶⁰ No state contests United States sovereignty over the land area, however there are related maritime boundary disputes with Canada, including the Beaufort Sea discussed below.

The United States EEZ and Continental Shelf claims are discussed by the National Oceanic and Atmospheric Administration (NOAA).⁶¹ The United States declared an EEZ extending out to 200 nautical miles from the baselines, on a basis which is consistent with LOSC.⁶² The United States has also declared a Continental Shelf, based on the 1958 Convention on the Continental Shelf.⁶³ This claim does not extend beyond 200 nautical miles.⁶⁴ If the United States ratifies LOSC, it will then have 10 years to make an OCS claim, which may extend from the north coast of Alaska extending into the Arctic Ocean.⁶⁵

⁵⁶ USGS Appraisal Hope Basin 'HB' area, North Chukchi-Wrangel Foreland Basin 'NCWF' area, and Arctic Alaska 'AA' area.

⁵⁷ 'Potential Arctic Oil' US Geological Survey <<http://pubs.usgs.gov/fs/2008/3049>> at 14 December 2012.

⁵⁸ Bird, above n 32, USGS Appraisal Hope Basin 'HB' area, North Chukchi-Wrangel Foreland Basin 'NCWF' area, and Arctic Alaska 'AA' area.

⁵⁹ Ibid.

⁶⁰ *Treaty concerning the Cession of the Russian Possessions in North America by his Majesty the Emperor of all the Russias to the United States of America*, 30 March 1867, 15 Stat 539, ('Alaska Treaty'). The purchase price was USD 7.2 million. There was a political advantage to Russia in preventing Great Britain from occupying Alaska, and restricting potential expansion of Great Britain's colony of British Columbia, established in 1858.

⁶¹ United States EEZ and Continental Shelf claims are analysed by the United States National Oceanic and Atmospheric Administration (NOAA), Coastal Services Center, FGDC Marine Boundary Working Group, <<http://www.csc.noaa.gov/mbwg/products.html>>at 13 June 2013.

⁶² *United States Presidential Proclamation 5030*, March 10, 1983 (3 C.F.R. 22); *Magnuson Act of 1950*, *Magnuson Act of 1950*, 50 USC §191 (1950) (definition of EEZ); United States Federal Register, 60 F.R. 43825 (Aug. 23, 1995) (public notice of the limits of the U.S. EEZ).

⁶³ *Convention on the Continental Shelf*, opened for signature 29 April 1958, 499 UNTS 311 (entered into force 10 June 1964). As discussed in Chapter II, the Convention defined the continental shelf based on exploitable, rather than geographical limit. The Convention related:

...to the seabed and subsoil of the submarine areas adjacent to the coast but outside the area of the territorial sea, to a depth of 200 metres or, beyond that limit, to where the depth of the superjacent waters admits of the exploitation of the natural resources of the said areas.

⁶⁴ Presidential Proclamation No. 2667, 1945, 3 CFR 67; *Outer Continental Shelf Lands Act of 1953*, 43 USC § 1331(a) (2001).

⁶⁵ The potential United States OCS would extend from the continental shelf of the north-western Alaskan coast in the Chukchi Sea, northwards into the Arctic Ocean, and the Beaufort Sea area from the north eastern Alaskan coast, adjacent to Canada northwards to the Arctic Ocean.

A related issue is whether the LOSC OCS regime has become part of customary international law. On this basis the United States, as a state which has not yet ratified LOSC, may potentially possess an OCS recognised by other states. The related issue is whether the United States must recognise the OCS of the other Arctic Ocean coastal states which are all parties to LOSC.

As discussed, LOSC may be binding on non-state parties where it is considered to reflect customary international law. Oude Elferink considered this issue in relation to the OCS regime in LOSC Article 76.⁶⁶ Oude Elferink considered the arguments against inclusion in customary international law include the complexity of Article 76, and its linkage to the OCS royalty payment regime under Article 82, while the arguments in favour of its inclusion are the considerable number of states that have enacted legislation modelled on Article 76, and the absence of protests from other states against this practice. Oude Elferink observed that the United States has taken the position that it 'has exercised and shall continue to exercise jurisdiction over its continental shelf in accordance with and to the full extent permitted by international law as reflected in Article 76, paragraphs (1), (2) and (3)' of LOSC. Oude Elferink concluded that 'the reference to article 76(2), which refers to paragraphs 4 to 6 of article 76, implies that the United States accepts all the substantive provisions of article 76 as customary international law.' As discussed in Chapter IV, the ICJ considered the relationship between Article 76 and customary international law in the *Territorial Dispute and Maritime Delimitation (Nicaragua v. Colombia)* case. The ICJ that the definition of the continental shelf set out in Article 76, paragraph 1 forms part of customary international law.⁶⁷

Rights can be granted by treaty states to non-treaty states, however it is unlikely that the CLCS has jurisdiction to consider the submission by non-parties to LOSC, or that the related recommendation would be binding on state parties.⁶⁸

⁶⁶ Alex G Oude Elferink 'The outer limits of the continental shelf in the polar regions' in Alex G Oude Elferink, Erik Molenaar, Donald R Rothwell (eds) *The Law of the Sea and Polar Regions: Interactions between Global and Regional Regimes* (Brill, 2013) 61, 62.

⁶⁷ *Territorial Dispute and Maritime Delimitation (Nicaragua v. Colombia)* [2012] ICJ Rep 624, 666 and 669.

⁶⁸ Ibid 144. Such a CLCS recommendation may also, for example, not be acceptable to state parties where the non-treaty state was not required to make contributions under Article 82 exploitation of the OCS beyond 200 nautical miles.

The United States right to a 200 nautical mile continental shelf would be consistent with the Convention on the Continental Shelf if this claim met the Convention's criteria, which depend on depth and exploitability of the superjacent waters. As the United States is not a party to LOSC, it can essentially assert this claim on the basis that a continental shelf is part of customary international law. The United States may similarly not have that part of the continental shelf out to the limit of the OCS, unless the right to a continental shelf to the limit of the OCS is also considered part of customary international law. The United States government has considered the potential adoption of LOSC, including discussion of legislation implementing several aspects of LOSC in domestic legislation.⁶⁹ The United States *Fishery Conservation and Management Act of 1976*,⁷⁰ and the *Deep Seabed Hard Mineral Resources Act*,⁷¹ were described by Marjorie Ann Browne as 'interim measures prior to entry into force of a Law of the Sea.'⁷²

The process of submission to the CLCS to obtain a recommendation for an OCS does not mean that the United States cannot unilaterally claim an OCS as a non-treaty party, however the inability to use the procedure involving the CLCS has implications for the acceptance of the outer limits by the international community.⁷³

The potential United States OCS claim to the Chukchi plateau underwater peninsula, north of the Alaska coast and adjacent to Russia, is known as the 'Chukchi Cap'. Marc Benitah considered that this claim would be based on Article 76(6), relating to 'submarine elevations that are natural components of the continental margin.'⁷⁴ The recommendation from the President to the United States Senate for the adoption of LOSC in 1994 stated that the Chukchi Cap was not considered a ridge, but rather a submarine elevation that was a natural component of the continental margin, therefore

⁶⁹ United States Department of State, 'Law of the Sea Convention Letters of Transmittal and Submittal and Commentary', Dispatch Volume 6, Supplement Number 1, February 1995.

<<http://dosfan.lib.uic.edu/ERC/briefing/dispatch/1995/html/Dispatchv6Sup1.html>> at 28 November 2012.

⁷⁰ *Fishery Conservation and Management Act of 1976*, 16 § USC 1801-1882 (1996) (also known as the *Magnuson-Stevens Act*).

⁷¹ *Deep Seabed Hard Mineral Resources Act*, 30 USC § 1401 (1980).

⁷² Marjorie Ann Browne, 'The Law of the Sea Convention and U.S. Policy' CRS Issue Brief for Congress, 11 <<http://www.fas.org/sgp/crs/row/IB95010.pdf>> at 28 November 2011. Browne also commented that 'provisional application of the agreement and U.S. participation in the International Seabed Authority, including the funding for such participation, might be viewed as bypassing or circumventing the role of the Senate in giving its advice and consent to U.S. adherence to a treaty.'

⁷³ LOSC art 4 Annex II.

⁷⁴ Marc Benitah 'Russia's Claim in the Arctic and the Vexing Issue of Ridges in LOSC' (2007) *American Society of International Law ASIL Insight* 11.

<<http://www.asil.org/insights/2007/11/insights071108.html>> at 10 June 2008.

allowing an OCS claim exceeding 350 nautical miles from the Alaskan coast.⁷⁵ Benitah commented that this category of claim under LOSC may also be used in the Russian claim relating to the Lomonosov and Mendeleev ridges, as discussed below. The extent of any potential overlaps between a future United States OCS submission, and the Russian OCS submission, the OCS submission of the Danish and Greenland governments, and a future Canadian OCS submission, will not be known until these OCS submissions, and the related recommendations by the CLCS, are made.

Oil and Gas

Shell has been conducting exploratory drilling in the Chukchi and Beaufort seas north of the Alaskan coast.⁷⁶ There was, however, a suspension of these activities in 2013 due to environmental concerns, as discussed in Chapter X. Green and Kaplan comment that oil and gas are located from the United States Alaskan coast.⁷⁷ Bird et al and the USGS Appraisal indicate potential oil reserves in the Chukchi Sea,⁷⁸ (see Illustration 5–2),⁷⁹ and potential gas reserves in the Chukchi Sea,⁸⁰ (see Illustration 5–3).⁸¹

C. United States/Canada – Beaufort Sea

Canada proclaimed a baseline claim in the Arctic region in 1985, in general from the boundary with the United States to the entrance to the Hudson Strait.⁸² There is a dispute with the United States in relation to an area of the EEZ and continental shelf of about 6,250 square miles in relation to the Beaufort Sea, where the Canadian claim extends north from the land boundary, whereas the United States claim is based on equidistance (see Illustration 5–6).⁸³

⁷⁵ William Jefferson Clinton, 'Message from the President of the United States and Commentary Accompanying the United Nations Convention on the Law of the Sea and the Agreement Relating to the Implementation of Part XI Upon their Transmittal to the United States Senate for its Advice and Consent' (1994) *Georgetown International Environmental Law Review* 7, 147.

⁷⁶ 'Offshore Oil and Gas Exploration', Shell Global, <<http://s03.static-shell.com/content/dam/shell/static/usa/downloads/alaska/os101-ch2.pdf>> at 9 October 2013.

⁷⁷ Green and Kaplan, above n 28, 81.

⁷⁸ Bird, above n 32. USGS Appraisal Arctic Alaska 'AA' area.

⁷⁹ 'Potential Arctic Oil' US Geological Survey <<http://pubs.usgs.gov/fs/2008/3049>> at 14 December 2012.

⁸⁰ Bird, above n 32. USGS Appraisal Arctic Alaska 'AA' Area.

⁸¹ *Ibid.*

⁸² Territorial Sea Geographic Coordinates (Area 7) Order of 10 September 1985, in *The Canada Gazette*, Part II, of 2 October 1985.

⁸³ 'Beaufort Sea' Government of Canada <<http://publications.gc.ca/Collection-R/LoPBdP/BP/bp322-e.htm>> at 14 December 2012.

There is also a potentially larger dispute as to the OCS boundaries, relating to rights over resources beyond 200 nautical miles from the respective coast baselines. The potential OCS dispute has yet to fully crystallise, as Canada made only a preliminary submission without full details to the CLCS on 6 December 2013, and the United States has not yet ratified LOSC and has therefore made no submission to the CLCS.

David Gray commented that the basis for the Canadian boundary claim is a meridian line 141 degrees of longitude, based on the 1825 Convention between Great Britain and Russia.⁸⁴ The Convention defined the boundary as 141 degrees of longitude, 'in its prolongation as far as the frozen ocean.'⁸⁵ The United States claim is based on the adoption of Russian rights under the agreement for the purchase of Alaska in 1867,⁸⁶ and the claim that the related boundary should be based on equidistance. Canada subsequently has adopted Great Britain's rights. The interpretation is based on the original French language of the treaty, and the dispute may need future resolution before the boundary can be agreed.⁸⁷

Ted L McDorman observed that Canada had granted two exploration leases in the 1980s, however these leases are inactive due to work prohibition orders. The United States has included the overlapping claim area in lease sales since 1982, including related lease sales in 2007, however these leases do not permit drilling until the dispute is resolved.⁸⁸ A shared access approach discussed in 1977 may potentially have an established boundary, where each state would then have had the right of purchase to half the volume of hydrocarbons produced in the other state's part of the shared zone.⁸⁹ McDorman commented that the 'Beaufort Sea boundary dispute area has long been seen as a candidate for the development of some type of hydrocarbon joint development regime.'⁹⁰ McDorman observed that existing leases add a complexity to negotiations for joint hydrocarbon development agreements, and there have not been significant

⁸⁴ *Convention between Great Britain and Russia concerning the limits of their Respective Possessions on the North-West Coast of America and the Navigation of the Pacific Ocean*, 16 February 1825, 75 Consolidated Treaty Series (CTS) 95.

⁸⁵ David Gray, 'Canada's Unresolved Maritime Boundaries' (1997) *IBRU Boundary and Security Bulletin* 61.

⁸⁶ *Convention between the United States of America and His Majesty the Emperor of Russia, for the Cession of the Russian Possessions in North America to the United States*, 30 March 1867, 134 Consolidated Treaty Series (CTS) 331.

⁸⁷ Gray, above n 85, 63.

⁸⁸ Ted L McDorman, *Salt Water Neighbours – International Ocean Relations between the United States and Canada* (2009) 181.

⁸⁹ *Ibid* 189. This arrangement would have enabled the retention of the two national regimes regulating oil and gas development.

⁹⁰ *Ibid* 188.

discussions of joint development since that date. This may potentially change due to the increasing interest in oil and gas resources in the region.

James S Baker and Michael Byers considered that Canada may have an internal issue in relation to any new maritime boundary,⁹¹ as the currently claimed boundary was used to set out rights and obligations between the Canadian government and the Inuvialuit peoples under the Inuvialuit Final Agreement.⁹² They also summarised the potential joint development solutions to the boundary dispute, based on the analysis by Fox and the BIICL report, while commenting that 'in reality, these models are pure types and there may be substantial overlap between them.'⁹³ One suggested solution was based on Canadian management of the region, under a joint development agreement, with a portion of the related profits paid to the United States.⁹⁴

The Beaufort Sea continental shelf dispute may be considered in the broader context of a potential dispute over future United States and Canadian OCS claims. Baker and Byers argued that the United States approach, based on equidistance, may reduce the potential United States OCS area, due to the proximity of Banks and Prince Patrick islands in the Canadian Northwest Territories, and that the use of equidistance beyond 200 nautical miles would favour the potential Canadian OCS.⁹⁵ The United States response to the potential Canadian OCS submission may be to present a 'no objection' note to the CLCS, on the basis that the CLCS consideration should be made without prejudice to a future boundary agreement.⁹⁶

Oil and Gas

Green and Kaplan observed that oil and gas has been discovered in the Beaufort Sea, and the potential United States OCS claim is likely to include potential new oil and gas

⁹¹ James S Baker and Michael Byers, 'Crossed Lines: The Curious Case of the Beaufort Sea Maritime Boundary Dispute' (2012) 43(1) *Ocean Development & International Law* 70, 78.

⁹² Agreement between the Committee for Original Peoples' Entitlement, representing the Inuvialuit of the Inuvialuit Settlement Region and the Government of Canada, 5 June 1984 <http://www.wmacns.ca/pdfs/1_IFA.pdf> at 29 August 2013 ('Inuvialuit Final Agreement').

⁹³ Baker and Byers, above n 91, 87. Baker and Byers summarised the potential solutions as comprising 'Model 1: A system of compulsory joint ventures between the States or their nationals; Model 2: A joint authority with licensing and regulatory powers manages development of the joint development zone on behalf of the States; and Model 3: One state manages development of the joint zone on behalf of both with the other State's participation confined to revenue sharing and monitoring.'

⁹⁴ Michael Byers, *International Law and the Arctic* (2013) 89.

⁹⁵ Baker and Byers, above n 91, 78.

⁹⁶ *Ibid* 85.

resources further offshore.⁹⁷ Canada is also conducting oil and gas activities and is extending these activities further offshore. Both Canada⁹⁸ and the United States⁹⁹ have granted conflicting offshore exploration leases in the disputed zone.

Bird et al and the USGS Appraisal indicate oil reserves in the Chukchi Sea,¹⁰⁰ (see Illustration 5–2).¹⁰¹ The USGS Appraisal indicates potential gas reserves in the Chukchi Sea,¹⁰² (see Illustration 5–3).¹⁰³ The Beaufort Sea is therefore a region of significant interest for oil and gas, and the disputed region is considered in detail below for a potential JDZ.

D. Canadian Arctic Coast and OCS – Lomonosov and Alpha Ridges

Canada's sovereignty to the Canadian archipelago is generally uncontested, however in prior years Canadian sovereignty was uncertain.¹⁰⁴ Canadian sovereignty was based on early British exploration, including expeditions led by Martin Frobisher and John Davis.¹⁰⁵ Britain transferred possessions in the Arctic, including 'all Islands adjacent to any such Territories,' to Canada under an Imperial Order in Council in 1880.¹⁰⁶ Canadian exploration included expeditions led by A P Low, Captain Joseph-Elzéar Bernier, and Vilhjalmur Stefansson.¹⁰⁷ Canadian sovereignty was also established by

⁹⁷ Green and Kaplan, above n 28, 81.

⁹⁸ Map with Canadian offshore exploration licences at: *Beaufort Sea*, Canadian Indian and Northern Affairs Department of Canada, Northern Oil and Gas Directorate, October 2006, map with exploration licences, < <http://www.ainc-inac.gc.ca/oil/Pdf/BsmdDispoPage.pdf>>

⁹⁹ Map with United States offshore exploration licences at: *Beaufort Sea Areawide 2006 Tract Map No. 8 of 8*, State of Alaska, Department of Natural Resources, Division of Oil and Gas <<http://www.dog.dnr.state.ak.us/oil/products/publications/beaufortsea/bsaw2006/bsmap8.pdf>> at 26 June 2008.

¹⁰⁰ Bird, above n 32. USGS Appraisal Arctic Alaska 'AA' area.

¹⁰¹ 'Potential Arctic Oil' US Geological Survey <<http://pubs.usgs.gov/fs/2008/3049>> at 14 December 2012.

¹⁰² Bird, above n 32. USGS Appraisal Arctic Alaska 'AA' area.

¹⁰³ Ibid.

¹⁰⁴ Canadian sovereignty itself was originally based on the charter granted to the Hudson's Bay Company by Charles II in 1670, addition of the Northwest Territories and Nunavut in 1821, and transfer by the Hudson's Bay Company to Canada under Imperial Order in Council dated 23 June, 1870, reproduced in Statutes of Canada, First Parliament, 35th Vict., 1872, at lxiii.

¹⁰⁵ The early British expeditions included John Cabot from the vessel *Mathew* in 1497, Martin Frobisher from the vessels *Gabriel* and *Ayde* from 1576 to 1578, and John Davis including the *Sunshine* and *Desire* from 1585 to 1592, Henry Hudson from the *Hopewell* from 1607 to 1608, Captain James Cook from *HMS Resolution* from 1776 to 1779, the Northwest Passage expedition of Rear-Admiral John Franklin from *HMS Erebus* in 1845, and Captain George Vancouver from the vessel *RRS Discovery* from 1892 to 1894.

¹⁰⁶ Imperial Order in Council, 31 July, 1880, reproduced in Statutes of Canada, Fourth Parl., 44th Vict., Vols I-II, 1880-81, ix-x.

¹⁰⁷ The principal expeditions were by A P Low from the vessel *Neptune* from 1903 to 1904, Captain Joseph-Elzéar Bernier from the *Arctic* from 1904 to 1911 including proclamation of sovereignty over the

administrative acts, including establishing Royal Canadian Mounted Police (RCMP) posts in the 1920s.¹⁰⁸

The northern coastline of Canada is defined under the Canadian baseline claim in the Arctic region in 1985, and follows the outer boundary of Canada's Arctic islands including Banks, Ellesmere and Baffin islands.¹⁰⁹

Tullio Scovazzi commented that the baselines were declared in 1985 with the purpose of ensuring Canadian national security with respect to the predicted increase in foreign commercial and military navigation.¹¹⁰ The Canadian declaration followed the voyage of the United States Coast Guard icebreaker USCGC *Polar Sea* through the Northwest Passage earlier in that year.¹¹¹

The Northwest Passage is a potential sea route between east and west between Canada's Arctic islands.¹¹² Canada claims the straits and channels between the Canadian Arctic islands to be Canada's internal waters subject to full Canadian sovereignty as discussed by Donat Pharand.¹¹³ The United States declared the straits to be international straits, which under LOSC allows the right of passage to vessels of all states without being

archipelago in 1909, and Vilhjalmur Stefansson leading the Canadian Antarctic Expedition from the *Karluk* from 1913 to 1916.

¹⁰⁸ 'Arctic Sovereignty' *The Canadian Encyclopaedia*,

<<http://www.thecanadianencyclopedia.com/articles/arctic-sovereignty>> at 27 February 2013.

¹⁰⁹ Territorial Sea Geographic Coordinates (Area 7) Order of 10 September 1985, in *The Canada Gazette*, Part II, of 2 October 1985.

¹¹⁰ Tullio Scovazzi 'The Baseline of the Territorial Sea: The Practice of Arctic States' in Oude Elferink and Rothwell, above n 42, 76. Scovazzi commented that the baselines are derived from historic title, however Scovazzi noted that there was no long-standing exercise of Canadian government authority, and no acquiescence of other states, to support historic title, except in respect of the Hudson Bay region. He considered the baseline claim may be better justified based on geographical circumstances, based on deep indentations such as on Baffin and Ellesmere islands. The margin of the archipelago could also be considered as representing the general direction of the coast based on the degree of compactness of the islands and the connection with the Canadian coast.

¹¹¹ The United States position should be considered in the light of asserting the legal regime of international straits in regions with greater strategic significance, particularly the Straits of Hormuz connecting the Arabian Sea and the Persian Gulf. See generally Nilufer Oral, 'Transit Passage Rights in the Strait of Hormuz and Iran's Threats to Block the Passage of Oil Tankers' (2012) 16(16) *ASIL Insights* <<http://www.asil.org/pdfs/insights/insight120503.pdf>> at 8 February 2013. In relation to the political circumstances see generally 'Iran v the United States – Iran's warning' *The Economist* (London), 7 January 2012.

¹¹² The Northwest Passage runs to the south of Banks, Victoria, Prince of Wales, Devon, and Somerset islands.

¹¹³ Donat Pharand, *The Northwest Passage: Arctic Straits* (Martinus Nijhoff, 1984). The principal issue of the baseline claim along the northern boundary of the Arctic islands means that straits which could be used for international shipping are declared to be Canadian internal waters. See also Donat Pharand, *Canada's Arctic Waters in International Law* (Cambridge University Press, 2009).

subject to Canadian control.¹¹⁴ The issue of the status of the Northwest Passage as an international strait was highlighted in particular by the passages of the United States vessels *SS Manhattan* in 1969 and *USCGC Polar Sea* in 1985. The principal case relating to the status of international straits is the *Corfu Channel* case,¹¹⁵ where the ICJ determined that the Corfu Channel was a strait 'used for international navigation between two parts of the high seas', notwithstanding that this was a secondary route, and the amount of traffic was low. On this basis the amount of traffic could only be a subsidiary consideration.¹¹⁶

The Northwest Passage appears likely to be classified as an 'international strait' as a result of global warming, as increased freedom for navigation in the passage means that the Northwest Passage may be becoming, over time, a de facto international strait, and LOSC treatment as an international strait may follow.¹¹⁷ Rob Huebert observed that the impact of reducing ice in the Arctic Ocean region meant that Article 234 may become more significant as coastal sea traffic increases.¹¹⁸

Canada ratified LOSC in 2003, and its OCS submission was originally required to be lodged with the CLCS by 6 December 2013.¹¹⁹ Canada stated in its 2013 partial submission in relation to the Atlantic Ocean that its submission in relation to the Arctic would be submitted at a later date in accordance with article 4 of Annex II of LOSC and

¹¹⁴ The United States ratified the *Convention on the Territorial Sea and Contiguous Zone*, opened for signature 29 April 1958, 516 UNTS 205 (entered into force 10 September 1964) Article 14 of the 1958 Convention allowed a right of innocent passage. The United States has not ratified LOSC, however it has accepted that the LOSC provisions on international straits, discussed in Chapter II, have become part of customary international law.

¹¹⁵ *Corfu Channel Case (United Kingdom v Albania)* [1949] ICJ Reports 3. The case concerned damage to British warships clearing mines in the channel between the Greek island of Corfu and the Albanian coast.

¹¹⁶ Donald R Rothwell, *The Polar Regions and the Development of International Law* (Cambridge University Press, 1996) 200. Rothwell commented that:

Whether, taking into account the Corfu Channel test, the views of various commentators, and making allowance for polar conditions, there has been a sufficient number of transits of ships engaged in international navigation through the passage to meet the functional criterion is difficult to determine.

¹¹⁷ Andrea Charron, 'The Northwest Passage Shipping Channel: Sovereignty First and Foremost and Sovereignty to the Side' (2005) 7(4) *Journal of Military and Strategic Studies* 5. Article 234 of LOSC establishes a specific regime for ice covered area which allows the coastal state such as Canada to adopt non-discriminatory laws and regulations for the preservation, reduction and control of marine pollution in ice covered waters within their respective EEZs. The provision would support Canada environmental measures.

¹¹⁸ Rob Huebert, 'Article 234 and Marine Pollution Jurisdiction in the Arctic' in Oude Elferink and Rothwell, above n 54, 261.

¹¹⁹ Government of Canada, Fisheries and Oceans Canada, 'Canada's Submission to the Commission on the Limits of the Continental Shelf Under the United Nations Convention on the Law of the Sea (The "Continental Shelf Program")' <<http://www.dfo-mpo.gc.ca/ae-ve/evaluations/09-10/6b060-eng.htm>> at 1 October 2013.

the eighteenth Meeting of States Parties to the Law of the Sea (SPLOS/183).¹²⁰ Canada then lodged the Preliminary Information concerning the outer limits of the continental shelf of Canada in the Arctic Ocean on 6 December 2013.¹²¹ The Preliminary Information is significant as it provides for a submission based on the Alpha and Lomonosov Ridges.¹²²

In relation to the expected final submission, Canada has been surveying the Alpha Ridge,¹²³ extending from the north coast of Ellesmere Island northwest into the Arctic Ocean, and the Lomonosov Ridge extending from Ellesmere Island and Greenland extending north into the Arctic Ocean.¹²⁴ The Canadian OCS claim relating to the Lomonosov and Alpha Ridges overlaps the Russian claim extending from the Russian coast to the North Pole (see Illustrations 5–7,¹²⁵ and 5–9).¹²⁶ The extent of an overlap, if any, between a full Canadian OCS submission, and the OCS submission of the Danish and Greenland governments made in December 2014, will not be known until the full Canadian submission, and the related recommendations by the CLCS, are made.

The issue may be determined by whether there is sufficient scientific evidence that the Lomonosov and Alpha Ridges are natural prolongations of the Canadian continental margin. The ridges extend across the North Pole between the American and Asian continents, and this suggests that they are not natural prolongations of only one continental margin, however the final determination must be made by the CLCS. If the final Canadian submission extends beyond the North Pole to overlap the Russian

¹²⁰ Partial Submission of Canada to the Commission on the Limits of the Continental Shelf regarding its continental shelf in the Atlantic Ocean, Executive summary, 3.

¹²¹ Preliminary Information concerning the outer limits of the continental shelf of Canada in the Arctic Ocean, <http://www.un.org/depts/los/clcs_new/commission_preliminary.htm> at 10 August 2014. The filing of the preliminary information satisfied the time period in article 4 of Annex II of the Convention, read in conjunction with decision SPLOS/183 adopted at the eighteenth meeting of States Parties to the Convention.

¹²² *Ibid.* The Preliminary Information stated:

The continental margin of Canada in the Arctic Ocean is part of a morphologically continuous continental margin around the Canada Basin and along the Amundsen Basin. It comprises a number of seafloor elevations (Lomonosov Ridge and Alpha Ridge) and forms the submerged prolongation of the land mass of Canada. Throughout, the areas of continental shelf extend beyond 200 nautical miles from the territorial sea baselines of Canada and, on the Alpha and Lomonosov Ridges, beyond the 350 nautical mile constraint.

¹²³ The Alpha Ridge extends towards commencement of the Mendeleev Ridge on the other side of the North Pole towards the Russian coast.

¹²⁴ Randy Boswell, 'Ocean Survey Looks Promising for Arctic Sovereignty Effort', National Post (Toronto, Canada), 16 May 2008, <<http://www.nationalpost.com/news/canada/story.html?id=520774>> at 26 June 2008.

¹²⁵ 'Potential Polar Claims – Lomonosov Ridge' – Chuck Carter and Paul Morin – Wired Magazine, <http://www.wired.com/science/planetearth/magazine/16-02/mf_continentalshelf_feud> at 22 February 2013.

¹²⁶ Macnab, above n 21, 226.

submission, then the CLCS may make recommendations without prejudice to the resulting boundary dispute, as discussed in Chapter IV. There are presently no indications whether the Canadian submission will extend beyond the North Pole, however the Danish and Greenland government submission did extend beyond the North Pole.

Oil and Gas

Green and Kaplan comment that oil and gas are being exploited off the Canadian Arctic coast, and offshore exploration is extending to the north into the EEZ. It is currently expected that oil and gas may be found out to the EEZ.¹²⁷ The USGS Appraisal indicates oil reserves north of the Canadian coast,¹²⁸ (see Illustration 5–2),¹²⁹ and potential gas reserves north of the Canadian coast,¹³⁰ (see Illustration 5–3).¹³¹

E. Canada/Denmark (Greenland) – Lincoln Sea

The major portion of the maritime boundary between Canada and Denmark in the Lincoln Sea region was agreed between the two states in 1973.¹³² The agreed boundary runs for nearly 1,500 miles from the Davis Strait to the south to Robeson Channel, at the northern end of Canada's Ellesmere Island and the north east coast of Greenland.¹³³ The boundary was generally based on equidistance, with a provision for adjustment when new information on the low water line of Canada's Arctic islands and the Greenland coast became available. The boundary did not however fully extend to the north into the Lincoln Sea, north of Ellesmere Island and Greenland. There was an unresolved boundary in respect of continental shelves of approximately 100 nautical miles, and the OCS boundary beyond 200 nautical miles from the respective coasts. The 1973 Agreement also did not delimit the boundary for a very small gap of less than one

¹²⁷ Green and Kaplan, above n 28, 81.

¹²⁸ Bird et al, above n 32. USGS Appraisal Arctic Alaska 'AA', Amerasia Basin 'AM', and Sverdrup Basin 'SB' areas.

¹²⁹ 'Potential Arctic Oil' US Geological Survey <<http://pubs.usgs.gov/fs/2008/3049>> at 14 December 2012.

¹³⁰ Bird et al, above n 32. USGS Appraisal Arctic Alaska 'AA', Amerasia Basin 'AM', and Sverdrup Basin 'SB' areas.

¹³¹ Ibid.

¹³² *Agreement between the Government of the Kingdom of Denmark and the Government of Canada relating to the delimitation of the Continental Shelf between Greenland and Canada*, 17 December 1973, 950 UNTS 151.

¹³³ Oude Elferink, above n 66, 181.

nautical mile in the Nares Strait, relating to the dispute over the sovereignty of Hans Island.

Lewis M Alexander commented that the 1973 Agreement provided for potential adjustments if the agreed boundary was determined not to be based on equidistance, and that neither state would issue petroleum licences in the boundary region without the agreement of the other state on the precise boundary.¹³⁴ Canada and Denmark agreed not to delimit the boundary to the north until more was known about the area and its resources.¹³⁵ The related issues included whether the Danish Beaumont Island should be given full effect in determining the boundary.¹³⁶

Canada and Denmark announced their tentative agreement to finalise the boundary in the Lincoln Sea to 200 nautical miles from the respective coasts in 2012.¹³⁷ This would extend the agreed boundary to approximately 1,600 nautical miles. Both states had negotiated a boundary on the equidistance principle, however a Danish baseline relating to Beaumont Island had resulted in a dispute over two small areas of approximately 65 nautical square miles in total.¹³⁸ The announcement in 2012 did not include agreement on the OCS in the Lincoln Sea. This issue may be resolved in the respective OCS submissions to the CLCS.¹³⁹

Hans Island is a small feature in the Nares Strait between the Canadian Ellesmere Island and the Danish (Greenland) coast, and is the only disputed land territory in the Arctic Ocean region.¹⁴⁰ The dispute appears small in scope, however there is an issue

¹³⁴ Lewis M Alexander 'Canada-Denmark (Greenland) Report, Number 1-1' in Charney and Alexander, above n 44, 371.

¹³⁵ Ibid 374.

¹³⁶ Ibid 376.

¹³⁷ Government of Canada, Foreign Affairs and International Trade Canada, 'Canada and Kingdom of Denmark Reach Tentative Agreement on Lincoln Sea Boundary', (Press Release, 28 November 2012) <<http://www.international.gc.ca/media/aff/news-communicues/2012/11/28a.aspx?view=d> > at 14 January 2013.

¹³⁸ Michael Byers commented that Canada's objection was based on the *Anglo-Norwegian Fisheries Case*, as the baselines were not related to a fringe of islands, were overly long, did not follow the general direction of the coast, and did not cross the intervening fjords but are further offshore, Michael Byers, *Who Owns the Arctic – Understanding Sovereignty in the Far North* (2009) 106.

¹³⁹ Jacques Hartmann, 'Canada and Denmark reach agreement on the Lincoln Sea Boundary' *EJIL: Talk!*, European Journal of International Law, <<http://www.ejiltalk.org/canada-and-denmark-reach-agreement-on-the-lincoln-sea-boundary/>> at 29 August 2013.

¹⁴⁰ Byers, above n 138, 22. Byers commented that the Danish claim to Hans Island is based on discovery by an expedition in 1853, use of the island by the Inuit population of Greenland, on British recognition of Danish sovereignty over Greenland, and on 1975 mapping results that showed the island to be slightly closer to the Greenland coast owned by Denmark, with the deeper channel on the Canadian side next to Ellesmere Island. The Canadian claim to Hans Island is based on transfer of title to Canada by Great

concerning navigation in the channel between the two coasts. The dispute has a comparatively high profile due to several incidents, including over-flights and flag plantings.¹⁴¹ In September 2005 both states issued a joint statement acknowledging their differences, and their commitment to peaceful resolution of the dispute.¹⁴²

Hans Island is also significant as proposals to resolve the dispute include each country having sovereignty over half the island, and alternatively making the island a condominium, with shared sovereignty between Canada and Denmark.¹⁴³ The condominium proposal potentially relates to a joint development solution relating to land territory of the island.¹⁴⁴

The most significant issue is how the Danish and Greenland government OCS claim, and the expected final Canadian OCS claim, may conflict with the revised Russian OCS claim. The Russian OCS claim currently does not extend beyond the North Pole. The potential overlap includes claims which may extend beyond the North Pole on the basis of equidistance, as indicated in the IBRU Arctic map.¹⁴⁵

Oil and Gas

Green and Kaplan comment that oil and gas resources are expected off the Canadian coast north of Ellesmere Island and towards the Greenland coast.¹⁴⁶ The USGS Appraisal indicates potential oil reserves north of the Canadian and Greenland coasts,¹⁴⁷

Britain in 1880, use of Hans Island as a base by Canada in the Second World War, and Canadian surveys in 1953 and 1972. In relation to the Danish claim, Byers argues that the related expedition was American rather than Danish, the position of an island does not determine its sovereignty, and the Inuit also used Ellesmere Island which is part of Canada.

¹⁴¹ Ibid 26. The incidents included very low over-flight in 1983 by Danish aircraft of a scientific camp established by the Canadian company Dome Petroleum under permit from the Canadian government, Danish flag plantings on the island from 1984 to 2004, a further Canadian survey in 2000 and Canadian flag planting in 2005.

¹⁴² Ibid 28.

¹⁴³ Ibid. Byers comments that this solution would be similar to the practice adopted for Pheasant Island in the Bidasoa River between France and Spain.

¹⁴⁴ Ibid 30.

¹⁴⁵ 'Maritime Jurisdiction and Boundaries in the Arctic Region' (2008) International Boundaries Research Unit <<http://www.durham.ac.uk/ibru>> at 15 August 2008.

¹⁴⁶ Green and Kaplan, above n 28, 81.

¹⁴⁷ Bird et al, above n 32. USGS Appraisal Sverdrup Basin 'SB' and North Greenland Sheared Margin 'NGS' areas.

(see Illustration 5–2),¹⁴⁸ and potential gas reserves north of the Canadian and Greenland coasts,¹⁴⁹ (see Illustration 5–3).¹⁵⁰

F. Danish Arctic Coast (Greenland) and OCS – Lomonosov Ridge

Denmark's sovereignty over Greenland is now uncontested by other states. Danish sovereignty is based on expeditions and claims of sovereignty by King Christian IV from 1605 to 1607, and Denmark's formal declaration of sovereignty in 1919.¹⁵¹ Danish sovereignty over Eirik Raudes Land in eastern Greenland was unsuccessfully challenged by Norway in the *Legal Status of Eastern Greenland* ('Eastern Greenland case') in 1933.¹⁵² The Permanent Court of International Justice rejected the Norwegian assertion that the territory was *terra nullius*, and confirmed Danish sovereignty, based on assertions of sovereignty and related administrative acts by Denmark. The *Eastern Greenland* case has particular significance in relation to Antarctic sovereignty claims as discussed in Chapter VI.

There is currently a significant development towards full independence for Greenland. Home rule government was granted by Denmark in 1979,¹⁵³ and this was extended to self-government in 2009.¹⁵⁴

The government of Denmark and the Government of Greenland made a partial submission to the CLCS in respect of the northern continental shelf of Greenland on 15 December 2014 (see Illustration 5–12).¹⁵⁵ The submission included the area based on

¹⁴⁸ 'Potential Arctic Oil' US Geological Survey <<http://pubs.usgs.gov/fs/2008/3049>> at 14 December 2012.

¹⁴⁹ Bird et al, above n 32. USGS Appraisal Sverdrup Basin 'SB' and North Greenland Sheared Margin 'NGS' areas.

¹⁵⁰ Ibid.

¹⁵¹ Denmark and Norway has been in a political union, however this was dissolved in 1814 under the Treaty of Kiel in 1814, which ceded Norway to Sweden at the end of the Napoleonic wars. The Greenland colonies remained under Danish control. *Treaty of Kiel*, 14 January 1814 <http://hem.passagen.se/klas.hasselstig/w_tryck/fred1814.html> at 27 February 2013.

¹⁵² *Legal Status of Eastern Greenland (Norway v Denmark)*, (1933) PCIJ Ser A/B No 53.

¹⁵³ *Home Rule Act of 1979* (Act. No. 577 of 29 November 1978). These measures included establishment of the Greenland Parliament, *Inatsisartut*.

¹⁵⁴ *Greenland Self-Government Act* (Act No. 473 of 12 June 2009). Denmark retains control at 2013 of justice affairs, including police, criminal procedures and the courts of law, defence and national security, financial sectors and monetary system, civil right law including family and succession, and citizenship, and foreign affairs. Greenland Representation to the E.U., Brussels, 'Politics in Greenland' <<http://eu.nanoq.gl/Emner/About%20Greenland/Politics%20in%20Greenland.aspx>> at 28 February 2013.

¹⁵⁵ Commission on the Limits of the Continental Shelf, 'Partial Submission of the Government of the Kingdom of Denmark together with the Government of Greenland to the Commission on the Limits of the Continental Shelf – The Northern Continental Shelf of Greenland' – Executive Summary

the Lomonosov Ridge under the continental shelf provisions of LOSC. The submission can be compared to the current claim by Russia which proceeds from the northern coast of Russia to the North Pole (see Illustrations 5–7,¹⁵⁶ and 5–9).¹⁵⁷ The Danish and Greenland submission however extended beyond the North Pole, and so substantially overlaps the Russian claim, and also extends into the Arctic Ocean north of the Canadian coast. The Danish and Greenland submission identifies the delimitation issues, including the issue of a future maritime boundary relating to Russia, and provides that the related CLCS recommendations should be without prejudice to the delimitation of the continental shelf.¹⁵⁸ On a similar basis to the Russian OCS submission, and the anticipated final Canadian submission, the issue may be determined by whether there is sufficient scientific evidence that the Alpha and Lomonosov Ridges are natural prolongations of the Greenland continental margin.

Denmark made an OCS submission in respect of the Faroe Islands in cooperation with the Government of the Faroes in 2009,¹⁵⁹ and a submission together with the Government of Greenland in respect of the southern continental shelf of Greenland in 2012.¹⁶⁰ Christian Marcussen and Flemming Christiansen commented that the Danish boundary of the area south of Greenland was yet to be agreed with Canada, and the area northeast of Greenland to the Norwegian islands of Jan Mayen and Svalbard, and to the north of Greenland, were yet to be agreed with Canada and Russia.¹⁶¹

Oil and Gas

<http://www.un.org/depts/los/clcs_new/submissions_files/submission_dnk_76_2014.htm> at 16 December 2014.

¹⁵⁶ Chuck Carter and Paul Morin, *Wired Magazine*

<http://www.wired.com/science/planetearth/magazine/16-02/mf_continentalshelf_feud> at 14 December 2012.

¹⁵⁷ United Nations Commission on the Limits of the Continental Shelf (CLCS) – Russian Submission <http://www.un.org/Depts/los/clcs_new/submissions_files/submission_rus.htm> at 22 February 2013.

¹⁵⁸ *Ibid* 18.

¹⁵⁹ Partial Submission of the Government of the Kingdom of Denmark together with the Government of the Faroes to the Commission on the Limits of the Continental Shelf - The Continental Shelf North of the Faroe Islands, 29 April 2009

<http://www.un.org/Depts/los/clcs_new/submissions_files/dnk28_09/dnk2009executivesummary.pdf> on 27 July 2009.

¹⁶⁰ Partial Submission of the Government of the Kingdom of Denmark together with the Government of Greenland to the Commission on the Limits of the Continental Shelf regarding the Southern Continental Shelf of Greenland, on 14 June:

<http://www.un.org/Depts/los/clcs_new/commission_submissions.htm> at 12 December 2012.

¹⁶¹ Christian Marcussen et al, 'Exploring for extended continental shelf claims off Greenland and the Faroe Islands - geological perspectives', (2004) 4 *Geological Survey of Denmark and Greenland Bulletin* 61.

Oil and gas resources are expected offshore from the northern and eastern Greenland coasts, and in the Greenland Sea towards the Svalbard Islands.¹⁶² The USGS Appraisal indicates potential oil reserves north of the Greenland coast,¹⁶³ (see Illustration 5-2),¹⁶⁴ and potential gas reserves north of the Greenland coast extending towards the North Pole,¹⁶⁵ (see Illustration 5-3).¹⁶⁶

G. Denmark (Greenland)/Norway (Jan Mayen and Svalbard)

The more southerly Denmark (Greenland) boundary with Norway relating to the Jan Mayen Island region was determined under an Agreement made in 1995,¹⁶⁷ which implemented the ICJ decision in the *Jan Mayen* case.¹⁶⁸ The Norwegian claim was based on a median line, and Danish claim was based on a 200 nautical mile boundary, with no effect to Jan Mayen.¹⁶⁹ The ICJ held that a combined boundary should be made generally between these two claims, as an "equitable solution in the light of relevant circumstances", including lengths of respective coasts and location of fishery resources.¹⁷⁰ Denmark had argued that the boundary should be determined taking into account that Jan Mayen lacked a settled population and an economy, apart from the activities of scientific personnel. The ICJ held that the limited nature of Jan Mayen's population and other socio-economic factors were not circumstances to be taken into account in the delimitation.¹⁷¹ The 1995 Agreement followed the ICJ judgement, with minor changes made after consultation with hydrographic experts for a more precise determination of the related baselines. D H Anderson commented that the ICJ

¹⁶² Green and Kaplan, above n 28, 81.

¹⁶³ Bird, above n 32. USGS Appraisal, North Greenland Sheared Margin 'NGS', Eurasia Basin 'EB', and Lomonosov-Makarov 'LM' areas.

¹⁶⁴ 'Potential Arctic Oil' US Geological Survey <<http://pubs.usgs.gov/fs/2008/3049>> at 14 December 2012.

¹⁶⁵ Bird, above n 32. USGS Appraisal, North Greenland Sheared Margin 'NGS', Eurasia Basin 'EB' and Lomonosov-Makarov 'LM' areas.

¹⁶⁶ Ibid.

¹⁶⁷ *Agreement between the Government of the Kingdom of Denmark and the Kingdom of Norway relating to the Delimitation of the Continental Shelf in the Area between Jan Mayen and Greenland and of the Boundary between the Fisheries Zones in the Area*, opened for signature 18 December 1995, 1996 UNTS 177 (entered into force 27 May 1998).

¹⁶⁸ *Case Concerning Maritime Delimitation in the Area between Greenland and Jan Mayen (Denmark v Norway) Judgement* [1993] ICJ Rep 38.

¹⁶⁹ Rothwell, above n 116, 191.

¹⁷⁰ The boundary was broadly midway between the 200 nautical mile boundary for Greenland and the equidistant line. In detail, the southern region 'zone 1' was divided equally, the middle region 'zone 2' and northern region 'zone 3' allowed a somewhat greater allocation to Norway.

¹⁷¹ Ibid.

judgement was the first time that the ICJ first drew the equidistance line as the provisional boundary, and then analysed whether that line was equitable.¹⁷²

The more northerly Denmark (Greenland) boundary with Norway relating to the Svalbard Islands region,¹⁷³ was determined under an Agreement made in 2006.¹⁷⁴ The boundary was based on an equidistance line with a minor adjustment for Denmark's Tobias Island. Byers commented that Denmark also implicitly recognised Norway's claim that Svalbard generated EEZ and continental shelf zones.¹⁷⁵

Oil and Gas

Potential oil and gas reserves have been identified in the region of the Svalbard Islands.¹⁷⁶ The USGS Appraisal indicates potential oil reserves surrounding Svalbard,¹⁷⁷ (see Illustration 5–2),¹⁷⁸ and potential gas reserves surrounding Svalbard,¹⁷⁹ (see Illustration 5–3).¹⁸⁰

H. Denmark (Greenland and Faroes)/Iceland

The boundary of the Continental Shelf between Denmark (Greenland) and Iceland was determined by an Agreement establishing the boundaries of the continental shelf and fisheries zones made in 1997.¹⁸¹ The background to the Agreement included the fisheries dispute relating to the 3,358 square mile 'grey zone' of overlapping Danish and

¹⁷² DH Anderson, 'Denmark (Greenland) –Norway (Jan Mayen), Report Number 9-19', in Jonathan I Charney, and Lewis M Alexander (eds), *International Maritime Boundaries* (1998) vol 3, 2507.

¹⁷³ The boundary is north of the Area regime applying in the 'Denmark/Iceland/Norway Banana Hole' discussed below.

¹⁷⁴ *Agreement between the Government of the Kingdom of Norway on the one hand, and the Government of the Kingdom of Denmark together with the Home Rule Government of Greenland on the other hand, concerning the delimitation of the continental shelf and the fisheries zones in the area between Greenland and Svalbard*, 20 February 2006, 2378 UNTS 21 (entered into force 2 June 2006).

¹⁷⁵ Byers, above n 94, 38.

¹⁷⁶ Green and Kaplan, above n 28, 81.

¹⁷⁷ Bird et al, above n 32. USGS Appraisal, Norwegian Margin 'NB', Barents Platform 'BP', and Eurasia Basin 'EB' areas.

¹⁷⁸ 'Potential Arctic Oil' US Geological Survey <<http://pubs.usgs.gov/fs/2008/3049>> at 14 December 2012.

¹⁷⁹ Bird et al, above n 32. USGS Appraisal, Norwegian Margin 'NB', Barents Platform 'BP', and Eurasia Basin 'EB' areas.

¹⁸⁰ *Ibid.*

¹⁸¹ *Agreement between the Government of the Kingdom of Denmark, together with the Greenland Home Rule Government, on the one Hand, and the Government of the Republic of Iceland, on the other hand, concerning the Delimitation of the Continental Shelf and the Fishery Zones in the area between Greenland and Iceland*, opened for signature 11 November 11 1997, 2074 UNTS 58 (entry into force 27 May 1998).

Icelandic claims relating to the effect to be given to inhabited Icelandic island of Grimsey and the uninhabited Icelandic islet of Kolbeinsey, and the Danish, Norwegian and Icelandic dispute relating to the 565 square mile 'Jan Mayen triangle' of respective overlapping claims.

The boundary adopted in the Agreement was generally based on the equidistance line between the respective coasts, giving full effect to Grimsey Island, however the boundary was adjusted to give limited effect to the Kolbeinsey islet. Oude Elferink commented that the agreement resulted in a 70 per cent allocation to Iceland, and 30 per cent allocation to Denmark, for the area affected by Kolbeinsey. The states did not define Kolbeinsey to be an island or rock under LOSC article 121.¹⁸²

Oude Elferink commented that the completion of the Agreement in 1997 enabled Iceland, Denmark (Greenland) and Norway (Jan Mayen) to agree the tri-point, where the respective maritime boundaries of the three states would meet.¹⁸³ This was confirmed by the protocols made in 1997 between Denmark/Norway,¹⁸⁴ and Norway/Iceland.¹⁸⁵ These agreements therefore resolved the 'Jan Mayen triangle' dispute. Anderson commented that this resolution allocated 35 per cent of the disputed area to Denmark, 35 per cent to Iceland, and 30 per cent to Norway.¹⁸⁶

An agreement was made in 2006 between Denmark (relating to the Faroes), Iceland and Norway relating to the southern part of the Banana Hole in the North Atlantic.¹⁸⁷ This region is approximately equidistant between the Faroes, Iceland, and Norway, and concerns the region to the south part of the 'Banana Hole', which is a region beyond

¹⁸² The result was, however, a small area where potentially no state has EEZ jurisdiction if Kolbeinsey is not treated as an island. The boundary is significant as an example of a compromise between the two states between the island and rock treatments under LOSC.

¹⁸³ Alex G Oude Elferink, 'Current Legal Developments, Denmark/Iceland/Norway' (1998) 13(4) *The International Journal of Marine and Coastal Law* 607.

¹⁸⁴ *Additional Protocol to the Agreement of 18 December 1995 between the Kingdom of Norway and the Kingdom of Denmark on the Delimitation of the Continental Shelf in the Area between Jan Mayen and Greenland and the Boundary between Fishery Zones in the Area*, 11 November 1997, 2100 UNTS 180 (entered into force 27 May 1998).

¹⁸⁵ *Additional Protocol to the Agreement of 28 May 1980 between Norway and Iceland on Fishery and Continental Shelf Questions and the Supplementary Agreement of 22 October 1981 on the Continental Shelf in the Area Between Jan Mayen and Iceland*, 11 November 1997, 2127 UNTS 227 (entered into force 27 May 1998).

¹⁸⁶ D H Anderson, 'Denmark (Greenland) –Iceland', Report Number 9-22', in Jonathan I Charney, and Robert W Smith (eds), *International Maritime Boundaries* (2002) vol 4, 2941, 2944.

¹⁸⁷ *Agreed Minutes on the Delimitation of the Continental Shelf beyond 200 Nautical Miles between the Faroe Islands, Iceland and Norway in the Southern Part of the Banana Hole of the Northeast Atlantic*, 20 September 2006, <<https://www.regjeringen.no/en/dokumenter/Agreed-Minutes/id446839/>> at 20 August 2015.

coastal state jurisdiction. The agreement was made to agree on a procedure for establishing the delimitations of the continental shelf between the States in the area, subject to fulfilment of their internal requirements. On this basis, these states will enter into treaties to extend their boundaries up to the 'Banana Hole' on finalisation of their respective OCS submissions.

The Denmark (Greenland) Iceland maritime boundary was extended to the OCS by an agreement of January 2013.¹⁸⁸

Oil and Gas

Green and Kaplan comment that oil and gas are expected to the north-east of Greenland.¹⁸⁹ The USGS Appraisal indicates potential concentrations of oil reserves east of the Greenland coast,¹⁹⁰ (see Illustration 5–2).¹⁹¹ The USGS Appraisal indicates potential gas reserves east of the Greenland coast,¹⁹² (see Illustration 5–3).¹⁹³

I. Norway (Jan Mayen)/Iceland – Current Arctic JDZ

Iceland and Norway agreed the boundaries in respect of the area within 200 nautical miles of the respective coasts in related agreements in 1980 and 1981.¹⁹⁴ The agreements generally provide a 200 nautical mile boundary to Iceland, rather than being based on equidistance, and a joint zone straddling the boundary requiring a sharing of resources which lies predominantly on the Norwegian (Jan Mayen) side. The related JDZ is discussed in Chapter III. The agreements may therefore be considered concessional by Norway.¹⁹⁵

¹⁸⁸ *Agreed Minutes on the Delimitation of the Continental Shelf beyond 200 Nautical Miles between Greenland and Iceland in the Irminger Sea*, 16 January 2013 <<http://www.utanrikisraduneyti.is/media/thjodrettarmal/Agreed-Minutes-og-vidaukar.pdf>> at 25 August 2015.

¹⁸⁹ Green and Kaplan, above n 28, 81.

¹⁹⁰ Bird, above n 32. USGS Appraisal East Greenland Rift Basin 'EGR' area.

¹⁹¹ 'Potential Arctic Oil' US Geological Survey <<http://pubs.usgs.gov/fs/2008/3049>> at 14 December 2012.

¹⁹² Bird et al, above n 32. USGS Appraisal East Greenland Rift Basin 'EGR' area.

¹⁹³ Ibid.

¹⁹⁴ *Agreement between Norway and Iceland on Fishery and Continental Shelf Questions*, opened for signature 28 May 1980, 2124 UNTS 226 (entered into force 13 June 1980); *Agreement between Iceland and Norway on the Continental Shelf between Iceland and Jan Mayen*, opened for signature 22 October 1981, 2124 UNTS 262 (entered into force 2 June 1982).

¹⁹⁵ Alex G Oude Elferink 'Arctic Maritime Delimitations' in Oude Elferink and Rothwell, above n 42, 179, 183.

Anderson analysed the circumstances of the new boundary.¹⁹⁶ He noted that Norway and Iceland made the Agreement concerning Fishery and Continental Shelf Questions in 1980 (1980 Agreement').¹⁹⁷ The 1980 Agreement provided a full 200 nautical miles to Iceland for fisheries purposes, while obtaining Iceland's agreement that Norway would have a fishing zone around Jan Mayen outside that area.¹⁹⁸ The 1980 Agreement required the establishment of a Conciliation Commission to recommend the continental shelf boundary. Norway and Iceland entered into the Agreement on the Continental Shelf between Iceland and Jan Mayen in 1981 ('Continental Shelf Agreement') implementing those recommendations.¹⁹⁹

The Commission recommended the continental shelf boundary be the same as the EEZ and Norway's fishery boundary established by the 1980 Agreement. There should however be a joint zone providing for the sharing of hydrocarbon resources. The joint zone was closer to Jan Mayen than Iceland, and the majority of the zone is therefore on the Norwegian side of the maritime boundary.²⁰⁰ The Continental Shelf Agreement implemented these recommendations.²⁰¹

Jan Mayen is significant as it was *terra nullius* until claimed by Norway in 1929. The related agreements have confirmed Norway's continental shelf rights arising from Norway's sovereignty over Jan Mayen, while generally reducing the area of Jan Mayen's continental shelf on terms which may be considered as favourable to Iceland. The limited nature of the occupation by Norway, relating primarily to scientific and military missions, supports the position that settlement is not required for the acquisition of territorial sovereignty, consistent with the *Eastern Greenland* case.²⁰² This is relevant to the discussion of whether declarations of sovereignty and related acts over territory which was previously *terra nullius* can support sovereignty claims in other regions, and in particular in relation to Antarctica and the Southern Ocean.

¹⁹⁶ D H Anderson, 'Iceland-Norway (Jan Mayen), Report Number 9-4', in Jonathan I Charney, and Lewis M Alexander (eds), *International Maritime Boundaries* (1993) vol 2, 1755.

¹⁹⁷ *Agreement between Norway and Iceland on Fishery and Continental Shelf Questions*, opened for signature 28 May 1980, 2124 UNTS 226 (entered into force 13 June 1980)

¹⁹⁸ Iceland had considered that Jan Mayen should not affect Iceland's EEZ or continental shelf declared in 1979. Norway had declared a fisheries zone extending from Jan Mayen in 1980, providing however that the boundaries of the zone were to be established by agreement.

¹⁹⁹ *Agreement between Iceland and Norway on the Continental Shelf between Iceland and Jan Mayen*, opened for signature 22 October 1981, 2124 UNTS 262 (entered into force 2 June 1982).

²⁰⁰ DH Anderson commented that the Conciliation Commission in its determination commented that 'Iceland is totally dependent on imports of hydrocarbon products'.

²⁰¹ *Agreement between Iceland and Norway on the Continental Shelf between Iceland and Jan Mayen*, opened for signature 22 October 1981, 2124 UNTS 262 (entered into force 2 June 1982).

²⁰² *Legal Status of Eastern Greenland (Norway v Denmark)*, (1933) PCIJ Ser A/B No 53.

The boundary is significant in relation to the Arctic Ocean region as an example of a resource sharing JDZ. As discussed in Chapter III, the joint zone extends roughly one third on the Icelandic side of the boundary, and two thirds on the Norwegian (Jan Mayen Island) side of the boundary, and broadly provides for the exchange of 25 per cent of the benefits from each state's part of the zone.²⁰³ The joint zone is significant as a case where the maritime boundary was agreed, and so resource sharing was made without potentially undermining the jurisdiction of either state.²⁰⁴

Oil and Gas

Oil and gas is currently being recovered from the Norwegian Sea.²⁰⁵ The USGS Appraisal indicates potential concentrations of oil reserves west of the Norwegian coast,²⁰⁶ (see Illustration 5–2).²⁰⁷ The USGS Appraisal indicates potential gas resources west of the Norwegian coast,²⁰⁸ (see Illustration 5–3).²⁰⁹

J. Norwegian Arctic Coast, OCS, and Svalbard Treaty Area

The Svalbard Islands are an archipelago adjoining the continental shelf and OCS from Greenland (Denmark), Iceland and Russia. The Svalbard Islands are subject to the terms of the Svalbard Treaty, which entered into force in 1925.²¹⁰ As discussed in Chapter III, the Svalbard Treaty established a joint development zone including the territorial sea around the islands, however there is no agreement between Norway and other state parties to the Treaty as to whether the Svalbard Treaty applies to the EEZ, continental shelf and OCS around the islands, (see Illustrations 3–1,²¹¹ and 5–10).²¹²

²⁰³ Masahiro Miyoshi, 'The Joint Development of Offshore Oil and Gas in relation to Maritime Boundary Delimitation' (International Boundaries Research Unit, 1999) 2(5) *International Boundaries Research Unit - Maritime Briefing* 34.

²⁰⁴ There are benefits from this arrangement as discussed in later chapters, particularly enforcement of measures against third states, for example each state can enforce its own laws for the protection and preservation of the marine environment within its own EEZ and continental shelf.

²⁰⁵ Green and Kaplan, above n 28, 81.

²⁰⁶ Bird, above n 32. USGS Appraisal Norwegian Margin 'NM' area.

²⁰⁷ 'Potential Arctic Oil' US Geological Survey <<http://pubs.usgs.gov/fs/2008/3049>> at 14 December 2012.

²⁰⁸ Bird, above n 32.

²⁰⁹ Ibid.

²¹⁰ *Treaty Concerning the Archipelago Spitsbergen*, opened for signature 9 February 1920, 2 LNTS 8, (entered into force 14 August 1925) ('Svalbard Treaty').

²¹¹ Peter Johan Schei and Dr R Douglas Brubaker, Fridtjof Nansen Institute <http://www.fni.no/doc&pdf/PJS-DB-2006-JANSROP1.PDF>

Norwegian sovereignty over the Svalbard Islands is based on the Svalbard Treaty. The islands had been the location of Dutch, English Danish and French settlements to support whaling from 1611, Norwegian and Russian hunting activities, and Norwegian, British and American coal interests from 1899. Svalbard presents certain similarities to Antarctica, in that there were multilateral claims to the land territory of the Svalbard islands, and there are currently multilateral claims (United Kingdom, Argentina and Chile) to the Antarctic Peninsula.

Svalbard is of particular interest in respect of JDZs as competing claims were resolved by a multilateral regime allowing access to land and territorial sea resources. That access is provided under the state sovereignty of Norway, which provides effective management, including the enforcement of measures for the protection and preservation of the environment.

Norway has defined the limits of the continental shelf in the *Act Pertaining to Petroleum Activities* of 1985.²¹³ The limits are defined as the seabed and subsoil outside Norwegian territorial sea, as far as it can be regarded as a natural prolongation of the Norwegian land territory but no less than 200 nautical miles from the baseline from which the territorial sea is measured, but not beyond the median line in relation to other states. The issue of state rights to oil and gas in the continental shelf and OCS of Svalbard is primarily a question of treaty interpretation, specifically whether the Svalbard treaty should apply to the EEZ and continental shelf regimes not existing at the time.

The Vienna Convention on the Law of Treaties (VCLT)²¹⁴ may give rise to a static or dynamic approach as discussed in Chapter VII. The principal clause relevant to Svalbard is Article 31, which requires that a treaty be interpreted 'in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its objects and purpose.' The issue in relation to Svalbard is whether the Svalbard Treaty should be interpreted to include the juridical continental

²¹² RR Churchill and Geir Ulfstein, *Marine Management in Disputed Areas; The Case of the Barents Sea* (Routledge, 1992).

²¹³ *Act of 22 March 1985 No. 11 Pertaining to Petroleum Activities*, Norway, <<http://www.un.org/Depts/los/legislationandtreaties/statefiles/Nor.html>> at 14 March 2008.

²¹⁴ *Vienna Convention on the Law of Treaties*, opened for signature 23 May 1969, 1155 UNTS 331 (entered into force 27 January 1980) ('VCLT').

shelf in the terms 'waters' and 'territorial waters' used in the Treaty,²¹⁵ which did not exist at the time of the Svalbard Treaty. Pederson comments that Norway has not acceded to the VCLT.²¹⁶ The VCLT also does not have retrospective effect.

There is a significant issue of the relationship between the Svalbard Treaty and the VCLT. The VCLT provides the good faith principle, which provides that:

A treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose.²¹⁷

Caracciolo discussed the related principle of effectiveness in relation to the Treaty, and stated that: 'Under this principle the norms set by a treaty must be interpreted in a manner that gives them meaning and effect, or at least partial effect.'²¹⁸

These principles of treaty interpretation are argued to override the restrictive interpretation adopted by Norway, because the purpose of the Treaty was to grant Norway sovereignty, subject to limiting sovereignty with respect to maintaining the freedoms of other states. It may be considered that to give effectiveness to this purpose, the Treaty should therefore also apply to resources of the EEZ and the continental shelf.

There is an issue of intertemporal law, which concerns which rule of law should apply given that facts and laws change over time.²¹⁹ The issue most commonly concerns the interpretation of treaties, particularly whether the interpretation of treaties should adopt a static or evolutionary approach. The static approach requires application to the facts and laws at the time the treaty was made. The evolutionary approach can allow

²¹⁵ Ibid art 3. Article 3 provides:

...equal liberty of access and entry for any reason or object whatever to the waters, fjords and ports of the territories...They shall be admitted under the same conditions of equality to the exercise and practice of all maritime, industrial, mining or commercial enterprises both on land and in the territorial waters...

²¹⁶ Torbjørn Pedersen, 'The Svalbard Continental Shelf Controversy: Legal Disputes and Political Rivalries' (2006) 37(3) *Ocean Development and International Law* 339, 345.

²¹⁷ Ibid art 31.

²¹⁸ Ida Caracciolo, 'Unresolved controversy: the legal situation of the Svalbard Islands maritime areas; an interpretation of the Paris Treaty in light of UNCLOS 1982', (Paper presented at The State of Sovereignty International Boundary Research Unit Conference, Durham, 2 April 2009) <http://www.dur.ac.uk/resources/ibru/conferences/sos/ida_caracciolo_paper.pdf> at 15 August 2012.

²¹⁹ Boleslaw A Boczek, *International Law: A Dictionary* (Scarecrow Press, 2005) 227, defines intertemporal law as follows:

The term intertemporal law refers to the principles of international law dealing with the problem of which of the different rules of international law prevailing in succeeding periods are to govern a specific situation.

application of the terms of a treaty taking into account the facts and circumstances after the effective date of the treaty. This may apply, for example, by attributing the current meaning of words, rather than the meaning at the time the treaty was made.²²⁰ Caracciolo commented that the ICJ adopted the inter-temporal principle in the case on the *Continental Shelf in the Aegean Sea* case in 1978.²²¹

Anderson commented on principles of international customary law as reflected in the VCLT, and stated that 'the task is to 'identify rights and obligations of Norway and those of other parties by interpreting the words used in their context and in the light of the object and purpose of the treaty.'²²² Anderson considered that the expressed intention of the Svalbard Treaty was to provide Svalbard with an 'equitable regime' in order to ensure its development and utilisation. This intention was realised by conferring sovereignty on Norway, subject to the fishing and mining rights to be enjoyed by all parties. Anderson concluded that other states should have economic rights to the Svalbard continental shelf.²²³ This is also consistent with the view of Robin Churchill and Geir Ulfstein, who state in summary that Norway has full sovereignty over Svalbard and all maritime areas around Svalbard, but the Svalbard Treaty applies to all such areas.²²⁴ There is, accordingly, support to conclude that there are substantial grounds for rights of other states to resources of the Svalbard continental shelf and OCS including offshore oil and gas.

The Denmark (Greenland)/Norway agreement in 2006 related to the Svalbard region.²²⁵ As discussed above, Byers commented that Denmark implicitly recognised Norway's claim that Svalbard generated EEZ and continental shelf zones by entering into the

²²⁰ Andrew Clapham, *Brierly's Law of Nations, An Introduction to the Role of International Law in International Relations* (Oxford University Press, 2012) 357.

²²¹ *Continental Shelf in the Aegean Sea (Greece v Turkey)*, ICJ Rep 1978, 3. In that case, exclusion of the application of the Geneva General Act for the Settlement of Disputes to disputes on the 'territorial status of Greece', was held by the ICJ to include a reservation on disputes on the continental shelf.

²²² DH Anderson, 'The Status under International Law of the Maritime Areas around Svalbard' (2009) 40(4) *Ocean Development and International Law* 373, 380.

²²³ *Ibid* 381. Anderson commented:

'To interpret the reference to Norway's sovereignty in an ambulatory way so as to apply not only to the land and the original territorial waters, but also to the extended territorial sea, continental shelf, fisheries zone and, at the same time, to interpret the reference to other states' rights strictly so that the rights were confined to the land and the original territorial sea would hardly be equitable or balanced.'

²²⁴ Churchill and Ulfstein, above n 212, 40.

²²⁵ *Agreement between the Government of the Kingdom of Norway on the one hand, and the Government of the Kingdom of Denmark together with the Home Rule Government of Greenland on the other hand, concerning the delimitation of the continental shelf and the fisheries zones in the area between Greenland and Svalbard*, 20 February 2006, 2378 UNTS 21 (entered into force 2 June 2006).

agreement.²²⁶ The agreement does not contain any provision relating to potential resource sharing and the Svalbard Treaty.

Norway made a partial OCS submission in respect of the Arctic for areas in the Norwegian and Barents Seas on 27 November 2006, including the Western Nansen Basin region north of Svalbard.²²⁷ The CLCS recommendation made on 27 March 2009 was stated to be 'without prejudice to matters relating to delimitation between States, or application of other parts of the Convention or any other treaties.'²²⁸ Accordingly the CLCS recommendation did not make any finding in relation to the Svalbard Treaty. Pedersen comments that the CLCS is a technical body, and that a CLCS determination of the geological limits of the continental shelf 'would leave the dispute unresolved.'²²⁹

The potential to establish a multilateral JDZ relating to the Svalbard continental shelf and OCS, essentially confirmation that the Svalbard Treaty applies beyond the territorial sea, is analysed in Chapter VIII. Potential changes affecting the prospects for a Svalbard continental shelf and OCS JDZ are analysed in Chapter X.

Oil and Gas

Oil and gas are already being exploited in the Barents Sea. Green and Kaplan comment that oil and gas has further been identified in a large area north from the Norwegian coast towards Svalbard, this area extending over almost the entire ocean area eastwards to the Russian coast.²³⁰ The USGS Appraisal indicates potential oil reserves north of the Norwegian coast, north of the Svalbard Islands, and north of the Norwegian coast to the

²²⁶ Byers, above n 94, 38.

²²⁷ Continental Shelf Submission of Norway in respect of areas in the Arctic Ocean, the Barents Sea and the Norwegian Sea <http://www.un.org/Depts/los/clcs_new/submissions_files> at 5 December 2012.

²²⁸ Summary of the Recommendations of the Commission on the Limits of the Continental Shelf In Regard To the Submission Made By Norway in Respect of Areas in the Arctic Ocean, the Barents Sea and the Norwegian Sea On 27 November 2006, 2.

<http://www.un.org/Depts/los/clcs_new/submissions_files/nor06/nor_rec_summ.pdf> at 18 February 2013.

²²⁹ Pedersen, above n 216, 352.

²³⁰ Green and Kaplan, above n 28, 81.

east towards Russia,²³¹ (see Illustration 5–2),²³² and potential gas reserves north of the Norwegian coast and Svalbard Islands,²³³ (see Illustration 5–3).²³⁴

K. Norway/Russia (Barents Sea) – Resolved by 2010 Treaty

The Norway and Russia maritime boundary in the Barents Sea had been in dispute, however the dispute has been resolved by the boundary treaty signed on 15 September 2010 ('Barents Sea Treaty').²³⁵

The Norwegian claim prior to the 2010 Barents Sea Treaty was based on equidistance, whereas the Russian claim was based on a boundary running to the north of the land boundary on the basis of the sector principle. The result was a disputed area of 175,000 square kilometres. There had been negotiations towards a boundary compromise, including the possible use of a joint development zone.²³⁶ Oude Elferink commented that the proposal was rejected by Norway in line with its policy of opposing common management schemes with the Soviet Union.²³⁷

The Russian claim for the sector principle was based on special circumstances, including population size, economic interests, and the Svalbard Treaty, as a result of which it was claimed the islands should not be given the status normally received as Norwegian territory. Oude Elferink commented that there were no precedents for factors such as population size or economic interest as special circumstances to support not using equidistance as the basis for the boundary.²³⁸

Tore Henriksen and Geir Ulfstein observed that the joint statement issued by the Norwegian and Russian governments and the Barents Sea Treaty do not describe the

²³¹ Bird, above n 32. USGS Appraisal, Norwegian Margin 'NM', Barents Platform 'BP', Eurasia Basin 'EB' and East Barents Basin 'EBB' areas.

²³² 'Potential Arctic Oil' US Geological Survey <<http://pubs.usgs.gov/fs/2008/3049>> at 14 December 2012.

²³³ Bird et al, above n 32. USGS Appraisal, Norwegian Margin 'NM', Barents Platform 'BP', Eurasia Basin 'EB' and East Barents Basin 'EBB' areas.

²³⁴ Ibid.

²³⁵ *Treaty Between the Kingdom of Norway and the Russian Federation Concerning Maritime Delimitation and Cooperation in the Barents Sea and the Arctic Ocean*, 15 September 2010, 2791 UNTS I-49095, (entered into force 7 July 2011), Norwegian Government, Office of the Prime Minister, <<http://www.regjeringen.no/en/dep/smk/press-center/Press-releases/2010/treaty.html?id=614254>> at 20 February 2012.

²³⁶ Oude Elferink, above n 66, 185.

²³⁷ Alex G Oude Elferink, *The law of maritime boundary delimitation: a case study of the Russian Federation* (1994) 240.

²³⁸ Ibid 187.

basis of delimitation made in the Treaty.²³⁹ There was no indication of whether geographical circumstances such as the coastlines or the undersea prolongation of the continental shelf determined the boundary (see Illustration 5–11).²⁴⁰

The Joint Statement issued by Norway and Russia referred to the Treaty as dividing the disputed area into 'two parts of approximately the same size'.²⁴¹ The Russian Foreign Ministry stated that the agreement gave approximately 88,000 square kilometres to each state.²⁴² This may suggest that achieving an approximately equal division of the disputed area was the primary objective of the Barents Sea Treaty. Norway described the result as a modified median line, and Russia described the result as a modified sector line.²⁴³ A Joint Operating Agreement is required for the exploitation of the trans-boundary hydrocarbon deposits.²⁴⁴

The Barents Sea Treaty also provides for the transfer of EEZ rights from Norway to Russia in a small 'special area' east of the boundary, but within 200 nautical miles of the Vardø region of north-eastern Norway, to prevent the related fishery resources being subject to neither state's jurisdiction.²⁴⁵ This is similar to the arrangements in the 1990 United States/Russia boundary agreement.²⁴⁶

Oil and Gas

²³⁹ Tore Henriksen and Geir Ulfstein, 'Maritime Delimitation in the Arctic: The Barents Sea Treaty' (2011) 42 *Ocean Development and International Law* 1.

²⁴⁰ 'The New Russia Norway Border' *Moscow Times*, <<http://dmacc50222.blogspot.com.au/2011/07/arctic-treaty-with-norway-opens-fields.html>> at 14 December 2012.

²⁴¹ 'Joint Statement on Maritime Delimitation and Cooperation in the Barents Sea and the Arctic Ocean' in Henriksen and Ulfstein, above n 239, 10.

²⁴² Henriksen and Ulfstein, above n 239, 10.

²⁴³ This has some significance as giving support to the sector principle, which is relevant to Russia's other Arctic claim, and to the Argentine claim in the southern ocean, discussed below. There is an issue whether the Barents Sea Treaty provides support for the sector principle, or should rather be considered as a practical determination of a long-running maritime boundary dispute.

²⁴⁴ *Treaty between the Kingdom of Norway and the Russian Federation Concerning Maritime Delimitation and Cooperation in the Barents Sea and the Arctic Ocean*, 15 September 2010, Norwegian Government, Office of the Prime Minister, <<http://www.regjeringen.no/en/dep/smk/press-center/Press-releases/2010/treaty.html?id=614254>> at 20 February 2012 (entered into force 7 July 2011).

²⁴⁵ *Ibid* art 3. IBRU commented that this arrangement is similar to an area created under the USA and Russia Bering Sea Treaty in 1990. 'Maritime jurisdiction and boundaries in the Arctic Region' International Boundaries Research Unit Note 5 <<http://www.dur.ac.uk/resources/ibru/arctic.pdf>> at 11 September 2012.

²⁴⁶ *Agreement between the United States of America and the Union of Soviet Socialist Republics on the Maritime Boundary*, opened for signature 1 June 1990, (not entered into force at 18 December 2012) United States–Department of State <<http://www.state.gov/documents/organization/125431.pdf>> at 10 January 2013 ('United States/Russia 1990 Agreement').

Oil and gas are already being exploited in the Barents Sea. Further oil and gas reserves are expected in the Norwegian boundary area with Russia.²⁴⁷ The USGS Appraisal indicates potential oil reserves north of the Norwegian and Russian coasts,²⁴⁸ and potential gas reserves north of the Norwegian and Russian coasts.²⁴⁹

L. Russian Arctic Coast and OCS – Lomonosov and Mendeleev Ridges

Russia declared baselines for the Arctic Ocean region in the Decree of 15 January 1985 of the Council of Ministers of the Soviet Union.²⁵⁰ The Russian baselines were declared around a series of Arctic Ocean islands,²⁵¹ and enclosed several straits.²⁵² The United States position was that the Russian baseline was contrary to international law as it purported to treat international straits as internal waters. United States actions included the voyage of the United States submarine USS *Baton Rouge* to protest the baseline closing access to Murmansk in 1992.²⁵³

The Russian Northern Sea Route is a sea route along the northern coast of Russia, and has a similar issue to the Northwest Passage as to whether the route should be classified as an international strait.²⁵⁴ Russia claims the Northern Sea Route as internal waters rather than as international straits, on a similar basis to Canada's treatment of the Northwest Passage, described by Douglas Brubaker²⁵⁵ and William Dunlap.²⁵⁶

Russia ratified LOSC on 12 March 1997, and made a submission to the CLCS in 2001. The submission included an OCS extending in parts to the North Pole (see Illustrations

²⁴⁷ Green and Kaplan, above n 28, 81.

²⁴⁸ Bird, above n 32. USGS Appraisal East Barents Basin 'EBB' area.

²⁴⁹ Ibid. USGS Appraisal East Barents Basin 'EBB' area.

²⁵⁰ Decree of 15 January 1985 of the Council of Ministers of the Soviet Union

<http://www.un.org/Depts/los/legislationandtreaties/pdf/RUS_1985_Declaration.pdf> at 8 January 2013 ('4450 Declaration').

²⁵¹ Scovazzi, above n 110, 76.

²⁵² Ibid. The baselines enclosed the Shokalski, Vilkitski, Sannikov and Dmitri Laptev straits as Russian internal waters

²⁵³ Ibid 83.

²⁵⁴ The route runs south of the Novaya Zemlya, Severnaya Zemla, New Siberian and Wrangel islands.

²⁵⁵ Douglas Brubaker, *The Russian Arctic Straits* (Martinus Nijhoff, 2004) 30. Brubaker comments that the Regulations are applicable to all vessels, and accordingly the straits are not treated as international straits allowing a right of transit passage except subject to compliance with the regulations. The regulations also do not recognise sovereign immunity of state vessels under LOSC Article 236.

²⁵⁶ William Dunlap, 'Transit Passage in the Russian Arctic Straits' (1996) 1-7 *International Boundaries Research Unit Maritime Briefing* 26.

5-7,²⁵⁷ 5-8,²⁵⁸ and 5-9).²⁵⁹ The CLCS adopted recommendations on the claim in June 2002, including requesting a revised submission in relation to the Arctic.²⁶⁰ The CLCS received *note verbale* responses from Canada, Denmark, Japan, Norway and the United States.²⁶¹ Canada's response in 2002 was that it was unable to respond without further supporting data, and the response was not agreement or acquiescence to the Russian submission. The submission and CLCS recommendation would be without prejudice to boundary delimitation between Canada and Russia. The CLCS requested a revised submission with additional scientific data in respect of the central Arctic Ocean in 2002.²⁶² The Danish and Greenland government submissions made in 2014 overlap the Russian OCS claim, and the anticipated final Canadian OCS submission may also overlap the Russian claim. It has been reported that Russia may make the revised OCS submission in the spring of 2015.²⁶³

The Russian submission included areas adjacent to the Lomonosov and Mendeleev Ridges. The likely basis of the claim is that the ridges are 'natural prolongations' of the Russian continental shelf, and which therefore gave rise to a claim to resources such as oil and gas extending on either side of the ridges.²⁶⁴ The Russian submission could potentially have extended beyond the North Pole along the Lomonosov and Mendeleev ridges, however Gorski notes that limiting the claim may have been made to encourage acceptance by other states.

²⁵⁷ 'Potential Polar Claims – Lomonosov Ridge' – Chuck Carter and Paul Morin – Wired Magazine, <http://www.wired.com/science/planetearth/magazine/16-02/mf_continentalshelf_feud> at 22 February 2013.

²⁵⁸ Macnab, above n 21, 226.

²⁵⁹ United Nations Commission on the Limits of the Continental Shelf (CLCS) – Russian Submission <http://www.un.org/Depts/los/clcs_new/submissions_files/submission_rus.htm> at 22 February 2013.

²⁶⁰ Commission on the Limits of the Continental Shelf 'Statement by the Chairman of the Commission on the Limits of the Continental Shelf on the progress of work in the Commission' (24-28 June 2002) UN Doc. CLCS/34, 33.

²⁶¹ Commission on the Limits of the Continental Shelf (CLCS) – Outer limits of the continental shelf beyond 200 nautical miles from the baselines: Submissions to the Commission: Submission by the Russian Federation, <http://www.un.org/Depts/los/clcs_new/submissions_files/submission_rus.htm> at 5 December 2012.

²⁶² United Nations, Report of the Secretary-General - Fifty-seventh session Agenda item 25 (a) Oceans and the law of the sea, UN Doc A/57/57/Add.1

< <http://daccess-dds-ny.un.org/doc/undoc/gen/N02/629/28/PDF/N0262928.pdf?OpenElement> > at 5 December 2012. Paragraph 41 stated:

As regards the Central Arctic Ocean, the Commission recommended that the Russian Federation make a revised submission in respect of its extended continental shelf in that area based on the findings contained in the recommendations.

²⁶³ 'Russian submits new Arctic Ocean claim' International Boundary Research Unit (IBRU) 4 November 2014, <https://www.dur.ac.uk/ibru/news/boundary_news/?itemno=22658&rehref=%2Fibru%2Fnews%2F&resubj=Boundary+news+Headlines> at 29 December 2014.

²⁶⁴ *Russian Federation submission through the Secretary-General to the Commission on the Limits of the Continental Shelf, pursuant to article 76, paragraph 8, of the Convention*, 20 December 2001.

The Russian claim was highlighted in August 2007 by the planting of the Russian flag on the sea floor at the North Pole, more than two and a half miles below the ocean surface. The flag was placed by two mini-submersibles launched from the research ship *Akademik Fyodorov*.²⁶⁵ The former Soviet Union had placed its flag on ice at the surface of the North Pole in an expedition by the ice breaker *Arktica* in 1977.²⁶⁶ It is generally agreed that the Russian action in 2007 was not significant in terms of LOSC, as Russia has made a submission to the CLCS to determine the extent of the OCS. The Denmark and Greenland government OCS submissions do however extend in the direction of Russia beyond the North Pole. There may be a dispute where boundaries are not then agreed between the states in this region, for example where a Canadian claim was based on equidistance as indicated in the IBRU Arctic map (see Illustration 2–1).²⁶⁷

Michael Byers discussed the flag planting and the following Danish government invitation to Arctic states to a conference in Ilulissat in Greenland. All five Arctic states reaffirmed their commitment to working together within an existing framework of international law in the Ilulissat Declaration in May 2008.²⁶⁸ Ken S Coates and colleagues commented that one aspect of the flag planting was significant from a Canadian perspective, being a demonstration of Russian capability in the Arctic Ocean.²⁶⁹ The Russian government has stated the general basis of the OCS claim, without reference to specific LOSC provisions.²⁷⁰

²⁶⁵ 'The Arctic - Gold Rush under the Ice', *The Economist* (London), 3 August 2007.

²⁶⁶ R K Headland, 'Ships (icebreakers) which have reached the North Pole', Scott Polar Research Institute, University of Cambridge <<http://www.spri.cam.ac.uk/resources/infosheets/14.html>> at 9 January 2013.

²⁶⁷ Pratt, above n 18.

²⁶⁸ Byers, above n 138, 89.

²⁶⁹ Ken S Coates, P Whitney Lackenbauer, William R Morrison et al, *Arctic Front – Defending Canada in the Far North* (Thomas Allen & Son, 2008), 162.

²⁷⁰ Tomasz Górski, 'A Note on Submarine Ridges and Elevations with Special Reference to the Russian Federation and the Arctic Ridges' (2009) 40(1) *Ocean Development & International Law* 51, and Statement Made by the Deputy Minister for Natural Resources of the Russian Federation During Presentation of the Submission Made by the Russian Federation to the Commission on 28 March 2002, Doc. CLCS/31, (5 April 2002) 5. The Russian presentation stated:

The results of the interpretation of comprehensive geological and geophysical data support the categorization of the Amerasian basin geostructures (Lomonosov ridge and Mendeleev and Alpha rises) as components of the continental margin . . . The conclusion regarding the continental nature of the earth's crust was also made on the basis of the interpretation of seismic data (deep seismic sounding and seismic reflection sounding) . . . The earth's crust is up to 32 km thick and contains typical components of the continental crust (sedimentary layer up to 5 km thick, upper crust up to 6–8 km thick, with velocity reversal (waveguides) in the lower part, and lower crust up to 20 km thick). This data is independently confirmed by the results of density modelling.

The technical basis for CLCS submission and related deliberations are confidential. Marc Benitah analysed the provisions which could potentially support the Russian claim extending several hundred nautical miles north from the Russian Arctic coast,²⁷¹ (see Illustrations 5–7,²⁷² 5–8,²⁷³ and 5–9).²⁷⁴

Mel Weber analysed the United States response to the Russian submission that regardless of the continental origin, at present the Lomonosov Ridge does not amount to a natural prolongation of either the Russian continental margin or the margins off Greenland or Ellesmere Island.²⁷⁵ In this interpretation, even if the CLCS concluded the geological origin of the Lomonosov Ridge related to the Russian, Canadian or Greenland continents, structures were not 'natural prolongations' as required by Article 76(1). The United States view may also relate to the morphological breaks from the continental margins illustrated by Ron Macnab (see Illustration 5–8).²⁷⁶

Benitah commented that the terms 'submarine elevations' and 'natural components' are not defined in LOSC, with the result that the CLCS may have to 'legislate' on the meaning of these terms in considering the Russian OCS claim. The CLCS may be required to analyse whether the Lomonosov and Mendeleev ridges are 'oceanic ridges', and if that is the case, reject that portion of the Russian OCS claim.²⁷⁷

²⁷¹ Marc Benitah 'Russia's Claim in the Arctic and the Vexing Issue of Ridges in LOSC' (2007) *ASIL Insight* 11.

²⁷² 'Potential Polar Claims – Lomonosov Ridge' – Chuck Carter and Paul Morin – Wired Magazine, <http://www.wired.com/science/planetearth/magazine/16-02/mf_continentalshelf_feud> at 22 February 2013.

²⁷³ Macnab, above n 21, 226.

²⁷⁴ United Nations Commission on the Limits of the Continental Shelf (CLCS) – Russian Submission <http://www.un.org/Depts/los/clcs_new/submissions_files/submission_rus.htm> at 25 February 2013.

²⁷⁵ Mel Weber, 'Defining the Outer Limits of the Continental Shelf across the Arctic Basin: The Russian Submission, States' Rights, Boundary Delimitation and Arctic Regional Cooperation', (2009) 24 *The International Journal of Marine and Coastal Law* 653, 661. Weber commented on the Canada, Denmark, Japan, Norway and the United States responses as follows:

The Notes Verbales of the five states addressed several different aspects. These include the difficulty of assessing proposed outer limits given the current state of knowledge, problems of overlapping jurisdiction, questionable baselines and differences in the geological interpretation of the central Arctic Ocean.

²⁷⁶ Macnab, above n 21, 226.

²⁷⁷ Benitah, above n 271.

The ILA considered whether state practice or CLCS interpretations may clarify these terms.²⁷⁸ The ILA did not provide a recommended definition of the term, however the conclusions included that all submarine ridges should be limited to 350 nautical miles.

The issue may therefore be determined by whether there is sufficient scientific evidence that the Lomonosov and Mendeleev Ridges are natural prolongations of the continental margin. The ridges extend across the North Pole between the American and Asian continents, and this potentially suggests that they are not natural prolongations of one continental margin, however the final determination must be made by the CLCS.

Oil and Gas

The region has large potential oil and gas reserves. Significant Arctic oil and gas developments include the Yamal LNG project, which includes the planned commissioning of sixteen icebreaker tankers for transport via the Northern Sea Route to markets including China.²⁷⁹ These developments also include the Prirazlomnoye oil field in the Pechora Sea, which includes an Arctic-class ice-resistant oil platform.²⁸⁰ The potential oil and gas reserves include the Kara Sea north of the Russian coast, the Arctic Ocean north of Franz Joseph Land, and the Barents Sea towards the Norwegian coast.²⁸¹

²⁷⁸ Outer Continental Shelf Committee of the International Law Association (ILA) Berlin Conference 2004 <<http://www.ila-hq.org/en/committees/index.cfm/cid/33>> at 4 December 2012. The chair and co-rapporteurs were Dolliver Nelson, David Ong and Alex G Oude Elferink. The comments relating to Article 76(6) and submarine elevations which can form part of the continental shelf, and are not limited to the 350 mile limit included the following:

- 76(6) was not intended to detract from article 76(3) of the Convention, which excludes 'oceanic ridges' from the continental margin
- Any interpretation of articles 76(3) and 76(6) has to take into account the object and purpose of article 76 as a whole. Article 76(1) indicates that the continental shelf is the natural prolongation of the land territory to the outer edge of the continental margin.
- The drafting history of article 76(6) lends support to the interpretation that ridges of an oceanic origin may be covered by the provision on submarine ridges.
- The view that the inclusion of paragraph 6 in article 76 was intended to limit the continental shelf to 350 nautical miles on submarine ridges is confirmed by a number of commentaries on the negotiations.

²⁷⁹ 'Yamal LNG, Harnessing the Arctic's gas resources' Total S.A., <<http://total.com/en/energies-expertise/oil-gas/exploration-production/projects-achievements/lng/yamal-lng>> at 9 October 2013>.

²⁸⁰ 'Prirazlomnoye oil field', Gazprom,

<<http://www.gazprom.com/about/production/projects/deposits/pnm/>> at 9 October 2013.

The development was the site of a significant Greenpeace protest in 2013. 'Russians Fire Shots amid Greenpeace Arctic Protest', *Rigzone*, 18 September 2013,

<http://www.rigzone.com/news/oil_gas/a/129108/Russians_Fire_Shots_amid_Greenpeace_Arctic_Protest> at 9 October 2013.

²⁸¹ Green and Kaplan, above n 28, 81.

The USGS Appraisal indicates extensive areas of potential oil reserves north of the Russian coast,²⁸² (see Illustration 5–2),²⁸³ The USGS Appraisal indicates potential gas reserves in many areas north of the Russian coast,²⁸⁴ (see Illustration 5–3).²⁸⁵

M. The Area – LOSC Part XI Regime

The Area regime is likely to include central areas in the Arctic Ocean (shown as two unshaded areas in the IBRU Arctic Boundary Map, see Illustration 5–1),²⁸⁶ the Bering Sea between the United States and Russia ('Central Bering Sea Doughnut Hole'), the Barents Sea north of Norway and Russia ('Norway/Russia Loophole'), and the Norwegian Sea between the Norwegian coast and Jan Mayen ('Denmark/Iceland/Norway Banana Hole').²⁸⁷ The Area regime is yet to be fully determined, as it will be outside state OCS regimes based on recommendations by the CLCS. The Area regime in the Arctic Ocean, in particular, may be significantly larger than illustrated if the CLCS does not recommend OCS areas relating to the Lomonosov and Alpha/Mendeleyev Ridges.

The LOSC Area regime was significantly amended by the 1994 Part XI Implementing Agreement (Implementing Agreement)²⁸⁸ as discussed in Chapter IV. The principal issue is whether measures such as protection of the environment can be effectively enforced in separate areas surrounded by Arctic states. The related Area regimes should therefore adopt Arctic Council standards, particularly the Arctic Marine Oil Pollution Preparedness and Response).²⁸⁹ This issue is analysed in Chapter VIII.

Oil and Gas

²⁸² Bird, above n 32. USGS Appraisal East Barents Basin 'EBB', West Siberian Basin 'WSB', Yenisey–Khatanga Basin 'YK', North Kara Basins and Platforms 'NKB', Laptev Sea Shelf 'LSS', North Chukchi–Wrangel Foreland Basin 'NCWF', Eurasia Basin 'EB' and Lomonosov–Makarov 'LM' areas.

²⁸³ 'Potential Arctic Oil' US Geological Survey <<http://pubs.usgs.gov/fs/2008/3049>> at 14 December 2012.

²⁸⁴ Bird above n 32. USGS Appraisal, East Barents Basin 'EBB,' West Siberian Basin 'WSB', Lena–Anabar Basin 'LA', Northwest Laptev Sea Shelf 'NWLS', East Siberian Sea Basin 'ESS', Vilkitskii Basin 'VLK', Hope Basin 'HB', Eurasia Basin 'EB' and Lomonosov–Makarov 'LM' areas.

²⁸⁵ Ibid.

²⁸⁶ Pratt, above n 18.

²⁸⁷ Alex G Oude Elferink and Donald R Rothwell 'Challenges for Polar Maritime Delimitation and Jurisdiction' in Oude Elferink and Rothwell above n 42, 351.

²⁸⁸ *Agreement Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982*, opened for signature 16 November 1994 (1994) 1836 UNTS 3 (entered into force 28 July 1996) ('*Implementing Agreement*').

²⁸⁹ Arctic Council, Senior Arctic Officials (SAO) Report to Ministers, Nuuk, Greenland, May 2011, 4.

Green and Kaplan did not estimate oil and gas reserves in the related regions.²⁹⁰ The USGS Appraisal did not indicate significant potential oil or gas reserves (see Illustration 5–4).²⁹¹ The regions subject to the Area regime represent the furthest sea depths from state continental shelves and OCS zones, and therefore await seismic research and exploratory drilling to determine whether there are economic oil and gas reserves.

6. Contributions to Research Conclusions

The primary research conclusion of this Chapter is that significant Arctic Ocean region maritime boundaries have not been resolved for reasons including the interpretation of bilateral and multilateral treaties, and political changes leading to the non-ratification of treaties. The unresolved boundary disputes include:

a) The United States/Canada maritime boundary dispute in the Beaufort Sea, based on different interpretations of the 1825 Convention between Great Britain and Russia.²⁹²

b) The Svalbard Islands region, concerning interpretation of the 1920 Svalbard Treaty,²⁹³ based on whether the Svalbard Treaty includes the sharing of resources of the continental shelf and OCS. Norway adopts a restrictive interpretation that the Treaty only applies to land and territorial seas, whereas other states may adopt a broad interpretation that the Treaty applies to the EEZ, continental shelf and OCS.

c) The United States/Russia maritime boundary issue concerns Russian non-ratification of the Agreement on the Maritime Boundary,²⁹⁴ due to dissatisfaction with the outcome and as the result of political processes. This demonstrates that maritime boundary treaties rely on the continued political support of both states, in a similar manner to the JDZ agreements in Chapter III.

²⁹⁰ Green and Kaplan, above n 28, 81.

²⁹¹ Pratt, above n 18.

²⁹² *Convention between Great Britain and Russia concerning the limits of their Respective Possessions on the North-West Coast of America and the Navigation of the Pacific Ocean*, 16 February 1825, 75 Consolidated Treaty Series (CTS) 95.

²⁹³ The interpretation of the *Svalbard Treaty* may be subject of future legal arbitration.

²⁹⁴ *Agreement between the United States of America and the Union of Soviet Socialist Republics on the Maritime Boundary*, opened for signature 1 June 1990, (not entered into force at 18 December 2012) United States– Department of State <<http://www.state.gov/documents/organization/125431.pdf>> at 10 January 2013.

d) The Arctic Ocean region is also significant as the Area regime of multilateral development under LOSC Part XI may apply to two specific areas in the Arctic Ocean, and one area in the Norwegian Sea.²⁹⁵ This issue awaits finalisation of OCS submissions by Russia, the final OCS submission of Canada, and completion of the related CLCS recommendations, to determine the scope of the Area in this region.

e) The 2010 Barents Sea Treaty,²⁹⁶ between Norway and Russia is an important recent development, as two states agreed to a boundary without recourse to a JDZ. This outcome provides the clarity of agreed boundary relating to jurisdictional control and rights to resources, in comparison with the potential uncertainties of a JDZ. This outcome is consistent with the very significant point that JDZs are not a universal panacea for maritime boundary disputes.

²⁹⁵ Oude Elferink and Rothwell, above n 42, 351.

²⁹⁶ *Treaty Between the Kingdom of Norway and the Russian Federation Concerning Maritime Delimitation and Cooperation in the Barents Sea and the Arctic Ocean*, 15 September 2010, UNTS Registration No 49095, Norwegian Government, Office of the Prime Minister, <<http://www.regjeringen.no/en/dep/smk/press-center/Press-releases/2010/treaty.html?id=614254>> at 20 February 2012 (entered into force 7 July 2011).

CHAPTER VI – THE SOUTHERN OCEAN – THE ANTARCTIC TREATY, MARITIME BOUNDARIES, AND POTENTIAL OIL AND GAS

1. Introduction

The paramount considerations in analysing potential claims in the Southern Ocean is the Antarctic Treaty which suspends claims to sovereignty,¹ and the Environmental Protocol which suspends exploration and oil and gas development by state parties to the Treaty.²

The Southern Ocean is subject to potential continental shelf OCS claims by states with Antarctic claims made prior to the Antarctic Treaty. Submissions relating to the Southern Ocean with related information on their Antarctic continental shelves have been made by Argentina in its submission to the CLCS in 2009,³ by Norway in its submission in 2009,⁴ and by Australia in its submission to the CLCS in 2004,⁵ and subsequent 2012 continental shelf proclamation relating to Heard and McDonald Islands, and Macquarie Island, which extends into the Southern Ocean,⁶ (see Illustration 6–1).⁷ Australia and Norway included a request that no further action be taken in respect of this information. The United Kingdom, France and New Zealand have not submitted information, but have submitted a formal reservation indicating that a submission may be made in the future. Chile has submitted preliminary information and has yet to decide whether to submit full information or issue a reservation. There is also an issue

¹ *Antarctic Treaty*, opened for signature 1 December 1959, 402 UNTS 71, (entered into force 23 June 1961).

² *Protocol on Environmental Protection to the Antarctic Treaty*, opened for signature 4 October 1991, 30 I.L.M. 1455 (entered into force 14 January 1998) ('*Environmental Protocol*').

³ Outer Limits of the Continental Shelf – Argentine Submission, <http://www.un.org/Depts/los/clcs_new/commission_submissions.htm> at 9 January 2013.

⁴ Continental Shelf Submission of Norway in respect of Bouvetøya and Dronning Maud Land, 4 May 2009 <http://www.un.org/Depts/los/clcs_new/submissions_files/nor30_09/nor2009_executivesummary.pdf> at 27 July 2009.

⁵ Commission on the Limits of the Continental Shelf, 'Continental Shelf Submission of Australia – Executive Summary' <http://www.un.org/Depts/los/clcs_new/commission_submissions.htm> at 9 January 2013.

⁶ *Seas and Submerged Lands (Limits of Continental Shelf) Proclamation 2012*. The proclamation was made pursuant to the *Seas and Submerged Lands Act 1973* (Cth).

⁷ 'Antarctic Region', Perry Castaneda Library, University of Texas at Austin <http://www.lib.utexas.edu/maps/islands_oceans_poles/antarctic_region_pol_2005.pdf> at 14 December 2012.

of access to resources in the Unclaimed Sector (Marie Byrd Land), and regions beyond state jurisdiction under the Area regime of Part XI of LOSC.⁸

The CRAMRA⁹ proposals for Antarctic exploration and development are particularly significant as a potential resolution allowing the development of resources in a region of contested sovereignty.

One threshold issue is the extent to which states with Antarctic claims have accepted dispute resolution procedures under LOSC, although the dispute settlement system procedure of LOSC does not apply to disputes on title to territory.¹⁰ Only the United Kingdom and New Zealand have accepted compulsory arbitration under LOSC in relation to maritime boundary delimitation under LOSC article 298. The case instituted by the Philippines against China under Annex VII relating to the South China Sea is relevant, as it was not formulated as a dispute on title to territory. The application was made on the basis that, as most of the features in the South China Sea, such as most of the Spratly Islands, cannot sustain life, they cannot be given their own continental shelf.¹¹

Table 6–1 Antarctic State LOSC Dispute Resolution Declarations

The choices of forum made by states with Antarctic claims and declarations on LOSC dispute resolution provisions are summarised in the following table:

	ITLOS	ICJ	Arbitration Annex VII	Special Arbitration annex VIII	Exception declared under LOSC Section 298 type of dispute -

⁸ *Law of the Sea Convention*, opened for signature 10 December 1982, 1833 UNTS 396 (entered into force 16 November 1994) ('*LOSC*').

⁹ *Convention on the Regulation of Antarctic Mineral Resource Activities*, opened for signature 2 June 1988, 27 ILM 868 ('*CRAMRA*') (not in force).

¹⁰ 'Settlement of Disputes Mechanism' United Nations Division for Ocean Affairs and the Law of the Sea <http://www.un.org/Depts/los/settlement_of_disputes/choice_procedure.htm> at 9 July 2012.

¹¹ The Philippines notified the People's Republic of China on 22 January 2013 of its intention to submit elements of the two countries' disputes concerning sovereignty and maritime jurisdiction in the South China Sea to an arbitration tribunal under Annex VII of LOSC, 'Philippines submits South China Sea disputes with China to UNCLOS Annex VII arbitration,' International Boundaries Research Unit, 22 January 2013

<http://www.dur.ac.uk/ibru/news/boundary_news/?itemno=16498&rehref=%2Fibru%2F&resubj=Boundary+news+Headlines> at 1 February 2013. China made a declaration under Article 298 of UNCLOS which excludes the application of compulsory binding procedures for the settlement of certain types of dispute, including disputes relating to maritime boundary delimitations.

					Boundary delimitation is (a)
Argentina	1	-	-	2	1(a), (b) and (c)
Chile	1	-	-	2	1(a), (b) and (c)
United Kingdom	-	1	-	-	1(b) and (c)
Norway	-	1	-	-	Declared for all categories
Australia	1	1	-	-	1(a)
France	NCF	NCF	NCF	NCF	1(a), (b) and (c)
New Zealand	NCF	NCF	NCF	NCF	No declaration

In the above table, 'NCF' means that no choice of forum was made.

2. Basis of Sovereignty Claims in the Antarctic and Southern Ocean

The sovereignty claims to the Antarctic are generally of two types, based on exploration and declaration, including claims by the United Kingdom, Norway, France, Australia and New Zealand, or based on historical and geographical circumstances, including claims by Argentina and Chile.

A threshold issue is whether Antarctica may be considered *terra nullius* (territory removed from state jurisdiction), or *res communis* (territory common to all and thus immune from claims of state sovereignty or national appropriation). Christopher C Joyner commented that as *terra nullius*, Antarctica would be subject to national appropriation should the Antarctic Treaty expire. As *res communis*, Antarctica would be insulated from state appropriation, resembling the 'common heritage of mankind' principle applying under LOSC Part XI to the Area regime of the deep seabed.¹²

The principal issue in respect of Antarctic claims is whether modes of acquisition of sovereignty are consistent with public international law. James Crawford described the orthodox approach to describing the modes of acquisition as follows:¹³

¹² Christopher C Joyner, 'The Exclusive Economic Zone and Antarctica' (1980-1981) 21 *Virginia Journal of International Law* 691, 709.

¹³ James Crawford, *Brownlie's Principles of Public International Law* (Oxford University Press, 8th ed, 2012) 220.

- Occupation, generally based on continued display of authority, the intention and will to act as sovereign, and some actual exercise or display of such authority;¹⁴
- Accretion, as an increase in territory through new geological formations by causes such as volcanic activity;¹⁵
- Cession, based on the transfer of right to territory by treaty;¹⁶
- Conquest, which has historically been a method of obtaining sovereignty over land territory. In relation to more recent times, Article 2(4) of the United Nations Charter prohibits the use of force.¹⁷ On this basis the acquisition of territory through offensive force would be contrary to international law;¹⁸ and
- Prescription, generally based on effective possession by the usurping state claiming sovereignty, together with recognition or acquiescence by the state which previously claimed sovereignty.¹⁹

Crawford commented that the limitations of the orthodox approach include the need to address how title is acquired when a new state comes into existence, and the actual practice of tribunals in determining sovereignty, being based on examining proof of the exercise of sovereignty.²⁰ This is demonstrated by the approaches taken by international tribunals in principal cases including:

- The *Island of Palmas* case,²¹ concerning an island located between Indonesia and the Philippines. The Permanent Court of Arbitration, established by a Convention made at the first Hague Peace Conference in 1899,²² held that the

¹⁴ Ibid 222.

¹⁵ Ibid 240.

¹⁶ Ibid 226.

¹⁷ *Charter of the United Nations*, (opened for signature 26 June 1945, 1 UNTS XVI (entered into force 24 October 1945) ('UN Charter'). Article 2(4) provides:

All Members shall refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any state, or in any other manner inconsistent with the Purposes of the United Nations.

¹⁸ Ibid 242.

¹⁹ Ibid 229.

²⁰ Ibid.

²¹ *Island of Palmas case (Netherlands v United States)*, (1928) 2 RIAA 831.

²² *Convention for the Pacific Settlement of International Disputes*, opened for signature 29 July 1899, 1 AJIL 103 (1907) (entered into force 4 September 1900).

peaceful display of sovereignty by the Netherlands from 1700 to 1906 was considered to prove Netherlands sovereignty. This approach displaced the previous approach to occupation in terms of settlement and close physical possession;²³ and

- The *Legal Status of Eastern Greenland* ('Eastern Greenland case') in 1933,²⁴ concerned the Norwegian claim to Eirik Raudes Land in eastern Greenland.²⁵ The Norwegian claim was based on a Norwegian royal proclamation of sovereignty in 1931 on the basis that the area was *terra nullius* as it had no permanent inhabitants.²⁶ The Danish claim was based on expeditions and claims of sovereignty by King Christian IV from 1605 to 1607, and Denmark's formal declaration of sovereignty to the whole of Greenland in 1919.²⁷ The Permanent Court of International Justice found on the facts that the area concerned was *terra nullius* at the relevant time, and held that Norway acquiesced to Danish sovereignty in the Ihlen Declaration in 1919.²⁸

Acts of discovery were considered to confer complete title in the fifteenth and sixteenth centuries, however the modern view is that discovery gives an inchoate title, essentially as an option against other states to proceed to effective occupation within a reasonable

²³ Crawford, above n 13, 225.

²⁴ *Legal Status of Eastern Greenland (Norway v Denmark)*, (1933) PCIJ Ser A/B No 53.

²⁵ The first settlement in Greenland was by the Norwegian Erik Thorvaldsson ('Eirik Raude' or 'Eric the Red') in 905. Norway and Denmark were united in 1380.

²⁶ The doctrine of *terra nullius* was considered more recently by the High Court of Australia in *Mabo and Others v Queensland (No 2)* (1992) 175 CLR 1 (the 'Mabo case'). The case concerned land rights of the Meriam aboriginal people to the Murray Islands in the Torres Strait, and specifically whether there was a valid native title to land, or whether the land was *terra nullius*, and could be acquired by occupation. The High Court held there was a common law doctrine of native title, based on traditional connection to or occupation of the land. This title could be extinguished by the valid exercise of governmental powers, provided a clear and plain intention to do so was manifest. The Meriam people therefore had title to the Murray Islands, with the exception of certain prior leases. The case is therefore also a rejection of the application of *terra nullius*, however this was based on recognising prior native title.

²⁷ Denmark and Norway had been in a political union, however this was dissolved in 1814 under the Treaty of Kiel in 1814, which ceded Norway to Sweden at the end of the Napoleonic wars. The Greenland colonies remained under Danish control. *Treaty of Kiel*, 14 January 1814 <http://hem.passagen.se/klas.hasselstig/w_tryck/fred1814.html> at 27 February 2013.

²⁸ *Ibid* 54. In rejecting the *terra nullius* argument, the Court stated:

The conclusion to which the Court is led is that, bearing in mind the absence of any claim to sovereignty by another Power, and the Arctic and inaccessible character of the uncolonized parts of the country, the King of Denmark and Norway displayed during the period from the founding of the colonies by Hans Egede in 1721 up to 1814 his authority to an extent sufficient to give his country a valid claim to sovereignty, and that his rights over Greenland were not limited to the colonized area.

time.²⁹ The expeditions of discovery discussed below in relation to Antarctic claimant states therefore also require effective occupation to confer sovereignty.

Symbolic annexation, such as formal state declarations of sovereignty, may be treated as a part of the process of effective occupation, and therefore as part of the evidence contributing to sovereignty.³⁰

Andrew Clapham commented on the *Eastern Greenland* case that 'a relatively slight exercise of authority would suffice when no other state could show a superior claim.'³¹

Malcolm M Shaw summarised this issue as follows.³²

Indeed in international law many titles will be deemed to exist not as absolute but as relative concepts. The state succeeding in its claim for sovereignty over *terra nullius* over the claims of other states will in most cases have proved not an absolute title, but one relatively better than that maintained by competing states and one that may take into account issues such as geography and international responses.

A related issue is that the court may determine the 'critical date' at which sovereignty should be tested. This may, for example, be an examination of the facts and circumstances at time of declaration of sovereignty. There may also be several critical dates, or the court may not adopt a specific date.³³

In relation to Antarctic claims of sovereignty, acts of discovery were followed by acts asserting sovereignty. On this basis the earliest Antarctic claims, such as that of the United Kingdom, should remain superior to overlapping claims made by other states, which will lack the first discovery, earliest declaration of sovereignty, and longest exercise of state authority. All possible measures were taken by the United Kingdom to acquire sovereignty as at 1908, and under the law of that time sovereignty was acquired.

²⁹ Crawford, above n 13, 223.

³⁰ Ibid 224 and 229. The essential basis of sovereignty should be considered the effective and continuous display of state authority. Crawford commented as follows:

In any event, in instances such as *Island of Palmas* and *Minquiers and Ecrehos*, the Court assesses the relative intensity of the competing acts of state authority to determine which party has the better right.

In appropriate circumstances the Court will lean in favour of title in one claimant even though there are grounds for a finding that the territory was at the relevant time *terra nullius*. Thus in *Eastern Greenland* Danish activity in the disputed area had hardly been intensive, but the court refused to consider the area *terra nullius*.

³¹ Andrew Clapham, *Brierly's Law of Nations, An Introduction to the Role of International Law in International Relations* (Oxford University Press, 7th ed, 2012) 173.

³² Malcolm M Shaw, *International Law* (Cambridge University Press, 6th ed, 2008) 511.

³³ Ibid 219.

This approach would be consistent with *the Island of Palmas* case in 1928,³⁴ displacing the previous approach to occupation in terms of requiring settlement. This is also consistent with the *Eastern Greenland* case in 1933,³⁵ which determined that state sovereignty could apply to a polar region.³⁶

There is a related issue of intertemporal law, concerning which rule of law should apply given that facts and laws change over time.³⁷ The issue in this respect concerns whether Great Britain did not establish sovereignty, if customary international law, at that time, required settlement to establish sovereignty. It may be argued however that such acts were sufficient to establish sovereignty, consistent with the later approach in the *Island of Palmas* case in 1928,³⁸ and the *Eastern Greenland* case in 1933.³⁹ The prior acts of the respective states were considered in these cases, however sovereignty was determined not to be on the prior test of settlement.

A related issue is whether there has been the emergence of the concept of joint jurisdiction in place of sovereignty. Peter J Beck argued that the Antarctic Treaty may be considered to emphasise exercise of jurisdiction rather than sovereignty, however he considered that the Treaty essentially relies on enforcement activities by individual states, rather than joint control.⁴⁰ Beck commented that the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), however, is an example of the development of joint control by the Antarctic Treaty regime. This is because CCAMLR applies a unified inspection regime, rather than reliance on state enforcement.

The status of any state's jurisdiction in the Southern Ocean is uncertain due to the absence of recognition by the majority of other states of state sovereignty claims. A

³⁴ *Island of Palmas case (Netherlands v United States)*, (1928) 2 RIAA 831.

³⁵ *Legal Status of Eastern Greenland (Norway v Denmark)*, (1933) PCIJ Ser A/B No 53.

³⁶ It should be noted that there was an Inuit settlement in Eastern Greenland at the date of the case, located at Ammassalik (since named Tasiilaq). Norway did not have a settlement in Eastern Greenland at the time of the case. Anders Stenbakken, 'History of East Greenland'

<<http://www.eastgreenland.com/database.asp?lang=eng&num=201>> at 17 June 2013.

³⁷ Boleslaw A Boczek, *International Law: A Dictionary* (Scarecrow Press, 2005) 227. Boczek defines intertemporal law as follows:

The term intertemporal law refers to the principles of international law dealing with the problem of which of the different rules of international law prevailing in succeeding periods are to govern a specific situation.

³⁸ *Island of Palmas case (Netherlands v United States)*, (1928) 2 RIAA 831.

³⁹ *Legal Status of Eastern Greenland (Norway v Denmark)*, (1933) PCIJ Ser A/B No 53.

⁴⁰ Peter J Beck, 'Who Owns Antarctica? Governing and Managing the Last Continent' (1994) 1-1 *International Boundaries Research Unit Boundary & Territory Briefing* 19.

significant example was the *Southern Ocean Whaling* case,⁴¹ discussed in Chapter IV, where Japan refused to appear before the Federal Court of Australia.⁴²

The ICJ in the *Whaling in the Antarctic* case held that the Japanese whaling program was inconsistent with Japan's treaty obligations. The case has potentially assisted the application of international environmental laws in the Southern Ocean.⁴³ The ICJ did not, however, consider the application of Antarctic claimant state legislation in the Southern Ocean. The implication of the Australian and ICJ cases for the implementation of environmental provisions of future Southern Ocean JDZs is likely to be that effective enforcement requires international treaty obligations, such as the proposed CRAMRA regime, rather than reliance on state provisions. The issue is analysed in relation to JDZ implementation in Chapter VIII. The Australian action should be seen more broadly as a significant exercise of state authority over the Australian Antarctic Territory (AAT).

A concluding comment should be made in relation to the delimitation of potential Southern Ocean maritime boundaries. Based on the 1993 ICJ decision in the *Greenland/Jan Mayen* case between Denmark and Norway,⁴⁴ D H Anderson commented that the level of settlement of the respective land territories was not a relevant factor. As discussed in Chapter IV, Denmark had argued that the boundary should be determined taking into account that Jan Mayen Island lacked a settled population and an economy, apart from the activities of scientific personnel. The ICJ held that the limited nature of Jan Mayen's population or socio-economic factors were not circumstances to be taken into account in the delimitation.⁴⁵

Accordingly in the event that a future Southern Ocean boundary dispute arose, notwithstanding the Antarctic Treaty, it appears unlikely that the respective lack of

⁴¹ *Humane Society International Inc v Kyodo Senpaku Kaisha Ltd* [2008] FCA 3 ('*Southern Ocean Whaling case*').

⁴² Christopher C Joyner, 'Potential Challenges to the Antarctic Treaty' in Paul Arthur Berkman et al (eds) *Science Diplomacy: Antarctica, Science and the Governance of International Spaces* (Smithsonian Institution Scholarly Press, 2011) 97.

⁴³ *Whaling in the Antarctic case (Australia v. Japan): New Zealand Intervening*, ICJ Judgement of 14 March 2014

<<http://www.icj-cij.org/docket/files/148/18136.pdf>> at 20 December 2014.

⁴⁴ *Maritime Delimitation in the Area between Greenland and Jan Mayen (Denmark v Norway)*, [1993] ICJ Rep 38.

⁴⁵ D H Anderson, 'Denmark (Greenland) – Norway (Jan Mayen), Report Number 9-19', in Jonathan I Charney, and Lewis M Alexander (eds), *International Maritime Boundaries* (Martinus Nijhoff, 1998) vol 3, 2507, 2513.

settlement by any state, or the positions of respective scientific stations, would be a significant factor in determining the maritime boundary.

3. Southern Ocean Baselines and Ice-Covered Coasts

In relation to the Antarctic and Southern Ocean, the two largest ice shelves are the Ross Ice Shelf in the New Zealand Ross Dependency, and the Filchner-Ronne Ice Shelf in the overlapping claims of Chile, Argentina and the United Kingdom adjacent to the Weddell Sea and the Antarctic Peninsula.

The presence of ice-covered areas raises issues in relation to baselines as the ice covered area may extend well beyond the coast itself. This issue is particularly relevant to the Antarctic. The outer edge of the Ross ice shelf, for example, could be considered part of the New Zealand Antarctic territorial claim, as discussed by Stuart Kaye.⁴⁶ The issue is not clearly resolved under LOSC, and it may require a determination of a continental shelf claim, which was based on the outer edge of an ice shelf, to establish a precedent on this issue. The New Zealand OCS submission to the CLCS made in 2006 and updated in 2007,⁴⁷ was stated to be a partial claim, 'not including areas of continental shelf appurtenant to Antarctica.' Accordingly it is not yet clear whether New Zealand will make an OCS submission relating to the Antarctic land coast and the Ross ice shelf.⁴⁸

Ice shelves are unstable compared to most land coasts, and arguments may be made against claiming a baseline based on the edge of such an ice shelf.⁴⁹ This appears to be the better view, particularly in view of climate change and possible further melting of the ice shelves.

The Antarctic Treaty specifically includes ice shelves in the Treaty's area of application.⁵⁰ The declaration of a baseline could potentially be considered as an

⁴⁶Stuart B Kaye, *Territorial Sea Baselines along Ice Covered coasts: International Practice and Limits of the Law of the Sea*, (2004) 35 *Ocean Development & International Law* 75.

⁴⁷ New Zealand submission through the Secretary-General to the Commission on the Limits of the Continental Shelf, pursuant to article 76, paragraph 8, of the Convention, 19 April 2006 <http://www.un.org/Depts/los/clcs_new/submissions_files/nzl06/nzl_exec_sum.pdf> at 18 February 2010.

⁴⁸ The Filchner-Ronne Ice Shelf is significant as it lies within parts of the UK, Chile and Argentine Antarctic claims, and a similar issue arises as to whether the baseline starts at the edge of the shelf.

⁴⁹*Ibid* 7.

⁵⁰ *Antarctic Treaty* art 6.

assertion of sovereignty contrary to Article 4 of the Antarctic Treaty. This is particularly the case as a state acquires complete sovereignty within the baseline, compared to the more limited regimes of the EEZ and the continental shelf. Failing to assert a baseline claim may however legitimise the position of those states which refuse to acknowledge Antarctic territorial claims.⁵¹ All Antarctic claimant states have asserted claims to a territorial sea adjacent to their Antarctic territories.⁵²

The normal baseline under LOSC Article 5 is the low-water line along the coast as marked on large-scale charts officially recognised by the coastal state. The presence of an ice-covered coast presents difficulties in determining the normal baseline under Article 5. The ice shelf could potentially constitute a state's territory, with the normal baseline therefore extending from the edge of the ice shelf, or alternatively from a geographical low water line determined assuming the ice shelf was absent. This second alternative is particularly problematic where the low water mark is obscured by an ice shelf and cannot be identified.⁵³ The related issue is the adoption of straight baselines originated in the *Anglo Norwegian Fisheries* case,⁵⁴ in which the ICJ supported Norway's adoption of straight baselines from the outermost points of islands. Straight baselines were adopted in LOSC Article 7.

Kaye observed that the United Kingdom government commented in 1926 that ice barriers were for all intents and purposes extensions of land, and also commented that Chile did not refer to ice shelves but included 'pack ice' in its declaration of sovereignty in 1940.⁵⁵ Howard Stagg described the Australian practice and the coordinates of the baseline in Australia's submission to the CLCS. The potential alternatives were: the location of the coastline as it would be in the absence of the ice sheet; the grounding line of the ice sheet on the seabed where the ice sheet first floats clear of the seabed; and

⁵¹ Kaye, above n 46.

⁵² Donald R Rothwell 'Antarctic Baselines: Flexing the Law for Ice-Covered Coastlines' in Alex G Oude Elferink and Donald R Rothwell (eds), *The Law of the Sea and Polar Maritime Delimitation and Jurisdiction* (Martinus Nijhoff, 2001) 49, 60.

⁵³ Rothwell, above n 52, 61.

⁵⁴ *Anglo-Norwegian Fisheries* case [1951] ICJ Rep 116.

⁵⁵ Stuart B Kaye, 'Territorial sea baselines along ice covered coasts: International practice and limits of the law of the sea' (Paper presented at Third Biennial Conference of ABLOS – Addressing Difficult Issues in the Law of the Sea, International Hydrographic Bureau, Monaco, 28–30 October 2003) 16 <www.gmat.unsw.edu.au/ablos/ABLOS03Folder/PAPER4-2.pdf> at 11 December 2012.

the edge of the semi-permanent ice that is attached to the continent. The basis used was the edge of the semi-permanent ice.⁵⁶

It appears that Norway's OCS submission to the CLCS in respect of Dronning Maud Land in 2009 did not examine the coastline in the absence of the ice sheet, and accordingly, the submission also appears to have used the edge of semi-permanent ice for the related Antarctic coast base points.⁵⁷

4. Southern Ocean Outer Continental Shelf Claims and LOSC

Several states with Antarctic claims have made OCS submissions to the CLCS which refer to the Antarctic continental shelf, but in all cases except for Argentina, these submissions requested the CLCS to reserve the issue of the Southern Ocean due to the terms of the ATS.⁵⁸ ISBA summarised state OCS claims in the Southern Ocean in a related map (see Illustration 6–3).⁵⁹ The OCS submissions relating to the Southern Ocean are summarised as follows:

Table 6–2 Antarctic Claimant State Submissions to the CLCS

⁵⁶ Howard Stagg 'Mapping the Antarctic Continental Shelf: Science Meets the Legal and Diplomatic Worlds' in Julia Jabour, Marcus Haward and Tony Press (eds) *Australia's Antarctica: Proceedings of the Symposium to Mark 75 Years of the Australian Antarctic Territory Occasional Paper No. 2* (2012) <<http://www.imas.utas.edu.au/research/ocean-and-antarctic-policy/publications/75-years-of-antarctica>> at 11 December 2012. Stagg described the selection process as follows:

For the purposes of definition of maritime zones, the TSB is defined as 'the low water--line along the coast'. This definition is clearly difficult to apply in the case of a coastline that is, more or less, permanently covered or abutted by ice. Three candidate locations were considered: the location of the coastline as it would be in the absence of the ice sheet; the grounding line of the ice sheet on the seabed, where the ice sheet first floats clear of the seabed; and the edge of the semi--permanent ice that is attached to the continent. The first of these alternatives was never seriously considered, primarily because of the difficulty in determining the bedrock elevation with respect to sea level. Extensive research (including field mapping with new data) was conducted into the feasibility of using the grounding line. However, Australia finally decided to use the ice edge as it was the simplest defensible option.

⁵⁷ Continental Shelf Submission of Norway in respect of Bouvetøya and Dronning Maud Land, 4 May 2009 <http://www.un.org/Depts/los/clcs_new/submissions_files/nor30_09/nor2009_executivesummary.pdf> at 27 July 2009.

⁵⁸ States cannot make future territorial claims in Antarctica if they are parties to the Antarctic Treaty and the Treaty is still in force. Other states may potentially make future territorial claims in Antarctica, and may then make related submissions to the CLCS for OCS. The United States could, for example, make a future territorial claim in respect of the Unclaimed Sector, and would then have 10 years from ratifying LOSC to make an OCS submission to the CLCS. It would be difficult for a non-party to make a claim if Art IV of the Antarctic Treaty can be said to have become part of customary international law.

⁵⁹ 'Non-Living Resources of the Continental Shelf Beyond 200 Nautical Miles: Speculations on the Implementation of Article 82 of The United Nations Convention on the Law of the Sea,' ISA Technical Study No. 5, <www.isa.org.jm/files/documents/EN/Pubs/TechStudy5.pdf> at 12 February 2013, 21.

Country	Ratified LOSC ⁶⁰	Southern Ocean CLCS Submission Lodged (or Due) ⁶¹	CLCS Recommendation Made	Southern Ocean recommendation adopted by State Legislation
Argentina - Southern Ocean	1 December 1995	21 April 2009, included ATS area		
Chile - Southern Ocean	25 August 1997	Preliminary Information 8 May 2009, reserved options relating to ATS area		
France - Southern Ocean	11 April 1996, entered into force 11 May 1996	Submission in respect of the French Antilles and Kerguelen Islands on 5 February 2009, did not submit information but submitted a formal reservation indicating that a submission may be made in the future		
United Kingdom - Falkland Islands Area - Southern Ocean	25 July 1997, entered into force 24 August 1997	11 May 2009, notified CLCS in May 2008, did not submit information but submitted a formal reservation indicating that a submission may be made in the future. However OCS submission re Falkland Islands on 11 May 2009 overlaps ATS area.		
Australia - Southern Ocean - ATS area generally deferred	5 October 1994, entered into force 16 November 1994	15 November 2004, included a request that no further action be taken except for OCS from Heard and Macquarie Islands. ⁶²	9 April 2008	24 May 2012 for Heard and Macquarie Islands extending into ATS area ⁶³
New Zealand - Southern Ocean	19 July 1996, entered into force 18 August 1996	Lodged 19 April 2006, did not submit information, but	22 August 2008	

⁶⁰Chronological Lists of Ratifications of, Accessions and Successions to the Convention and Related Agreements, United Nations Division for Ocean Affairs and the Law of the Sea, <http://www.un.org/Depts/los/reference_files/chronological_lists_of_ratifications.htm> at 24 October 2008.

⁶¹United Nations Division for Ocean Affairs and the Law of the Sea, <http://www.un.org/Depts/los/clcs_new/clcs_home.htm> at 24 October 2008.

⁶² Australia did however request the CLCS to make recommendations in relation to Heard and Macquarie Islands, which extended south of 60° south latitude, into the area subject to the Antarctic Treaty

⁶³ *Seas and Submerged Lands (Limits of Continental Shelf) Proclamation 2012* <<http://www.comlaw.gov.au/Details/F2012L01081/Explanatory%20Statement/Text>> at 9 November 2012.

		submitted a formal reservation indicating that a submission may be made in the future		
Norway - Southern Ocean	24 June 1996, entered into force 24 July 1996	Lodged on 2 May 2009, included a request that no further action be taken		

Oude Elferink commented that at the end of 2004 the claimant states reached a compromise for a common approach, which envisaged two possibilities. A state could either submit information to the CLCS or refrain from doing so. Oude Elferink summarised that:⁶⁴

Argentina, Australia and Norway have submitted information, while requesting the Commission to not consider their submission for the moment. France, New Zealand and the United Kingdom have indicated, while making a submission for other territories, that for the moment they are refraining from making a submission concerning their continental shelf in Antarctica. Chile has not yet made a submission to the Commission, but has used the opportunity to submit preliminary information.

Argentina, Australia and Norway have all admitted information on their Antarctic continental shelves. Australia and Norway included a request that no further action be taken. The United Kingdom, France and New Zealand have not submitted information but have submitted a formal reservation indicating that a submission may be made in the future. Chile has submitted preliminary information and has yet to decide whether to submit full information or issue a reservation. The principal issue arising from these positions is whether compliance with the Antarctic Treaty may affect the status of future OCS claims. Rothwell and Stephens comment that the CLCS process may arguably be considered a procedural requirement because Article 77(3) provides that 'the rights of a coastal state ...do not depend on occupation, effective or notional, or any express proclamation.'⁶⁵ On this basis states inherently possess the OCS, and the CLCS process is done to confirm that right. This position may be considered as resulting in compliance with the Antarctic Treaty taking priority over a potential procedural breach of the OCS provisions of LOSC, but not such as to lose the right to that OCS. On this basis the positions generally taken in CLCS submissions by the United Kingdom, Australia, New

⁶⁴ Alex G Oude Elferink 'The outer limits of the continental shelf in the polar regions' in Alex G Oude Elferink, Erik Molenaar, Donald R Rothwell (eds) *The Law of the Sea and Polar Regions: Interactions between Global and Regional Regimes* (Brill, 2013).

⁶⁵ Donald R Rothwell and Tim Stephens, *The International Law of the Sea* (Hart Publishing, 2010) 113.

Zealand, France, Norway and Chile are arguably the correct balance of current Antarctic Treaty obligations while not prejudicing future OCS regimes in the Southern Ocean.

5. Southern Ocean Continental Shelf and OCS Claims and the Antarctic Treaty System

The status of sovereignty claims in the Southern Ocean is subject to the Antarctic Treaty. As discussed in Chapter IV, the main impact of the Antarctic Treaty is to suspend claims of sovereignty. Significant provisions of the Antarctic Treaty include: Article 1, which provides that Antarctica shall be used for peaceful purposes only, and prohibits the conduct of military activities in Antarctica;⁶⁶ Article 3 which provides for international scientific cooperation, including the exchange of information on programmes, the exchange of scientific personnel, and exchange and free availability of scientific observations and results;⁶⁷ and Article 4(2), which suspends claims for territorial sovereignty while the treaty is in force.⁶⁸

The suspension of sovereignty claims may potentially apply to the assertion of OCS claims from the Antarctic coast. Kaye highlighted the related limitation that the CLCS cannot make recommendations in relation to OCS submissions if there is a dispute, except where the recommendation is made on a non-prejudice basis to that dispute.⁶⁹ This is based on the related Rules of Procedure.⁷⁰ This position results from the lack of recognition by many countries of any Antarctic claim made before the entry into force of the Antarctic Treaty, and the suspension of current Antarctic claims under the Treaty. Most states with Antarctic claims which have made submissions to the CLCS have requested that no finding be made by the CLCS in respect of areas governed by the Antarctic Treaty.

Kaye considered that the assertion of maritime zones should not be considered a 'claim' contrary to Article 4 of the Antarctic Treaty, as the term 'claim' should relate only to

⁶⁶ *Antarctic Treaty*, art 1.

⁶⁷ *Ibid* art 3.

⁶⁸ *Ibid* art 4(2). Article 4(2) provides:

No Acts or activities taking place while the present treaty is in force shall constitute a basis for asserting, supporting, or denying a claim to territorial sovereignty in Antarctica or create any rights of sovereignty in Antarctica. No new claim, or enlargement of an existing claim, to territorial sovereignty in Antarctica shall be asserted while the present treaty is in force.

⁶⁹ Stuart Kaye, 'The Outer Continental Shelf in the Antarctic' in Oude Elferink and Rothwell, above n 52, 125, 128.

⁷⁰ Rules of Procedure of the Commission on the Limits of the Continental Shelf, annex 1, UN Doc CLCS/3/Rev 3 (6 February 2001).

land territory, rather than maritime zones, as the maritime zones arise simply due to their proximity to land territory.⁷¹ On this basis the declaration of maritime zones would not be contrary to Article 4.

There is a related issue of intertemporal law, discussed by Triggs, that acts performed at an earlier date than the Antarctic Treaty can be interpreted under the current provisions of the Law of the Sea. On the basis that the continental shelf was recognised in 1961 at the time of the Antarctic Treaty, such zones can now be interpreted under the revised formula applied in LOSC. Triggs also commented that the jurisdiction of a state over adjacent maritime areas expands with the development of international law. On this basis OCS declarations would therefore not be considered to be new claims of sovereignty contrary to Article 4 of the Antarctic Treaty.⁷²

The Antarctic Treaty is not specifically incorporated in LOSC, and the CLCS is not bound to recognise the Antarctic Treaty in its recommendations in relation to continental shelf submissions. The related issue is whether the CLCS can make recommendations concerning a continental shelf arising from the Antarctic continent in the presence of a current or potential dispute over the sovereignty over these regions. The CLCS has shown that it can address this issue, at least for OCS claims extending into the Antarctic Treaty area, by making recommendations without prejudice to other treaties.

The United Kingdom and Australia have made OCS submission in relation to islands outside the Antarctic treaty area, where the claimed OCS extends into the Antarctic Treaty area south of 60° south, and Argentina has made an OCS submission from the Antarctic coast. These specific claims are discussed below.

A significant issue with the Antarctic Treaty is whether its provisions can be effectively enforced. Article 7 provides for state parties to designate observers who may carry out inspections within and outside the Treaty area, including inspections of all ships and aircraft at points of discharging or embarking cargoes or personnel in Antarctica.⁷³ These procedures are not enforcement procedures, however, and the lack of

⁷¹ Kaye, above n 69, 135.

⁷² Gillian Triggs, *The Antarctic Treaty Regime: Law, Environment and Resources* (Cambridge University Press, 1987) 88-91.

⁷³ *Antarctic Treaty* art 7.

enforcement can be considered a limitation of the Antarctic Treaty. Rothwell commented that non-governmental inspections, by organisations such as Greenpeace, have identified violations of the Treaty not identified under the formal inspection regime.⁷⁴

The current position of state claims under the Antarctic Treaty has been described as 'modified Treaty sovereignty', where active assertions of traditional sovereignty have been replaced with other measures to promote territorial claims, including submissions by several claimant states to the CLCS relating to the establishment of an OCS.⁷⁵ Alan D Hemmings, Rothwell, and Karen N Scott concluded that: 'The security of Antarctic claims therefore remains a key plank of the Antarctic policies of each of the seven claimants.'

6. Southern Ocean Offshore Oil and Gas

The Antarctic Treaty permits legitimate scientific research which may be relevant to oil and gas exploration, for example in relation to the understanding of geological structures such as sedimentary basins. The Environmental Protocol however prohibits mineral resource activities in Article 7, such as oil and gas exploration, which would include activities such as seismic surveys, and exploratory and appraisal drilling. Some oil and gas exploration was undertaken in the Southern Ocean prior to the Environmental Protocol.

Potential oil resources in the Antarctic and Southern Ocean have been estimated at up to 203 billion barrels, including 50 billion barrels estimated in the Weddell Sea adjacent to the Australian Antarctic Territory (AAT), and the Ross Sea, adjacent to New Zealand's Ross Dependency.⁷⁶ John Kingston analysed sedimentary basins which may potentially

⁷⁴ Rothwell and Stephens, above n 65, 85. David Day commented that Greenpeace inspections have revealed attempted French demolition of a penguin colony to enlarge an airstrip, and United States dumping of radioactive waste under the ice, in David Day, *Antarctica: A Biography* (2012) 518. It should also be noted that Article 8 concerns jurisdiction over nationals, and provides that the state party may exercise jurisdiction over its nationals, while not limiting jurisdiction over all other persons. The provision does not however affirm the right of treaty states to exercise jurisdiction over persons on of non-treaty states.

⁷⁵ Donald R Rothwell, Karen N Scott and Alan D Hemmings 'The Search for Antarctic Security' in Alan D Hemmings, Donald R Rothwell, Karen N Scott (eds) *Antarctic Security in the Twenty-First Century: Legal and Policy Perspectives* (Routledge, 2012) 8.

⁷⁶ B St John, in D I M Macdonald, et al, 'A preliminary assessment of the hydrocarbon potential of the Larsen Basin, Antarctica, (1987) 5 *Marine and Petroleum Geology* 34; Joseph J Ward, *Black gold in a white wilderness – Antarctic Oil: the past, present and potential of a region in need of sovereign environmental stewardship* (1998) 371.

hold oil and gas. As with the Arctic surveys analysed in Chapter V, however, extensive seismic surveys and related exploratory drilling would be required to provide accurate estimates of Antarctic and Southern Ocean oil and gas resource potential (see Illustration 6–2).⁷⁷

A reference to potential oil and gas reserves based on these surveys is made below, where relevant to the specific Antarctic and Southern Ocean claims.

7. Analysis of Antarctic and Southern Ocean Claims

The following is an analysis of sovereignty claims in the Antarctic, commencing with the Chilean claim, and moving in an easterly direction about the South Pole. Kaye analysed potential Antarctic maritime boundaries and these conclusions are included in the review below.⁷⁸ Christopher C Joyner and Ethel R Theis make an essential point that five claimant states, Australia, France, New Zealand, Norway, and the United Kingdom, mutually recognise each other's Antarctic claim.⁷⁹ The Chilean and Argentine claims are not recognised by other states. It should be emphasised that states cannot make future territorial claims in Antarctica if they are parties to the Antarctic Treaty and the Treaty is still in force. There would be a very significant change to the Antarctic and Southern Ocean regime if new territorial claims were made by current non-claimant states, including potential claims by states such as the United States, Russia and China. The United States and the former USSR formally reserved the right to make a claim in the future, and are therefore arguably in a different position to China. It would, however, be very difficult for a non-party to make a claim particularly if Article IV of the Antarctic Treaty can be said to have become part of customary international law. The potential effects of such claims on the Antarctic Treaty regime are analysed in Chapter X as potential game changing events.

A. Chile

⁷⁷ John Kingston, *The Undiscovered Oil and Gas of Antarctica*, (United States Geological Survey, 1992) <<http://pubs.usgs.gov/of/1991/0597/report.pdf>> at 18 December 2012.

⁷⁸ Stuart B Kaye, 'Antarctic Maritime Delimitation' in Oude Elferink and Rothwell above n 52, 157, 163.

⁷⁹ Christopher C Joyner and Ethel R Theis, *Eagle over the Ice – The U.S. in the Antarctic* (University Press of New England, 1997) 36.

The Chilean Antarctic claim was made on 6 November 1940 for the area between 53° west and 90° west (see Illustration 6–1),⁸⁰ in a sector extending to the South Pole.⁸¹ The claim was made based on the findings of a special commission.⁸²

The original basis of the claim was principally the papal bull *Inter Caetera* issued in 1493, demarcating the sphere of influence between Spain and Portugal.⁸³ The related principle of *uti possidentis* is that Chile inherited the claims of Spain, and this concept has been applied in South America. The Chilean claim also can be considered to be based on the intent to exercise sovereignty over a period of time.⁸⁴

This basis would mean that Antarctica was not *terra nullius* when discovered and claimed by Great Britain. F M Auburn observed that the papal bull applies to lands and islands to be discovered by Spain and Portugal. The legal authority of the papal bull and treaty appear not to have been questioned by other countries at the time of the treaty, and all land in South America was deemed to have been part of Spanish and Portuguese colonial rule.⁸⁵ Auburn considered that the doctrine of *uti possidentis* was supported by Latin American practice and arbitration, though not supported by other international practice and arbitration.⁸⁶

⁸⁰ 'Antarctic Region', above n 5.

⁸¹ Chilean Foreign Affairs Ministry Decree 1747, enacted on November 6, 1940 and published on June 21, 1955. The Chilean permanent Antarctic bases are Bernardo O'Higgins Station, Antarctic Peninsula, Captain Arturo Prat Base on Greenwich Island, Base Presidente Eduardo Frei Montalva and Professor Julio Escudero Bases on King George Island, South Shetland Islands, Council of Managers of National Antarctic Program (COMNAP), Scientific Committee on Antarctic Research <<https://www.comnap.aq/operations/facilities>> at 31 July 2009.

⁸² Chilean Foreign Affairs Ministry Decree 1541, on September 7, 1939.

⁸³ United Nations, Report of the Secretary General on the Question of Antarctica, Part II, Volume 2, Views of States (1984) UN Doc A/39/583, and Chilean Government note to the United Nations, 27 June 1984. The Chilean government stated:

Our country's historical involvement in the Antarctic originated with the Papal bulls of Pope Alexander VI (1493) and the Treaty of Tordesillas... Upon gaining independence from the Spanish throne, the new republics acquired absolute ownership of all lands assigned to them by Spain... In the case of Chile, its borders, by virtue of *uti possidentis*, include the Antarctic region adjacent to South America... By 1906, Chile's titles to Antarctica had been effectively established by effective occupation, administration, regulation, and political and diplomatic activity... Geographically, the South American Antarctic is a continuation of Chilean territory.

The papal bull declared that 100 leagues west and south of any of the islands of the Azores or the Cape Verde Islands should belong to Spain. The Treaty of Tordesillas of 1494 between Spain and Portugal which moved the boundary 270 leagues further to the west.

⁸⁴ Donald R Rothwell, *The Polar Regions and the Development of International Law* (Cambridge University Press, 1996), 59.

⁸⁵ F M Auburn, *Antarctic Law and Politics* (Indiana University Press, 1982) 49. Auburn stated:

It may be concluded that *uti possidentis* is a valid rule of intra-American customary international law, although its extension to the Antarctic is objectively dubious - but no more questionable, it might be argued, than the sector principle which it resembles in a number of ways.

⁸⁶ *Ibid* 50.

Robert E Wilson considered that the Chilean claim may have been made in response to the 24 May 1940 statement by Cordell Hull, the United States Secretary of State, that the American republics should have a clearer claim to the Antarctic.⁸⁷ The basis proposed by Hull was to improve continental defence.⁸⁸ Wilson commented that circumstances claimed in support of the 1940 declaration included the grant of fishing concessions including 'to assure dominion over' regions including Graham Land on the Antarctic Peninsula in 1906, and instructions by the Chilean Foreign Minister Antonio Hunneaus to the Chilean Navy Department in 1906.⁸⁹

The Chile boundary on the western side is based on a sector drawn from 90° west. Chile has territory including Easter Island further west than 90° west, and the Juan Fernandez Islands would be 85° west, and a sector based on mainland Chile's continental shelf would be 80° west. The claim may have made from 90° west to ensure that some part of the claim was not overlapping the British claim, which extended to the east from 80° west.

The Chilean claim to Antarctica is only supported by Argentina, and the boundary between Chile and Argentina is also disputed with a large overlapping region. Kaye commented that 'There is no purpose in considering where Argentine or Chilean boundaries might run, as neither recognises any claim but their own.'⁹⁰ Chile also

⁸⁷ Robert E Wilson, 'National interests and Claims in the Antarctic' (1964) 17(1) *Arctic* 15.

⁸⁸ Cordell Hull, United States Secretary of State, Statement of May 24, 1940:

Considerations of continental defence make it vitally important to keep for the 21 American republics a clearer title to the Antarctic continent south of America than is claimed by any non-American country.

⁸⁹ Wilson, above n 87, 18. The Chilean statement in 1906 included the following:

....make effective by all means at the government's disposal the sovereignty vested in it over the Shetland Islands and over the southern continent, which, until today, seem to have remained abandoned, and establishing firmly by means of occupation its title to the dominion of the Antarctic region...

⁹⁰Kaye, above n 78, 168. An example of the basis for Argentine support for the Chilean claim was made as follows

There is little doubt that like the Argentine Republic, Chile enjoys valid titles with respect to the possession of Antarctic land in the South American quadrant. The same reasons of geographical and historical nature serve her and to a certain extent the juridical reasons are similar, even though our country excels her notably in the matter of permanent and effective occupation. In any case it is unquestionable that the South American quadrant of the sixth continent belongs entirely to Argentina and Chile.

Albert Luis Quaranta, *El Sexto Continente* (1950) 130, cited in Wilson, above n 94, 15.

supported its claim by occupation, including civilian activities in the village of Villa Las Estrellas.⁹¹

Chile's claim would be strengthened by the acceptance by other states, however no other state has supported the claim other than certain statements by Argentina, and Argentina's claim itself substantially overlaps the Chilean claim. The Chilean claim made in 1940 also does not appear to have effectively displaced the prior United Kingdom claim from 20° west to 80° west made in 1908, particularly in the absence of recognition of Chile's claim by other states.

Chile ratified LOSC on 25 August 1997. Chile lodged Preliminary Information in 2008 in relation to a future OCS submission to the CLCS.⁹² This lodgement meets the time requirement to lodge CLCS submissions under an extension granted at the 18th Meeting of State Parties to the LOSC convention in June 2008.⁹³ The preliminary submission advised that Chile would determine whether to apply for deferral of a decision in relation to the Antarctic Treaty area or to make a partial submission with future submission in relation to the Antarctic Treaty area.⁹⁴

Oil and Gas

⁹¹ The village of Villa Las Estrellas is located on King George Island north of the Antarctic Peninsula, which includes a town hall, hotel, day-care centre, school, scientific equipment, hospital, post office and bank. However it is doubtful that a village of up to 180 people can sustain a Chilean claim of 480,000 square miles together with surrounding oceans. The basis of the claim is highly significant as there may be occupation by increasing the size and economic viability of such settlements to support sovereignty claims. The Chilean Antarctic Strategy Plan announced to improve existing facilities, build new infrastructure, heighten ground security, improvement of Teniente Marsh airfield on King George Island, docking pier, and port development, with the project is set for completion in 2014, 'Chile announce ambitious Antarctica Strategic Plan', *MercoPress* (Montevideo) 15 February 2010, <<http://en.mercopress.com/2010/02/15/chile-announce-ambitious-antarctica-strategic-plan>> at 4 September 2012.

⁹² Preliminary Information indicative of the Outer limits of the Continental Shelf and description of the status of preparation and the intended date of making a submission to the Commission on the Limits of the Continental Shelf, Chile, <http://www.un.org/Depts/los/clcs_new/submissions_files/preliminary/chl2009preliminaryinformation.pdf> at 8 June 2012.

⁹³ *Antarctic Treaty*, Documents of the Meetings of State Parties, UN Doc SPLOS/183 para 1(a) (13 - 20 June 2008).

⁹⁴ Preliminary Information indicative of the Outer limits of the Continental Shelf and description of the status of preparation and the intended date of making a submission to the Commission on the Limits of the Continental Shelf, Chile, <http://www.un.org/Depts/los/clcs_new/submissions_files/preliminary/chl2009preliminaryinformation.pdf> at 8 June 2012.

The Weddell Sea area has been identified as a potential source of oil and gas reserves (see Illustration 6–2).⁹⁵ Traces of hydrocarbons were also detected in the Weddell Sea by the drilling vessel *JOIDES Resolution* in 1987.⁹⁶

B. United Kingdom

The British Antarctic Territory extends from 20° west to 80° west, (see Illustration 6–4,⁹⁷ and 6–5,⁹⁸), in a sector extending to the South Pole.⁹⁹ The southern part of the British Antarctic Territory, extending from the Filchner-Ronne Ice Shelf to the South Pole, was named Queen Elizabeth Land on 18 December 2012.¹⁰⁰ United Kingdom sovereignty originated in claims to the Falkland Islands, the proclamation of sovereignty over South Georgia, and acts of exploration and discovery.¹⁰¹ Christopher C Joyner considered the basis for the United Kingdom claim,¹⁰² including extensive British exploration encompassing voyages by Anthony de la Roche, Captain James Cook, William Smith, Edward Bransfield, John Briscoe, James Clark Ross, Robert Falcon Scott, William Bruce and Ernest Shackleton.¹⁰³

⁹⁵ Kingston, above n 77.

⁹⁶ Keith A Kvenvolden, Frances D Hostettler and Tamara J Frank, 'Hydrocarbons In Sediment Of The Weddell Sea, Antarctica' in P R Barker, J P Kennett, et al (1990) 1 Proceedings of the Ocean Drilling Program, Scientific Results 199, <http://www-odp.tamu.edu/publications/113_SR/VOLUME/CHAPTERS/sr113_16.pdf> at 1 November 2012.

⁹⁷ 'Antarctic Region', above n 5.

⁹⁸ IBRU <https://www.dur.ac.uk/ibru/resources/south_atlantic/> at 14 December 2012.

⁹⁹ *British Antarctic Territory Order in Council 1962* (26 February 1962), Statutory Instrument 1962 No. 400. The United Kingdom permanent Antarctic bases are Halley Research Station on the Brunt Ice Shelf, and Rothera Research Station on Adelaide Island, Council of Managers of National Antarctic Program (COMNAP) Scientific Committee on Antarctic Research <<https://www.comnap.aq/operations/facilities>> at 31 July 2009.

¹⁰⁰ Foreign & Commonwealth Office 'Queen Elizabeth Land' (Press Release, 18 December 2012) <<https://www.gov.uk/government/news/queen-elizabeth-land>> at 18 June 2013.

¹⁰¹ The United Kingdom stated the basis of sovereignty as follows:

The root of the United Kingdom's title to the islands and territories comprising the British Antarctic Territory lies in British acts of discovery between 1819 and 1843, accompanied by formal claims in the name of the British Crown. British sovereignty over these islands and territories was formally confirmed and defined by the Crown in Letters Patent in 1908 (as amended by further Letters Patent in 1917). Since then there has been in regard to the islands and territories now comprising the British Antarctic territory a continuous display of British sovereignty and activity appropriate to the circumstances.

Memorandum by the British Foreign and Commonwealth Office 10 November 1982, in Peter J Beck, 'Who owns Antarctica? Governing and Managing the Last Continent' (1994) 1(1) *IBRU Boundary and Territory Briefing* 44.

¹⁰² Christopher C Joyner, *Antarctica and the Law of the Sea* (Kluwer Academic Publishers, 1992) 48.

¹⁰³ British exploration of Antarctica included discovery of South Georgia by Anthony de la Roche in the vessel *Hamburg* in 1675, exploration and claim for the British crown to the islands for the British crown by Captain James Cook in *HMS Resolution* in 1778, discovery of the South Shetland Islands as the first lands south of 60° south by William Smith in the *Williams* in 1819, discovery and claim for the British crown of the South Orkney Islands in 1821, exploration of the Antarctic coast by Edward Bransfield in

Great Britain issued Letters Patent in relation to the Antarctic claim on 21 July, 1908.¹⁰⁴ Argentina and Chile did not object to the British claim at this time. The claim was updated by further Letters Patent in 1917.¹⁰⁵

The United Kingdom claim was subsequently contested by Argentina and Chile. In the Hope Bay incident on 1 February 1952, Argentine military personnel fired shots over the heads of British scientists and support staff reconstructing a British Antarctic base.¹⁰⁶ Although this was more likely a symbolic gesture than a naval dispute, it is nonetheless an incident involving the use of weapons to achieve an objective in Antarctica. The United Kingdom referred the dispute to adjudication at the ICJ in the *Antarctica* cases in 1947, 1948 and 1955 against Argentina and Chile.¹⁰⁷ Argentina declined to accept ICJ jurisdiction on each occasion, and the United Kingdom eventually withdrew the cases.

The United Kingdom claim should reasonably be considered much stronger than the overlapping Argentine and Chilean claims, due to the long history of British exploration and discovery, the much earlier declarations of state sovereignty, and by the mutual recognition by Norway, Australia, France, and New Zealand.

the *Williams* in 1820, circumnavigation of Antarctica by John Briscoe from the *Tula* in 1832, and circumnavigation of Antarctica by Captain James Clark Ross in 1841 to 1843 from HMS *Erebus*, including claim of Ross Island and all 'contagious lands' for the British crown. Later British exploration included the British National Antarctic Expedition led by Robert Falcon Scott from RRS *Discovery* in 1901 to 1904, the British Antarctic Expedition 1910 led by Scott from the *Terra Nova* in 1910, the Scottish National Antarctic Expedition led by William Bruce from the *Scotia* in 1903, the British Imperial Antarctic Expedition led by Ernest Shackleton in 1907 to 1909 from the *Nimrod*, and the Imperial Trans-Antarctic Expedition led by Shackleton in 1914 from the *Endurance*.

¹⁰⁴ British sovereignty was asserted over:

South Orkney, South Georgia and South Shetland Islands, and Graham Land situated in the South Atlantic Ocean to the south of the 50th parallel of south latitude and lying between the 20th and 80th degrees of west longitude

British Letters Patent appointing the Governor of the Colony of the Falkland Islands to be Governor of South Georgia, the South Orkneys, the South Shetlands, the Sandwich Islands, and Graham's Land, and providing for the Government thereof as Dependencies of the Colony.—Westminster, July 21, 1908, *Falkland Islands Gazette* (1 September 1908) and (1912) 101 *British and Foreign State Papers* (1907-08) 76.

¹⁰⁵ Letters Patent, passed under the Great Seal of the United Kingdom, providing for the further Definition and Administration of certain Islands and Territories as Dependencies of the Colony of the Falkland Islands. (28 March 1917), *Falkland Islands Gazette*, (2 July 1917) and (1921) 111 *British and Foreign State Papers*, 1917-18, 16.

¹⁰⁶ Beck, above n 40, 6.

¹⁰⁷ *Antarctica Case (United Kingdom v Argentina)* [1956] ICJ Rep 12; *Antarctica Case (United Kingdom v Chile)* [1956] ICJ Rep 15; ('*Antarctica cases*').

The United Kingdom notified the CLCS on 9 May 2008 that it was not making an OCS submission from the coast of the British Antarctic Territory, however it reserved the right to do so in the future.¹⁰⁸ The United Kingdom submission also did not include coordinates relating to a potential OCS extending from the Antarctic coast, similarly to the approach taken by New Zealand, whereas the Australian submission included such coordinates.

The United Kingdom made a submission in respect of an OCS for the Falkland Islands, South Georgia and the South Sandwich Islands on 11 May 2009. The coordinates for the South Sandwich Islands extended to an ocean area south of 60° south latitude, however the submission did not include 'areas of continental shelf appurtenant to Antarctica'.¹⁰⁹

The submission relating to the South Sandwich Islands is similar to the Australian submission to the CLCS and subsequent declaration claim of sovereignty. The United Kingdom position is consistent with the basis that Article 4 of the Antarctic Treaty relates to prohibiting new territorial claims, and that does not extend to declaration of maritime zones generated by Antarctic territory. The position is also consistent with prohibition applying to the Antarctic continent, and not maritime zones which extend into the Antarctic Treaty area. The United Kingdom may therefore be considered to have complied with the Antarctic Treaty by not making an OCS submission from the Antarctic coast but reserving the right to do so in the future.

Oil and Gas

As discussed, the Weddell Sea area has been identified as a potential source of oil and gas reserves (see Illustration 6–2).¹¹⁰

C. Argentina

¹⁰⁸ Foreign and Commonwealth Office, United Kingdom, Note No. 168/08 of 9 May 2008, <<http://www.fco.gov.uk/en/news/latest-news/?view=News&id=16346920>> at 15 February 2010.

¹⁰⁹ Submission to the Commission on the Limits of the Continental Shelf pursuant to Article 76 paragraph 8 of the United Nations Convention on the Law of the Sea 1982 in respect of the Falkland Islands, and of South Georgia and the South Sandwich Islands' on 11 May 2009, United Kingdom on 11 May 2009, at <http://www.un.org/Depts/los/clcs_new/submissions_files/submission_gbr_45_2009.htm> at 15 February 2010, and Note No. 168/08 of 9 May 2008.

¹¹⁰ Kingston, above n 77.

The Argentine Antarctic claim was first made on 12 November 1940 in response to the Chilean claim, and was between 25° west and 75° west in a sector extending to the South Pole and substantially overlapping the Chilean claim.¹¹¹ This claim was updated in November 1941 to between 25° west and 74° west, (see Illustrations 6–4,¹¹² and 6–5,¹¹³), in a sector extending to the South Pole.¹¹⁴

The Argentine claim is principally based on the succession to Spanish rights commencing with the papal bull *Inter Caetera* of 1493,¹¹⁵ together with continuous occupation, although this relates to a station on the South Orkney Island, rather than the Antarctic continent.¹¹⁶

The basis of the claim included the Treaty of Utrecht, which guaranteed Spanish possessions in the Americas against further British claims.¹¹⁷ Auburn noted that the Argentine claim is also based on the Antarctic Peninsula as an extension of the

¹¹¹ Argentine Note to Chile in response to the Notification of Chilean claims to Antarctica (12 November 1940).

¹¹² 'Antarctic Region', above n 6.

¹¹³ IBRU <https://www.dur.ac.uk/ibru/resources/south_atlantic/> at 14 December 2012.

¹¹⁴ Rothwell, above n 84, 58. The Argentine permanent Antarctic bases are Belgrano II in Coats Land, Esperanza Base at Hope Bay, Jubany Base on King George Island, Marambio Base on Seymour-Marambio Island, Orcadas Base on the Orcadas Islands, and San Martin Base on the Antarctic Peninsula, COMNAP Scientific Committee on Antarctic Research <<https://www.comnap.aq/operations/facilities>> at 31 July 2009.

¹¹⁵ Argentine Government Note to the United Nations, 31 July 1984, stated as follows:

The unselfish sacrifice and undaunted efforts of Argentines made it possible effectively to establish Argentine Antarctica as an inseparable part of the national territory... Fifteenth century Spain considered the Antarctic territories as its own... By virtue of the general principles governing the succession of states, the polar regions became part of the United Provinces of Rio de la Plata, now Argentina, which throughout its independent existence as a nation has enjoyed and improved on the rightful inheritance of its forebears... The Argentine Republic has (by 1984) for more than 80 years continuously and effectively occupied its Antarctic territory... Geographical proximity is one more element which contributes to the exercise of Antarctic sovereignty by the Republic... Geological continuity can be mentioned as an additional basis for the link between the South American part of Argentina and Antarctica.

¹¹⁶ Robert N Rudmose-Brown, Political claims in the Antarctic (1947) *World Affairs*, Oct. 397, cited in cited in Wilson, above n 88, 20, as follows:

Continuous occupation over any length of time in the Antarctic regions could be claimed only by Argentina who since 1904 has maintained a meteorological observatory at the South Orkney Islands and has recently founded another on the west side of Graham Land. . . . No state has the right to claim sovereignty over land which it cannot administer and that argument can be used against all sovereign claims in Antarctica.

¹¹⁷ The French established the first settlement at Berkeley Sound in 1764. Britain founded a settlement at Port Egmont in 1766. Spain acquired the French settlement in 1767, and expelled the British residents in 1770. British residents returned following the Exchange of Declarations in 1771. Britain and Spain later abandoned the settlements, leaving plaques asserting their respective sovereignty. The merchant Luis Vernet established a settlement in 1828 with approval from both Britain and Argentina. Argentina sent a military garrison in 1832. Britain sent forces to remove the Argentine garrison in 1833 and established a colony in 1840. Argentina invaded the islands in 1982, and the United Kingdom recovered the islands on 14 June 1982.

Argentine continental shelf.¹¹⁸ The Argentine claim in 1940 does not appear to have effectively displaced the prior 1908 United Kingdom claim.

Argentina ratified LOSC on 1 December 1995, and made an OCS submission to the CLCS including the Southern Ocean in the area of the ATS on 21 April 2009.¹¹⁹ The Antarctic OCS was part of the Argentine OCS submission to the CLCS, which included the continental shelf extending from the Falklands (Malvinas) and from the Argentine Antarctic claim (see Illustration 6–9).¹²⁰

The OCS claim extended beyond 200 nautical miles, and so goes beyond any continental shelf rights that may have applied under customary international law prior to the Antarctic Treaty coming into force in 1961. Argentina's OCS submission did not request the CLCS to reserve findings in relation to the Antarctic Treaty area. The submission itself is likely not a claim under the Antarctic Treaty, however a future proclamation of an OCS may constitute a breach of Article 4(2) of the Antarctic Treaty where that proclamation is considered a new assertion of sovereignty. As discussed above, the Argentine position is consistent with the basis that Article 4 relates to prohibiting new territorial claims, and that does not extend to the declaration of maritime zones generated by Antarctic territory. The position is not however consistent with the position that the prohibition applies to maritime zones which extend into the Antarctic Treaty area.

The CLCS may decline to make a recommendation on the Argentine OCS claim from the Antarctic coast, due to the presence of a dispute arising from the overlapping claims of Chile and the United Kingdom. The CLCS may, however, address this issue by a reservation that its recommendations are made without prejudice to any territorial dispute. The responses to Argentina's submission, including the United States, Russia, India, Japan and the Netherlands, were that they did not recognise claims to a continental shelf in Antarctica.¹²¹ The United Kingdom, for example, advised the CLCS

¹¹⁸ Auburn, above n 85, 49.

¹¹⁹ Outer Limits of the Continental Shelf – Argentine Submission, <http://www.un.org/Depts/los/clcs_new/commission_submissions.htm> at 9 January 2013.

¹²⁰ Ibid 24.

¹²¹ Commission on the Limits of the Continental Shelf, 'Communications received with regard to the submission made by Argentina to the Commission on the Limits of the Continental Shelf, <http://www.un.org/depts/los/clcs_new/submissions_files/submission_arg_25_2009.htm> at 26 August 2015.

in 2009 and 2012 that it expected the CLCS not to take any action on that part of the Argentine submission.¹²²

Oil and Gas

As discussed, the Weddell Sea area has been identified as a potential source of oil and gas reserves (see Illustration 6–2).¹²³

D. Norway

The Norwegian Dronning Maud Land extends from 20° west to 45° east.¹²⁴ The southern extent of the claim is not specified, although it may be understood to extend to the South Pole.¹²⁵ The northern boundary extending into the Southern Ocean is also not declared. This can be contrasted to the claims of the United Kingdom, Australia, New Zealand, Chile and Argentina, which all extend on a sector basis to the South Pole (see illustration 6–1).¹²⁶

Norwegian sovereignty is primarily based on exploration, including the expedition led by Roald Amundsen in 1911 from the vessel *Fram*, as the first expedition to reach the South Pole.¹²⁷ Norway's first territorial claim in the Southern Ocean region was made in respect of Bouvet Island in 1927, north of the Antarctic Treaty region.¹²⁸ The Antarctic Plateau was claimed for Norway in 1911 by Amundsen, however the claim was not supported at that time by the Norwegian government. The expedition of the *Norvegia* by Hjalmar Riiser-Larsen, was empowered by decree in 1927 to claim 'all land which had not previously come under the dominion of other powers.' Peter I Island was

¹²² Commission on the Limits of the Continental Shelf, 'Communications received with regard to the submission made by Argentina to the Commission on the Limits of the Continental Shelf', United Kingdom, Notes 84/09 and 273/12 to the Secretary General of the United Nations, <http://www.un.org/Depts/los/clcs_new/submissions_files/submission_arg_25_2009.htm> at 15 February 2013.

¹²³ Kingston, above n 77.

¹²⁴ The Norwegian permanent is Troll Station, COMNAP Scientific Committee on Antarctic Research <<https://www.comnap.aq/operations/facilities>> at 31 July 2009.

¹²⁵ The absence of a southern limit at the South Pole may have been due to Norwegian reluctance in 1939 to support a potential Canadian sector claim extending to the North Pole.

¹²⁶ 'Antarctic Region', above n 6.

¹²⁷ Norway stated the basis of sovereignty as follows:

Norway's right to bring the said unclaimed land under her dominion is founded on the geographical exploration work done by Norwegians in this region, in which work they have been alone.

Norwegian Royal Decree, 14 January 1939.

¹²⁸ Day, above n 74, 208.

claimed in February 1929 and annexed by royal decree in 1931, and Enderby Land was claimed in December 1929.¹²⁹ These explorations were the primary basis for the Norwegian claims, together with the need to secure access to the region for whaling. Dronning Maud Land was annexed by royal decree in 1939, as the land bordering the Falkland Islands Dependencies in the west and the AAT in the east.

Norway lodged an OCS submission to the CLCS in respect of Dronning Maud Land on 27 March 2009. Norway requested the CLCS not to take any action with respect to the Antarctic submission in view of the Antarctic Treaty.¹³⁰ The submission included the OCS of Bouvet Island which was outside the Antarctic Treaty area.

E. Australia – Australian Antarctic Territory – Western Sector

The western sector of the Australian Antarctic Territory (AAT) extends from 45° east to 136° east, extending in a sector to the South Pole (see Illustrations 6–1,¹³¹ and 6–7).¹³² Australian sovereignty is based on the doctrine of the acquisition of sovereignty over *terra nullius* through discovery and effective occupation, including discovery and expeditions by Great Britain, Australian expeditions led by Douglas Mawson,¹³³ and subsequent acts of occupation, administration and control.¹³⁴

The British government asserted sovereignty over Antarctic territory south of 60° south and between 160° east and 45° east, other than Adelie Land, and placed this territory under the authority of Australia, by an Order in Council of 7 February 1933.¹³⁵ The

¹²⁹ Ibid 245. The Expedition proceeded in a westerly direction in 1930, including the discovery and naming of Dronning Maud Land.

¹³⁰ Continental Shelf Submission of Norway in respect of Bouvetøya and Dronning Maud Land, 4 May 2009 <http://www.un.org/Depts/los/clcs_new/submissions_files/nor30_09/nor2009_executivesummary.pdf> at 27 July 2009.

¹³¹ 'Antarctic Region', above n 6.

¹³² Kaye, above n 78, 169. The Australian permanent Antarctic bases are Mawson Station at Mac Robertson Land, Davis Station at Princess Elizabeth Land, and Casey Station on Vincennes Bay.

¹³³ Day, above n 74, 248. The expeditions were the Australasian Antarctic Expedition led Douglas Mawson from 1911 and 1914 from the vessel *Aurora*, and the British, Australian and New Zealand Antarctic Research Expedition led by Mawson from 1929 to 1931, which included a claim on behalf of the British Crown to the Antarctic Enderby, Kemp, and MacRobertson Lands in January 1930.

¹³⁴ Australian government note to the United Nations, 31 July 1984. The Australian government note stated:

Australia's claim to sovereignty over the Australian Antarctic Territory (AAT) is based on acts of discovery and exploration by British and Australian navigators going back to the time of Captain Cook, and subsequent continuous occupation, administration and control.

¹³⁵ Order in Council 'Australian Antarctic Territory', republished in the Commonwealth of Australia Gazette 16 March 1933, <<http://www.antarctica.gov.au/about-antarctica/history/exploration-and-expeditions/the-australian-antarctic-territory>> at 13 February 2013.

transfer was confirmed by the Australian government in the *Australian Antarctic Territory Acceptance Act* in 1933.¹³⁶

Gillian Triggs analysed the basis of the Australian Antarctic claim, and the arguments that, due to climate conditions, Antarctica is presently incapable of effective occupation, and that scientific stations do not represent effective occupation. Triggs however argued that state practice has been that Antarctica is subject to sovereignty claims.¹³⁷ On this basis, Australian legislative and administrative activities have consolidated Australia's claim by demonstrating its intent and will to act as sovereign.¹³⁸ This includes in particular the *Australian Antarctic Territory Act 1954*,¹³⁹ which provides a comprehensive body of laws which are in force in the area of the Australian claim. Ordinances in force in the AAT such as the *Crimes Ordinance 1951*,¹⁴⁰ and *Mining Ordinance 1930*,¹⁴¹ have not been applied in practice, and legislation such as the *Fisheries Act 1952*,¹⁴² only regulated activities of Australian nationals. There has been some development since that publication to widen Australian jurisdiction, however, specifically the *Environment Protection and Biodiversity Conservation Act 1999*,¹⁴³ which applies to nationals of other states within the Australian EEZ and continental shelf.¹⁴⁴

Australian administrative acts include the appointment of coroners and justices of the peace, the regulation of scientific research, the maintenance of Mawson, Davis and Casey bases, and the development of transport and communications. Although these administrative activities may be regarded as minor, Triggs argued that the *Eastern Greenland case*¹⁴⁵ suggests that no more is required to establish sovereignty in such an isolated area.

OCS Submission

¹³⁶ *Australian Antarctic Territory Acceptance Act 1933* (Cth).

¹³⁷ Gillian Triggs, *International Law and Australian Sovereignty in Antarctica* (Legal Books, 1986) 82.

¹³⁸ *Ibid* 261.

¹³⁹ *Australian Antarctic Territory Act 1954* (Cth).

¹⁴⁰ *Crimes Ordinance 1951* (Cth).

¹⁴¹ *Mining Ordinance 1930* (Cth).

¹⁴² *Fisheries Act 1952* (Cth).

¹⁴³ *Environment Protection and Biodiversity Conservation Act 1999* (Cth).

¹⁴⁴ *Ibid* s 5(3). The definition of continental shelf refers to the *Seas and Submerged Land Act 1973* (Cth), which in turn refers to LOSC article 76(1), and the term therefore includes the Australian OCS.

¹⁴⁵ *Legal Status of Eastern Greenland (Norway v. Denmark)* [1933] P.C.I.J. Ser. A/B, No. 53, 71.

Australia made an OCS submission to the CLCS on 15 November 2004, which included geographical data which would relate to an OCS from the coast of Antarctica,¹⁴⁶ (see Illustration 6–10).¹⁴⁷ The Australian submission included a diplomatic note addressed to the Secretary-General of the United Nations requesting the Commission “not to take any action for the time being” on that part of the submission relating to the region of the AAT.¹⁴⁸

Issues relating to submissions to the CLCS include the availability of appropriate data, and the scientific and legal expertise to prepare the submission.¹⁴⁹ The original requirement was to make the submission within ten years of Australia’s accession to LOSC, i.e. by 16 November 2004. The date for submission was amended to 13 May 2009 by state parties to LOSC. Serdy commented that Australian sovereignty over Antarctic territory is recognised by France, New Zealand, Norway, and the United Kingdom.¹⁵⁰

The Australian submission to the CLCS included Heard Island and Macquarie Islands, and extended south of 60° south latitude, into the area subject to the Antarctic Treaty. The related Australian diplomatic note defers consideration of this part of Australia's OCS claim due to the Antarctic Treaty.¹⁵¹

The CLCS recommendation made in 2008 in respect of the Australian OCS submission relating to Heard Island and Macquarie Islands,¹⁵² which extended into the Antarctic treaty area, was stated to be without prejudice to Australia's treaty obligations, which would include the Antarctic Treaty, and were also made without prejudice to any subsequent delimitation between Australia and France in relation to the French

¹⁴⁶ Australian submission through the Secretary-General to the Commission on the Limits of the Continental Shelf, pursuant to article 76, paragraph 8, of the Convention, 15 November 2004 <http://www.un.org/Depts/los/clcs_new/submissions_files/aus04/Documents/aus_doc_es_web_delivery.pdf> at 18 February 2010.

¹⁴⁷ 'Continental Shelf Submission of Australia – Executive Summary'

<http://www.un.org/Depts/los/clcs_new/commission_submissions.htm> at 9 January 2013.

¹⁴⁸ Julia Jabour, 'The Australian Continental Shelf: Has Australia's High-Latitude Diplomacy Paid Off?' *Marine Policy* 33 (2009) 429.

¹⁴⁹ Andrew Serdy, 'Towards Certainty of Seabed Jurisdiction beyond 200 Nautical Miles from the Territorial Sea Baseline: Australia's Submission to the Commission on the Limits of the Continental Shelf' (2005) 36 *Ocean Development and International Law* 201.

¹⁵⁰ The Australian diplomatic note also referred to the desirability of keeping the Antarctic Treaty system and the LOSC regime of the law of the sea in harmony. This issue may also refer to resolution of the undelimited boundaries in the Antarctic with Norway, New Zealand, and France.

¹⁵¹ *Antarctic Treaty* art 4.

¹⁵² The region was referred to in the Australian submission and the CLCS recommendation as the Kerguelen Plateau Region.

Kerguelen Islands.¹⁵³ France had advised the CLCS considering Australia's submission that it had no objection to the CLCS, providing the recommendation was without prejudice to France's Kerguelen OCS.¹⁵⁴

There was also an issue whether these islands generate an OCS as they are uninhabited, however the basis of the OCS included Australian fishing activities in the related areas.¹⁵⁵ LOSC provides that islands not capable of sustaining human habitation or an economic life of their own are not entitled to a continental shelf.¹⁵⁶

The Australian declaration of an OCS in respect of Heard Island and Macquarie Islands, extending into the Antarctic Treaty area was made on 24 May 2012.¹⁵⁷ The declaration may potentially be considered to be the assertion of a right in relation to the Antarctic Treaty. The Australian position is, however, consistent with the prohibition applying to the Antarctic continent, and not maritime zones which extend into the Antarctic Treaty area.

The Australian position in the OCS submission is therefore arguably consistent with the basis that Article 4 of the Antarctic Treaty relates to prohibiting new territorial claims by not making a submission for an OCS from the Antarctic coast, however Australia has also taken the position that this prohibition does not extend to declaration of maritime zones generated by Antarctic territory, or related administrative actions such as the declaration of the Australian Whale Sanctuary.¹⁵⁸

¹⁵³ 'Summary of the Recommendations of the Commission on the Limits of the Continental Shelf (CLCS) in Regard to the Submission made by Australia on 15 November 2004' 1 <http://www.un.org/Depts/los/clcs_new/submissions_files/aus04/Documents/aus_doc_es_web_delivery.pdf> at 30 November 2012.

¹⁵⁴ Ibid 1 and 15. France and Australia agreed a partial maritime boundary between the Australian Heard Island and MacDonal Island and the French Kerguelen Islands, however that boundary does not extend to the entire OCS area. The Marine Delimitation Treaty between Australia and France does not fully delimit the maritime boundary to its potential extensions in the Southern Ocean, *Agreement on Marine Delimitation between the Government of Australia and the Government of the French Republic, opened for signature 4 January 1982*, 1329 UNTS 107 (entered into force 10 January 1983) The OCS claims of France and Australia did not however overlap, Australian Government, 'Kerguelen Plateau', <<http://www.ga.gov.au/energy/province-sedimentary-basin-geology/petroleum/offshore-southern-australia/kerguelen-plateau.html>> at 21 December 2012, and 'France's new ECS submission', Geopolitical Boundaries, <<http://geoboundaries.wordpress.com/2009/02/06/frances-new-ecs-submission/>> at 21 December 2012.

¹⁵⁵ Donald R Rothwell, 'Issues and Strategies for Outer Continental Shelf Claims' (2008). 23 (2008) *International Journal of Marine and Coastal Law* 185, 208.

¹⁵⁶ LOSC art 121.

¹⁵⁷ *Seas and Submerged Lands (Limits of Continental Shelf) Proclamation 2012* <<http://www.comlaw.gov.au/Details/F2012L01081/Explanatory%20Statement/Text>> at 9 November 2012.

¹⁵⁸ *Environment Protection and Biodiversity Conservation Act 1999* (Cth) s 225.

Alan D Hemmings and Tim Stephens commented that Australia's claim to an AAT continental shelf dates from 1953, prior to the Antarctic Treaty. On this basis it could be argued that an AAT OCS would not be a new claim or an enlargement of an existing claim, and was therefore 'an additional area of shelf accrued by virtue of developments in the law of the sea.'¹⁵⁹

EEZ Declaration

Australia declared an EEZ adjacent to the Australian Antarctic Territory coast in 1994.¹⁶⁰ The LOSC EEZ regimes entered into force in 1994,¹⁶¹ after the entry into force of the Antarctic Treaty in 1961.¹⁶² It may be argued that the declaration of the EEZ may be considered to be a new claim contrary to Article 4 of the Antarctic Treaty. This may apply particularly as there was no Australian EEZ regime prior to Australian ratification of the Antarctic Treaty. Churchill and Lowe commented specifically that the Australian EEZ declaration was made 'notwithstanding the prohibition' in Article 4.¹⁶³

The EEZ declaration may have been generally consistent with Australia's rights over resources of an area of the seabed beyond the external limit of the territorial sea under the continental shelf regime of the Convention on the Continental Shelf,¹⁶⁴ however that Convention entered into force in 1964, also after the entry into force of the Antarctic Treaty.¹⁶⁵ The EEZ declaration did not include any reservation making the claim subject to Australia's obligations under the Antarctic Treaty, as contained in the Australian submission to the CLCS.¹⁶⁶ The status of the EEZ declaration under the Antarctic Treaty is therefore less clear, as the EEZ does extend from the Antarctic coast.

Oil and Gas

¹⁵⁹ Alan D Hemmings and Tim Stephens, 'Australia's Extended Continental Shelf: What Implications for Antarctica?' (1990) 20(1) *Public Law Review*, 9, 12.

¹⁶⁰ *Maritime Legislation Amendment Act 1994* (Cth) s 10, amended the *Seas and Submerged Lands Act 1973* to insert a new Division 1A to establish an Australia's EEZ jurisdiction relating to Australian territories.

¹⁶¹ This issue concerns whether an EEZ exists as an inherent right. The better view is likely to be that the EEZ itself is not an inherent right unless declared under the related terms in LOSC.

¹⁶² The EEZ claim may potentially be considered as a confirmation of a pre-existing right to declare an EEZ, rather than a new territorial claim.

¹⁶³ RR Churchill and AV Lowe, *The Law of the Sea* (Manchester University Press, 3rd ed, 1999) 165.

¹⁶⁴ *Convention on the Continental Shelf* opened for signature 29 April 1958, 499 UNTS 311 (entered into force 10 June 1964)

¹⁶⁵ The right to a continental shelf may therefore, potentially, exist prior to the entry into force of LOSC.

¹⁶⁶ Julia Jabour, above n 148, 431.

The Australian Antarctic Division released a summary of potential Antarctic mining including discussion of potential oil and gas resources.¹⁶⁷ The report specifically noted the currently high estimated costs of Antarctic oil, and the developing potential of much cheaper alternatives such as shale gas in other regions of the world.¹⁶⁸

Prydz Bay is an area of interest for potential oil and gas resources (see Illustration 6–2).¹⁶⁹ Prydz Bay lies in the AAT adjacent to the Amery Ice Shelf near Davis Station. The drilling ship *JOIDES Resolution* under the auspices of the International Ocean Drilling Program, with participation by Australian scientists, conducted offshore drilling in Prydz Bay in 1988, and identified sedimentary basins with hydrocarbon traces.¹⁷⁰

F. France – Adélie Land

The French Adélie Land extends from 136° east to 142° east, extending in a sector to the South Pole, and is bordered on both landward sides by the Australian AAT (see Illustrations 6–1,¹⁷¹ and 6–7).¹⁷² French sovereignty is based on several actions,¹⁷³ including discovery by Yves-Joseph de Kerguelen-Trémarec, Jules Dumont d'Urville, and Jean-Baptiste Charcot, together with a declaration by the French government to the British government in 1912, a proclamation placing Adélie Land under the administration of Governor General of Madagascar in 1924, and a declaration of sovereignty in 1938.¹⁷⁴

¹⁶⁷ 'Mining', Australian Antarctic Division, <<http://www.antarctica.gov.au/about-antarctica/fact-files/geology/mining>> at 24 August 2012.

¹⁶⁸ *Ibid.* The AAT state:

It has been estimated by reliable authorities that oil would have to cost well over US\$200 per barrel (42 US gallons, 35 imperial gallons or 160 litres) were it to be found in viable quantities ... Oil shale is becoming economically viable and opens up a vast potential resource that is much cheaper than Antarctic hydrocarbons.

¹⁶⁹ Kingston, above n 77. Traces of hydrocarbons were also detected in the Weddell Sea by the drilling vessel *JOIDES Resolution* in 1987. Keith A. Kvenvolden, Frances D. Hostettler and Tamara J. Frank, 'Hydrocarbons In Sediment Of The Weddell Sea, Antarctica' in P. R. Barker, J. P. Kennett, et al (1990) 1 *Proceedings of the Ocean Drilling Program, Scientific Results* 199, <http://www-odp.tamu.edu/publications/113_SR/VOLUME/CHAPTERS/sr113_16.pdf> at 1 November 2012.

¹⁷⁰ P E O'Brien, A K Cooper, C Richter et al, (2001) 188 *Proceedings of the Ocean Drilling Program, Initial Reports* 60 <http://www-odp.tamu.edu/publications/188_IR/VOLUME/CHAPTERS/IR188_01.PDF> at 1 November 2012.

¹⁷¹ 'Antarctic Region', above n 7.

¹⁷² Kaye, above n 78, 169. The French permanent Antarctic bases are Concordia station maintained together with Italy on the Antarctic plateau, and Dumont d'Urville Station on Adélie Land, COMNAP Scientific Committee on Antarctic Research <<https://www.comnap.aq/operations/facilities>> at 31 July 2009.

¹⁷³ Day, above n 75, 185.

¹⁷⁴ The French decree was as follows:

France made a submission in respect of the French Antilles and Kerguelen Islands on 5 February 2009. France did not submit information in relation to the coast of Antarctica in the submission, but submitted a formal reservation indicating that a submission may be made in the future.¹⁷⁵ A partial submission was made in respect of the St Paul and Amsterdam Islands in the Indian Ocean which are part of the *Territoire des Terres australes et antarctiques françaises*, (Territory of the French Southern and Antarctic Lands) on 8 May 2009.¹⁷⁶

G. Australia – Australian Antarctic Territory – Eastern Sector

The eastern sector of the AAT extends from the boundary with France at 142° east to the boundary of the New Zealand Ross Dependency at 160° east, extending in a sector to the South Pole (see Illustration 6–1,¹⁷⁷ and 6–6,¹⁷⁸). As discussed above, Australia's OCS submission in 2004 included a diplomatic note addressed to the Secretary-General of the United Nations requesting the Commission “not to take any action for the time being” on that part of the submission relating to the region of the Australian Antarctic Territory.¹⁷⁹

H. New Zealand – Ross Dependency

Sovereignty over Adélie Land, discovered in 1840 by Dumont d’Urville...explored by Charcot, crossed in recent years by the French polar expeditions, rests on solid foundations. The French government is proud, in addition to having indisputable historical claims, to be able to rely on a permanent occupation.

French Government Decree, 1 April 1938.

¹⁷⁵Partial Submission to the Commission on the Limits of the Continental Shelf pursuant to Article 78 paragraph 8 of the United Nations Convention on the Law of the Sea in respect of the French Antilles and Kerguelen Islands, France,

http://www.un.org/Depts/los/clcs_new/submissions_files/fra09/fra_executivesummary_2009.pdf> on 27 July 2009.

¹⁷⁶Partial Submission to the Commission on the limits of the Continental Shelf pursuant to Article 78 paragraph 8 of the United Nations Convention on the Law of the Sea in respect of La Réunion and Saint-Paul and Amsterdam Islands, France,

http://www.un.org/Depts/los/clcs_new/submissions_files/fra40_09/fra2009executivesummary.pdf> on 27 July 2009.

¹⁷⁷ 'Antarctic Region', above n 7.

¹⁷⁸ Kaye, above n 78, 169. There are no permanent Australian bases in the Eastern sector.

¹⁷⁹ Australian submission through the Secretary-General to the Commission on the Limits of the Continental Shelf, pursuant to article 76, paragraph 8, of the Convention, 15 November 2004 <http://www.un.org/Depts/los/clcs_new/submissions_files/aus04/Documents/aus_doc_es_web_delivery.pdf> at 18 February 2010.

The New Zealand Ross Dependency extends from 160° east to 150° west, extending in a sector to the South Pole (see Illustrations 6– 1,¹⁸⁰ and 6– 7).¹⁸¹ New Zealand sovereignty is based on discovery by James Clark Ross in 1841, Robert Falcon Scott from 1901 to 1904, and Ernest Shackleton from 1907 to 1909. Great Britain transferred its right of sovereignty under the Order in Council providing for the Government of the Ross Dependency 30 July 1923.¹⁸² New Zealand has carried out subsequent exploration, and acts of occupation from Scott Base from 1957.¹⁸³

New Zealand lodged an OCS submission with the CLCS in 2006. New Zealand reserved its position in respect of the Antarctic and the Southern Ocean in a Note to the United Nations relating to its submission to the CLCS.¹⁸⁴ The New Zealand submission, unlike the Australian submission, did not include geographical coordinates for a potential OCS relating to the Antarctic coast.¹⁸⁵ New Zealand may potentially make a future claim subject to the issue of the expiry of the CLCS time limitation.¹⁸⁶

Oil and Gas

¹⁸⁰ 'Antarctic Region', above n 7.

¹⁸¹ Kaye, above n 78, 169. The New Zealand permanent Antarctic base is Scott Base on Ross Island, COMNAP Scientific Committee on Antarctic Research <<https://www.comnap.aq/operations/facilities>> at 31 July 2009.

¹⁸² Order in Council providing for the Government of the Ross Dependency 30 July 1923, reprinted in the New Zealand Government Gazette, 1923, 1 and Memorandum by the New Zealand Department of External Affairs, Ross Dependency, 21 February 1947.

¹⁸³ The basis of the claim was described by the New Zealand government as follows

New Zealand's claim to the Ross Dependency rests on... discovery by a British explorer (i.e. Ross), certain Government actions connected with territorial rights in the Ross Sea area (e.g. issue of postage stamps)...annexation – Order in Council of 1923, subsequent exploration, certain acts of occupation upon the assumption of sovereignty...Since 1957...Scott Base has been continuously occupied

New Zealand Government Note to the United Nations, Ross Dependency, 6 July 1984.

¹⁸⁴ Note from the Permanent Mission of New Zealand to the Secretary-General of the United Nations accompanying the lodgement of New Zealand's submission, NZ-CLCS-TPN-02, 19 April 2006, <http://www.un.org/Depts/los/clcs_new/submissions_files/nzl06/nzl_doc_es_attachment.pdf> at 9 January 2013.

¹⁸⁵ New Zealand submission through the Secretary-General to the Commission on the Limits of the Continental Shelf, pursuant to article 76, paragraph 8, of the Convention, 19 April 2006 <http://www.un.org/Depts/los/clcs_new/submissions_files/nzl06/nzl_exec_sum.pdf> at 18 February 2010.

¹⁸⁶ New Zealand submission through the Secretary-General to the Commission on the Limits of the Continental Shelf, pursuant to article 76, paragraph 8, of the Convention, 19 April 2006, <http://www.un.org/Depts/los/clcs_new/submissions_files/nzl06/nzl_exec_sum.pdf> at 18 February 2010.

The Ross Sea is an area of interest for potential oil and gas resources (see Illustration 6–2).¹⁸⁷ Traces of hydrocarbons were detected by the drilling ship *Glomar Challenger* in 1972.¹⁸⁸

I. Unclaimed Sector – Marie Byrd Land

The Unclaimed Sector (Marie Byrd Land) extends from the edge of the New Zealand Ross Dependency at 150° west to 90° west at the commencement of the Chilean Antarctic claim, and extending in a sector to the South Pole (see Illustrations 6–1,¹⁸⁹ and 6–7,¹⁹⁰). The Unclaimed Sector is particularly interesting as UNCLOS III did not deal with Antarctica, and LOSC contains the underlying assumption that all land territory is possessed by a coastal state.¹⁹¹ The Unclaimed Sector should be considered *terra nullius*. Kaye commented that it is therefore not clear whether territory considered *terra nullius* can generate maritime zones. The LOSC continental shelf regime, unlike the EEZ regime, does not require state declaration, apart from the process of applying to the CLCS to determine the extent of the OCS. On this basis there is an issue whether the Unclaimed Sector could potentially generate a 'shadow' maritime zone. The definition in Article 76 is based on the essential premise of a 'coastal state', and it is difficult to maintain that there would be such a continental shelf jurisdiction without a coastal state. Kaye considered that, apart from this issue, the shallow waters adjacent to the Unclaimed Sector could potentially generate a continental shelf to the general OCS limit of 350 nautical miles from the coast.

The United States had a significant interest in this region prior to the Antarctic Treaty. Joyner and Theis have observed that the United States has not asserted sovereignty over the Unclaimed Sector, however it has also been careful 'not to surrender any of its rights to Antarctic territory, which have been symbolically upheld through continuous occupation of a station at the geographic South Pole.'¹⁹²

¹⁸⁷ Kingston, above n 77. Traces of hydrocarbons were also detected in the Weddell Sea by the drilling vessel JOIDES Resolution in 1987. Keith A Kvenvolden, Frances D Hostettler and Tamara J Frank, 'Hydrocarbons In Sediment Of The Weddell Sea, Antarctica' in P. R Barker, J. P. Kennett, et al (1990) 1 *Proceedings of the Ocean Drilling Program, Scientific Results* 199, <http://www-odp.tamu.edu/publications/113_SR/VOLUME/CHAPTERS/sr113_16.pdf> at 1 November 2012.

¹⁸⁸ Richard D McIver 'Hydrocarbon Gases In Canned Core Samples From Leg 28 Sites 271, 272, and 273, Ross Sea' in Ansis G Kaneps (ed), (1975) 28 *Initial Reports of the Deep Sea Drilling Project* 815 at <http://www.deepseadrilling.org/28/volume/dsdp28_28.pdf> at 1 November 2012.

¹⁸⁹ 'Antarctic Region', above n 7.

¹⁹⁰ Kaye, above n 78, 169.

¹⁹¹ Kaye, above n 69, 131.

¹⁹² Joyner and Theis, above n 79, 40.

J. The Area

The Area regime under Part XI LOSC was analysed in Chapter IV. The regime should apply to areas south of 60° south in the Antarctic Treaty area, beyond the potential OCS claims of states which claim sovereignty over parts of the Antarctic continent. The Southern Ocean region potentially subject to the Area regime was illustrated by ISBA (see Illustration 6–3).¹⁹³ The Area regime may potentially be significantly larger if OCS jurisdictions of Antarctic claimant states are not accepted by a significant number of other states. The potential conflict of these regimes, and a potential JDZ solution, are analysed in Chapter VIII.¹⁹⁴

The Environmental Protocol extends to the same area as the Antarctic Treaty, which applies to the extent south of 60° south, but so as not to prejudice rights of states under the high seas.¹⁹⁵ The Environmental Protocol therefore seeks to include regulating activities in the high seas subject to the Area regime under LOSC Part XI to the extent south of 60° south.¹⁹⁶ All Antarctic Treaty consultative members have ratified the Environmental Protocol. There may be an issue of states seeking to conduct oil and gas activities prior to 2048, either as states which have not signed or ratified the Antarctic Treaty, or states which have ratified the Antarctic Treaty but not the Environmental Protocol.

Rothwell commented that by adopting the same area of application as the Antarctic Treaty, the Protocol seeks to regulate all mineral resource activities that may take place in the deep seabed within the Antarctic Treaty area, and this was an indicator that the Antarctic Treaty parties do not believe there is any scope for the application of the deep seabed minerals regime in Antarctic waters.¹⁹⁷ The international acceptance of this position should be reinforced by the additional ratifications of the Environmental Protocol.

¹⁹³ 'Non-Living Resources of the Continental Shelf Beyond 200 Nautical Miles: Speculations on the Implementation of Article 82 of The United Nations Convention on the Law of the Sea,' ISA Technical Study No. 5, <www.isa.org.jm/files/documents/EN/Pubs/TechStudy5.pdf> at 12 February 2013, 21.

¹⁹⁴ The CRAMRA proposals applied to offshore areas up to the deep seabed, defined as the seabed and subsoil beyond the geographic extent of the continental shelf, CRAMRA art 5(3). Rothwell commented that it could also be inferred that limitations on environmental impact should apply in the Area. Rothwell, above n 84, 284.

¹⁹⁵ *Antarctic Treaty* art 6.

¹⁹⁶ *Ibid.*

¹⁹⁷ Rothwell, above n 84, 284.

The Antarctic Treaty regime would be likely to always have superior expertise in relation to the Southern Ocean than ISBA, and the integration of oil and gas or other mineral resources development should be undertaken under the auspices of the ATS. The application of an ISBA regime in the Southern Ocean could also, potentially, erode the authority of the Antarctic Treaty regime.

A related concern with the potential Area regime in the Southern Ocean is whether international supervision of oil and gas activities by ISBA would be effective, particularly enforcement of environmental protection provisions. The current framework for protection of the environment is analysed in Chapter VIII, however the specific issue relating to the Area concerns the absence of a coastal state which may have primary responsibility for environmental protection. The current Part XI regime of the Area was developed with regard to resources such as sea-floor poly-metallic nodules, as discussed in Chapter II, rather than offshore oil and gas reserves at extreme water depths. This may become a significant issue if oil and gas technology advances to allow drilling in the high seas beyond the continental shelf.¹⁹⁸

For these reasons, it is proposed that a specific Southern Ocean regime under the auspices of the Antarctic Treaty should apply for oil and gas activities in the Area, rather than the LOSC Area regime, to the extent they are conducted south of 60° south, on a basis of a treaty structure within the ATS similar to the treaty structure of the CRAMRA proposals. This issue is analysed in Chapter VIII.

8. Potential Southern Ocean Boundary Delimitations

A. Chile/Unclaimed Sector – Ellsworth Land

The potential maritime boundary between Chile and the Unclaimed Sector (Marie Byrd Land) extends from the coast of Ellsworth Land at 90° west into the Bellingshausen Sea

¹⁹⁸ The issues include the higher oil and gas pressures at greater ocean depths, together with difficulties of access to attempt to controlling an existing leak, and consequently there is a greater risk of significant oil spills. Oil and gas development in the Area occurring south of 60° south, and outside the continental shelf and OCS of states, should also, as a priority, include measures imposing financial liability for damage to the environment, requirements for sufficient financial support based on a consortium of large oil and gas companies, and external audit of compliance with environmental standards.

(see Illustrations 6–1,¹⁹⁹ and 6–8,²⁰⁰). There are special circumstances in this region, as the Unclaimed Sector may continue to have no claimants, or may be claimed by a state at a future date in the event of a challenge to the Antarctic Treaty and its suspension of sovereignty claims. The boundary of the Chile claim is therefore quite unusual as there may never be a state claiming Antarctic territory at this boundary.

There are few geographical features claimed by Chile, or features which are unclaimed, that may potentially cause a future maritime boundary dispute. The Fletcher Peninsula lies on the side claimed by Chile, however this feature does not extend significantly out to the ocean. There are small ice shelves which could marginally affect an agreed boundary, but these features do not extend more than about 40 miles from the coast.

Peter 1 Island is claimed by Norway, and is located about 280 nautical miles from the coast of the Unclaimed Sector.²⁰¹ The island may significantly affect a Chilean maritime boundary if the Norwegian claim is recognised and the island has a continental shelf and OCS. As with other Antarctic island claims, the island may potentially generate an OCS. The island is uninhabited, however it is likely to be too large at about 60 square miles to be termed a 'rock' which would not have an EEZ or continental shelf under LOSC.²⁰²

B. Chile/United Kingdom – Bellingshausen and Weddell Seas

Any potential maritime boundary between Chile and the United Kingdom is very difficult to identify, due to the very large overlapping nature of these respective territorial claims. Chile claims 90° west to 53° west, and the United Kingdom claims from 80° west to 20° west. In addition Argentina claims 74° west to 25° west. It appears highly improbable that any of the three states would relinquish claims to the Bellingshausen and Weddell Seas surrounding the South Shetland Islands and Grahams Land on the Antarctic Peninsula (see Illustration 6–4).²⁰³

¹⁹⁹ 'Antarctic Region', above n 7.

²⁰⁰ Polar Geospatial Center, University of Minnesota– United States Geological Survey map <http://www.pgc.umn.edu/maps/antarctic/id/ANT_REF-MK2508-008> at 14 December 2012.

²⁰¹ Nils Larsen and Ola Olstad landed on the island and claimed it for Norway in 1929. Norway annexed the island in 1931, and made the island a dependency in 1933.

²⁰² LOSC art 121(3) provides that 'Rocks which cannot sustain human habitation or economic life of their own shall have no exclusive economic zone or continental shelf.'

²⁰³ 'Antarctic Region', above n 7.

C. Chile and Argentina – Bellingshausen and Weddell Seas

Any potential maritime boundary between Chile and Argentina is also difficult to identify, due to the overlapping nature of these respective territorial claims. Chile claims 90° west to 53° west, and Argentina claims 74° west to 25° west. Any potential delimitation is made more complex due to the prior claim of the United Kingdom from 80° west to 20° west (see Illustrations 6–4,²⁰⁴ and 6–5).²⁰⁵

This is a significant region as a joint development zone was proposed in 1948. Argentina and Chile issued the Joint Declaration on the Antarctic in 1948, where the two countries agreed to co-operate in the zone of their combined, but not common, sovereignty from 25° west to 90° west.²⁰⁶

D. United Kingdom/Argentina

As with other potential boundaries in the Bellingshausen and Weddell seas above, a potential maritime boundary between the United Kingdom and Argentina is difficult to identify, due to the overlapping nature of these claims. United Kingdom claims sovereignty from 80° west to 20° west, while Argentina claims sovereignty from 74° west to 25° west (see Illustrations 6–4,²⁰⁷ and 6–5,²⁰⁸).

E. United Kingdom/Norway – Weddell Sea

The potential maritime boundary between the United Kingdom's British Antarctic Territory and Norway's Dronning Maud Land extends from the coast at 20° west (see Illustration 6–6).²⁰⁹ The coast of Dronning Maud Land extends northwards from 20° west, and a median line equidistant from the coast may therefore extend to the north-west into the Weddell Sea, favouring Norway. Kaye commented that the potential

²⁰⁴ Ibid.

²⁰⁵ 'Argentina and UK claims to maritime jurisdiction in the South Atlantic and Southern Oceans' IBRU <https://www.dur.ac.uk/ibru/resources/south_atlantic/> at 14 December 2012.

²⁰⁶ Joint Declaration on the Antarctic, 33 Ministerio de Relaciones Exteriores, Santiago 1. 948. Soberania de Chile en la Antartica, Albert Luis Quaranta, *El Sexto Continente* (1950) 130, cited in Robert E Wilson, 'National interests and Claims in the Antarctic' (1964) 17(1) *Arctic* 15, (also 'La Rosa-Vergara Donoso declaration').

²⁰⁷ Ibid.

²⁰⁸ 'Argentina and UK claims to maritime jurisdiction in the South Atlantic and Southern Oceans' IBRU <https://www.dur.ac.uk/ibru/resources/south_atlantic/> at 14 December 2012.

²⁰⁹ Council of Managers of National Antarctic Programs (COMNAP) 'Antarctic Facilities Map, Edition 5', <https://www.comnap.aq/Publications/Comnap%20Publications/Forms/Publications.aspx?Category=Maps> at 14 December 2012.

boundary from the coast would pass through the Brunt Ice Shelf, and then the Riiser-Larsenisen Ice Shelf.²¹⁰ The potential boundary may be affected by the Norwegian Bakewell Island,²¹¹ in the southern part of the ice shelf.²¹²

F. Norway/Australia – Southern Ocean

The potential maritime boundaries between Norway and Australia at 45° east extends from the coast of Queen Maud Land on the Norwegian side and Enderby Land on the Australian side (see Illustration 6–7).²¹³

Kaye considered that a potential boundary delimitation made on a median line may favour Australia due to the Tange Promontory extending from the AAT.²¹⁴ The boundary may also be affected by whether a median line may be drawn from an ice sheet. Kaye also notes that Norway had not declared a boundary extending from the sector boundary as such an action may have supported the Russian sector claim on the boundary in the Barents Sea. That boundary was however agreed in 2010 as discussed in Chapter V, which may result in a future Norwegian statement on the potential boundary.

G. Australia/France – Southern Ocean

The two potential maritime boundaries between the Australian Antarctic Territory extend from both sides of the French Adélie Land sector, with Australian claimed Wilkes Land on the western side at 136° east, and Australian claimed George V Land at 142° east on the eastern side (see Illustration 6–7).²¹⁵

The delimitation issues include the north and south western areas between the Australian Heard and McDonald Islands. Kaye and Rothwell observed that the continental shelf boundary with France in relation to the French Kerguelen Islands was generally delimited under an Agreement in 1982, however the continental shelf boundary beyond 200 nautical miles from the respective islands was not delimited and

²¹⁰ Kaye, above n 78, 170.

²¹¹ The island is *Bakewelløyain* in Norwegian.

²¹² Lyddan Island on the United Kingdom side is an ice rise, with the rock under the ice below the sea surface, and potentially would not affect a maritime boundary.

²¹³ Kaye, above n 78, 169.

²¹⁴ *Ibid*, 170.

²¹⁵ *Ibid* 169.

awaited resolution. The Agreement reserved the question of the continental shelf boundary beyond 200 nautical miles to a future delimitation in Article 3.²¹⁶ A median line may reasonably be considered to be a solution on the northern boundary, however the south western boundary could vary from a median line. A potential French claim may be based on a continental shelf boundary following a spur known as the Elan Bank. An Australian claim may be based on natural prolongation of the Australian claim.²¹⁷ Kaye and Rothwell highlighted that the region has rough seas and very deep water, and so would not likely support exploitation in the near term.

H. Australia/New Zealand – Southern Ocean

The potential maritime boundary between Australia and New Zealand extends from the Australian Oates Land and the New Zealand claimed Ross Dependency at 160° east (see Illustration 6–7).²¹⁸ Kaye commented that a potential Australian Antarctic Territory maritime boundary with the New Zealand Ross Dependency may be affected by the New Zealand claimed Balleny Islands.²¹⁹ There is an issue that the islands are uninhabited and therefore, Australia may argue, should not affect the median line, however Kaye notes that the Australian Eastern Sector is also uninhabited. A potential boundary may also be affected by ice sheets. The Balleny Islands would modify a median line to increase the New Zealand continental shelf in the Southern Ocean if given effect.

I. New Zealand/Unclaimed Sector – Ross Sea

The issue of any potential boundary in the western part of the Ross Sea is distinctive because there is presently no state claiming sovereignty over the Unclaimed Sector. This issue is also relevant as discussed above to any potential boundary of Chile or the United Kingdom with any future claimant to the Unclaimed Sector in the Bellingshausen Sea.

²¹⁶ Agreement on Maritime Delimitation between the Government of Australia and the Government of the French Republic, 4 January 1982, 1329 UNTS 107 (entered into force 10 January 1983).

²¹⁷ Stuart B Kaye and Donald R Rothwell, 'Southern Ocean Boundaries and Maritime Claims: Another Antarctic Challenge for the Law of the Sea' (2002) 3 *Ocean Development and International Law* 359, 375.

²¹⁸ Kaye, above n 78, 169.

²¹⁹ *Ibid.*, 171. The Balleny Islands extend in a chain approximately 99 miles long, including the southernmost Sturge Island approximately 190 miles from the Antarctic coast, and include Young Island at 87 square miles area, Buckle Island at 47 square miles area, and Sturge Island at 168 square miles area.

The potential maritime boundary between New Zealand and any future claimant to the Unclaimed Sector (Marie Byrd Land) extends from 150° west extending into the Ross Sea (see Illustration 6–8).²²⁰ The area is the Saunders Coast, and the Sulzberger Ice Shelf extends in the region of 150° west. Vollmer Island is the most northerly land feature, is approximately eleven nautical miles long, and lies on both sides of 150° west.²²¹ The potential boundary is complex depending on whether the Sulzberger Ice Shelf would be given any affect. The likely boundary based on equidistance may extend to the north-west from the northern coast of Vollmer Island at 150° west, reducing the New Zealand continental shelf in the Ross Sea.

9. Contributions to Research Conclusions

The primary research conclusion is that Southern Ocean maritime claims are subject to the Antarctic Treaty regime, which has generally been very effective in suspending sovereignty claims, subject to a small number of issues including the Argentine submission to the CLCS.²²² Within this framework, significant Southern Ocean region maritime boundaries have not been resolved, for reasons including overlapping Antarctic territorial claims, and the non-recognition of Antarctic territorial claims by other states. The unresolved issues include:

- a) The status of Antarctic claims, and particularly whether sovereignty can be acquired in the absence of permanent settlement. Though this issue is not free from doubt, the implications of the *Eastern Greenland* case,²²³ support the position that states can acquire sovereignty over such remote and unsettled areas.
- b) There is a significant issue concerning the potential scope of the LOSC Area regime, and whether the Environmental Protocol suspension of oil and gas activity is effective in the high seas. The scope of the Antarctic Treaty is not to restrict high seas freedoms, and so the suspension of oil and gas activities, and the broader environmental protection

²²⁰ Polar Geospatial Center, University of Minnesota– United States Geological Survey map <http://www.pgc.umn.edu/maps/antarctic/id/ANT_REF-MK2508-008> at 14 December 2012.

²²¹ Antarctica Sketch Map, Saunders Coast - Marie Byrd, United States Department of the Interior <<http://maps.pgc.umn.edu/antarctica/usgs/08/preview/Saunders%20Coast%20to%20Marie%20Byrd%20Land.jpg>> at 4 September 2012.

²²² Outer Limits of the Continental Shelf – Argentine Submission, 24, <http://www.un.org/Depts/los/clcs_new/commission_submissions.htm> at 9 January 2013.

²²³ *Legal Status of Eastern Greenland (Norway v Denmark)*, (1933) PCIJ Ser A/B No 53.

measures south of 60° south would be assisted by wider ratification of the Environmental Protocol.

c) In relation to the Antarctic Treaty claimants, the United Kingdom/Argentina/Chile overlapping claims in the Antarctic Peninsula and Weddell Sea regions are the most significant source of potential conflicts, which are made more complex by the political link to Falkland Islands/Malvinas dispute between United Kingdom and Argentina. Attention should be given to the mutual supporting recognition of Antarctic claims by United Kingdom, Norway, France, Australia and New Zealand.

d) The Southern Ocean is exceptional due to the absence of sovereignty claims to the Unclaimed Sector and related maritime zones. These circumstances have the potential for resource disputes, but also have the potential for multilateral development.

The Southern Ocean is potentially a very significant region in presenting an opportunity for adopting a form of multilateral JDZ which could resolve potential resource conflicts.

CHAPTER VII – JOINT DEVELOPMENT ZONES AND MODEL AGREEMENTS

1. Introduction

This chapter analyses the essential clauses of a Model JDZ agreement. The analysis is based on the Model JDZ Agreement and related research by the British Institute of International and Comparative Law (BIICL). The research was edited by Hazel Fox, and published in *Joint Development of Offshore Oil and Gas* in 1989 (The BIICL Review).¹ A revised Model Agreement was published after further consultation in 1990 (the BIICL Model).² This analysis and the proposed adaptations to address special circumstances of the Arctic and Southern Ocean regions are based on the BIICL Model. The analysis also incorporates discussion of JDZs at the Conference on Joint Development and the South China Sea in June 2011 in Singapore,³ and analysis of international oil and gas exploration and development agreements by Claude Duval, Honoré Le Leuch and André Pertuzio.⁴ The Model JDZ Agreement, incorporating these proposals in italics, is set out in Appendix I.

2. Preliminary Remarks

A significant preliminary issue relates to the interpretation of any JDZ agreement. JDZs are in most cases bilateral treaties entered into between two states. JDZs may also be multilateral treaties between several states. An early example of a multilateral treaty is

¹ Hazel Fox et al, *Joint Development of Offshore Oil and Gas, A Model Agreement for States for Joint Development with Explanatory Commentary* (British Institute of International and Comparative Law, 1989) 1. The BIICL Working Group comprised Maurice Bathurst, D.H. Anderson, J.P. Armstrong, A. Baker, R.W. Benthall, E.D. Brown, Robin Churchill, M.H. Mendelson, J. Merrett, Clive Symmons and Michael J. Wilson. The working Group was supported by Hazel Fox, Director of the BIICL and research officers of the BIICL.

² Hazel Fox et al, *Joint Development of Offshore Oil and Gas, A Model Agreement for States for Joint Development with Explanatory Commentary* (British Institute of International and Comparative Law, 1990) vol 2, 1.

³ Tara Davenport, Ian Townsend-Gault, Robert Beckman et al, Conference Report (Conference on Joint Development and the South China Sea, Singapore, 16–17 June 2011) <<http://cil.nus.edu.sg/wp/wp-content/uploads/2011/06/Report-of-CIL-Conference-on-Joint-Development-and-the-South-China-Sea-2011-04.08.2011.pdf>> at 2 October 2012.

⁴ Claude Duval, Honoré Le Leuch, André Pertuzio, et al, *International Petroleum Exploration and Exploitation Agreements: Legal, Economic and Policy Aspects* (Barrows Company Incorporated, 2009).

the Svalbard Treaty,⁵ which gave sovereignty of the islands and surrounding waters to Norway, while allowing other countries access to the resources of the islands. The proposed CRAMRA regime⁶ for exploration and exploitation of mineral resources in the Antarctic would have been a multilateral treaty.

The Vienna Convention on the Law of Treaties (VCLT)⁷ provides essential terms for the interpretation of treaties entered into by state parties.⁸ The application of these principles of interpretation have been described as a 'broad approach', where a court or arbitration panel would seek to give any ambiguous terms of an international agreement a broad meaning so that the clause in question has binding effect.⁹

The dispute resolution measures of a JDZ may provide for an arbitration panel which may give effect to the VCLT to interpret the JDZ agreement as an international treaty. On this basis the interpretation of the clauses of a JDZ is likely, under the VCLT, to be broad. The proceedings between Australia and Timor-Leste, which were being held at the Permanent Court of Arbitration (PCA),¹⁰ potentially included the interpretation of JDZ agreements, however these proceedings were suspended in 2014.

There is an issue of intertemporal law, as to whether the interpretation of JDZ agreements should adopt an ambulatory or static approach. The ambulatory approach can allow interpretation of the terms of a treaty taking into account the facts and circumstances after the effective date of a treaty, for example by attributing the current meaning of words, rather than the meaning at the time the treaty was made, upon each

⁵*The Treaty Concerning the Archipelago Spitsbergen*, opened for signature 9 February 1920, 2 LNTS 8, (entered into force 14 August 1925) (*Svalbard Treaty*).

⁶ *Convention on the Regulation of Antarctic Mineral Resource Activities*, opened for signature 2 June 1988, (not yet in force), (1988) 27 ILM 868 (*CRAMRA*). The Convention was effectively made redundant by the Protocol on Environmental Protection to the Antarctic Treaty.

⁷ *Vienna Convention on the Law of Treaties*, opened for signature 23 May 1969, 1155 UNTS 331 (entered into force 27 January 1980) (*VCLT*).

⁸ *Ibid.* VCLT provisions include:

- Articles 26 - 'Every treaty in force is binding upon the parties to it and must be performed by them in good faith.'
- Article 31 'A treaty shall be interpreted in good faith...'
- Article 32 'Recourse may be had to supplementary means of interpretation... ' generally only to confirm the meaning, or the meaning is ambiguous or obscure.

⁹ See eg. *Fothergill v Monarch Airlines Ltd.* [1981] AC 251, decided by the House of Lords. The case is an example of the broad approach in the interpretation of treaties. The issue was whether 7 day time limit to claim for 'damage' from an airline flight also applied to the 'loss' of any contents. The Court held that 'damage' was to be interpreted broadly to include loss. There was no complaint about the loss within the time limit, and so the passenger had no right to compensation for the loss. The broad approach of our courts to the interpretation of an international convention incorporated into our law is well settled.'

¹⁰ *Arbitration under the Timor Sea Treaty (Timor-Leste v. Australia)*, Permanent Court of Arbitration, http://www.pca-cpa.org/showpage.asp?pag_id=1403 at 21 January 2014.

occasion on which the treaty is to be applied.¹¹ On this basis, circumstances such as the introduction of LOSC and the continental shelf as a new maritime zone may be considered in respect of the application of a treaty, notwithstanding that these circumstances did not exist at the time of the treaty. The static approach may restrict the meaning of terms in a treaty to facts, circumstances and laws existing at the effective date of the treaty.¹² The Svalbard Treaty is an example of this issue.¹³ As discussed in Chapter V, an ambulatory interpretation would include the resources of the EEZ, continental shelf, and OCS, in the international resource sharing required under the Svalbard Treaty, notwithstanding that these maritime zones did not exist when the treaty entered into force in 1925.

A further essential issue is that the terms of JDZs are not provided in any specific provisions within LOSC. Becker-Weinberg commented that JDZs are not regulated under LOSC, and that LOSC also does not provide rules for seabed activities in disputed maritime areas.¹⁴ JDZs can therefore be consistent with LOSC, as interim measures pending a final maritime boundary delimitation, however the use of JDZs and their specific terms are the result of bilateral or multilateral treaty negotiations.

3. The BIICL Model Agreement

A. The Concept of a Model Agreement

The purpose of the BIICL Model was to provide for the 'shared pooling of the widely held recognised continental shelf jurisdiction which international law accords to the coastal state.'¹⁵ The Model was intended to provide the clearest possible allocation of responsibility for the grant of rights and to those carrying out operations in the zone and of the duty to enact and enforce regulations in the zone.¹⁶

¹¹ Andrew Clapham, *Brierly's Law of Nations, An Introduction to the Role of International Law in International Relations* (Oxford University Press, 7th ed, 2012) 357.

¹² One issue relating to the static and ambulatory approaches is considered in relation to Article 21 and environmental laws discussed below.

¹³ This issue relates to the Svalbard region in the Arctic Ocean, and is analysed in Chapter VIII. This issue is relevant to Norway's claim for continental shelf rights about the Svalbard Islands, which uses the static approach on the basis that continental shelf did not exist at the time of the Svalbard Treaty.

¹⁴ Vasco Becker-Weinberg, *Joint Development of Hydrocarbon Deposits in the Law of the Sea* (Springer Verlag, Heidelberg, 2014) 2.

¹⁵ Fox, above n 1, 1.

¹⁶ *Ibid* 11.

The BIICL Model is a draft agreement for a JDZ between two states, and is not a detailed joint operating agreement or production sharing contract to be entered into with an oil and gas company. The BIICL Model therefore does not include detailed provisions such as work programmes, budgets, production and lifting schedules, sole risk insurance and the conservation of petroleum.¹⁷

The BICCL Model was issued in 1990, and the BIICL was therefore able to comment on the Australia/Indonesia Timor Gap Treaty,¹⁸ and as described below has adopted a substantial part of the provisions in the Revised Model. The BIICL was not able to comment on the terms of the subsequent Australia/Timor-Leste Timor Sea Treaty.¹⁹

B. BIICL Model - Essential Terms

The following is an analysis of the essential terms of a JDZ contained in the BIICL Model.

i) Article 1 - Use of Terms

The Article defines essential terms, including the specified petroleum law which is to be as determined under Articles 7 and 8, and the Zone, being the seabed, ocean floor and subsoil region with related geographical coordinates.

ii) Article 2 - Joint Development Zone

The Joint Development Zone (the Zone) is established for the purpose of developing petroleum. States may also agree to develop other resources in the JDZ.

iii) Article 3 - Principles of Joint Development

Contracting States are required to promote joint development of petroleum in the JDZ and share equally (or as otherwise agreed) the related rights and obligations. The

¹⁷ Ibid 14.

¹⁸ *Treaty between Australia and the Republic of Indonesia in the Zone of Cooperation in an Area between the Indonesian Province of East Timor and Northern Australia*, 11 December 1989 1654 UNTS 106 (entered into force 9 February 1991) (*Timor Gap Treaty*).

¹⁹ *Timor Sea Treaty between the Government of East Timor and the Government of Australia*, 20 May 2002, 2258 UNTS 3 (entered into force 2 April 2003) (*Timor Sea Treaty*).

Australia/Timor-Leste Agreement provided a 90 per cent allocation to Timor-Leste from the JPDA to benefit that state's development.²⁰

iv) Article 4 - Without Prejudice

The article provides that nothing in the Agreement shall be interpreted as a renunciation of a State's right or claim, or recognition or support in respect of any right or claim of either Contracting State.²¹

v) Article 5 - Joint Commission

The Joint Commission is the body responsible for overall supervision of petroleum activities in the JDZ, comprises equal numbers of representatives for each State Party, and is to have legal personality in the Contracting States.

The allocation of powers to a joint authority was considered by the BIICL as central to any joint development.²² The earliest examples of JDZs did not have a single administration. However all the later JDZs have this feature, and the complexity of oil and gas operations and the related legal and environmental issues make this feature a necessity.²³ The BIICL Model therefore provides for the Joint Commission as the governing body of the JDZ to have a strong administration, and this includes separate legal authority to enable it to enter into contracts and conduct legal proceedings against third parties such as contractors.²⁴

The BIICL Review recommends a Joint Commission with legal personality and the power to make recommendations but without any binding power to make regulations.²⁵

The Australia/Timor-Leste Timor Sea Treaty provides that Australia and Timor-Leste

²⁰ *Timor Sea Treaty* art 6(c)(i) .

²¹ The article also provides that no acts or activities under the Agreement may form the basis for asserting, supporting or denying the position of either state with regard to rights and claims in the JDZ

²² Fox, above n 2, 33.

²³ The BIICL Review comments that it is very difficult for contractors in the JDZ to request the agreement of several organisations for decisions, and effective enforcement within the JDZ is likely to best come from a single administration.

²⁴ An early example is the Kuwait and Saudi Arabia Neutral Zone established in 1922. A joint operating agreement in 1960 established the Joint Operating Committee to carry out production. Isa Huneidi 'Saudi/Kuwait Joint Development', in Fox, above n 1, 77.

²⁵ Fox, above n 2, 33. BIICL compared this to the structure of the Australia and Indonesia Timor Gap Treaty, which allowed the Ministerial Council under that Treaty to make binding regulations in respect of Area A by making changes to the related Petroleum Mining Code.

shall negotiate an agreed Petroleum Mining Code,²⁶ while providing that the Joint Authority may make related regulations.²⁷

The BIICL Review also proposed a Technical Committee for day to day supervision and management of joint development. The Timor Sea Treaty has an equivalent Joint Authority, and then provides Technical, Financial and Legal Directorates within that Joint Authority.²⁸

The Joint Commission would be based in the country of the related governing law, to increase the legal effectiveness of the entity as it can sue in its own jurisdiction.²⁹

vi) Article 6 - Functions of the Joint Commission

Article 6 provides that the Joint Commission's primary roles are the planning, coordinating and supervising of joint development of petroleum in the JDZ.³⁰ The most important function of the Joint Commission was considered to be the forum within which the representatives of the two states reach agreement on a joint development plan to manage the Zone.³¹

vii) Article 7 - Preparation of the Zone Plan

²⁶ *Timor Sea Treaty* art 7(a).

²⁷ *Ibid* art 6(c)(i).

²⁸ Fox, above n 2, 33.

²⁹ *Ibid* 40. The BIICL Review comments that governing law in the Australia and Indonesia Timor Gap Agreement differs for different legal matters and different zones. The governing law for civil damages was the legal regime of the victim's nationality, criminal matters are subject to the legal regime of the perpetrator's nationality, and the Production Sharing Contract (PSC) may specify which state law is to apply. This was considered to be somewhat inefficient, however it allowed both states to consider they have legal authority in respect of significant portions of the JDZ.

³⁰ Article 6(2) of the Model Agreement provides additional functions of the Joint Commission as follows:

- preparation of submissions to the state parties;
- collection and exchange of scientific, technical and other data;
- preparation and submission of the Zone Plan;
- carrying out tasks allocated to it under the Zone Plan;
- recommending application of petroleum law and changes to necessary to promote development of petroleum in the Zone;
- supervision and implementation of the JDZ Agreement;
- consideration of matters referred to it by the state parties;
- submission of proposals for regulation of fishing, research, submarine cables and pipelines and preservation of the marine environment;
- recommendations for joint exploitation of mineral resources apart from petroleum; and
- other functions as specified in the agreement or state parties regard as necessary.

³¹ Fox, above n 1, 313. The Joint Commission would coordinate the interests of the state parties in areas where interests of third parties are likely to be involved, including regulation of fishing, research, submarine cables and pipelines, and preservation of the marine environment.

The Joint Commission is required to formulate a Zone Plan, and submit the Plan to the State parties for approval.³² Three alternatives are then proposed within this framework for the basic mechanism of the JDZ, which may be adopted due to differing political and economic systems, traditions of conflict and degrees of national sensitivity:³³

1. A compulsory joint venture between states or their nationals. The BIICL Review refers to the 1974 Japan/Korea Agreement and the 1965 Kuwait/Saudi Arabia Agreement as examples. The JDZ in the Japan/Korea Agreement is divided into subzones, and each state authorises concessionaires to exploit the zone in a Joint Operating Agreement and share resources equally with the concessionaires of the other state. Each state retains licensing power and approval of operations in its subzone. BIICL considered that this structure removed the need to combine different tax and licencing systems;³⁴
2. A supra-national joint authority to develop the joint zone. BIICL refer to the 1979 Malaysia/Thailand Memorandum of Understanding, and Zone A of the Australia/Indonesia Timor Gap Treaty as examples. In the Malaysia/Thailand Agreement, the Joint Authority therefore has the licensing power and approval of operations.³⁵ Malaysia and Thailand entered into an agreement to constitute the Malaysia Thailand Joint Authority (MTJA) in 1990, which issued Standards of Petroleum Operation, Procedures for Drilling Operations and Procedures for Production Operations in 2009;³⁶ and
3. A single state managing joint development which pays a share of the revenue to the other state party. The Qatar/Abu Dhabi Agreement³⁷ is an example of this type of agreement. The advantages may include simplicity, the use of existing

³² Ibid 9. Article 7(5) provides that the parties may designate a joint commission as sole development authority, either state party as sole development authority, or both state parties as concurrent or joint development authorities.

³³ Fox, above n 1, 115.

³⁴ Ibid 116.

³⁵ Ibid 133. The BIICL had noted that the Malaysia/Thailand Agreement did not specify which petroleum regime should apply, and conceded this 'proved a major stumbling block at that time.

³⁶ MTJA Standards of Petroleum Operation - Regulations 1997/ B.E. 2540 -issued pursuant to the Malaysia-Thailand Joint Authority Act 1990/ B.E. 2533, Procedures for Drilling Operations 14 Dec 2009, -issued pursuant to the Production Sharing Contract (PSC), Procedures for Production Operations 14 Dec 2009 -issued pursuant to the Production Sharing Contract (PSC), <<http://www.mtja.org/rules.php>> at 28 September 2012.

³⁷ *Agreement Concerning Settlement of Offshore Boundaries and Ownership of Islands Between Qatar and Abu Dhabi*, signed 20 March 1969, 2402 UNTS 54, (entered into force 20 March 1969) ('*Qatar/ Abu Dhabi Agreement*').

administrative machinery, and the use of one state's petroleum regime. This type of agreement may effectively provide that one state has a dominant role in the zone, however, which may impact perceptions of sovereignty.³⁸ A variation is the use of a 'checkerboard' pattern, with each state having the power over defined subzones. The BIICL identified Zones B and C of the former Australia/Indonesia Timor Gap Treaty,³⁹ as based on this pattern.⁴⁰

Article 7(6) requires the Joint Commission to establish the specified petroleum law in the Zone Plan. Where the Joint Commission is the sole development authority the parties are required to endeavour to agree on petroleum law, or otherwise apply the petroleum law applying to the contractor or operator. Where a state party is the sole development authority then the petroleum law of that state applies. Where there are two joint development authorities then the petroleum law of the operator's state applies.⁴¹

Symmons characterised the alternative models for establishing a licencing system as follows:⁴²

1. Joint Commission with representatives of both states is used in the Kuwait/Saudi Arabia Agreement,⁴³ and the United Kingdom/Norway Agreement.⁴⁴ Each state party exercises regulatory powers over their concessionaires in the JDZ;
2. Joint Commission operates the JDZ concurrently in the Japan/South Korea Agreement,⁴⁵ with the Joint Commission as a concurrent licencing authority;
3. Joint Commission with regulatory powers delegated to one of the states for specific regions. Symmons refers to Zones A and B under the Australia/

³⁸ Fox, above n 1, 149.

³⁹ *Timor Gap Treaty*.

⁴⁰ Fox, above n 1, 152.

⁴¹ *Timor Gap Treaty* art 7(6).

⁴² Clive R Symmons 'Regulatory Mechanisms in Joint development Zones' in Fox, above n 2, 141.

⁴³ *Agreement on the partition of the Neutral Zone*, signed 7 July 1965, 1750 UNTS 48, (entered into force 7 July 1965) ('Saudi Arabia/Kuwait Agreement').

⁴⁴ *Agreement Between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of the Kingdom of Norway relating to the Exploitation of the Frigg Field reservoir and the Transmission of Gas therefrom to the United Kingdom*, signed 10 May 1976, 1098 UNTS 4 (entered into force 22 July 1977) ('United Kingdom/Norway Agreement').

⁴⁵ *Japan-Republic of Korea - Agreement concerning the Joint Development of the Southern part of the Continental Shelf adjacent to the Two Countries*, signed 30 January 1974, 1225 UNTS 104 (entered into force 30 January 1974), ('Japan/Korea Agreement').

Indonesia Timor Gap Treaty.⁴⁶ The Australia/Timor-Leste Timor Sea Treaty differs from this model, as there is only one zone in the newer Timor Sea treaty;⁴⁷

4. The Joint Commission was responsible for establishing the regulatory system, used in the Thailand/Malaysia Agreement. This may result in a loss of sovereignty, however it may be argued that both states exercise a measure of control due to membership of the Joint Commission;⁴⁸ and
5. No Joint Commission is used in the Bahrain/Saudi Arabia,⁴⁹ Qatar/Abu Dhabi,⁵⁰ and Iran/Sharjah agreements,⁵¹ with regulatory powers granted to one of the states. In the France/Spain Agreement⁵² both states retain licencing powers.⁵³

viii Article 8 - Compliance and Enforcement

State Parties are required to take all appropriate action within their legal systems to enforce the applicable petroleum law, and provide support to the Joint Commission in ensuring contractor compliance with that law.

ix) Article 9 - Financial Terms of Development Contracts

The financial terms for contractors in oil and gas development may be determined exclusively by development contracts, which will incorporate the taxation regime of the country of the respective development authority, or adopt a specific tax regime of one of

⁴⁶ *Timor Gap Treaty*.

⁴⁷ The Joint Petroleum Development Area (JPDA) in the Australia and Timor-Leste - Timor Sea Treaty is equivalent to the shared 'Area A' under the earlier Timor Gap Treaty.

⁴⁸ Symmons, above n 42, 148.

⁴⁹ *Agreement Between the Kingdom of Saudi Arabia and the Government of Bahrain*, 22 February 1958, 1993 UNTS 8 (entered into force 22 February 1958) ('*Saudi Arabia/Bahrain Agreement*').

⁵⁰ *Agreement Concerning Settlement of Offshore Boundaries and Ownership of Islands Between Qatar and Abu Dhabi*, signed 20 March 1969, 2402 UNTS 54 (entered into force 20 March 1969) ('*Qatar/ Abu Dhabi Agreement*').

⁵¹ *Memorandum of Understanding' between Iran and Sharjah*, 29 November 1971 (entered into force 29 November 1971), at <http://www.parstimes.com/history/iran_sharjah.html> at 25 July 2012 ('*Iran/Sharjah Agreement*').

⁵² *Convention Between the Government of the French Republic and the Government of the Spanish State on the Delimitation of the Continental Shelves of the Two States in the Bay of Biscay*, 29 January 1974, 996 UNTS 345 (entered into force 5 April 1975) ('*France/Spain Agreement*').

⁵³ Symmons, above n 42, 142.

the state parties, or delegate to a Joint Commission the power to formulate tax provisions for the JDZ.⁵⁴

The BIICL Review commented on the importance of financial provisions:⁵⁵

Investors may well turn straight to the financial provisions. For them the presence of a satisfactory taxation provision is likely to be the touchstone of the Agreement's workability.

The BIICL Model leaves the choice of fiscal system open on the basis that different countries adopt different systems, and would not readily agree to new tax arrangements for a JDZ.⁵⁶

The principal financial terms for upstream oil and gas are generally as follows:⁵⁷

- In concession regimes (also known as licence regimes)⁵⁸ the state transfers title to oil and gas resources to the oil company under a concession or licence; the state generally imposes corporate income tax levied on oil and gas profits,⁵⁹ together with royalties on oil and gas production.⁶⁰ Concession regimes are used in countries including the United Kingdom, United States, Canada, Norway, France, Australia and New Zealand. The oil company therefore owns the oil and gas under the concession, and pays tax on the related profits;⁶¹

⁵⁴ Ibid.

⁵⁵ Fox, above n 1, 243.

⁵⁶ Ibid 245. The BIICL Model provides that the respective taxation system under the three structures may then include production or income based taxation, royalties, payments in kind, production sharing arrangements income and corporation taxes and resource rentals. The financial terms are also intended to be the sole taxation regime.

⁵⁷ John Abrahamson, *Tolley's International Taxation of Upstream Oil and Gas* (LexisNexis, 2014) 19; Van Meurs Corporation, *World Fiscal Systems for Oil and Gas* <www.vanmeurs.org/Training.aspx> at 4 October 2012, Wood Mackenzie – Upstream Service, *Country Fiscal Models and Analysis*, <www.woodmacresearch.com> at 4 October 2012; and Ernst & Young, *Global Oil and Gas Guide 2011* <www.ey.com/GL/en/Industries/Oil---Gas> at 4 October 2012.

⁵⁸ Duval, above n 4, 58. The grant of a petroleum concession generally includes the grant of an exploration permit or licence, and the grant of an exploitation right which may be referred to as a concession, lease or production licence. The grant of these rights may be made in one agreement or in a combination of agreements.

⁵⁹ Ibid 234. The tax regime generally has additional tax or higher tax rates relating to oil and gas production. The use of a corporate tax regime raises some more complex issues, such as whether to allow a charge or allocation of head office administration expenses and interest costs, and whether charges from related companies are made at 'arm's length' prices (known as transfer pricing).

⁶⁰ Ibid 232.

⁶¹ The tax rate is generally higher for upstream oil and gas activities as the oil company is acquiring the state's oil and gas under the concession. The tax regime may also have 'ring fencing', where losses on oil and gas cannot be used to offset taxable profits on non-oil and gas activities, or more restrictively, 'field ring fencing' where losses on oil and gas field cannot be used to offset taxable profits on other oil and gas

- In Production Sharing Contract (PSC) regimes, also known as Production Sharing Agreements (PSAs), the state retains title to oil and gas but gives a right to share production.⁶² A portion of the total oil and gas production is retained by the contractor to recover their costs, (known as cost recovery, or cost oil).⁶³ The remaining production (known as profit oil) is then divided between the state and the oil company. Tax is then generally imposed on the profit oil derived by the oil company;⁶⁴ and
- Royalties are generally imposed in addition to tax under concession and PSC regimes. These royalties are payments imposed on the oil company based on production or value of oil and gas produced.⁶⁵ Royalties can provide a state with revenue from oil and gas production before the field becomes profitable.⁶⁶ States may use progressive royalty rates, where the rate increases as production reaches benchmark levels.⁶⁷

Government financial terms may also include service contract terms,⁶⁸ bonus payments,⁶⁹ surface rentals,⁷⁰ excise tax,⁷¹ and Value Added Tax (VAT).⁷² The

fields. Issue whether grouping or consolidation available, e.g. losses of one company offset profits of another company.

⁶² Duval, above n 4, 245.

⁶³ Ibid 243.

⁶⁴ The PSC may then impose tax on Profit Oil (Angola), while others deem oil company tax to be paid by government from the Government's Profit Oil Share.

⁶⁵ The royalty may be a fixed percentage, e.g. USA Federal, A bid amount, some USA states, e.g. the royalty rate in the state of Louisiana can vary with geological features, e.g. Nigeria offshore royalties increase with water depth, Sliding scale based on production, e.g. China, Abu Dhabi, Sliding scale based on several factors, e.g. Alberta in Canada, based on production and price, or a Sliding scale depending on IRR, e.g. Greenland.

⁶⁶ Ibid 227.

⁶⁷ Ibid 228.

⁶⁸ Duval, above n 4, 99. In service contract regimes, the oil company is generally a contractor and essentially receives a fee rather than ownership of oil and gas, and may also receive reimbursement of costs. Risk sharing contracts provide that the contractor risks losses if the venture is unsuccessful. Regular service contracts provide a fee for services performed irrespective of the venture's outcome. Service contracts are not preferred by oil companies, as the regime results in lower profits than concession or PSC regimes. States may derive correspondingly higher revenue, however the regime also can discourage new investment in exploration and development.

⁶⁹ Bonus payments may be required at various stages of exploration and production. This can include signature bonus on signing oil and gas agreement, capacity building bonus generally early in contract, bonuses on discovery, commercial discovery, licence application, production or cumulative production. Bonuses are generally not cost recoverable under PSC regimes, i.e. Oil and Gas Company does not get cost oil to repay these expenses. Bonuses may qualify for tax relief under tax regimes.

⁷⁰ Surface rentals are charges for the area portion of the concession or PSC block area retained by the oil company. These regimes can encourage the oil company to relinquish part of a licence area not used for production, and which may then be made available to other oil companies interested in further exploration. Duval above n 4, 235.

Australia/Indonesia Timor Gap Treaty contained a specific tax code for the shared Area A,⁷³ however this approach was not adopted in the Australia/Timor-Leste Timor Sea Treaty.⁷⁴

There is also an issue concerning the interaction of the tax regimes in the oil producing country and the country where the oil company's head office or parent company is located. The principal issue is whether the parent country exempts the related foreign income, such as dividends, paid by the subsidiary company in the oil producing country, or taxes such income but allows a credit for taxes paid in the oil producing country.⁷⁵

x) Article 10 - Approval of the Zone Plan

The approval of the Zone Plan requires joint approval of the State Parties.

xi) Article 11 - Development Contracts

Article 11(1) provides that no petroleum activities may be undertaken without a development contract, which may take the form of a concession/licence agreement, or a PSC.⁷⁶ The PSC regime provides the oil producing country with a direct portion of the profit oil.⁷⁷

⁷¹ Excise tax regimes (also known as export duty) may also be used based on the value of production exported. A substantial portion of Russian state revenue from upstream oil and gas activities is an excise tax. The Russian Excise Tax rate varies from 35% to 65% of the exported production value. This is in addition to Minerals Extraction Tax royalties and in addition to Corporate Profits Tax at 20%. The Russian tax regime has been considered unattractive by international investors, and on 12 April 2012, Russian government announced it was cutting mineral extraction tax and duties levied on exports of hydrocarbons produced in Russia's Arctic offshore zones for 15 years after start of production. Reductions also expected for other Russian continental shelf projects.

⁷² Value Added Tax (VAT) is imposed in many countries on value of sales, with businesses recovering VAT on their purchases, and with exports exempt from VAT in many countries. The use of a VAT system can give rise to a VAT refund issue. The oil company may be applying for refunds, as it has paid VAT on its purchases, but does not charge VAT on its sales where export sales are exempt. The issue is whether refunds are allowed, are provided promptly, or there are substantial delays. Tax regimes and PSCs may therefore provide specific exemptions from VAT to avoid this credit refund issue. This may be extended to local suppliers to upstream oil and gas companies.

⁷³ *Timor Gap Treaty*, Annex D art 4(1).

⁷⁴ On this basis, there is arguably a trend not to incorporate a separate tax code.

⁷⁵ Duval, above n 4, 259. The parent country may exempt foreign income and so avoid double taxation, or may tax foreign profits, but allow a credit for foreign taxes. The principal issue is whether the parent country exempts the foreign income, or allows a credit for host country taxes. The tax credit is intended to reduce double taxation on the income, and may be provided under the parent company's domestic tax rules, or under tax treaties between the parent company's state and the producing state. The United States, for example, taxes foreign profits, but may allow a tax credit for foreign taxes provided the foreign taxes are based on profits. Amounts based on production, such as royalties, are generally not creditable.

⁷⁶ *Ibid* 69.

⁷⁷ *Ibid*.

Article 11 provides that nationals of either state may apply to the appropriate development authority or to the Joint Commission where it is acting as the development authority. The criteria for selection include provision of satisfactory safeguards for the protection of the marine environment. The development contract is required to include a work programme and environmental impact statement.

The BIICL Model allows alternative development regimes:

- In concession/licensing regimes), the oil and gas company acquires oil and gas. The state exercises supervision under petroleum laws and imposes taxes and royalties;
- In PSC regimes, the state has an active role and engages the oil company as a contractor and the state owns the oil and gas produced less the agreed share of the contractor;
- Other contractual arrangements include service contracts, where the state engages the oil and gas company to provide development activities in return for a fee or a supply of oil at a discount price or share of proceeds of the sale of oil;
- The state, or state-owned oil company, may also participate as a joint venture. The state or state-owned oil company acquires a share of production in return for providing a share of the exploration, development and production costs;⁷⁸ and
- Contractual arrangements may also include terms for 'carried interests', where the state owns the related oil and gas, less an agreed share of the oil and gas company, but also has the option to acquire an equity interest in the oil and gas company's activities.⁷⁹

States concerned in a JDZ may use different petroleum development regimes. Accordingly while it is generally necessary in practice for the JDZ to adopt a single regime, this may requires one of the states to the JDZ to accept a non-standard

⁷⁸ Ibid, 248.

⁷⁹ Ibid 237. The use of carried interests has a negative effect on the economics of the oil company's investment, however such measures may be considered to increase the stability of the exploitation regime.

petroleum development regime. Burmester examined the example of the regime used in the Timor Gap Treaty between Indonesia and Australia,⁸⁰ and noted that the treaty generally adopted the production sharing model used by Indonesia.⁸¹ The Petroleum Mining Code applying pursuant to the Australia/Timor-Leste Timor Sea Treaty⁸² has also adopted production sharing contracts.⁸³

Licence or concession regimes are more commonly used by developed economies which have more advanced taxation systems, and can regulate oil and gas activity under specific oil and gas legal regimes. Kamal Hossain commented that PSC may offer greater flexibility, as agreement can contain detailed conditions and obligations on the contractor.⁸⁴

Article 11(7) provides that in the event of competing applications for development contracts, the Joint Commission may grant one development contract, invite the applicants to resolve the competition amongst themselves, or invite competitive bids.⁸⁵

Duval, Le Leuch, and Pertuzio observed that most development agreements are made by competitive bidding or by negotiation, with increased use of competitive bidding in more recent times.⁸⁶ The principal deficiency of the bidding system was considered to be inflexibility, in that it fixes the major elements of the development agreement in advance by which the bid is evaluated.⁸⁷

xii) Article 12 - Access to Operations

⁸⁰ *Timor Gap Treaty*.

⁸¹ H Burmester, 'The Zone of Co-operation between Australia and Indonesia: A Preliminary Outline with Particular Reference to Applicable Law' in Fox, above n 2, 132.

⁸² The basis of taxation of each state is then applied to the profits on the respective share of production.

⁸³ Petroleum Mining Code, Australia Timor-Leste Joint Production Development Area (JPDA), Timor-Leste Institute for Development Monitoring and Analysis, at <<http://www.laohamutuk.org/Oil/PetRegime/JPDA%20PMC%208-05.pdf>> at 18 February 2009.

⁸⁴ Kamal Hossain, 'Choice of Petroleum Development Regime in Joint Development of Offshore Oil and Gas' in Fox, above n 1, 72.

⁸⁵ Fox, above n 1, 14.

⁸⁶ Duval, above n 4, 34. Competitive bidding may be based on a checkerboard pattern, so that the state or national oil company can derive information for bidding rounds from exploration conducted from adjacent leased blocks, and also enable the state or state oil company to retain the flexibility to develop promising blocks themselves.

⁸⁷ *Ibid* 37. These elements can include the size of the works program, the amount of bonuses and royalties, and the percentage of production sharing. States may use several factors for bid evaluation together with a ranking system to evaluate the bid, or may use discretionary powers to evaluate the bids

State Parties have the right to non-discriminatory consideration of nationals' applications, monitor operations, access data, and meter petroleum production. The BIICL Review considered that there should be no nationality requirement for operators, and that the development of the Japan/Korea JDZ was limited by the requirement for an operator from each country. The better approach would appear to be that allowed under later agreements, where a single operator is granted rights to exploration and development for a particular area within the JDZ.⁸⁸

xiii) Article 13 Rights and Duties of Contractors

Article 13 provides that contractors have exclusive rights to carry out petroleum activities under the Development Contract, subject to compliance with the terms of the contract. A significant issue is the status of any rights granted before the agreement to the JDZ, and this appears to be a major impediment to the China/Japan JDZ as discussed by Manicom.⁸⁹ The JDZ should define any existing oil and gas exploration or development permits granted, and then declare whether they are subject to the 50 per cent production sharing under the agreement, or are exempt from it.⁹⁰

A related issue is the impact of JDZs on previously granted oil and gas interests. Townsend-Gault has argued that the grant of oil exploration and development rights made before the introduction of a JDZ should remain binding, as the JDZ is a sharing of benefits rather than cancellation of either state's sovereignty. Accordingly a grant made by one state does not become void on the introduction of a JDZ unless the state then cancels that grant.⁹¹ A principal ground for treating the grant of oil and gas exploration and development rights as void is that the state lacked the power to make the grant, and states may only grant licences that are clearly subject to their jurisdiction in international law. States may, however, make such grants as a way of asserting their rights.⁹²

⁸⁸ Fox, above n 2, 39.

⁸⁹ James Manicom, 'China's Claims to an Extended Continental Shelf in the East China Sea: Meaning and Implications', (2009) 9(14) *China Brief* 9.

⁹⁰ Where the JDZ has a complex management system it may be quite difficult to integrate pre-existing contractual arrangements with the new legal and regulatory regime.

⁹¹ Ian Townsend-Gault, 'The Impact of a Joint development Zone on Previously Granted Interests' in Fox, above n 2, 171.

⁹² *Ibid* 178.

The example of the *North Sea Continental Shelf* cases was discussed,⁹³ where the ICJ held that the boundary was to be drawn by agreement between the Parties and in accordance with equitable principles, including concavity of the coast, on which basis the agreed boundary increased the area controlled by Germany. After negotiation between the respective states, oil licences previously granted by the Netherlands and Denmark in the area controlled by Germany were not cancelled. This is contrasted to a declaration by the United States in relation to the disputed boundary with Canada in the Beaufort Sea, that in the event the Canadian claim failed, the United States would treat interests granted by Canada as void.⁹⁴

xiv) Article 14 Cancellation or Suspension of Development Contracts

There is to be no cancellation of a development contract without allowing the Contractor an opportunity to remedy the breach of contract, except for a serious threat to the marine environment or where there is a significant danger to health and safety.

xv) Article 15 Assignment

The assignment of contractor rights is allowed under the BIICL Model, however the assignment requires consent of the relevant development authority.

xvi) Article 16 - Customs and Duty Exemptions

There is an exemption from customs and duty charges on equipment unless the Joint Commission specifies otherwise. The article also provides an exemption on customs and duty on the shipment of petroleum within the jurisdictions of the State Parties.

xvii) Article 17 - Operations by Contractors in the Territory of the State Parties

Article 17 provides Contractors the right to conduct activities in accordance with the relevant petroleum law.

⁹³ *North Sea Continental Shelf Cases (Federal Republic of Germany v Denmark; Federal Republic of Germany v Netherlands)* [1969] ICJ. Rep 3.

⁹⁴ Townsend-Gault, above n 91. Concessions were granted by Thailand to Triton Petroleum Corporation prior to establishment of the Thailand Malaysia JDZ, and Thailand has maintained the effectiveness of the grant without profit sharing as otherwise required in the JDZ. This grant has been a significant factor in preventing the effective implementation of the JDZ.

xviii) Article 18 - Unitisation

The state parties are required to consult if petroleum deposits straddle a JDZ area to allow unitisation for the most effective means of developing these fields, and the sharing of resources from these fields.

xix) Article 19 - Employment and Training of Personnel

The Joint Commission may issue guidelines to enhance employment of nationals and the equitable division of employment and training benefits.

xx) Article 20 - Health and Safety

The state parties are required to agree procedures based on international standards and implemented under the specified petroleum law. Barrett commented on the BIICL Model article on the general principle of coastal state jurisdiction over offshore installations, and flag state jurisdiction over state flag vessels when in transit.⁹⁵ Petroleum tankers in transit, and stand-by vessels which support fixed installations, are subject to flag state jurisdiction. Accommodation vessels may be subject to coastal state jurisdiction, if the vessels are considered to be installations. Offshore oil and gas operations are also supported by helicopters which are subject to civil aviation laws.⁹⁶

The enforcement of health and safety measures should be included under sovereign rights relating to the LOSC continental shelf regime.⁹⁷ Barrett comments that it is not clear whether continental shelf jurisdiction gives the coastal state jurisdiction over stand-by vessels except while at an oil installation.⁹⁸

There is also a concern with flag of convenience vessels, which are ships registered in a state that differs from the residence state of the vessel's individual owners or partners, or the state of incorporation of an owning company. This practice may be adopted to

⁹⁵ Brenda Barrett, 'Occupational Health and Safety ' in Fox, above n 2, 187.

⁹⁶ Ibid 190.

⁹⁷ LOSC provides that the coastal state exercises over the continental shelf sovereign rights for the purpose of exploring it and exploiting its natural resources.

⁹⁸ Barrett, above n 95, 192. The result may be two concurrent jurisdictions of the coastal state and the flag state.

reduce regulatory requirements or taxation. LOSC attempted to control the use of flags of convenience by requiring 'a genuine link between the state and the ship.'⁹⁹

xxi) Article 21 - Prevention of Pollution and Protection of the Marine Environment

Article 21 provides requirements to prevent pollution and protect the environment, and is therefore a critical clause of the BIICL Model given the environmental risks in the Arctic and Southern Oceans.

The state parties shall use all reasonable endeavours to ensure that petroleum activities in the Zone or the operation of any installation or pipeline involved in those activities shall not cause nor be likely to cause pollution of the marine environment.

Article 21 requires several specific measures to be implemented under the specified petroleum law, and for the measures to be based on good oilfield practice, taking into account any international rules, standards, recommended practices and procedures, in particular those promulgated by the United Nations Environmental Programme, the International Maritime Organisation, and other relevant international bodies. Contingency plans are required for combatting pollution, and notification from state parties to the Joint Commission or the inspectorate on pollution incidents. These measures are not to prejudice state party measures to control pollution.

Birnie considered that the LOSC Article 21 requirement should apply to states entering into JDZ agreements.¹⁰⁰ IMO and UNEP guidelines were most relevant to potential pollution for offshore oil and gas activities,¹⁰¹ such as the IMO/UNEP Guidelines on oil spill dispersant application,¹⁰² and these standards have a specific reference in the BIICL Model.¹⁰³

There are also oil and gas industry approaches to the 'reasonable endeavours' requirement in Article 21. Read commented that the 'reasonable endeavours' requirement would include the following measures:¹⁰⁴

⁹⁹ LOSC art 91.

¹⁰⁰ P Birnie, 'Protection of the Marine Environment' in Fox, above n 2, 202.

¹⁰¹ Ibid 208.

¹⁰² International Maritime Organisation, *IMO/UNEP Guidelines on oil spill dispersant application including environmental considerations*, (1995).

¹⁰³ Fox, above n 2, 19. Incorporated in BIICL Model Agreement art 21(2)(b).

¹⁰⁴ A D Read, 'Protection of the Marine Environment: A View from Industry' in Fox, above n 2, 223.

- Prevention, including oil-tight and gas-tight equipment (meaning tightness in connections and joints that prevent oil or gas from flowing through the connected surfaces), well control, and prevention of blow-outs;¹⁰⁵
- Reporting spills and follow up, including investigating cause and instituting measures to prevent repetition of similar incidents. Read commented that the authorities should designate one body to report spills;¹⁰⁶
- Environment impact assessment, including analysis of the proposed operations including potential emissions, infrastructure, and the sensitivities of the surrounding environment;¹⁰⁷
- Operational discharges, including production water, drilling fluids, machinery space drainage, sewage and garbage. Read commented that states parties to the 1973 International Convention for the Prevention of Pollution from Ships and the 1978 Protocol (MARPOL 73/78 Convention) would be required to enforce those provisions;¹⁰⁸
- Marine support aspects, including control of tankers if offshore loading is used, and control of offshore support vessels;
- Contingency plans for oil spills, including reporting, responsibilities, clean-up equipment, trained personnel, access to additional equipment and personnel, and compatibility with national plans;¹⁰⁹
- Fishery aspects, including temporary interference in the exploration phase, permanent loss of access in the development phase, and debris; and
- Compensation, including a legal system for prompt and adequate compensation for pollution damage. Read observed an industry preference for strict but limited

¹⁰⁵ Fox, above n 2, 19. Incorporated in BIICL Model art 21(2)(c).

¹⁰⁶ Ibid. Incorporated in BIICL Model art 21(3).

¹⁰⁷ Ibid. incorporated in BIICL Model art 21(3).

¹⁰⁸ Ibid. Incorporated in BIICL Model art 21(2)(c).

¹⁰⁹ Ibid. Incorporated in BIICL Model art 21(2)(cc).

liability, and funding by insurance or financial security rather than from a fund.¹¹⁰

Article 21 requires application of international standards for the protection of the environment. These standards include the International Convention on Oil Pollution Preparedness, Response and Cooperation (OPRC Convention),¹¹¹ the Protocol on Preparedness, Response and Cooperation to Pollution Incidents by Hazardous and Noxious Substances,¹¹² and the International Convention on Civil Liability for Oil Pollution Damage, 1992 ('Civil Liability Convention')¹¹³, which requires compensation for pollution damage from oil tankers.¹¹⁴

There is a related issue of whether the drafting used in Article 21 would effectively incorporate new environmental conventions after the entry into force of the JDZ agreement, and a related issue of the potential operation of the Vienna Convention on the Law of Treaties (VCLT) in interpreting the JDZ agreement.¹¹⁵ The current Article 21 may require an ambulatory interpretation to be used to apply environmental standards introduced after the ratification of the JDZ Agreement, rather than a static interpretation.¹¹⁶ The BIICL Model should be amended to remove this uncertainty by

¹¹⁰ Ibid. Incorporated in BIICL Model art 21(2)(d).

¹¹¹ *International Convention on Oil Pollution Preparedness, Response and Co-operation*, opened for signature 30 November 1990, 1891 UNTS 51 (entry into force 13 May 1995) ('OPRC').

¹¹² *Protocol on Preparedness, Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances*, opened for signature 15 March 2000 [2007] ATS 41 (entry into force 14 June 2007) ('OPRC-HNS Protocol').

¹¹³ *International Convention on Civil Liability for Oil Pollution Damage*, 1992, opened for signature 27 November 1992, 1953 UNTS 255 (entered into force 3 May 1996) ('Civil Liability Convention').

¹¹⁴ *International Convention on Civil Liability for Oil Pollution Damage*, opened for signature 29 November 1969, 973 UNTS 3 (entered into force 19 June 1975) ('CLC').

¹¹⁵ *Vienna Convention on the Law of Treaties*, opened for signature 23 May 1969, 1155 UNTS 331 (entered into force 27 January 1980) ('VCLT').

¹¹⁶ In relation to states with Arctic coasts, Canada, Russian Federation and Denmark (relating to Greenland) have ratified the Vienna Convention, while the United States and Norway have not. In relation to states with territorial claims in Antarctica, the United Kingdom, Australia, New Zealand, Argentina and Chile have ratified the Vienna Convention, while Norway and France have not. Vienna Convention on the Law of Treaties, opened for signature 23 May 1969, 1155 UNTS 331 art 18 (entered into force 27 January 1980) ('VCLT'). There is therefore an issue whether the Vienna Convention may be considered to be incorporated in customary international law. As discussed in Chapter IV, the *North Sea Continental Shelf cases* concluded that customary international law required i) state practice of those States whose interests were affected by the custom, and ii) *opinio juris*, a belief that the practice amounts to a legal obligation. The number of state ratifications may, potentially, be considered a relevant factor in such a determination, however customary international law may still not be binding on states which are persistent objectors, as analysed in RR Churchill and AV Lowe, *The Law of the Sea*, (Manchester University Press, 3rd Edition, 1999) 8.

requiring application of environmental standards at the date of the JDZ and future environmental standards.¹¹⁷

The BIICL Review considered that the control of pollution provisions in the Australia/Indonesia Timor Gap treaty were weak on specific measures, as they were based on 'good oilfield and sound environmental practice' rather than setting out specific measures.¹¹⁸

The BIICL Model provided for strict liability of the operator.¹¹⁹ There is a significant issue concerning the adequacy of compensation to clean up a major environmental oil spill. Article 21(2)(d) requires that states 'ensure recourse in accordance with state parties' legal systems for prompt and adequate compensation or other relief in respect of damage caused to the marine environment.' The BIICL Model therefore incorporates state regulation for liabilities, however this may result in inadequate compensation to clean up a major Arctic or Southern Ocean environmental oil spill. Birnie considered that a specific Joint Commission role on liability and compensation could be incorporated in the BIICL Model.¹²⁰

xxii) Article 22 - Inspection Rights

The state party of the specified petroleum law has sole responsibility for inspections. Both state parties have powers of access under Article 12.

xxiii) Article 23 - Settlement of Disputes

Disputes are to be submitted to a Joint Commission for mediation. Disputes are then submitted to a third party's arbitral tribunal process if mediation was not successful. In relation to disputes between state parties, each state elects one arbitrator, and those arbitrators select the third arbitrator. Disputes relating to the development authority and contractors are required to be submitted to binding commercial arbitration.

¹¹⁷ There is also an issue whether the requirement to apply international standards applies if one or both state parties to the JDZ agreement are not state parties to an environmental convention. The Article should be amended to provide that the international environmental standard is to be applied irrespective of non-ratification by one or both state parties to the JDZ agreement.

¹¹⁸ Fox, above n 2, 55.

¹¹⁹ Birnie, above n 100, 211.

¹²⁰ Ibid 212.

The BIICL Review noted that the Australia/Indonesia Timor Gap Agreement required resolution of disputes between states by consultation and negotiation, rather than compulsory third party arbitration, and disputes between the JDA and contractors were to be resolved by international commercial arbitration. The Australia/Timor-Leste Timor Sea Agreement, discussed in Chapter III, made after the BIICL review, now provides such arbitration clauses.¹²¹ The effectiveness of these arbitration clauses has not been tested, as the related proceedings to be held at the Permanent Court of Arbitration (PCA) were withdrawn in September 2014.¹²²

xxiv) Article 24 - Third Party Rights

State parties are required to exercise their rights in such a manner so as not to interfere with the rights and freedoms of other states as provided under generally accepted principles of international law.¹²³

If the JDZ is within 200 nautical miles of the coastal state's baselines, then the JDZ is likely to be a combined continental shelf and EEZ, subject to the LOSC requirement that the EEZ must be declared by the coastal state. If the JDZ includes an area beyond 200 nautical miles, the JDZ would be in the OCS regime, which requires submission of a claim to the CLCS. An important distinction between these regimes concerns the rights of third parties.¹²⁴ If the JDZ relates to the OCS, essentially beyond 200 miles from coastal state baselines, then third party states have high seas freedoms under LOSC Article 78(2). If the JDZ is within 200 miles and is therefore continental shelf and EEZ regimes, then third party states have rights relating to navigation, overflight and laying of cables and pipelines.¹²⁵ Accordingly Churchill concluded that there is a complex issue where there are overlapping state EEZ rights which are not addressed in JDZs.¹²⁶

¹²¹ *Australia/Timor-Leste - Timor Sea Treaty*, 20 May 2002, 2258 UNTS 3, art 3 and Annex B (entered into force 2 April 2003).

¹²² *Arbitration under the Timor Sea Treaty (Timor-Leste v. Australia)*, Permanent Court of Arbitration, http://www.pca-cpa.org/showpage.asp?pag_id=1403 at 18 December 2014,' and East Timor spy row: Australia, East Timor postpone ICJ case to seek 'amicable settlement' ABC News, 7 September 2014 <<http://www.abc.net.au/news/2014-09-06/icj-postpones-australia-etimor-spy-row-case/5724918>> at 18 December 2014.

¹²³ Fox, above n 2, 22.

¹²⁴ RR Churchill, 'International Legal Issues', in Fox, above n 1, 62.

¹²⁵ LOSC, art. 58(1).

¹²⁶ Churchill, above n 124, 66.

xxv) Article 25 - Entry into Force and Duration

The BIICL Model provides for unlimited duration, except that after 45 years, either state party may give 5 years notice to terminate the agreement.

C. Summary Table of BIICL Model Terms

Table 7–1 Summary of the Articles in the BIICL Model JDZ Agreement

The following is a Summary of Articles in the BIICL Model JDZ Agreement:¹²⁷

Article	Clauses	Summary
1.	Use of Terms	Essential terms defined, including specified petroleum law as determined under Articles 7 and 8, and the Zone being seabed, ocean floor and subsoil with related geographical coordinates
2.	Joint Development Zone	JDZ is established for the purpose of developing petroleum, States may agree to develop other resources
3.	Principles of Joint Development	Contracting states shall promote joint development of petroleum in the JDZ and share equally (or as otherwise agreed) the rights and obligations
4.	Without prejudice clause	Nothing in the Agreement shall be interpreted as a renunciation of a state's right or claim. No acts or activities under the Agreement may form the basis for asserting, supporting or denying rights and claims in the JDZ
5.	The Joint Commission	Joint Commission is the body responsible for overall supervision of petroleum activities in the JDZ, comprises equal number of representatives for each state. Joint Commission to establish a Technical Committee for day to day supervision. Joint Commission to have legal personality in the Contracting States
6.	Functions of the Joint Commission	Joint Commission primary roles are the planning, coordinating and supervising of joint development of petroleum in the JDZ
7.	Preparation of the Zone Plan	Joint Commission to formulate Zone Plan and submit to the state parties for approval. States may designate joint commission as sole development authority, either state as sole development authority, or both states as concurrent joint development authorities. Joint Commission to determine petroleum law
8.	Compliance and Enforcement	State Parties to take all appropriate action to enforce the applicable petroleum law, and provide support to the Joint Commission in ensuring contractors compliance
9.	Financial Terms of Development Contracts	Financial terms for Contractors determined exclusively by development contracts, which will either i) incorporate taxation regime of respective development authority, ii) adopt a specific tax regime of one of the state parties, or iii) delegate to Joint Commission power to formulate taxing provisions
10.	Approval of the Zone Plan	Requires joint approval of state parties

¹²⁷ Fox, above n 2, 3-23.

11.	Development Contracts	All petroleum activities require a development contract. Joint Commission may act as development authority. Criteria for selection include provision of satisfactory safeguards for the marine environment. Required to include work programme, environmental impact statement. May be a licence, concession, production sharing contract or other arrangement
12.	Access to Operations	State parties rights to non-discriminatory consideration of nationals' applications, monitor operations, access data, meter petroleum activities
13.	Rights and Duties of Contractors	Exclusive rights to carry out petroleum activities under development contract subject to compliance with its terms
14.	Cancellation or Suspension of Development Contracts	No cancellation of development contract without opportunity to remedy, except for serious threat to marine environment or danger to health and safety
15.	Assignment	Assignment of contractor rights requires consent of relevant Development Authority
16.	Customs and Duty Exemptions	Exemption on equipment unless Joint Commission specifies otherwise. Exemption on shipment of petroleum within jurisdiction of state parties
17.	Operations by Contractors in the Territory of the State Parties	Allows contractor activities in accordance with petroleum law
18.	Unitisation	Consultation if petroleum deposits straddle JDZ area
19.	Employment and Training of Personnel	Joint Commission may issue guidelines to enhance employment of nationals
20.	Health and Safety	State parties to agree procedures based on international standards and implemented under specified petroleum law
21.	Prevention of Pollution and Protection of the Marine Environment	Measures to be implemented under specified petroleum law, based on good oilfield practice and UNEP and IMO international standards. Requires contingency plan for combatting pollution and notification from state parties on pollution incidents. Requires prompt and adequate compensation or other relief in respect of damage caused to the marine environment. No prejudice to state measures to control pollution
22.	Inspection Rights	State party of specified petroleum law has sole responsibility for inspections
23.	Settlement of Disputes	Joint Commission mediation, then arbitration tribunal process. For disputes development authority and contractors binding commercial arbitration
24.	Third Party Rights	State parties not to interfere with rights of other states under generally accepted principles of international law
25.	Entry into Force and Duration	Provides for unlimited duration, save either state may give five years notice to terminate after 45 years

4. Contemporary Commentary on the Model Agreement

There have been significant developments relating to the BIICL Model. New JDZs have been established since the BIICL publication, and one of the JDZs which appeared unsuccessful at the time of the BIICL Review is now in full production.¹²⁸ The reference in the Model Agreement to resources other than oil and gas has become more relevant to existing and future JDZs. In this respect, Sudan and Saudi Arabia agreed to a Common Zone JDZ in 1974 in respect of the seabed and subsoil of the Red Sea between

¹²⁸ 'Malaysia-Thailand Joint Authority' (MTJA) <<http://www.mtja.org/chronicle3.php>> at 2 October 2012.

the two countries.¹²⁹ The Article 2 reference in that agreement to other resources has become much more relevant following the 2010 JDZ licence, including the Atlantis 2 Deep site, which provides for the exploitation of offshore copper, zinc, gold and silver.¹³⁰

The BIICL Review expressed concerns with a model where the JDZ issues petroleum regulations,¹³¹ however these comments were made prior to the more successful development of the Thailand/Malaysia Agreement.¹³² The Thailand/Malaysia JDZ is now in full production.¹³³ The Australia/Timor-Leste Timor Sea Treaty¹³⁴ provides that a petroleum code was to be jointly prepared by Australia and Timor-Leste.¹³⁵ The petroleum code was agreed between Australia and Timor-Leste in 2004,¹³⁶ with successful production for the related Joint Petroleum Development Area (JPDA).¹³⁷ JDZs are therefore operating successfully with the Joint Commission issuing petroleum regulations and state agreement to the petroleum regulations.

In relation to the fiscal regime of the JDZ, the Australia/Timor-Leste Timor Sea Treaty tax code provides that Australia applies its tax system to 10 per cent of the income derived in the JPDA, and Timor-Leste applies its tax system to 90 per cent of that income.¹³⁸

¹²⁹ *Agreement Between Sudan and Saudi Arabia Relating to the Joint Exploitation of the Natural Resources of the Seabed and Subsoil of the Common Zone*, signed 16 May 1974, 952 UNTS 198 (entered into force [1974]), ('*Sudan/Saudi Arabia Agreement*').

¹³⁰ Government of Southern Sudan Natural Resources Management Group, 'Sudan Saudi Arabia Sign Mining License' (Press Release, 31 May 2010) <<http://www.ssudan-nrmg.org/nrmg/index.php?start=30>> at 31 July 2012.

¹³¹ Churchill, above n 124, 33.

¹³² *Memorandum of Understanding between the Kingdom of Thailand and Malaysia on the Establishment of a Joint Authority for the Exploitation of the Resources of the Sea-Bed in a Defined Area of the Continental Shelf of the two countries in the Gulf of Thailand*, signed 21 September 1979, (entered into force 24 October 1979) ('*Thailand/Malaysia Agreement*') reprinted in Jonathan I. Charney and Lewis M. Alexander (eds), *International Maritime Boundaries* (1993) vol 1, 1099.

¹³³ Malaysia-Thailand Joint Authority (MTJA) Website

<<http://www.mtja.org/chronicle3.php>> at 2 October 2012. In 2010, one area (Block A-18), was reported as achieving the milestone of 1 trillion cubic feet of gas sales in September 2010.

¹³⁴ Fox, above n 2, 35.

¹³⁵ The Petroleum Code is particularly significant as the primary regulation of operators for the prevention of marine pollution.

¹³⁶ Duval, above n 4, 216. The Petroleum Mining Code reference is:

<<http://www.laohamutuk.org/Oil/PetRegime/JPDA%20PMC%208-05.pdf>> at 16 October 2012.

¹³⁷ 'Australia and Timor-Leste', ConocoPhillips

<http://www.conocophillips.com/EN/about/worldwide_ops/asia-me/Pages/Australia.aspx> at 16 October 2012. ConocoPhillips reported production from the Bayu-Undan field in the JPDA of natural gas and liquids of 89 million barrels of oil equivalent per day (MBOED) in 2011.

¹³⁸ *Timor Sea Treaty*, arts 1(1)(h) and 5(1), and 'Taxation Code to the Timor Sea Treaty between Australia and East Timor' Australian Taxation Office

The fiscal regime has also been adopted in relation to the Thailand/Malaysia Agreement in 1979.¹³⁹ This regime provides for a royalty payable by Contractors to the joint authority, equal sharing of profit oil between MTJA and Contractors, and Petroleum Income Tax to be paid to the respective Governments.¹⁴⁰

The use of flags of convenience, discussed in relation to Article 20 on health and safety and Article 21 on prevention of pollution and protection of the marine environment, remains widespread. The United Nations Convention on Conditions for Registration of Ships was opened for signature in 1986 but has not entered into force as at 2014.¹⁴¹ The Convention would require that a flag state be linked to its ships, either by having an economic interest in the ownership of its ships, or by providing crew for the ships.

The issue of civil liability and Article 21 of the Model Agreement has developed, particularly following the *Deepwater Horizon* offshore oil spill. Civil liability under United States law includes the United States *Oil Pollution Act*,¹⁴² which was introduced following the *Exxon Valdez* oil spill.¹⁴³ Ronen Perry observed that liability for removal costs arising from environmental damage from an oil spill from an offshore facility is unlimited.¹⁴⁴ Liability for environmental damage from oil tankers is however limited to the greater of USD 1,900 per ton or USD 16 million.¹⁴⁵ In the example of a future JDZ between the United States and Canada, where the United States regulatory regime applied, the BIICL Model may potentially fail to provide compensation for the full recovery costs if the liability was limited under such provisions.

<<http://www.ato.gov.au/individuals/content.aspx?menuid=48275&doc=/content/56392.htm&page=1> > at 17 October 2012.

¹³⁹ *Thailand/Malaysia Agreement*.

¹⁴⁰ Malaysia Thailand Joint Authority, 'Fiscal Regime for the JDA'

<<http://www.mtja.org/fiscalregime.php>> at 2 August 2013. Tax applies on the first 8 years of production at 0 per cent of taxable income, next 7 years at 10 per cent of taxable income, and in subsequent years at 20 per cent of taxable income. Export duty is to be paid to the Governments at 10 per cent of profit oil for sales outside Thailand and Malaysia.

¹⁴¹ *United Nations Convention on Conditions for Registration of Ships*, opened for signature 7 February 1986 <<http://www.jus.uio.no/english/services/library/treaties/07/7-04/registration-ships.xml>> at 9 October 2012.

¹⁴² *Oil Pollution Act*, 33 USC §§ 2701-2719 (2006).

¹⁴³ Ronen Perry 'The Deepwater Horizon Oil Spill and the Limits of Civil Liability' (2011) 86(1) *Washington Law Review* 1.

¹⁴⁴ *Ibid* § 2704(a)(3).

¹⁴⁵ *Ibid* § 2704(a)(1).

Developments taking place after the BICCL Model include the Argentine cancellation of the 1995 United Kingdom/Argentina MOU relating to the South West Atlantic,¹⁴⁶ and Thai cancellation of the 2001 Thailand and Cambodia MOU.¹⁴⁷ The cancellation of the former agreement relates to a sovereignty dispute over land territory of the Falkland (Malvinas) Islands. The United Kingdom/Argentina case is an example of a land sovereignty dispute making the implementation of any future JDZ for the Antarctic Peninsula and related sea areas substantially more difficult. The CRAMRA agreement for a form of JDZ in the Antarctic and Southern Ocean, though not in force as discussed in Chapter IV, was however signed by the United Kingdom and Argentina.¹⁴⁸

5. The Model JDZ and the Polar Regions

A. Arctic and Southern Ocean Issues

The BIICL Review and Model present an excellent basis for a bilateral treaty negotiation between states with overlapping continental shelf claims in the Arctic Ocean region, while allowing for variations and options to be agreed between the state parties. The following proposed modifications for the Arctic Ocean JDZs principally relate to a more unified regime for protection of the environment supervised by the Arctic Council, as discussed in Chapter VIII.

It is essential to emphasise that the purpose of the Model Agreement is to provide a general example for the shared pooling of the continental shelf jurisdiction which international law accords to the coastal state. A Model Agreement will not, by necessity, meet all the requirements for a specific JDZ agreement. Modifications will always be required to meet the needs of the respective state parties, and the specific circumstances of different regions.

The Southern Ocean has special circumstances as Antarctic claims are generally not recognised by most other states, and significant land areas are subject to overlapping claims between the United Kingdom, Chile and Argentina, (including the Graham Land

¹⁴⁶ *Argentina - United Kingdom: Joint Declaration on Cooperation over Offshore Activities in the South West Atlantic*, 27 September 1995, 35 ILM 301 (*Argentina/ United Kingdom MOU*).

¹⁴⁷ *Memorandum of Understanding between the Royal Thai Government and the Royal Government of Cambodia regarding the Area of their Overlapping Maritime Claims to the Continental Shelf*, 18 June 2001 (*Thailand/Cambodia MOU*)

<http://tncbcc.rtarf.mi.th/pdf/pdf_cam190/07.pdf> at 9 April 2013.

¹⁴⁸ Donald R Rothwell, "The Antarctic Treaty System: Resource Development, Environmental Protection or Disintegration?" (1990) 43(3) *Arctic* 284, 290.

and Palmer Land areas on the Antarctic Peninsula), or not subject to any claim (the Unclaimed Sector). The Antarctic and Southern Ocean may also potentially be viewed as the common heritage of mankind rather than sovereign territory of the particular claimant states, although it is essential to note that many states strongly contest the idea that Antarctica is the common heritage of mankind. All oil and gas exploration and development is also effectively suspended until at least 2048 under the Environmental Protocol.¹⁴⁹

In the event that such exploration and development was allowed at some future date, one potential solution may be based the multilateral development of resources. It is however proposed that the Antarctic claimant states be ultimately responsible for supervision in their claimed areas, including protection and preservation of the environment, and in return, receive a level of recognition in respect of their territorial claims in the form of a share of the related oil and gas revenues.

B. Variations to the BIICL Model

The BIICL Model was prepared as a framework for JDZ agreements, with alternatives provided for in the development regime, and with the capacity to incorporate changes required for specific circumstances.¹⁵⁰ The following are proposed variations to the BIICL Model which seek to address the most urgent issues in contemplating oil and gas operations in the Arctic and Southern Oceans.¹⁵¹ The principal variations are further discussed in relation to JDZ implementation in the Arctic and Southern Ocean regions in Chapter VIII. Incorporating these requirements in the JDZ agreement should assist in ensuring that these terms are incorporated in the related exploration and development agreements with oil and gas companies. The 'Arctic and Southern Ocean Model JDZ Agreement', based on the BIICL Model incorporating the proposed variations is included in Appendix I.

¹⁴⁹ The Antarctic is also viewed by many states as the common heritage of mankind, rather than sovereign territory of the particular claimant states. However the suspension of sovereignty may result in an ungoverned area without the international framework of the Antarctic Treaty. In a region of extreme environmental sensitivity this appears likely to result in potential for oil spills. This may also lead to competition for resources and related potential conflicts.

¹⁵⁰ Fox, above n 1, 12.

¹⁵¹ The proposed variations are not exhaustive, as a full Arctic and Southern Ocean JDZ Model would require a large project similar to the BIICL Review. These proposals should highlight significant issues for consideration in developing a future JDZ agreement for the Arctic and Southern Oceans.

i) Article 5 - The Joint Commission

a) Arctic Ocean - Representative from Arctic Council

The likely JDZs in the Arctic Ocean would be bilateral agreements between states with opposite or adjacent coasts. There should be an effective role for the Arctic Council as the regional authority in the oversight of JDZs, on the basis that areas of uncertain sovereignty would benefit from a trusted third party. The Arctic Council as a body principally comprising Arctic State members and communities would be very appropriate for this role. This may be incorporated, for example, by Arctic Council representation on the Joint Commission. This issue is analysed in Chapter VIII.

b) Arctic Ocean - Svalbard - Representative from Arctic Council

There are significant unresolved issues concerning the continental shelf and OCS about the Svalbard Islands, as analysed in Chapter V. There is currently no general recognition of Norway's right to the resources of Svalbard's EEZ and continental shelf. In the event that Norway is not recognised as having sole continental shelf and OCS rights relating to Svalbard, a multilateral JDZ regime may be required.¹⁵² There would, however, be an issue concerning the linkage between the Svalbard Treaty and the Arctic Council, due to the significant differences between their participation. It would be a positive development if Arctic Council representation would be acceptable to the participants of the Svalbard Treaty.

c) Southern Ocean - Integration with the Antarctic Treaty

The models for such multilateral regimes are: the Area, in relation to the resources of the deep seabed beyond OCS claims of any country; and the Convention on the Regulation of Antarctic Mineral Resource Activities (CRAMRA)¹⁵³ proposed for Antarctica in 1988. Both models may potentially address many of the requirements for potential JDZs in the Southern Ocean.

¹⁵² There are significant environmental risks if there is no strong regulatory regime, however one approach may be for a multilateral JDZ which specifically recognises Norway as the regulatory authority, and where Norway enforcing Arctic Council standards for environmental protection.

¹⁵³ *Convention on the Regulation of Antarctic Mineral Resource Activities*, opened for signature 2 June 1988, (not yet in force), (1988) 27 ILM 868 ('CRAMRA').

As discussed in Chapter VIII below, a regime allowing multilateral access to resources, essentially with provision for shared return with the sovereign claimant in return for regulatory authority, and a shared return through the mechanism applying to payments relating to the OCS for third party countries, together with a unified regime for protection of the environment supervised by dedicated body mandated under the ATS, is proposed as one potential solution for Southern Ocean oil and gas joint development.¹⁵⁴

In the event that such exploration and development was allowed at some future date, it appears likely that a multilateral solution should be applied, however it is proposed that the Antarctic claimant states be responsible for supervision in their claimed areas, and derive some level specific benefit in recognition of their claims.

d) Arctic and Southern Oceans - Accountability and Audit

A significant issue for JDZs is public accountability for the distribution of funds from oil and gas activities. The Model Agreement should provide for a Finance Committee to improve accountability on a similar basis to the 1994 Implementation Agreement for the Area.¹⁵⁵ As discussed in Chapter IV, concerns over the regime of the Area resulted in the Implementation Agreement, including the provisions relating to the Finance Committee.¹⁵⁶

¹⁵⁴ There is a risk that the removal of sovereignty claims may result in an effectively ungoverned area. In a region of extreme environmental sensitivity this appears likely to result in an increased risk of oil spills. This may also lead to competition for resources and related potential conflicts.

¹⁵⁵ *Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982*, opened for signature 28 July 1994, 1994 UNTS 42 (entered into force provisionally 16 November 1994) ('1994 Implementation Agreement').

¹⁵⁶ *Ibid.* Annex Section 9(7) of the 1994 Implementation Agreement provides the contributions of the Finance Committee in informing decisions by the Assembly and Council of the International Seabed Authority (ISBA) as follows:

7. Decisions by the Assembly and the Council on the following issues shall take into account recommendations of the Finance Committee:

- (a) Draft financial rules, regulations and procedures of the organs of the Authority and the financial management and internal financial administration of the Authority;
- (b) Assessment of contributions of members to the administrative budget of the Authority in accordance with article 160, paragraph 2(e), of the Convention;
- (c) All relevant financial matters, including the proposed annual budget prepared by the Secretary-General of the Authority in accordance with article 172 of the Convention and the financial aspects of the implementation of the programmes of work of the Secretariat;
- (d) The administrative budget;
- (e) Financial obligations of States Parties arising from the implementation of this Agreement and Part XI as well as the administrative and budgetary implications of proposals and recommendations involving expenditure from the funds of the Authority;
- (f) Rules, regulations and procedures on the equitable sharing of financial and other economic benefits derived from activities in the Area and the decisions to be made thereon.

The Model Agreement should also require public accountability from the Joint Commission, and require accounts to be audited by international auditing firms to ensure the accuracy of financial reports.

e) Legal Regime - Arctic Ocean - Bilateral JDZs

A legal regime based on a Joint Commission is proposed for Arctic Ocean bilateral JDZs, with each state's petroleum regulations applying on that state's side of the median line between the respective state claims. This structure has the primary purpose of closer integration with Arctic coastal state's existing petroleum regulations, and particularly, each state's environmental protection provisions. This structure may also address concerns about the effectiveness of common management regimes by separating ultimate enforcement between the two states up to the JDZ median line.¹⁵⁷ The regulatory authority is an essential issue for Arctic and Southern Ocean JDZs, and is analysed in Chapter VIII.

f) Legal Regime - Southern Ocean - Bilateral and Multilateral JDZs

A Joint Commission with specific petroleum regulations and regulatory powers is proposed for Southern Ocean JDZs enforcing specific petroleum regulations similar to the CRAMRA model, with the primary purpose of better integration with the Antarctic Treaty. This issue is analysed in Chapter VIII.

g) Legal Regime - Arctic and Southern Ocean - The Area

A Joint Commission with a specific regulatory power is proposed for Arctic and Southern Ocean oil and gas activities conducted in the Area under LOSC Part XI.¹⁵⁸ This is similar to the proposal for Southern Ocean JDZs, enforcing specific petroleum regulations similar to the CRAMRA model, with the primary purpose of better coordination with environmental control measures in the Antarctic Treaty area.

¹⁵⁷ This issue arose in relation to Russia's proposals to Norway for joint development in the Barents Sea. Oude Elferink commented that the Russian proposal was rejected by Norway in line with its policy of opposing common management schemes with the Soviet Union, Alex G Oude Elferink, *The law of maritime boundary delimitation: a case study of the Russian Federation* (Martinus Nijhoff, 1994) 240.

¹⁵⁸ LOSC Part XI.

The Area is defined as the sea-bed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction.¹⁵⁹ IBRU has identified three areas of seabed that may be in the Area, subject to future recommendations by the CLCS. The first area lies north of the potential United States OCS, between the potential Canadian and Russian OCS regions; the second area lies nearer the North Pole, adjacent to the potential Russian OCS near the Lomonosov Ridge and Franz Josef Land, adjacent to the potential Greenland (Danish) and Norway OCS areas; and the third area is part of the Banana Hole in the Norwegian Sea as analysed by IBRU,¹⁶⁰ and the Norwegian government.¹⁶¹

Oude Elferink and Rothwell commented that due to the limited extent of these areas in the Arctic, practical future exploitation may only be possible at the same time as nearby oil and gas developments under national jurisdiction.¹⁶² Some form of JDZ with the respective Arctic state may therefore apply.¹⁶³ In relation to the Southern Ocean, Oude Elferink and Rothwell commented that if the legitimacy of continental shelf claims is accepted, then the Area may be considered to apply beyond those claims, however if the claims are not accepted then the Area may apply up to the low water mark of the Antarctic coast.¹⁶⁴ The coordinated use of a single petroleum regulatory regime is therefore a priority to prevent regulatory uncertainty arising from two different regimes potentially applying to the same area. The issue of the Area and potential JDZ implementation is considered in Chapter VIII.

ii) Article 6 - Functions of the Joint Commission - Arctic and Southern Oceans

Due to the environmental hazard of oil and gas operations in the Arctic and Southern Oceans, the choice of petroleum law is very significant to provide an effective regulatory regime. The most satisfactory outcome may potentially be based on the use of each state's petroleum regime for bilateral JDZs in the Arctic region on their respective side of the median line, and a single specific petroleum regime for

¹⁵⁹ Ibid art 1(1).

¹⁶⁰ 'Maritime Jurisdiction and Boundaries in the Arctic Region' International Boundary Research Unit <<http://www.dur.ac.uk/resources/ibru/arctic.pdf>> at 6 October 2012.

¹⁶¹ 'Norwegian Maritime Boundaries' Norwegian Ministry of Foreign Affairs <<http://www.regjeringen.no/en/dep/ud/selected-topics/civil--rights/spesiell-folkerett/folkerettslige-sporsmal-i-tilknytning-ti.html?id=537481>> at 16 October 2012.

¹⁶² Alex G Oude Elferink and Donald R Rothwell, *The Law of the Sea and Polar Maritime Delimitation and Jurisdiction* (2001) 351.

¹⁶³ Alex G Oude Elferink 'The Outer Continental Shelf in the Arctic and the Application of Article 76 of the LOS Convention in a Regional Context' in Oude Elferink and Rothwell, above n 162, 139, 150.

¹⁶⁴ Oude Elferink and Rothwell, above n 162, 350.

multilateral JDZs such as those proposed for the Southern Ocean. This supports the second structure proposed by the BIICL, using a supra-national joint authority to develop the joint zone.

iii) Article 9 - Financial Terms of Development Contracts

a) Fiscal Regime - Arctic and Southern Oceans

The tax and royalty regime should be used for financial terms for JDZs in the Arctic and Southern Oceans, as these regimes are used by the United States, Canada, Norway, the United Kingdom, Australia, Argentina, France and Chile. Russia has an excise tax regime for oil and gas exports, however it has also announced a review and likely reductions, and so may accept a tax and royalty regime for future JDZs.¹⁶⁵

b) Arctic and Southern Oceans - Tax code on Thailand/Malaysia model

The Model should clarify the taxing powers of state parties, as done in the Malaysia/Thailand Agreement,¹⁶⁶ where incomes derived from activities/services in the JDA are subject to taxes by both Malaysia and Thailand under their respective laws, subject to reduction by 50 per cent of the tax chargeable by each country.¹⁶⁷ This is also consistent with the Taxation Code provided in the Australia/Timor-Leste Timor Sea Treaty.¹⁶⁸ The Timor Sea tax code comprised an allocation of state taxing powers to the agreed share of the business profits derived from the JDZ, together with clarification of dividends, interest and royalties, and mutual agreement procedure for resolution of tax matters. This can be contrasted to the use of a separate tax code in the prior Australia/Indonesia Timor Gap Treaty. A new tax code is generally quite complex, and therefore retaining each state's respective tax laws is potentially a much simpler system.

These fiscal terms were discussed with Bhupinder Singh, Head of Tax, at the Malaysian state oil company Petroliam Nasional Berhad ('Petronas'). Singh advised that Petronas

¹⁶⁵ The tax regime has been considered unattractive by international investors, and on 12 April 2012, Russian government announced it was cutting mineral extraction tax and duties levied on exports of hydrocarbons produced in Russia's Arctic offshore zones for 15 years after start of production. Reductions also expected for other Russian continental shelf projects.

¹⁶⁶ *Thailand/Malaysia Agreement*.

¹⁶⁷ Malaysia Thailand Joint Authority, 'Fiscal Regime for the JDA' <http://www.mtja.org/fiscalregime.php> at 2 August 2013.

¹⁶⁸ *Timor Sea Treaty*, Annex G.

prepared Malaysian and Thai tax returns for oil and gas production from blocks in the JDA, and simply divided the tax owed under each calculation to the respective countries by two. Singh commented that this basis of revenue sharing was straightforward.¹⁶⁹ The same basis of revenue sharing is proposed for Arctic and Southern Ocean JDZs.

c) Fiscal Stability - Arctic and Southern Oceans

Fiscal stability clauses are provisions typically made in PSCs, which may provide an undertaking by government not to change the fiscal regime. The BIICL Model does not provide a stability clause, however these clauses may be included in the development contract or PSC.¹⁷⁰ Terms relating to fiscal stability are proposed for the revised Model Agreement.

iv) Article 11 - Development Contracts

a) Arctic and Southern Oceans - Development Regime

The development regimes used by Arctic and Southern Oceans states are generally licence and concession regimes, as follows:¹⁷¹

Table 7–2 Arctic and Antarctic Claimant Oil and Gas Development Regimes

Arctic Ocean	Development Regime
Norway	Licence/concession
Russian Federation ¹⁷²	Licence/concession
United States ¹⁷³	Licence/concession
Canada ¹⁷⁴	Licence/concession
Greenland (Denmark) ¹⁷⁵	PSC with national oil company Nunaoil AS.
Southern Ocean	Development Regime
United Kingdom ¹⁷⁶	Licence/concession

¹⁶⁹ Interview with Bhupinder Singh, Head of Tax, Petroliaam Nasional Berhad ('Petronas'), (Kuala Lumpur, 6 September 2013).

¹⁷⁰ Fox, above n 2.

¹⁷¹ See generally Ernst & Young, *Global Oil and Gas Tax Guide*, (2012). <www.ey.com/GL/en/Industries/Oil---Gas> at 4 October 2012.

¹⁷² Ibid 424.

¹⁷³ Ibid 532.

¹⁷⁴ Ibid 81.

¹⁷⁵ Ibid 198.

Norway ¹⁷⁷	Licence/concession
Australia ¹⁷⁸	Licence, (PSC used in relation to <i>Timor Sea Treaty JPDA</i>)
France ¹⁷⁹	Licence/concession
New Zealand ¹⁸⁰	Licence/concession
Chile ¹⁸¹	Licence/concession, or joint venture with national oil company
Argentina ¹⁸²	Licence/concession
High Seas	Development Regime
ISBA ¹⁸³	Licence, or joint venture with the Enterprise

The concession (licence) regime should therefore be used for development contracts, as generally used by the United States, Canada, Norway, the United Kingdom, Australia (all offshore areas except JPDA under the Timor Sea Treaty JDZ), Argentina, France and Chile, with only Greenland proposing to use a type of PSC regime. Argentina had previously used risk service contracts, however the country has used the concession regime from 1993.¹⁸⁴ The concession regime would use a tax and royalty financial terms applying to the profits and production of the oil company, as set out in Article 9.

b) Bilateral Investment Treaties - Arctic and Southern Oceans

A bilateral investment treaty (BIT) may provide some degree of protection to oil and gas investors from state measures such as nationalisation, or against substantial increases in tax rates or government profit oil allocation, on the basis that such changes are damaging to the oil company as an investor.¹⁸⁵

¹⁷⁶ Ibid 520.

¹⁷⁷ Ibid 344.

¹⁷⁸ Ibid 23.

¹⁷⁹ 'Shell confirms deepwater oil discovery offshore French Guiana' Killajoules, <<http://killajoules.wikidot.com/blog:1278> > at 5 October 2012. A licence/concession is considered to be the likely regime based on example of the Guyane Maritime permit in the French Overseas Territory of French Guiana.

¹⁸⁰ Ernst & Young, above n 171, 326.

¹⁸¹ Ibid 96.

¹⁸² Ibid 17.

¹⁸³ See Chapter IV(3).

¹⁸⁴ Duval, above n 4, 97.

¹⁸⁵ An example of a BIT clause is as follows: 'Investments of investors of each Contracting Party shall not be nationalized, expropriated or subjected to measures having effect equivalent to nationalisation or expropriation (hereinafter referred to as "expropriation") in the territory of the other Contracting Party except for expropriations made in the public interest, on a basis of non-discrimination, carried out under due process of law, and against prompt, adequate and effective compensation'

Oil companies have been successful in cases where the tax changes were discriminatory, for example *RosInvest Co UK Ltd v. Russian Federation*, SCC Case No 075/2009; IIC 471 (2010) - The case was brought under the Russian Federation – UK BIT. The Tribunal held that the arbitrary increase of taxes payable by Yukos (54 per cent rather than the usual corporation tax rate of 30 per cent) was discriminatory, could "hardly be accepted as bona fide treatment" and was "indeed confiscatory" in the

c) Development contracts - Bid evaluation - Arctic and Southern Ocean Regions

The BIICL Model provides for a competitive bidding model with selection generally based on the highest bidder. In the Arctic and Southern Ocean regions, however, bid evaluation issues such as the capacity to protect the environment should be of paramount importance, specifically the ability to provide the best pollution prevention and disaster recovery capabilities. The BIICL Model should be amended to require consideration of multiple factors, and to prioritise protection of the marine environment, and specifically, capabilities for pollution prevention and control.

d) Development contracts - Bid evaluation - Arctic and Southern Oceans - Multilateral JDZs

The competitive bidding process is a significant issue for JDZ implementation in the Arctic and Southern Ocean regions, particularly for the potential multilateral JDZs in the Svalbard and Southern Oceans. The practical acceptance and implementation of a JDZ regime may require the inclusion of oil companies from specific states in the form of participation in consortiums under the related development contract.

v) Article 20 - Health and Safety

a) Health and Safety - Southern Ocean

context of expropriation. Tribunal held that despite Russia's inherent discretion to vary tax policy, the fact that such changes and the use of discretion "occur in so many respects and regarding a specific tax payer as compared with the treatment accorded to comparable other tax payers, doubts remain regarding the objectivity and fairness of the process".

The oil company may however not be successful where there is a negative tax impact without specific circumstances. *The EnCana Corporation v. Republic of Ecuador*, LCIA Case No. UN3481, UNCITRAL (2006) -was brought under the Ecuador – Canada BIT. The case concerned the failure by Ecuador to provide EnCana with a VAT refund associated with oil production and export, in breach of the stabilisation provisions. The Tribunal found that this 'did not deny EnCana 'in whole or significant part' the benefits of its investment', and that 'only if a tax law is extraordinary, punitive in amount or arbitrary in its incidence would issues of indirect expropriation be raised'.

There is also an issue of which state's BIT would apply. The sovereignty over the JDZ area is not resolved by most JDZs. Accordingly an oil company may make a claim under a BIT, however it is not certain that outcome would be binding on an organisation such as a Joint Commission. Accordingly it is proposed that the Model Agreement provide that the state parties extend BIT protection to the oil company.

The health and safety regime in JDZs face specific challenges in the Southern Ocean due to uncertainty over sovereignty and state jurisdiction.¹⁸⁶ Effective governance is essential to enforce measures to maximise safety, particularly with respect to the dangers of oil and gas production platforms, and deep sea diving relating to subsea equipment and pipelines. Effective governance is also essential to the effectiveness of rescue measures. Oil and gas development in JDZs should not progress in the Arctic or Southern Oceans without the supervisory authority for the JDZ enforcing effective health and safety regulations.

b) Health and safety - No Flag of Convenience

The use of flag of convenience ships can result in ships registered in a state without adequate health and safety provisions. There is a further concern with flag of convenience vessels relating to activities in the JDZ where sovereignty may be disputed, and it may be very difficult to enforce health and safety provisions in a petroleum law against a flag of convenience vessel. Due to uncertainty over jurisdiction the Model Agreement should provide that all vessels must not be flag of convenience vessels.

vi) Article 21 - Prevention of Pollution and Protection of the Marine Environment

Several incidents have highlighted the importance of the prevention and control of pollution. In particular, oil spills may not disperse in Arctic waters for a very long period, and environmental damage can therefore be potentially very high.¹⁸⁷

¹⁸⁶ One example of uncertain jurisdiction was raised by the death of Rodney Marks, a New Zealand citizen, at the United States Amundsen–Scott Station at the South Pole. The New Zealand government appears not to have received full cooperation from the United States government, notwithstanding the very serious nature of the incident. 'Circumstances of Australian scientist's South Pole death still unclear', ABC Radio, 24 September 2008,

<http://www.abc.net.au/news/stories/2008/09/24/2373587.htm?site=news> at 1 February 2013. The station is partially within the Ross Dependency claimed by New Zealand, and the death on 12 May 2000 was investigated by a New Zealand coroner in Christchurch, New Zealand. The Coroner held that the death was by methanol poisoning but could not determine the related circumstances. The Australian government's ABC Radio reported: 'Mr McElrea said problems of jurisdiction in Antarctica were highlighted with an Australian dying at a US base and his body being taken to New Zealand. He also noted that New Zealand police were not satisfied they had received full cooperation over the case from Raytheon Polar Service, which provided services at the base and the USNCF, which owned the base and ran research there. "The facts of the case and partial outcomes point to an urgent need to set comprehensive rules of investigation and accountability for deaths in Antarctica on a fair and open basis," he said.'

¹⁸⁷ World Wildlife Fund (WWF) International Arctic Programme, *Oil Spill Response Challenges in Arctic Waters* (2007) 7. The most significant incident to date near to the Arctic region was the *Exxon Valdez* oil spill, in which a large single-hull oil tanker ran aground in Prince William Sound in Alaska in 1989. The resulting crude oil spill was 10.8 million gallons.

There is a related issue concerning the actual effectiveness of environmental provisions.¹⁸⁸ In relation to the effectiveness of Australian provisions to prevent marine pollution, for example, Tina Hunter highlighted shortcomings in the system of supervision relating to the Montara oil spill in the Timor Sea.¹⁸⁹ There may therefore be no effective pollution control regime, notwithstanding seemingly satisfactory national and international regulation. This issue is a significant concern for the Arctic and Southern Ocean environments.

a) Environment - Arctic Ocean - Arctic Council Supervision

The issue of supervision relates to the enforcement of a regional prevention and response code. The Arctic Council concluded the binding agreement on Arctic Marine Oil Pollution Preparedness and Response (MOPPR) in May 2013, as discussed in Chapter IV. The JDZ should refer to compliance with Arctic Council environmental protection measures, such as those contained in the MOPPR agreement, as a binding condition of JDZ approval and continued operations.¹⁹⁰

b) Environmental Protection - Southern Ocean - Antarctic Treaty Supervision

CRAMRA contained the related principles for judgments on whether to approve Antarctic mineral resource activities in Article 4, principally based on assessment of its possible impacts, that the proposed activity is judged to not cause significant adverse effects on the environment, and the capacity exists to respond effectively to accidents with potential environmental effects.¹⁹¹ Article 8 of CRAMRA made the operator of a minerals activity strictly liable for damages including environmental damage. These provisions should also be included in Southern Ocean JDZ agreements.

The detailed environmental protection measures of any JDZ, including a Southern Ocean oil and gas regime, would necessarily be complex, and would be incorporated in

¹⁸⁸ Tina Hunter, 'The Montara oil spill and the marine oil spill contingency plan: Disaster response or just a disaster?' (2010) 24(2) *Australian and New Zealand Maritime Law Journal*, 46.

¹⁸⁹ *Ibid* 47. The spill was reported to have lasted from August to November 2009, with the total oil spill estimated at 6.7 million litres.

¹⁹⁰ *Agreement on Cooperation on Marine Oil Pollution, Preparedness and Response in the Arctic*, 13 May 2013, <<http://www.arctic-council.org/eppr/agreement-on-cooperation-on-marine-oil-pollution-preparedness-and-response-in-the-arctic/>> at 21 January 2014 (not yet in force).

¹⁹¹ *CRAMRA* art 4.

a specific regulatory code. The related code would be specified in the JDZ agreement. The detailed measures would not be incorporated in the JDZ agreement itself, or incorporated in amendments to other treaties such as the Environmental Protocol. The acceptance of a Southern Ocean JDZ regime and the related regulatory code would, however, be subject to the approval requirements for any future minerals regime set out in the Environmental Protocol. This issue is discussed in Chapter XIII.

c) Environmental Supervision - Arctic and Southern Oceans Emergency Response

JDZ agreements in the Arctic and Southern Oceans should incorporate effective measures for responses to oil spills, for example by incorporating the MOPPR measures in Arctic Ocean JDZs. One measure that should be included in JDZ Agreements is the requirement for oil company standby emergency resources, and effective pooling of these resources with other oil companies in the JDZ, and other oil companies in nearby oil and gas fields. Compliance by oil companies should also be subject to environmental audit, such as analysis by environment services groups of large accounting firms, to ensure that measures undertaken by oil companies and contractors continue to meet agreed contract standards.¹⁹²

d) Environmental Protection - Arctic and Southern Ocean - Ambulatory Interpretation

The BIICL Model refers to environmental standards, however there may be new standards introduced after the effective date of the JDZ agreement. An ambulatory interpretation approach should be used, which would provide for incorporation of future environmental standards as they are developed. The VCLT may potentially apply to the interpretation of a JDZ agreement as discussed, however it does not provide for either static or ambulatory methods of interpretation. The BIICL Model should therefore be drafted to adopt an ambulatory approach to require the application of environmental standards at the date of the JDZ and future environmental standards.

e) Environmental Protection - No Flag of Convenience

¹⁹² Duval, above n 4, 398.

The use of flags of convenience can mean that ships are registered in a state without effective enforcement and compensation in the event of an oil spill. Liability and compensation are governed by the Civil Liability and Fund Conventions, and the state in which a ship is registered is not relevant under these measures. The practical application of these conventions should, however, be assisted by ensuring that claims can readily be pursued in jurisdictions with effective enforcement. This issue is of further concern relating to activities in the JDZ where sovereignty may be disputed. Due to uncertainty over jurisdiction the Model Agreement should provide that all vessels must not be flag of convenience vessels.

f) Environmental Guarantees - Arctic and Southern Oceans - Clean up Liability

It is proposed that there should be strict liability of oil companies and all contractors for the full amount of environmental clean-up costs, on a similar basis to Greenland oil and gas contracts.¹⁹³ The liability should apply to pollution from oil installations, and also from ships such as oil tankers. The required financial resources of oil company consortiums to meet the potential costs under the guarantees for environmental liability should therefore be set at a significant level. BP reported that as at 31 December 2012, it had spent USD 14 billion on response activities with respect to the *Deepwater Horizon* offshore oil spill.¹⁹⁴ The determination of the amount for liability compensation requires a detailed economic analysis.¹⁹⁵ Shane Bosma observed that the practical insurance for the oil company may be limited to USD 1 billion.¹⁹⁶ Bosma concluded that the funds

¹⁹³ This is based on the terms of Licence No 09/98 for Exploration for and Exploitation of Hydrocarbons for an Offshore Area West of Sisimiut in West Greenland, Mineral Resources Administration for Greenland, 29 June 1998. <<http://www.geus.dk/ghexis/pdf/sislic.pdf>> at 19 November 2012.

¹⁹⁴ 'Deepwater Horizon Accident' BP <<http://www.bp.com/sectiongenericarticle800.do?categoryId=9036575&contentId=7067541>> at 20 March 2013.

¹⁹⁵ Oil companies and contractors may obtain insurance, however the total cover available is limited. In addition contractors such as drilling companies may have indemnities provided by the oil company, although such indemnities may be limited in cases such as negligence.

¹⁹⁶ Shane Bosma 'The regulation of marine pollution arising from offshore oil and gas facilities – an evaluation of the adequacy of current regulatory regimes and the responsibility of states to implement a new liability regime' (2012) 26 *Australia and New Zealand Maritime Law Journal* 89, 109. The availability of pollution cover is described as follows:

1. The amounts of pollution cover placed by oil industry participants are, generally:
 - a. oil companies: USD 500 million to USD 1 billion (although this can often be 'self-insured' i.e. no insurance is actually placed with a third party insurer);
 - b. drill rig contractors: USD 300 million to USD 1 billion; and
 - c. other oilfield service providers: USD 50m to USD 1 billion, but
2. There are significant regional variances in the levels of insurance cover placed for pollution damage, particularly within the jurisdictions of developing countries'

available for clean-up measures therefore rely on the balance sheet of the oil company.¹⁹⁷

An alternative method is a fund which provides for the costs of remediating oil spills. The Arctic Council has not introduced such a measure as at December 2014, and it appears likely to be difficult to establish a fund to the necessary levels.

For the purposes of variations to the BIICL Model, the proposed environmental guarantee amount is the actual damage caused, with the financial assets of the oil company consortiums set at the *Deepwater Horizon* amount in order to highlight this specific issue. The required financial assets to support potential guarantee costs is therefore proposed at USD 14 billion, subject to a future analysis of the real economic risks.¹⁹⁸ In practice this means that activities would only be undertaken by the largest oil and gas companies in consortiums, with the combined financial strength to meet the costs of potential environmental damage.¹⁹⁹

g) Environmental Guarantees - Arctic and Southern Oceans

The environmental provisions of a JDZ should also include environment or pollution guarantees, which may be given by the oil company, its parent company and third party financial institutions to guarantee to pay costs in the event of a major environmental incident. Specific insurance cover against events such as oil spills may also be a condition of the development agreement.²⁰⁰

¹⁹⁷ Ibid 109. Bosma comments as follows:

'Again, the community is in a sense fortunate that BP was the operator with responsibility for the Macondo incident and was able to bring to bear the balance sheet strength of, at the time, the world's second largest public multinational oil company and a corporate culture willing to assume initial responsibility beyond the legislative limitation and despite the disputation with its JV partners and contractors. However, the current 'Russian roulette' of being reliant upon the balance sheet strength of the polluter is clearly unsatisfactory and it is difficult to conclude that the present state of affairs can be considered sufficient to fulfil the international legal obligation of coastal States to establish adequate compensation for damage caused by pollution to the marine environment.'

¹⁹⁸ This amount is the minimum available net assets of the oil and gas licence holders including the field operator and their consortium partners.

¹⁹⁹ There principal risk to an effective environmental regime in the Southern Ocean is that states may not recognise any continental shelf regime applies to Antarctica, and therefore consider that the Area extends to the Antarctic coastline, and that such measures therefore need to be incorporated in future amendments to LOSC Part XI. This issue is analysed in Chapter XIII.

²⁰⁰ Duval, above n 4, 160.

In view of the environmental considerations in the Arctic and Southern Ocean the requirement for full environmental and pollution insurance, together with full environmental and pollution guarantees from the oil company, its ultimate parent and third party financial institution should be included in the JDZ agreement.²⁰¹

vii) Article 23 - Settlement of Disputes - Southern Ocean

The CRAMRA regime provided specific dispute resolution measures in Article 57, based on negotiation, enquiry, mediation, conciliation, arbitration, judicial settlement or other peaceful means of their choice. If the dispute could not be resolved then the dispute could be referred by one of the parties to the Arbitral Tribunal. It is proposed that Southern Ocean JDZs should adopt dispute resolution measures on a similar basis to the CRAMRA proposals.

C. Summary Table - Variations to BIICL Model Terms

Table 7–3 Summary of Variations to the BIICL Model JDZ Agreement

The following is a Summary Table of the proposed variations to the BIICL Model for consideration for Arctic and Southern Ocean JDZs:²⁰²

Item Ref.	BIICL Model Art.	Clause	Summary
i)	5	Joint Commission	Arctic Ocean - Arctic Council representation on the Joint Commission
ii)	5	Joint Commission	Southern Ocean - Integration based on multilateral access to resources model within Antarctic Treaty regime
iii)	5	Joint Commission	Arctic and Southern Oceans - Finance Committee, public accountability and audit
iv)	5	Joint Commission	Arctic Ocean - Legal regime - Separate state petroleum regulation to the median line
v)	5	Joint Commission	Arctic Ocean - Svalbard - Potential multilateral JDZ, with agreement for Norway as regulatory authority
vi)	5	Joint Commission	Southern Ocean - Legal Regime - Joint Commission with petroleum regulatory regime for integration with Antarctic Treaty

²⁰¹ The Greenland Government, for example, requires guarantees from the holders of exploration or development permits in a single licence block area in excess of USD 1 billion. The guarantee is typically provided by both the local oil company subsidiary and the ultimate parent company, and the state may also require support for the financial obligations from third party financial institutions. Measures of this type may be included in licence or PSC terms.

²⁰² Fox, above n 2, 3-23.

vii)	5	Joint Commission	Arctic and Southern Ocean - Legal Regime - The Area - Joint Commission with petroleum regulatory regime for integration with Antarctic Treaty
viii)	6	Functions of Joint Commission	Arctic and Southern Oceans - Supra-national joint authority with respective state petroleum regimes to the median line of the zone for bilateral JDZs, and a single specific petroleum regime for multilateral JDZs
ix)	9	Financial Terms of Development Contracts	Arctic and Southern Oceans - Tax and royalty regime
x)	9	Financial Terms of Development Contracts	Arctic and Southern Oceans - Tax code on Malaysia/Thailand model. ²⁰³ Tax calculated under each state's rules, sharing by paying each state half the calculated tax.
xi)	9	Financial Terms of Development Contracts	Arctic and Southern Oceans - Fiscal stability
xii)	11	Development Contracts	Arctic and Southern Oceans - Concession (licence) regime
xiii)	11	Development Contracts	Arctic and Southern Oceans - Bilateral Investment Treaty protection
xiv)	11	Development Contracts	Arctic and Southern Oceans - Finance committee, public accountability and audit
xv)	11	Development Contracts	Arctic and Southern Oceans - Multiple bidding elements for Development Contracts, prioritising protection of the marine environment capabilities
xvi)	11	Development Contracts	Arctic and Southern Oceans - Potential multilateral JDZ - Svalbard and Southern Ocean - Promotion of bidding consortiums
xvii)	20	Health and Safety	Southern Ocean - More effective governance regime
xviii)	20	Health and Safety	Arctic and Southern Oceans - No flag of convenience ships
xix)	21	Prevention of Pollution and Protection of Marine Environment	Arctic Ocean - Supervision of regulations by Arctic Council, and implementation of Arctic Marine Oil Pollution Preparedness and Response
xx)	21	Prevention of Pollution and Protection of Marine Environment	Southern Ocean - Supervision of regulations under Antarctic Treaty
xxi)	21	Prevention of Pollution and Protection of Marine Environment	Arctic and Southern Oceans - Effectiveness of the regulatory regime - Oil company standby resources and pooling - Audit of readiness
xxii)	21	Prevention of Pollution and Protection of Marine Environment	Arctic and Southern Oceans - Ambulatory interpretation - include future environmental provisions
xxiii)	21	Prevention of Pollution and Protection of Marine Environment	Arctic and Southern Oceans - No flag of convenience ships
xxiv)	21	Prevention of Pollution and Protection of Marine Environment	Arctic and Southern Oceans - Environmental guarantees from oil and gas company on similar basis to Greenland contracts, ²⁰⁴ extended to the ultimate parent companies

²⁰³ *Thailand/Malaysia MOU, and 1990 Agreement between Malaysia and Thailand on the constitution and other matters relating to the establishment of the Malaysia-Thailand Joint Authority*, 30 May 1990. <<http://cil.nus.edu.sg/1990/1990-agreement-between-the-government-of-malaysia-and-the-government-of-the-kingdom-of-thailand-on-the-constitution-and-other-matters-relating-to-the-establishment-of-the-malaysia-thailand-joint-ortho/>> on 15 January 2013 (entered into force 30 May 1990).

²⁰⁴ Licence No 09/98 for Exploration for and Exploitation of Hydrocarbons for an Offshore Area West of Sisimiut in West Greenland, Mineral Resources Administration for Greenland, 29 June 1998, <<http://www.geus.dk/ghexis/pdf/sislic.pdf>> at 19 November 2012.

xxv)	21	Prevention of Pollution and Protection of Marine Environment	Arctic and Southern Oceans - Strict liability of oil company and contractors on a joint and severable basis for all environmental costs on Greenland model. ²⁰⁵ Consortium assets required to be at significant level e.g. USD 14 billion
xxvi)	23	Dispute Resolution	Southern Ocean - Adopt dispute resolution under Antarctic Treaty

The use of BIICL Model and proposed variations for the Arctic Ocean is subject to the need for the highest environmental standards, with significant potential benefits of regional approach incorporating the Arctic Council, the possibility that a multilateral JDZ may be required relating to Svalbard, and the possibility of joint venture development in the three regions likely to be part of the LOSC Area regime. The use of the BIICL Model and variations for the Southern Ocean JDZ should not undermine the Antarctic Treaty Regime. Analysis of the implementation of JDZs in the Arctic and Southern Oceans based on these variations are considered in Chapter VIII.

6. Contribution to Research Conclusions

The principal contribution of this analysis to the research conclusions is that JDZs should be adapted to Arctic and Southern Ocean environmental conditions. The BIICL Model Agreement allowed flexible terms, and was intended as an example to assist state parties to arrive at an effective JDZ agreement. The majority of the proposed changes to the BIICL Model should be interpreted in the same manner, as an example for the potential use of state parties, rather than an inflexible set of terms.

The principal adaptations relate to the protection of the environment, including the requirement for bidding consortiums with sufficient resources to meet compensation claims, and the provision of extended liability for compensation for oil pollution damage on a similar basis to the current Greenland regime.

Related proposals include integration with regional pollution prevention and control regimes. It is also proposed that state jurisdiction applies up to the median line of a bilateral JDZ region, to improve enforcement of environmental protection measures against third parties, similar to the Norway/Iceland Agreement which established the Jan Mayen JDZ.²⁰⁶

²⁰⁵ Ibid.

²⁰⁶ *Agreement between Iceland and Norway on the Continental Shelf in the Area between Iceland and Jan Mayen*, 22 October 1981, 2124 UNTS 262 (entered into force 2 June 1982) ('*Norway/Iceland Agreement*').

Contemporary developments after publication of the BIICL Model include the Australia/Timor Leste Timor Sea Treaty, with each state applying its own tax system to their share of oil company profits,²⁰⁷ and similar provisions in the implementation of the Malaysia/Thailand Agreement.²⁰⁸

The revised Model based on these terms is set out in Appendix I.

²⁰⁷ *Timor Sea Treaty* annex G arts 1(1)(h) and 5(1), and 'Taxation Code to the Timor Sea Treaty between Australia and East Timor' Australian Taxation Office
<<http://www.ato.gov.au/individuals/content.aspx?menuid=48275&doc=/content/56392.htm&page=1> > at 17 October 2012.

²⁰⁸ *Thailand/Malaysia Agreement*.

CHAPTER VIII – JOINT DEVELOPMENT ZONES – IMPLEMENTATION ISSUES IN POLAR REGIONS

1. Introduction

This chapter analyses the three specific implementation issues relating to the use of JDZs in the Arctic and Southern Ocean regions. This includes the use of JDZs to resolve resource conflicts through resource sharing in specific regions, measures to protect the marine environment, and supporting regional governance structures under the Arctic Council and Antarctic Treaty regimes.

2. Resource Sharing

A. Resolving Potential Resource Conflicts

The establishment of JDZs has been successful in several regions as discussed in Chapter III, and has resolved competing continental shelf and OCS claims and allowed the development of offshore oil and gas resources based on the sharing of resources. Several regions in the Arctic and Southern Ocean have special circumstances as analysed in Chapters V and VI. This chapter analyses specific implementation issues for potential Arctic and the Southern Ocean JDZs, and proposes JDZ structures for resource sharing to resolve potential resource conflicts in these regions.¹

The JDZ structure can likely best resolve issues of control and jurisdiction by applying each state's jurisdiction, including oil and gas and environmental regulations, from each state's boundary with the JDZ area up to the median line between the respective state

¹ The most significant Arctic Ocean and adjoining regions based on potential oil and gas reserves are between the United States and Russia in the Bering Sea, the United States and Canada in the Beaufort Sea, the Central Arctic region between Canada, Denmark (Greenland) and Russia, and the Svalbard Islands region in the Greenland and Barents Seas and Arctic Ocean. The most significant Southern Ocean regions based on potential oil and gas reserves, subject to the very limited drilling to date, are the Weddell Sea region claimed by the United Kingdom, Argentina and Chile, the Ross Sea in the New Zealand Ross Dependency, and Prydz Bay in the Australian Antarctic Territory.

claims. This structure would allow each state to tax 50 per cent of the net income from oil companies in the JDZ under their respective tax rules. Each state would also impose royalties and any excise tax on 50 per cent of production from the JDZ.

B. Arctic Ocean Region

The implementation of JDZs in the Arctic Ocean region is subject to specific circumstances including the maritime boundaries of the United States with Canada and Russia, the potential OCS overlap of Denmark (Greenland), Canada and Russia, the process of the CLCS in reviewing OCS submissions, the potential absence of state claims to three regions in the Arctic Ocean and Norwegian Sea likely to be subject to the Area regime under Part XI LOSC,² and special circumstances relating to the Svalbard Islands and the Svalbard Treaty.³

i) United States and Russia – Bering Sea

A primary area for a potential JDZ lies in the Bering Sea between the United States and Russia, extending north to the Chukchi Sea and the Arctic Ocean. As discussed in Chapter V, the United States and Russia signed an Agreement on the Maritime Boundary on 1 June 1990,⁴ to delimit the baselines and continental shelf in the Bering and Chukchi Seas into the Arctic Ocean. The United States ratified the Agreement on September 16, 1991. Russia has not ratified the Agreement, however the two states have agreed to apply the Agreement provisionally.⁵ Russia may however ratify the Agreement at a later date, in which case no JDZ would be required.⁶

ii) United States and Canada – Beaufort Sea

² *United Nations Convention on the Law of the Sea*, opened for signature 10 December 1982, 1833 UNTS 396 (entered into force 16 November 1994) ('*LOSC*').

³ *The Treaty Concerning the Archipelago Spitsbergen*, opened for signature 9 February 1920, 2 LNTS 8, (entered into force 14 August 1925) ('*Svalbard Treaty*').

⁴ *Agreement between the United States of America and the Union of Soviet Socialist Republics on the Maritime Boundary*, opened for signature 1 June 1990, (not entered into force at 14 March 2008).

⁵ Alex G Oude Elferink and Donald R Rothwell (eds), *The Law of the Sea and Polar Maritime Delimitation and Jurisdiction* (Martinus Nijhoff, 2005) 183.

⁶ There is an issue whether the implementation of a future Bering Sea JDZ would be affected as the United States has not ratified LOSC. The issue of the application of LOSC to non-party states is considered in Chapter II. This issue raises concern in relation to LOSC measures for dispute resolution, and for protection and preservation of the marine environment. The model JDZ agreement addresses these issues as proposed in Chapter VII.

The Beaufort Sea between the United States and Canada also has potential for a JDZ. The disputed area is not large, however oil exploration is actively conducted in this region.

In this case Canada's claim appears quite strong, and the Canadian government may prefer to refer the matter for arbitration under LOSC in the event that the United States ratified LOSC. However a corresponding concession may also be offered by the United States to support a JDZ. One example would be United States recognition of the Northwest Passage as Canadian internal waters rather than an international strait.

Michael Byers observed that joint development solutions have been proposed for this region, as discussed in Chapter V, including Canadian management of the region under a joint development agreement, with a portion of the related profits paid to the United States.⁷

iii) Svalbard Islands

Svalbard is potentially one of the more complex maritime boundary disputes in the Arctic Ocean region due to the issue of the applicability of the Svalbard Treaty.⁸ The background to the Svalbard region and the related dispute over continental shelf and OCS was analysed in Chapter V.

The principal issues concerning a JDZ relating to Svalbard are that a continental shelf and OCS JDZ needs the agreement of the states concerned, and any sharing of resources beyond the territorial sea is currently contrary to Norway's view that it has sole rights to the resources of the Svalbard continental shelf and OCS. The determination of a way forward is likely to be a complex matter, however one method may be to recognise some part of the Norwegian claim, in return for Norway's exercise of effective regulatory authority.

⁷ Michael Byers, *International Law and the Arctic* (Cambridge University Press, 2013) 89.

⁸ *Svalbard Treaty* art 3. Article 3 provides to all parties:

'equal liberty of access and entry for any reason or object whatever to the waters, fjords and ports of the territories...They shall be admitted under the same conditions of equality to the exercise and practice of all maritime, industrial, mining or commercial enterprises both on land and in the territorial waters...'

It is proposed that one potential solution may be an equal sharing between Norway and the contractor states, for example by allowing Norway the right to tax 50 per cent of the income from operations in the Svalbard continental shelf, and allowing the state of residence of the operators the right to tax 50 per cent of the remaining income. Norway's powers to tax are limited under Article 8 of the Svalbard Treaty,⁹ and accordingly such taxation provisions of a potential new agreement for a JDZ would need to replace these terms.

Norway would be required to licence oil companies providing they met the required standards, particularly the environmental standards analysed in Chapter VII. It would remain to be determined whether other states would consider the structure to be acceptable, recognising that Norwegian arguments for resources have some basis, and that the result would be equitable given Norwegian oil and gas regulatory supervision.

It is proposed that the Arctic Council would have representation on the Joint Committee established in relation to any future JDZ in the Arctic Ocean region, primarily to supervise environmental regulations, and ensure coordination with environmental measures and emergency responses in the Arctic Ocean region.¹⁰

The JDZ may be made as a new agreement, a renegotiation of the Svalbard Treaty or as a protocol to the Svalbard Treaty. Renegotiation of the Svalbard Treaty or a related Protocol is likely to be impractical, due to the large number of state parties to the Svalbard Treaty. The more practical approach is likely to be made by a Norwegian declaration of a JDZ area consistent with the Svalbard Treaty. The JDZ structure should however offer a potential solution to the dispute and allow the development of oil and gas resources to proceed.

⁹ Svalbard Treaty. Article 8 states in part that 'Norway undertakes to provide for the territories specified in Article 1 mining regulations which, especially from the point of view of imposts, taxes or charges of any kind, and of general or particular labour conditions, shall exclude all privileges, monopolies or favours for the benefit of the State or of the nationals of any one of the High Contracting Parties, including Norway, and shall guarantee to the paid staff of all categories the remuneration and protection necessary for their physical, moral and intellectual welfare. Taxes, dues and duties levied shall be devoted exclusively to the said territories and shall not exceed what is required for the object in view.'

¹⁰ The Norwegian licencing regime allows foreign oil companies to explore and produce oil and gas in Norwegian continental shelf and OCS. The proposed structure would also provide for complete Norwegian control as the licencing authority, consistent with the position taken by academic authorities discussed above. The JDZ terms would allow the taxing power to other states to benefit from the resources in the JDZ.

iv) Central Arctic – Canada, Denmark (Greenland) and Russia

There is a potential overlap in the central Arctic Ocean between the United States, Canada, Denmark and Russia as discussed in Chapter V. The potential overlap is generally illustrated as arising from equidistance from their respective coasts extending beyond the North Pole, which would overlap the current submission made by Russia to the CLCS extending from the Russian coast to the North Pole.¹¹ The potential JDZ area, based on equidistance overlapping a Russian claim, is indicated on the IBRU map published in 2012 (see Illustration 5–1).¹² LOSC limits on the OCS may mean there are no overlaps, unless Lomonosov and Mendeleev Ridges support an extended OCS, and this issue is therefore subject to CLCS review of the relevant geological data. The potential overlap is also subject to the CLCS recommendations on the revised Russian submission relating to the Lomonosov and Mendeleev Ridges, and the CLCS recommendations on the current Danish and Greenland government submission and the anticipated Canadian final submission.¹³

There is currently no indication that Russia will not accept a future CLCS recommendation, and the Russian Arctic claim does not extend beyond the North Pole. As discussed in Chapter V, Canada lodged the Preliminary Information concerning the outer limits of the continental shelf of Canada in the Arctic Ocean on 6 December 2013.¹⁴ The Preliminary Information provided for a submission based on the Alpha and Lomonosov Ridges, however the Preliminary Information did not provide whether a submission would be made relating to any sea areas beyond the North Pole.¹⁵ The Denmark and Greenland government submission in December 2014 does extend

¹¹ Donat Pharand, 'Canada's Arctic Jurisdiction in International Law' (1982-1983) 7 *Dalhousie Law Journal* 315, 318.

¹² Martin Pratt, 'Maritime Jurisdiction and Boundaries in the Arctic Region', International Boundaries Research Unit, <<http://www.dur.ac.uk/ibru/resources/arctic/>> at 24 January 2015.

¹³ Mel Weber, 'Defining the Outer Limits of the Continental Shelf across the Arctic Basin: The Russian Submission, States' Rights, Boundary Delimitation and Arctic Regional Cooperation', (2009) 24 *The International Journal of Marine and Coastal Law* 653, 662.

¹⁴ Preliminary Information concerning the outer limits of the continental shelf of Canada in the Arctic Ocean, <http://www.un.org/depts/los/clcs_new/commission_preliminary.htm> at 10 August 2014. The filing of the preliminary information satisfied the time period in article 4 of Annex II of the Convention, read in conjunction with decision SPLOS/183 adopted at the eighteenth meeting of States Parties to the Convention.

¹⁵ *Ibid.* The Preliminary Information stated:

The continental margin of Canada in the Arctic Ocean is part of a morphologically continuous continental margin around the Canada Basin and along the Amundsen Basin. It comprises a number of seafloor elevations (Lomonosov Ridge and Alpha Ridge) and forms the submerged prolongation of the land mass of Canada. Throughout, the areas of continental shelf extend beyond 200 nautical miles from the territorial sea baselines of Canada and, on the Alpha and Lomonosov Ridges, beyond the 350 nautical mile constraint.

beyond the North Pole and therefore overlaps the current Russian submission. There may be a potential need for a JDZ in the event that CLCS recommendations confirm that Canadian and Danish claims overlap the Russian claim and future maritime boundaries are not agreed.

Allain analysed the approaches to the CLCS, and considered that to avoid the possibility of a deadlock between the Arctic states, an available option was to reach a boundary agreement before making a submission to the CLCS.¹⁶ This was the position taken by Australia and New Zealand before their respective submissions to the CLCS.¹⁷ Allain considered that it was in a state's best interest to combine its data with the other Arctic States, to have the same interpretations and applications of the provisions of Article 76 of LOSC.

An alternative approach is to make a partial submission. Symmons considered the use of a partial submission would allow a submitting state with an extensive maritime or land dispute off its coast to put this aspect of its own claim 'into cold storage' until a future date, without being affected by the 10 year submission rule, while at the same time enabling a submission with respect to the state's OCS which do not overlap the claims of another state.¹⁸

Oude Elferink proposed a procedure based on paragraph 5 of Annex I of the Rules of Procedure, which allows the disputed areas of a submission to be examined with the prior consent of all coastal States involved.¹⁹ Allain commented that as Russia has yet to make public the contents of its initial submission and the recommendations of the CLCS, it is debatable whether or not Russia would change its approach and share the details of its claim with the other Arctic States.

¹⁶ Monique Andree Allain, 'Canada's Claim To The Arctic: A Study In Overlapping Claims To The Outer Continental Shelf' (2011) 42 *Journal of Maritime Law and Commerce* 1.

¹⁷ *Treaty between the Government of Australia and the Government of New Zealand establishing certain Exclusive Economic Zone and Continental Shelf Boundaries*, 25 July 2004, (2006) ATS 4 (entered into force 25 January 2006).

¹⁸ Clive Symmons, 'The Irish Partial Submission to the Commission on the Limits of the Continental Shelf in 2005: A Precedent for Future Such Submissions in the Light of the "Disputed Areas" Procedures of the Commission?' (2006) 37 *Ocean Development and International Law* 3, 4.

¹⁹ Alex G Oude Elferink, 'Submissions of Coastal States to the CLCS in Cases of Unresolved Land or Maritime Disputes' in Myron H. Nordquist, John N. Moore and Tomas H. Heidar eds., *Legal and Scientific Aspects of Continental Shelf Limits* (Martinus Nijhoff, 2003) 263, 268.

The potential JDZs may be between Canada and Russia, and between Denmark (Greenland) and Russia. Canada and Denmark are coordinating a survey for the CLCS submissions,²⁰ and announced in 2012 that agreement had been reached in relation to the boundary in the Lincoln Sea.²¹

v) Central Arctic and Norwegian Sea – Three Zones under the Area Regime, LOSC Part XI

As discussed in Chapter V, the Area regime may be considered a form of multilateral JDZ, where development by different states is permitted under the ultimate control of ISBA. The Area regime is likely to apply to central areas in the Arctic Ocean, the central Bering Sea between the United States and Russia ('Central Bering Sea Doughnut Hole'), the Barents Sea ('Barents Sea Loophole'), and the Norwegian Sea ('Norwegian Sea Banana Hole').²² The potential Arctic Ocean regions are shown as three unshaded areas in the IBRU Arctic Boundary Map (see Illustration 5–1),²³ however this region may be larger if the CLCS does not recommend that an OCS can relate to the Lomonosov and Mendeleev Ridges.²⁴

A significant implementation issue concerns whether a structure can be provided to ensure effective enforcement of the environmental provisions of LOSC Part XI. It is therefore proposed that the Norwegian regulatory regime to apply to the zone adjacent to the Norwegian Sea, the Canadian regime apply to the zone adjoining the Canadian Arctic Ocean OCS, and the Russian regulatory regime apply to the zone adjoining the Russian Arctic Ocean OCS. The Arctic Council binding agreement on Arctic Marine Oil Pollution Preparedness and Response would potentially apply in all regions as discussed below.²⁵

C. Southern Ocean – Antarctic Continental Shelf and OCS

²⁰ Allain, above n 16, 1.

²¹ Government of Canada, Foreign Affairs and International Trade Canada, 'Canada and Kingdom of Denmark Reach Tentative Agreement on Lincoln Sea Boundary', (Press Release, 28 November 2012) <<http://www.international.gc.ca/media/aff/news-communiqués/2012/11/28a.aspx?view=d>> at 14 January 2013.

²² Alex G Oude Elferink and Donald R Rothwell 'Challenges for Polar Maritime Delimitation and Jurisdiction' in Oude Elferink and Rothwell, above n 5, 351.

²³ Pratt, above n 12.

²⁴ As discussed in Chapter V, this would potentially apply if these ridges are not classified as 'submarine elevations that are natural components of the continental margin,' and so would not support OCS claims.

²⁵ Arctic Council, Senior Arctic Officials (SAO) Report to Ministers, Nuuk, Greenland, May 2011, 4.

i) Antarctic Treaty – Claimant and Non-claimant States

The implementation of JDZs in the Southern Ocean is subject to the Antarctic Treaty and the Environmental Protocol, the position of non-claimant states to Southern Ocean resources, the overlapping claims of three states on the Antarctic Peninsula, and the absence of current claimants to the Unclaimed Region. The CRAMRA regime would have permitted multilateral development as analysed in Chapter IV.

An essential issue is that development of such a JDZ would need to be made within the framework of the Environmental Protocol, in regard to the prohibition on Antarctic mineral resource activities in Article 7, and the procedure for any modification to that provision in Article 25, as discussed in Chapter IV. Special reference must be made to Article 25(5), which provides that the prohibition on mineral resource activities shall continue 'unless there is in force a binding legal regime on Antarctic mineral resource activities that includes an agreed means for determining whether, and, if so, under which conditions, any such activities would be acceptable'. Accordingly the time frame for a Southern Ocean JDZ includes not only the term when the prohibition cannot be changed, but also the time required for development of an agreed means of acceptance of the new regime.

Article 25(5) also requires that any mineral resource regime must fully safeguard the interests of all states referred to in Article IV of the Antarctic Treaty and apply the principles thereof, and must include a binding legal regime. The terms of a JDZ include issues such as the rights of states, the administrative structures such as a Joint Commission, the manner of exploitation, environmental protection and dispute resolution, as discussed in Chapter VII. These terms are essentially separate from the terms of the Environmental Protocol, and the JDZ would be a completely new treaty regime.²⁶ The integration of a new JDZ regime with the Environmental Protocol would however be based on the requirement for an agreed means of acceptance, and the safeguarding of state rights under the Antarctic Treaty.

Determining the basis of resource sharing requires a negotiation process within the framework of the Antarctic Treaty. The following structure is submitted as a potential

²⁶ For example, the specific requirements for an environmental impact assessment for oil and gas development under a JDZ are much more complex than the current requirements in Article 8 of the Environmental Protocol.

solution, based on a combined income taxation and production royalty regime, as used by all the Antarctic claimant states. The rights of claimant states should, in part, be recognised, by the right of the claimant to impose taxation on a proposed 50 per cent of the related oil and gas income of each oil company participating in the development. The state with the closest economic connection to each oil company engaged in the development would then tax the remaining 50 per cent of income. There is a very significant issue as to whether a Southern Ocean JDZ should recognise the interests of other states. As the JDZ is intended to resolve potential disputes as to resources, and given that essential fact that the majority of states do not recognise Antarctic claims, one possible solution to resolve competing interests would be not only to provide for the direct participation of non-claimant states, but also to provide for a treatment of revenues for other states on a similar basis to the OCS regime of Part VI Article 82(4), where other states can potentially receive a benefit from activities in the OCS. This proposed approach is should be treated as one example which is made to highlight the resource sharing issue as one potential solution. It is important to emphasise that there are likely to be other potential solutions to this issue. The interests of non-claimant states should be met primarily by the right to tax their oil companies participating in the development on 50 per cent of income discussed above, combined with the collection of production royalties for the benefit of all states and particularly less developed and landlocked states on the same basis as LOSC Part VI Article 82(4). The proposed economics of a combined income tax and royalty regime should be fully analysed to ensure a satisfactory sharing of costs and benefits.²⁷

The development of a multilateral JDZ is a process of negotiation, and one alternative approach would be to allow the claimant state to nominate one of the oil companies in the development.

LOSC Annex III allows the contractor to elect between a production-based charge,²⁸ or production-based charge combined with a share of net proceeds,²⁹ with amendment likely to be required in relation to oil and gas resources.³⁰

²⁷ This type of review may be undertaken, for example, by organisations such as Van Meurs Corporation <<http://www.vanmeurs.org>> at 2 November 2012, together with Wood Mackenzie Research and Consulting <<http://www.woodmacresearch.com/cgi-bin/wmprod/portal/energy/portalup/index.jsp>> at 2 November 2012.

²⁸ LOSC annex 3 art 13(5). Production based charge, at a rate to years 1-10 of commercial production of 5 per cent, and years 11 to the end of commercial production of 12 per cent.

²⁹ LOSC annex 2 art 13(6). Production based charge combined with a share of net proceeds, with the production based payment based on the period of commercial production from 2 per cent to 4 per cent,

It is proposed that a Joint Commission established for the JDZ adopt a standard regulatory and environmental code for oil and gas exploration and development. The claimant state would however exercise jurisdiction over oil and gas activities in the claimed area to enforce those provisions.

The principle of claimant state enforcement is based on rights under international law in relation to Antarctic claims. It is not proposed to establish a regime derogating from those rights. The enforcement regime would be similar to the Svalbard region, with a Norwegian enforcement regime as the sole country enforcing Norwegian and international laws, while providing for multinational sharing of resources, as discussed by Churchill and Ulfstein.³¹ There would therefore be enforcement of oil and gas regulations and environmental measures by one state, rather than by many.

The need for effective integration of a Southern Ocean JDZ with the ATS is a key issue. The JDZ itself would require a treaty acceptable to a sufficient number of states to result in ratification, which would require recognition of state rights within the ATS to be reflected in the terms of the JDZ.

It must be emphasised that the essential disagreement between claimant and non-claimant states over any sovereignty over Antarctica and the Southern Ocean presents a very unique challenge to the implementation of a JDZ in this region. The JDZ is however a significant possible way to reconcile these competing interests in a manner which may potentially be acceptable to claimant and non-claimant states.

ii) United Kingdom, Chile and Argentina – Antarctic Peninsula Region

together with share of net proceeds, based on return on investment and period of production, from 35 per cent to 70 per cent.

³⁰ The LOSC Part XI regime is essentially a royalty based on production, and does not prevent the respective state most closely connected to the oil company from taxing that company on its related income from the Area.

³¹ RR Churchill and Geir Ulfstein, *Marine Management in Disputed Areas: The Case for the Barents Sea* (Routledge, 1992) 40.

The Antarctic Peninsula has overlapping claims by the United Kingdom, Argentina and Chile as discussed in Chapter VI. The area is also highly significant for potential oil and gas as hydrocarbons were detected during drilling in the Weddell Sea.³²

The proposal for a 50 per cent share to the Antarctic claimant state can be modified in regions of overlapping claims, so that the 50 per cent share for the claimant state is then shared equally between the related claimant states.³³ An alternative approach would be to allow each claimant state to nominate and tax one of the oil companies in the development.

A related issue concerns the regulatory regime for offshore oil and gas in the overlapping area of the respective United Kingdom, Chilean and Argentine claims. It is proposed that the Joint Commission established for the JDZ adopt one oil and gas regulatory and environmental regime, and this should be the same regime applying to the Unclaimed Sector and to the Area. Each state should retain oversight of oil and gas activities in their claimed area. The overlapping claims can therefore result in oversight by more than one state, however this should be satisfactory where the Joint Commission is enforcing an agreed oil and gas regulatory regime and common environmental standards.

A pragmatic solution to these potential conflicts would strongly suggest a level of resource sharing in response to these claims, as was observed in the United Kingdom agreement to the JDZ with Argentina in the South West Atlantic in 1995 as analysed in Chapter III.³⁴ As discussed in Chapter III the Agreement was repudiated by Argentina. It is important to consider the context of this action, as one of several measures taken by Argentina in relation to the Falkland Islands dispute, and the poor state of relations

³² Keith A Kvenvolden, Frances D Hostettler and Tamara J Frank, 'Hydrocarbons In Sediment Of The Weddell Sea, Antarctica' in P R Barker, J P Kennett, et al (1990) 1 *Proceedings of the Ocean Drilling Program, Scientific Results* 199, <http://www-odp.tamu.edu/publications/113_SR/VOLUME/CHAPTERS/sr113_16.pdf> at 1 November 2012.

³³ The claimant state share of 50 per cent would be therefore divided as follows:
90° west to 80° west, solely Chile;
80° west to 74° west, Chile and United Kingdom;
74° west to 53° west, Chile, United Kingdom and Argentina;
53° west to 25° west, United Kingdom and Argentina; and
25° west to 20° west, solely United Kingdom.

³⁴ *Joint Declaration on Cooperation over Offshore Activities in the South West Atlantic* (Argentina and United Kingdom), 27 September 1995, 35 ILM 301 ('Argentina/United Kingdom Agreement').

between the two states as at 2014.³⁵ The issue is whether there are realistic prospects for an improvement in relations, such that there may be a renewal of the JDZ between the United Kingdom and Argentina relating to the South-west Atlantic and the Falklands, and prospects for a future JDZ in relation to Antarctica and the Southern Ocean.³⁶ There are certain to be significant changes to both United Kingdom and Argentine governments in the time frame of at least 2048 for any change to the Environmental Protocol, and the potential for a JDZ solution should therefore be seen as remaining open in this time frame.

One significant distinction between the Falklands JDZ, and any future Southern Ocean JDZ, is that the Falklands JDZ could be seen as some recognition of United Kingdom sovereignty over the Falkland Islands. The JDZ lay between the Falkland Islands and the Argentine coast, and the JDZ therefore could have been considered to be a recognition that the Falklands were United Kingdom territory, which generated equal rights in the JDZ area. A future Southern Ocean JDZ would not relate to the recognition of United Kingdom rights to the Falklands, providing the JDZ area was limited to the continental shelf and OCS from the Antarctic coast, and did not relate to the Falklands region.

³⁵ 'Mark Lyall Grant's rebuttal of Timmerman's accusations of British militarisation of the South Atlantic', *Falklands News* (March 2012) <<http://falklandsnews.wordpress.com/2012/03/page/2>> at 30 October 2012. Mark Lyall Grant, making the United Kingdom's response in the United Nations, stated as follows:

'The United Kingdom continues to believe that there are many opportunities for co-operation in the South Atlantic. However, in recent years the Republic of Argentina has:

- * withdrawn from co-operation on the South Atlantic Fisheries Commission and extended its fishing seasons in Argentine waters, thus endangering the long-term sustainable management of straddling fish stocks in the South Atlantic, in contravention of Article 63 of the United Nations Law of the Sea;

- * repudiated the 1995 Joint Declaration on Hydrocarbons, which had provided for co-operation in a Special Co-operation Area that straddled both Argentine and Falkland Islands waters;

- * placed a ban on charter flights travelling through Argentine airspace to the islands in 2003;

- * introduced domestic legislation to penalise companies who wish to do business in or with the Falkland Islands;

- * introduced a Presidential Decree in 2010 that does not comply with the freedom of navigation nor right of innocent passage provided for by international law, including the United Nations Convention on the Law of the Sea;

- * threatened at the United Nations in September 2011 to withdraw from the 1999 United Kingdom-Republic of Argentina Joint Statement; this 1999 Joint Statement had allowed Argentine passport holders to enter the Falkland Islands for the first time since the 1982 conflict and had provided for the resumption of the Falkland Islands' only commercial air link with South America;

- * asked the Mercosur region in December 2011, to support a declaration denying access to their ports to Falkland Islands flagged vessels, thus explicitly attempting to restrict trade and threatening the people of the Falkland Islands with economic isolation.'

³⁶ The prospects for any JDZ in the nearer term may also be affected by Argentine nationalisation of the Argentine oil and gas assets of the Spanish oil company YPF.

iii) Unclaimed Sector – Marie Byrd Land

The Unclaimed Sector raises specific issues as there is no claimant state, and so ultimate responsibility for enforcement would be based on the Antarctic Treaty and related agreements. CRAMRA³⁷ provided a framework for an international licencing and regulatory regime based on a Commission. It is proposed that a similar regime should apply to the Unclaimed Sector in the event that Antarctic exploration and development is permitted at some date after 2048.

CRAMRA did not include specific fiscal terms, as discussed in Chapter IV. Article 47(k)(ii) provided in general terms that the Management Scheme include 'payments in the nature of and similar to taxes, royalties or payments in kind.' It is proposed that a Joint Commission would impose tax on 50 per cent of the related oil company income, and the state with the closest economic connection to the oil company taxes the remaining 50 per cent of income. The fiscal regime would also include royalties based on oil and gas production on the same basis as Part XI in the Area. The tax and royalty revenue collected by the Joint Commission would then be provided to ISBA, and used for distribution to all states, including developing and landlocked states.

A significant concern with potential oil and gas operations in the Unclaimed Sector is whether international supervision of environmental provisions would be effective. The measures submitted for environmental protection in Chapter VII should be integrated in a future multilateral oil and gas regulatory regime for the Unclaimed Sector.³⁸

iv) The Area – LOSC Part XI

The regime of the Area under Part XI of LOSC may potentially apply from the boundary of the Antarctic coast, continental shelf and OCS, north to 60° south.³⁹ States

³⁷ *Convention on the Regulation of Antarctic Mineral Resource Activities*, opened for signature 2 June 1988, (1988) 27 ILM 868 (not yet in force) ('CRAMRA').

³⁸ This includes the priority to include measures imposing financial liability for damage to the environment, requirements for sufficient financial support based on consortia of large oil and gas companies, and external audit of compliance with environmental standards. Enforcement would under the Antarctic Treaty framework as there would be no opportunity for claimant state enforcement.

³⁹ Exceptions to the Area regime would include:

- Continental shelf and OCS generated by islands claimed by states south of 60° south, such as the South Shetland and South Orkney Islands claimed by the United Kingdom and Argentina, Peter I Island claimed by Norway, and Balleny Islands claimed by New Zealand.
- Continental shelf and OCS generated by islands north of 60° south but generate OCSs that extend south of 60° south, such as the South Sandwich Islands claimed by the United Kingdom

may not however agree to state continental shelf and OCS claims extending from the Antarctic coast, on the basis that the territorial claims of the respective Antarctic claimant states are not recognised. As discussed in Chapter VI, the regime of the Area may therefore have greater significance to the development of Southern Ocean oil and gas.

It is proposed that enforcement of oil and gas regulations would potentially be performed under the Antarctic Treaty framework, similar to the CRAMRA proposals, and as proposed above for the Unclaimed Sector, as there would be no opportunity for claimant state enforcement. This proposal would require ISBA acceptance of an oversight role, with primary enforcement provided under the Antarctic Treaty framework.

3. Oil Pollution – Prevention, Response and Liability Regimes

International measures relating to the prevention of potential oil spill pollution from oil and gas exploration and development activities are very significant for future Arctic and Southern Ocean JDZs.

A. Arctic and Southern Ocean Environments

Arctic and Southern Ocean JDZs need to address environmental issues including minimising the risk of pollution incidents, providing the most effective emergency response, and a financial regime to fund the repair of environmental damage. The United States Arctic Research Commission issued a summary of oil spills research in Arctic waters in 2012, including a description highlighting the environmental risks.⁴⁰ The United States National Oceanic and Atmospheric Administration (NOAA) has also

and Argentina, Heard and McDonald Islands in the Australian Antarctic Territory, and Macquarie Island in the Australian state of Tasmania.

⁴⁰ United States Arctic Research Commission and the United States Army Corps of Engineers - Cold Regions Research and Engineering Laboratory, 'Oil Spills in Arctic Waters, An Introduction and Inventory of Research Activities and USARC Recommendations' (2012). The Report stated:

...interest in oil and gas development in the Arctic is on the rise, as is marine shipping, the likelihood of oil spills is increasing. Climate change, the retreat of Arctic ice, and global economic demand suggest that oil and gas prospects will be explored and eventually developed on the outer continental shelf of Alaska and in remote, icy waters of other Arctic nations. Increased Arctic marine transportation, and greater oil and gas exploration and production, amplify the possibility of oil spills.

summarised the special risks of oil pollution in Arctic waters.⁴¹ Non-governmental organisation (NGO) perspectives on the oil pollution risk are reflected in the World Wildlife Fund (WWF) report 'Oil Spill - Response Challenges in Arctic Waters'.⁴² The combination of conditions in the Arctic was considered to result in greater environmental risks, included the increased risk of environmental accident;⁴³ the adverse effect on recovery efforts;⁴⁴ and the persistence of oil pollution in Arctic waters.⁴⁵

In the longer time frame, for example in the Southern Ocean with the Environmental Protocol suspending oil and gas exploration and development until at least 2048, the effect of global warming may substantially reduce sea ice.⁴⁶ The United Nations Environment Program stated in 2013 that the most common prediction was that the Arctic may become substantially free of ice from about 2035.⁴⁷ On this basis:

⁴¹ United States National Oceanic and Atmospheric Administration (NOAA), Office of Response and Restoration, 'Activities in the Arctic', <<http://response.restoration.noaa.gov/oil-and-chemical-spills/oil-spills/activities-arctic.html>> at 21 March 2013. The NOAA summary of the risks was as follows:

Conditions in the Arctic are changing rapidly. NOAA estimates that within the next 30 years the Arctic Ocean will be free of multi-year ice in the summer, increasing opportunities for maritime transportation, tourism, and oil and gas exploration.

However, "ice-free" seasonal conditions still present hazards to navigation: unpredictable ice conditions, moving ice floes, unsettled weather, and wave patterns.

Vessels transiting the Arctic have little or no emergency response infrastructure for support. This means that when oil does spill, the consequences can be much more severe, and search and rescue missions can face even greater difficulties...Vessels transiting the Arctic have little or no emergency response infrastructure for support. This means that when oil does spill, the consequences can be much more severe, and search and rescue missions can face even greater difficulties.

⁴² WWF International Arctic Programme, *Oil Spill Response Challenges in Arctic Waters* (World Wildlife Fund, 2007).

⁴³ Ibid 7. WWF identified the particular risks increasing the likelihood of oil spills including arctic conditions, including dynamic ice cover, low temperatures, reduced visibility or complete darkness, high winds, and extreme storms.

⁴⁴ Ibid 15. Arctic conditions may also adversely impact recovery efforts, which may need to be made as early as possible. The WWF Report states:

Environmental conditions in the Arctic are an obvious impediment to the efficacy of most spill response technologies. Typical arctic conditions impacting on oil spill response operations include the presence and type of sea ice, extreme cold, limited visibility, rough seas, and wind.

These conditions may also impact on the fate and behaviour of spilled oil, and thus either improve or reduce the effectiveness of response technologies and systems.

⁴⁵ Ibid 7. The increased likelihood of oil spills is coupled with the increased impact in the arctic environment. WWF illustrated this issue with the persistence of oil pollution from the Exxon Valdez oil spill, where lingering oil from the 1989 Exxon Valdez oil spill was found in 2005 only slightly weathered under beaches across the spill impact area. The WWF Report states:

There are several characteristics of the arctic environment and arctic wildlife species that exacerbate the potentially negative consequence of an oil spill to arctic waters. Oil persists longer in arctic conditions because it evaporates more slowly or may be trapped in or under ice and is thus less accessible to bacterial degradation. Population recovery after an incident may be slowed because many species have relatively long life spans and slower generational turnover.

⁴⁶ The more immediate risk therefore relates to the Arctic Ocean where oil and gas development has already commenced, and yet sea water temperatures and ice cover maximise the risk of environmental damage.

⁴⁷ United Nations Environment Programme, *UNEP Year Book 2013*, 'The View from the Top' (United Nations, 2013) 19.

- The environmental protection regime should provide measures for the prevention of oil spills, including design of oil platforms and subsea equipment. The regime should provide for coordinated monitoring and supervision to prevent pollution, as it may not be possible to effectively remove oil pollution once an oil spill has occurred. This is principally due to the persistence of oil pollution in cold waters, and the difficulties in clean-up operations in waters with significant sea ice;
- The regime should provide for a coordinated oil spill response, and particularly that pollution control vessels from adjacent fields of other operators on the JDZ, and in adjacent states, would be deployed rapidly on the basis of a coordinated control and under a prepared emergency management plan; and
- The regime should provide contractual joint and several strict liability between the state and the oil company consortium members, and include liability for oil pollution from ships, to ensure that liability is not avoided due to the issue of flag state jurisdiction.

Addressing these issues requires international or regional conventions for the protection of the environment combined with more effective enforcement, and addressing environmental protection more effectively in agreements relating to oil and gas development, including the related terms of JDZ agreements.

B. International Treaty Provisions

i) Safety of Ships – SOLAS – and Related Safety Conventions

The prevention of oil pollution has included measures to prevent oil spills from ships such as tankers. The primary convention providing for the seaworthiness of ships is promoted by the IMO in the 1974 International Convention for the Safety of Life at Sea (SOLAS).⁴⁸ SOLAS provides minimum standards for the construction, equipment and

⁴⁸ *International Convention for the Safety of Life at Sea*, opened for signature 1 November 1974, 1184 UNTS 3 (entered into force 25 May 1980) ('SOLAS').

operation of merchant ships.⁴⁹ SOLAS applies to ships entitled to fly the flag of contracting states, and therefore does not apply to fixed oil and gas platforms.⁵⁰ The enforcement of SOLAS standards is primarily the responsibility of the flag state, being the state which has registered the vessel. The port state can enforce SOLAS measures including prevention of sailing until the vessel meets SOLAS requirements.⁵¹

Other conventions relating to ship safety include the collision avoidance and vessel traffic separation schemes under the IMO Convention on the International Regulations for Preventing Collisions at Sea in 1972 (COLREGs).⁵² COLREGs apply to vessels, defined as every description of water craft used or capable of being used as a means of transportation on water, and therefore apply to offshore support vessels.⁵³

The principal international convention concerning the standards of crew is the IMO International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW).⁵⁴ STCW applies to sea-going ships, and therefore applies to mobile offshore drilling vessels but not to fixed offshore oil or gas platforms. STCW was amended in 2012 to include training guidance for personnel on ships operating in polar waters.⁵⁵

ii) Pollution from Ships – MARPOL

The primary international convention relation to the prevention of pollution from ships is the IMO's 1973 International Convention for the Prevention of Pollution from

⁴⁹ The *SOLAS* measures include crew qualification, and therefore can contribute to the prevention of marine accidents.

⁵⁰ *SOLAS* art 2.

⁵¹ Donald R Rothwell and Tim Stephens, *The International Law of the Sea* (Hart Publishing, 2010) 266.

⁵² *Convention on the International Regulations for Preventing Collisions at Sea*, opened for signature 20 October 1972, 1050 UNTS 16 (entered into force 15 July 1977) ('*COLREGs*').

⁵³ *Ibid* reg 3. A related issue concerns search and rescue at sea is the IMO 1979 International Convention on Maritime Search and Rescue ('*SAR*'). Parties are required to ensure that arrangements are made for the provision of adequate *SAR* services in their coastal waters, and encouraged to enter into *SAR* agreements with neighbouring states. These measures include the establishment of *SAR* regions, the pooling of facilities, establishment of common procedures, training and liaison visits. The Convention also includes preparatory measures and operating procedures in the event of emergencies. *International Convention on Maritime Search and Rescue*, opened for signature 1 November 1979, 1405 UNTS 97 (entered into force 22 June 1985)

⁵⁴ *International Convention on Standards of Training, Certification and Watchkeeping for Seafarers*, opened for signature 7 July 1978, 1361 UNTS 2 (entered into force 28 April 1984), substantially amended in 1995 ('*STCW*').

⁵⁵ IMO 'International Convention on Standards of Training, Certification and Watchkeeping for Seafarers <[http://www.imo.org/About/Conventions/ListOfConventions/Pages/International-Convention-on-Standards-of-Training,-Certification-and-Watchkeeping-for-Seafarers-\(STCW\).aspx](http://www.imo.org/About/Conventions/ListOfConventions/Pages/International-Convention-on-Standards-of-Training,-Certification-and-Watchkeeping-for-Seafarers-(STCW).aspx)> at 4 April 2013 ('*Manilla amendments*').

Ships,⁵⁶ modified by the 1978 Protocol (MARPOL),⁵⁷ and the 1997 Protocol.⁵⁸ The provisions relating to oil pollution are contained in Annex 1.⁵⁹ The definition of 'ship' includes fixed and floating platforms, and so applies to platforms used in oil and gas production,⁶⁰ however MARPOL does not provide detailed regulations for these platforms.⁶¹

MARPOL specifies port state jurisdiction over ships which may prevent future pollution incidents.⁶² A port state has jurisdiction over ships in port for marine pollution occurring while in port, due to the territorial sovereignty of the port state. MARPOL also specifies port state jurisdiction to inspect ships and report their defects to the flag state,⁶³ and to detain the vessel until repairs are carried out.⁶⁴

⁵⁶ *International Convention for the Prevention of Pollution from Ships*, opened for signature 2 November 1973, 1340 UNTS 184 ('MARPOL 73'). Legislation giving effect to MARPOL in Australia is the *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* (Cth) and the *Navigation Act 1912* (Cth).

⁵⁷ *1978 Protocol to 1973 International Convention for the Prevention of Pollution from Ships*, 1340 UNTS 61 (entered into force 2 October 1983). The 1973 MARPOL Convention had not yet entered into force, as the 1978 MARPOL Protocol absorbed the parent Convention. The combined instrument is referred to as the *International Convention for the Prevention of Marine Pollution from Ships, 1973*, as modified by the Protocol of 1978 relating thereto ('MARPOL 73/78'). These measures replaced the *International Convention for the Prevention of Pollution of the Sea by Oil*, opened for signature 12 May 1954 (entered into force 26 July 1958) ('OILPOL').

<<http://library.arcticportal.org/1699/1/marpol.pdf>> at 12 November 2012.

⁵⁸ *Protocol of 1997 to amend the International Convention for the Prevention of Pollution from Ships of 2 November 1973, as modified by the Protocol of 17 February 1978, (Annex VI on the Prevention of Air Pollution from Ships)*, opened for signature 26 September 1997 [2007] ATS 37 (entered into force 19 May 2005) ('MARPOL PROT 1997').

⁵⁹ The provisions relating to oil pollution are contained in Annex 1. These measures include 'load on top' mechanism to limit oil discharges at sea, segregated ballast tanks, equipment for crude oil washing, oil separation equipment. Parties must also provide reception facilities for oil wastes in their ports. MARPOL includes measures against other forms of ship based pollution in Annex II. Other environmental and liability provisions relating to non-oil pollution include the 1972 *Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter*, opened for signature 29 December 1972, 1046 UNTS 120 (entered into force 30 August 1975) ('London Convention'), and the 1996 *International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea*, opened for signature 3 May 1996, (1996) 35 ILM 1406 ('HNS Convention') concerning liability.

⁶⁰ MARPOL 73/78 art 2(4).

⁶¹ Lucien Chabason, 'Offshore oil exploitation - A new frontier for international environmental law' Institut du Développement Durable et des Relations Internationales Working paper 11 (2011), specific provisions relating to oil platforms, not a specific prevention code. Chabason refers to Annex V of the MARPOL Convention 73/78 prohibits the discharge of household solid waste, including packaging, from offshore platforms as it does from ships. The London Convention (1972/1996) on marine pollution also applies to waste dumped from platforms. The 1990 IMO International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC), on hydrocarbon pollution, applies to critical situations affecting the platforms. Similarly, the IMO Anti-Fouling Systems Convention (AFS) (2008) and the Hong Kong Convention on end-of-life ship recycling (2009) apply to offshore floating units.

⁶² Brian F Fitzgerald, 'Port State Jurisdiction and Marine Pollution Under UNCLOS III' (1995) 11 *Maritime Law Association of Australia and New Zealand Journal* 29, 31.

⁶³ MARPOL 73/78 art 6(1).

⁶⁴ MARPOL 73/78 art 5(2).

Churchill and Lowe commented that Annex 1 of MARPOL had likely contributed to the significant reduction in oil spills from tankers and other ships, including a decrease from 2.13 million tonnes in 1973 to 0.57 million tonnes in 1989, and that MARPOL is binding on nearly 95 per cent of the world fleet by tonnage.⁶⁵ The International Tanker Owners Pollution Federation Ltd (ITOPF) reported that the total of oil spills from tankers in 2013 was 0.007 million tonnes,⁶⁶ and the IMO stated in 2014 that MARPOL applies to 99 per cent of the world's merchant fleet tonnage.⁶⁷ On this basis there has been a very significant reduction in oil spills relating to oil tankers and other ships subject to the MARPOL regime.

MARPOL includes enhanced provisions for nominated 'special areas,' where discharges are prohibited, and this includes the Antarctic Treaty area under amendments in 1990 which entered into force in 1992. Rothwell comments that a MARPOL special area regime has not been extended to the Arctic.⁶⁸ Canada's ratification of the MARPOL specifically excludes the Arctic north of 60° north latitude.⁶⁹ Canada applies specific measures to prevent Arctic marine pollution under the *Arctic Waters Pollution Prevention Act*.⁷⁰

The IMO released guidelines for ships operating in Arctic ice-covered waters which provide requirements additional to MARPOL for navigation in Arctic waters.⁷¹ The IMO also prepared the Polar Code, which resulted in guidelines to address the design, construction, equipment, operational, training, search and rescue and environmental protection issues relevant to ships operating in polar waters.⁷²

⁶⁵ RR Churchill and AV Lowe, *The Law of the Sea* (Manchester University Press, 3rd ed, 1999), 341.

⁶⁶ International Tanker Owners Pollution Federation Ltd, Oil Tanker Spill Statistics, <<http://www.itopf.com/knowledge-resources/data-statistics/statistics/>> at 12 August 2014.

⁶⁷ International Maritime Organisation, 'Pollution Prevention,' <<http://www.imo.org/OurWork/Environment/PollutionPrevention/Pages/Default.aspx>> at 12 August 2014.

⁶⁸ Donald R Rothwell, 'Global environmental protection instruments' in Davor Vidas (ed) *Protecting the Polar Marine Environment - Law and Policy for Pollution Prevention* (Cambridge University Press, 2000) 57, 60.

⁶⁹ Government of Canada 'Pollution Prevention in the Canadian Arctic' <<http://www.tc.gc.ca/eng/marinesafety/debs-arctic-environment-pollution-496.htm>> at 23 November 2012.

⁷⁰ *Arctic Waters Pollution Prevention Act*, RS 1985, c. A-12.

⁷¹ International Maritime Organisation, 'Guidelines for ships operating in Arctic ice-covered waters', (2010). The Guidelines aim to address the additional risk imposed on shipping due to the harsh environmental and climatic conditions existing in polar waters.

⁷² Heike Deggim, 'International Requirements for Ships Operating in Polar Waters', (Paper presented at Meeting of experts on the management of ship-borne tourism in the Antarctic Treaty Area, Wellington, 9 to 11 Dec 2009).

iii) LOSC Part XII

Part XII of LOSC provides the framework for protection and preservation of the marine environment as discussed in Chapter II. Enforcement provisions relating to oil spills from environmental emergencies include:

- Article 197, which requires states to cooperate on a global and regional basis to formulate international rules, standards and recommended practices and procedures for the protection and preservation of the marine environment 'taking into account characteristic regional features';
- Article 208, which requires coastal states to adopt laws and regulations to prevent, reduce and control pollution of the marine environment arising from or in connection with sea-bed activities subject to their jurisdiction and from artificial islands, installations and structures under their jurisdiction; and
- Article 214, which requires states to adopt laws and regulations and implement applicable international rules and standards to prevent, reduce and control pollution of the marine environment arising from sea-bed activities and installations under their jurisdiction.

LOSC also provides enforcement provisions to prevent damage to the marine environment, including regimes requiring flag state,⁷³ port state,⁷⁴ and coastal state enforcement.⁷⁵

One of the most significant concerns with the LOSC environmental protection provisions is the absence of a liability and compensation regime. LOSC Article 235(3)

⁷³ LOSC art 217. Article 217, relating to flag state enforcement of applicable international rules and standards for the prevention, reduction and control of pollution of the marine environment from vessels. Article 217 requires the state to adopt laws and regulations and take other measures necessary for implementation. Flag states are required to provide for the effective enforcement irrespective of where a violation occurs.

⁷⁴ LOSC art 218. Article 218 provides that the port state may take legal proceedings against a vessel alleged to have discharged polluting matter outside that state's internal waters, territorial waters or EEZ, in violation of international rules and standards. Churchill and Lowe comment that the provision is highly innovative, as it can apply to alleged incidents outside the state's jurisdiction. Churchill and Lowe, above n 22, 350.

⁷⁵ LOSC art 220. Article 220 provides for enforcement by coastal states in respect of violation of its laws and regulations for the prevention, reduction and control of pollution from vessels when the violation has occurred within the territorial sea or EEZ.

requires States to cooperate in 'the further development of international law relating to responsibility and liability for assessment of and compensation for damage and the settlement of related disputes, as well as, where appropriate, development of criteria and procedures for payment of adequate compensation, such as compulsory insurance or compensation funds.'⁷⁶ The need for an effective liability compensation regime is discussed below.

Article 211(2) provides that *LOSC* provisions are without prejudice to other environmental agreements,⁷⁷ accordingly other international conventions discussed below also apply to the Arctic and Southern Oceans.

iv) United Nations Regional Seas Programme

The United Nations General Assembly Conference on the Human Environment in Stockholm, underlining the 'vital importance' of the seas and all the living organisms which the oceans support, established UNEP in 1972.⁷⁸

The regional seas provision is significant in supporting regimes for regional cooperation. These measures may, potentially, extend to non-member states to the extent the regional measures are considered to be incorporated into customary international law. OSPAR does not currently apply to the Arctic Ocean region, and is not currently supported by the Arctic Council, however incorporation of UNEP measures by the Arctic Council may be a potential future development.

v) Protection of the Marine Environment of the North-East Atlantic – OSPAR Convention

The 1992 Convention for the Protection of the Marine Environment of the North-East Atlantic ('OSPAR Convention')⁷⁹ is the current convention for the north-east Atlantic,⁸⁰

⁷⁶ *LOSC* art 235(3).

⁷⁷ *LOSC* art 237.

⁷⁸ United Nations Environment Programme (UNEP), Regional Seas Programme, <<http://www.unep.ch/regionalseas/main/hkey.html>> at 18 January 2013.

⁷⁹ *Convention for the Protection of the Marine Environment of the North-East Atlantic*, opened for signature 22 September 1992, 2354 UNTS 67 (entered into force 25 March 1998) ('*OSPAR Convention*').

⁸⁰ The *OSPAR Convention* replaced the *Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft*, opened for signature 15 February 1972, 932 UNTS 3 (entered into force 7 April 1974) ('*Oslo Convention*') and the *Convention for the Prevention of Marine Pollution from Land-Based Sources* opened for signature 4 June 1974, 1546 UNTS 119 (entered into force 6 May 1978) ('*Paris Convention*').

and includes a specific Arctic Area, as 'Region 1 - Arctic Waters', extending to the North Pole. OSPAR applies to Denmark (Greenland), Iceland and Norwegian seas in the Arctic region, but does not extend to Canadian Arctic seas or to the Russian side of the Barents Sea.⁸¹ The Convention is the main regime by which European Union states and the European Commission cooperate to protect the environment of the North East Atlantic.⁸²

OSPAR has highlighted the risks attached to increasing oil and gas activity, especially in Region 1.⁸³ OSPAR measures to reduce pollution from offshore activities include the reduction of oil in produced water, restrictions on use and discharge of drilling fluids, and the banning or restriction on dumping or leaving in place disused offshore installations.

Annex III of OSPAR includes specific provisions for offshore installations and imposes a 'best available techniques' and 'best environmental practice' standard.⁸⁴

vi) Intervention Convention – Incident Response

⁸¹ *OSPAR* art 1. The OSPAR convention generally applies to the territorial seas, sea beyond and adjacent to the territorial sea under the jurisdiction of the coastal state, and the high seas of the Atlantic and Arctic Oceans and their dependent seas which lie north of 36° north latitude and between 42° west longitude and 51° east longitude.

⁸² The Treaty parties are Belgium, Denmark, Finland, France, Germany, Iceland, Ireland, Luxembourg, The Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom, together with the European Union. The region includes important oil and gas operations in the North Sea, and the Norwegian part of the Barents Sea. One example of the effectiveness of the Convention was the moratorium on the dumping of offshore installations following proposal in 1995 by the Shell oil company to dump the Brent Spar platform.

⁸³ OSPAR Commission, 'Quality Status Report 2010', Offshore Oil and Gas Industry, <http://qsr2010.ospar.org/en/ch07_01.html#environmental_pressures > at 21 March 2013. The statement includes the following comments:

Environmental pressures from offshore oil and gas operations are greatest in Region II. However, oil and gas production has peaked in the North Sea and is now declining. For other parts of the OSPAR area, such as the Barents Sea, production is expected to increase. This is due to rising global demand and increased access to Arctic resources as sea ice retreats following the rise in global temperature. Some large projects are already underway, for example, the development of the Shtokman field in the Russian Barents Sea. A significant proportion of the world's known oil and gas reserves are in the Arctic, with offshore areas of Greenland, the Faroe Islands, Iceland, northern Norway and Arctic Russia of particular interest. Increased production in Region I will bring an increase in environmental pressure. Marine ecosystems in the Arctic are considered to be particularly sensitive to impacts from offshore activities and effective management of oil spills and other impacts is important.

⁸⁴ *OSPAR* Annex III art 2 provides:

1. When adopting programmes and measures for the purpose of this Annex, the Contracting Parties shall require, either individually or jointly, the use of:
 - (a) best available techniques
 - (b) best environmental practiceincluding, where appropriate, clean technology.

The 1969 Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties ('Intervention Convention'),⁸⁵ concerned procedures for the response to oil pollution incidents. The 1973 Protocol extended the scope of the Convention to include substances other than oil.⁸⁶ The Intervention Convention provides the right of a coastal State to take such measures on the high seas to prevent, mitigate or eliminate danger to its coastline or related interests from pollution by oil following a maritime casualty.⁸⁷ The Convention excludes, however, installations engaged in the exploration and exploitation of the resources of the sea-bed, ocean floor and the subsoil.⁸⁸

vii) OPRC Convention – Preparedness, Response and Coordination

The IMO 1990 Oil Pollution Preparedness, Response and Coordination Convention ('OPRC Convention'),⁸⁹ requires state parties to prepare against oil pollution emergencies, and respond on the basis of regional cooperation.⁹⁰ Article 3 requires oil pollution emergency plans by state parties, the flag state of registration of ships, and operators of offshore units under its jurisdiction.⁹¹ Article 4 requires immediate notification to states which might be affected by an incident.⁹² Article 6 provides that

⁸⁵ *Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties*, opened for signature 29 November 1969, 970 UNTS 211 (entry into force 6 May 1975) ('*Intervention Convention*'). Churchill and Lowe comment that as the EEZ did not exist at the time of the Convention, and as the Convention should not grant greater powers over the high seas than the EEZ, the Convention should therefore be taken to apply to 'beyond the territorial sea', and therefore apply to a coastal state's EEZ. Churchill and Lowe, above n 65, 354. Rothwell comments that there will be an issue in coastal state jurisdiction relating to the Antarctic, Rothwell, above n 68, 68.

⁸⁶ *Protocol relating to Intervention on the High Seas in Cases of Marine Pollution by Substances other than Oil*, opened for signature 2 November 1973, 1313 UNTS 4 (entered into force 30 March 1983). The hazardous substances list was extended in 1991, 1996 and 2002.

⁸⁷ *Ibid* art 1. Article 3 provides that the coastal state shall proceed to consultations with other states affected by the maritime casualty, particularly the flag state, before taking any measures. The coastal state is also required to notify without delay the proposed measures to any persons physical or corporate known to the coastal state, or made known to it during the consultations, to have interests which can reasonably be expected to be affected by those measures.

⁸⁸ *Intervention Convention* art 2(2).

⁸⁹ *Oil Pollution Preparedness, Response and Coordination Convention*, opened for signature 30 November 1990, 30 ILM 733 (entered into force May 13, 1995) ('*OPRC Convention*'). The Annex provides that state bears the costs of response measures unless the response measures were requested by the other state. OPRC was extended to substances other than oil by the Protocol on Preparedness, Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances, 2000 (OPRC-HNS Protocol), *Protocol on Preparedness, Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances*, 2000, opened for signature 15 March 2000, [2007] ATS 41 (entered into force 14 June 2007) (OPRC-HNS Protocol).

⁹⁰ *OPRC Convention* art 1.

⁹¹ *OPRC Convention* art 3.

⁹² *OPRC Convention* art 4.

state parties are required to prepare national and regional contingency plans to respond to emergencies.⁹³

A higher standard may be adopted by state parties, for example Canada's *Arctic Waters Pollution Prevention Act*.⁹⁴ The Arctic Council's Arctic Marine Oil Pollution Preparedness and Response (MOPPR) is the Arctic regional implementation of OPRC.⁹⁵

viii) Liability for Damage – Civil Liability Convention and Fund Convention

The International Convention on Civil Liability for Oil Pollution Damage, 1992 ('Civil Liability Convention')⁹⁶ governs the liability of shipowners for oil pollution damage, and provides the principle of strict liability for shipowners together with a system of compulsory liability insurance. The shipowner is generally able to limit liability based on the tonnage of the ship.⁹⁷ The Civil Liability Convention replaced several private industry regimes.⁹⁸

The International Oil Pollution Compensation Fund (IOPCF) in 1992 and the Supplementary Fund in 2003⁹⁹ provide a compensation regime of up to approximately

⁹³ OPRC Convention art 6.

⁹⁴ *Arctic Waters Pollution Prevention Act* (1970, R.S.C. 1985).

⁹⁵ *Agreement on Cooperation on Marine Oil Pollution, Preparedness and Response in the Arctic*, 13 May 2013, <<http://www.arctic-council.org/index.php/en/document-archive/category/425-main-documents-from-kiruna-ministerial-meeting>> at 21 27 August 2015 (not yet in force).

⁹⁶ *International Convention on Civil Liability for Oil Pollution Damage*, 1992, opened for signature 27 November 1992, 1953 UNTS 255 (entered into force 3 May 1996) ('*Civil Liability Convention*') The *Civil Liability Convention* updated the prior *International Convention on Civil Liability for Oil Pollution Damage*, opened for signature 29 November 1969, 973 UNTS 3 (entered into force 19 June 1975) ('*CLC Convention*'), and the *Protocol of 1992 to amend the International Convention on Civil Liability for Oil Pollution Damage*, opened for signature 27 November 1992, 1956 UNTS 255, (entered into force 30 May 1996).

⁹⁷ The International Regime for Compensation For Oil Pollution Damage, IOPC Funds, Explanatory Note, November 2012

<http://www.iopcfunds.org/fileadmin/IOPC_Upload/Downloads/English/explanatorynote_e.pdf > at 1 November 2012.

⁹⁸ Industry liability schemes comprised the Tanker Owners' Voluntary Agreement concerning Liability for Oil Pollution (opened for signature 7 January 1969) 8(3) ILM 497 ('*TOVALOP*') and the Contract Regarding an Interim Supplement to Tanker Liability for Oil Pollution ('*CRISTAL*'). Both *TOVALOP* and *CRISTAL* ceased to accept claims in February 1997. Churchill and Lowe comment that the schemes ended in 1997 due to the increased number of states party to the Civil Liability Convention. Churchill and Lowe, above n 65, 361.

⁹⁹ *International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage*, 1992, opened for signature 19 November 1976 [1995] ATS 3 (entered into force 22 November 1994) ('*IOPCF*' or '*Fund Convention*') and the *Protocol of 2003 to the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage*, 1992, 16 May 2003, [2003] ATNIF 21. These provisions updated the prior *International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage*, opened for signature 18 December 1971 [1995] ATS 2 (entered into force 16 October 1978), and the *Protocol to the International Convention on the Establishment of the International Fund for Compensation for Oil*

USD 1 billion, which is funded by compulsory levy payments by companies which receive oil after carriage by sea.¹⁰⁰

Jorgensen-Hull observed that the limitations of this system included that there is no liability for pure environmental damage, as compared to economic damage.¹⁰¹ In addition no compensation will be paid if the state does not undertake remediation efforts. It is therefore not certain that the costs of a reinstatement of the Arctic or Southern Ocean environments in the event of a future oil spill would be met by the Fund.

One attempted regional agreement for the North Sea for oil pollution liability and compensation from sources including platforms was the 1977 Convention on Civil Liability for Oil Pollution Damage resulting from Exploration for and Exploitation of Seabed Mineral Resources ('CLEE Convention').¹⁰² The CLEE Convention has not been ratified, but would have applied to an incident which occurred at an installation under the jurisdiction of a Controlling State, in the internal waters, territorial sea or sovereign rights over natural resources.¹⁰³

ix) Civil Liability – Bunker Oil Convention

The 2001 International Convention on Civil Liability for Bunker Oil Pollution Damage, ('Bunker Convention')¹⁰⁴ imposes strict liability of the shipowner at the time of an incident, with limited exceptions.¹⁰⁵ The Convention also provides the right of the

Pollution Damage Protocol to the International Convention on the Establishment of the International Fund for Compensation for Oil Pollution Damage [1995] ATS 3 (entered into force 30 May 1996).

¹⁰⁰ International Oil Pollution Compensation Funds (IOPC Funds)

<<http://www.iopecfund.org/intro.htm>> at 13 November 2012. There are currently three IOPC Funds: the 1971 Fund, the 1992 Fund and the Supplementary Fund. These three intergovernmental organisations were established at different times, have different maximum amounts of compensation and have different Member States. The 1971 Convention ceased to be in force on 24 May 2002 and the fund now relates only to certain pollution incidents prior to termination of the 1971 Convention.

¹⁰¹ Alexander Jorgensen-Hull, 'A Sticky Situation: The Seepage of Liability into International Environmental Law' (Paper presented at the symposium Toward Rio+20: Contemporary Issues in International Environmental Law, Canberra, 28 May 2011) 5.

¹⁰² Convention on Civil Liability for Oil Pollution Damage resulting from Exploration for and Exploitation of Seabed Mineral Resources, opened for signature 1 May 1977, (1977) 16 ILM 1451 (not yet in force) ('CLEE Convention'). The signatories to this Convention are the United Kingdom, Germany, Ireland, the Netherlands, Norway and Sweden. The Convention was not ratified by any state.

¹⁰³ CLEE Convention art 2

¹⁰⁴ International Convention on Civil Liability for Bunker Oil Pollution Damage, opened for signature 23 March 2001, (2001) 40 ILM 1493 (entered into force 21 November 2008) ('Bunker Oil Convention'). The Convention requires that states parties recognise and enforce such a judgment under article 10.

¹⁰⁵ Bunker Oil Convention art 3.

shipowner, their insurers, or those providing financial security, to limit liability under any applicable national or international regime.¹⁰⁶

C. Arctic Ocean – Regional Protection Regime

The development of a regional environmental strategy included the adoption by Arctic states of the Arctic Environmental Protection Strategy in 1991.¹⁰⁷ The objectives of the strategy were the identification, reduction and eventual elimination of pollution. The strategy noted environmental conventions applicable to the Arctic region, and noted gaps in that coverage.¹⁰⁸ The Arctic Council was established in 1996 to oversee and coordinate these programmes.¹⁰⁹

i) Prevention and Response Measures

The Arctic Council has taken an active role to promote an effective regime for oil spill response, and as discussed in Chapter IV, and in particular the state parties to the Arctic Council concluded the Agreement on Cooperation on Marine Oil Pollution, Preparedness and Response (MOPPR) in the Arctic in May 2013.¹¹⁰ As discussed in Chapter VII, Arctic Ocean JDZs should implement the future Arctic Ocean MOPPR provisions as a binding condition of JDZ approval and continued operations. It is significant however that MOPPR is not concerned with preventing pollution. MOPPR makes no direct reference to offshore hydrocarbon installations, and consequently there is no obligation on the operator to have an oil pollution emergency plan or report oil spills.

The Arctic Council issued the Arctic Offshore Oil and Gas Guidelines in 2009 for the use of Arctic nations for offshore oil and gas activities during planning, exploration, development, production and decommissioning. The Guidelines defined a set of recommended practices and actions for the regulation of offshore oil and gas activities in the Arctic.¹¹¹ The Guidelines included environmental impact statements,

¹⁰⁶ *Bunker Oil Convention* art 6.

¹⁰⁷ Arctic Environmental Protection Strategy 30 ILM 1624 (1991).

¹⁰⁸ Churchill and Lowe, above n 65, 335.

¹⁰⁹ Declaration on the Establishment of the Arctic Council, 35 ILM 1382 (1996).

¹¹⁰ *Agreement on Cooperation on Marine Oil Pollution, Preparedness and Response in the Arctic*, 13 May 2013, <<http://www.arctic-council.org/index.php/en/document-archive/category/425-main-documents-from-kiruna-ministerial-meeting>> at 27 August 2015 (not yet in force).

¹¹¹ Arctic Council, 'Arctic Offshore Oil and Gas Guidelines' <<http://www.pame.is/index.php/projects/offshore-oil-and-gas>> at 27 August 2015.

environmental monitoring, safety and environmental management, operating practices, emergencies and decommissioning and site clearance. The Guidelines were strengthened by the issue of the Arctic Offshore Oil and Gas Guidelines: Systems Safety Management and Safety Culture, in 2014.¹¹² These Guidelines are 'soft law' measures as they are not binding on Arctic Council member states. There is a significant potential for strengthening of these measures if the Guidelines were made binding on member states. The JDZ should refer to the Arctic Offshore Oil and Gas Guidelines as a binding condition of JDZ approval and continued operations.

The Arctic Council also established a Task Force on Arctic Marine Oil Pollution Prevention in 2013 to identify how best the Arctic Council could contribute to marine oil pollution prevention in the Arctic, to recommend a plan of action, and develop co-operative arrangements to implement such a plan.¹¹³

ii) **Liability Regime**

The Arctic Council has not proposed regional measures for a liability and compensation regime, however the issue is under consideration. Greenland stated that Arctic Council countries would benefit from joint reflection and consideration of its proposal to make a liability compensation regime applicable to the Arctic.¹¹⁴

D. **Southern Ocean – Regional Protection Regime**

The primary treaty for the protection of the Southern Ocean environment is the Environmental Protocol. A threshold issue is that the Environmental Protocol was ratified by 35 states as at 2014, which is less than the 50 states which have ratified the Antarctic Treaty.¹¹⁵ Accordingly, measures such as the ban on minerals development,

¹¹² Arctic Council, 'Arctic Offshore Oil and Gas Guidelines: Systems Safety Management and Safety Culture - Avoiding Major Disasters in Offshore Oil and Gas Operations' (2014) <<http://www.arctic-council.org/index.php/en/resources/news-and-press/news-archive/874-new-guidelines-from-pame-on-arctic-offshore-oil-and-gas-safety-management>> at 27 August 2015.

¹¹³ Arctic Council, 'Arctic Council works to prevent Arctic marine oil pollution' <<http://www.arctic-council.org/index.php/en/resources/news-and-press/news-archive/843-arctic-council-works-to-prevent-arctic-marine-oil-pollution>> at 27 August 2015.

¹¹⁴ Arctic Council, Emergency Prevention, Preparedness and Response Working Group (EPPR) Working Group Meeting Final Report (Whitehorse, June 15-16, 2011) 11.

¹¹⁵ The Environmental Protocol has been ratified as at 2014 by 35 states, Senate Standing Committees on Foreign Affairs, Defence and Trade, Inquiry into Australia's future activities and responsibilities in the Southern Ocean and Antarctic waters, Submission by the Department of Foreign Affairs and Trade, 27 June 2014, and Ecolex, Treaties - Record Details

including oil and gas, have not, to date, been accepted by a large proportion of the 193 member states of the United Nations. It appears likely that in the longer term, with more ratifications, the Environmental Protocol will be accepted as international customary law, and therefore potentially binding on non-parties. At present the Environmental Protocol may not have sufficient international acceptance for potential application to non-parties.

i) Preventive Measures

Annex IV of the Environmental Protocol has provisions concerning pollution from ships, and ships are defined to include fixed or floating platforms.¹¹⁶ The measures apply to state parties, and also require a state to provide measures applying to their respective operators, such as oil and gas companies.¹¹⁷ Article 3 requires preventative measures by operators to reduce the risk of environmental emergencies and their potential adverse impact.¹¹⁸ Article 4 requires contingency plans by operators for responses to incidents, and cooperation with respect to these plans. Article 12 requires the state parties to develop contingency plans for marine pollution response in the Antarctic Treaty area, including contingency plans for ships operating in the Antarctic Treaty area, and oil spills originating from coastal installations.¹¹⁹

ii) Response Measures

Annex IV of the Environmental Protocol includes Article 5 concerning emergency response measures, and provides that state parties require their operators to take prompt and effective response action to environmental emergencies arising from the activities of that operator. In the event that an operator does not take prompt and effective response action, the state parties are encouraged to take such action, including through their agents and operators.¹²⁰

<<http://www.ecolex.org/ecolex/ledge/view/RecordDetails?id=TRE-001120&index=treaties>> at 13 August 2014.

¹¹⁶ *Protocol on Environmental Protection to the Antarctic Treaty*, opened for signature 4 October 1991, 30 ILM 1455 annex IV art 1(g) (entered into force 14 January 1998) (*Environmental Protocol*).

¹¹⁷ *Environmental Protocol* art 14. Article 14 provides that nothing in the Annex derogates from rights and obligations under MARPOL 73/78. States which are parties to MARPOL therefore remain bound by its provisions irrespective of whether they are also parties to the Environmental Protocol.

¹¹⁸ Preventative measures may include specialised structures or equipment incorporated into the design and construction of facilities and means of transportation; specialised procedures incorporated into the operation or maintenance of facilities and means of transportation; and specialised training of personnel.

¹¹⁹ *Environmental Protocol*, annex IV art 12.

¹²⁰ *Ibid.*

The effectiveness of pollution management plans relating to the Southern Ocean is severely impacted by limited effective harbours.¹²¹ This issue makes the prepositioning of emergency response ships highly unlikely under current conditions.¹²²

iii) Liability Regime

Article 16 of the Environmental Protocol requires the parties to undertake to elaborate 'special rules and procedures relating to liability'.¹²³ Article 16 has resulted in Annex VI to the Environmental Protocol for liability from environmental emergencies ('Liability Annex'), which is in the process of ratification by the state parties.¹²⁴ René Lefeber commented that there may be a need for a liability regime for minerals activities because, for example, mineral resource activities could be carried on in the Area notwithstanding the Environmental Protocol.¹²⁵

Annex VI Article 6 concerns liability for damages, and provides that an operator that fails to take prompt and effective response action to environmental emergencies arising from its activities shall be liable to pay the costs of response action taken by Parties.

Annex VI Article 9 limits liability for a ship, including floating platforms, on the basis of tonnage.¹²⁶ The related issue is determining the potential liability.¹²⁷ These limits

¹²¹ Ports facilities on the Antarctic continent and adjacent islands currently include Rothera Station on Adelaide Island near the Antarctic Peninsula in the British Antarctic Territory, United States Palmer Station on Anvers Island near the Antarctic Peninsula, the Chilean Villa Las Estrellas on King George Island near the Antarctic Peninsula, the Argentine Esperanza Base on the Antarctic Peninsula, the Australian Mawson Station near Avery Ice Shelf and Prydz Bay, and the United States McMurdo Station on Ross Island in the New Zealand Ross Dependency. In relation to potential oil and gas, Antarctic Peninsula facilities may be relevant for the Weddell Sea, Mawson Station for Prydz Bay, and McMurdo Base for the Ross Sea. These limited facilities would need to be upgraded to support emergency response vessels.

¹²² In this respect from the environmental perspective, incorporation of Argentina and Chile home port facilities, and facilities in the Antarctic Peninsula and Weddell Sea region, in a joint emergency response structure, is likely to be an essential part of an effective regime. This issue supports incorporation of Chile, Argentina and the United Kingdom in the JDZ structure outlined above. In the longer time frame of 2048 there may be substantially less sea ice, and there should be scope to establish such facilities, together with an effective regime for pooling emergency resources.

¹²³ The *Environmental Protocol* requirement was therefore to introduce the related future provisions.

¹²⁴ *Annex VI to the Protocol on Environmental Protection to the Antarctic Treaty Liability arising from Environmental Emergencies*, opened for signature 14 June 14 2005 <http://www.ats.aq/documents/recatt/Att249_e.pdf>.

¹²⁵ René Lefeber, 'The Legal Need for an Antarctic Environmental Liability Regime' in Davor Vidas (ed) *Implementing the Environmental Protection Regime for the Antarctic* (Springer, 2000) 181, 193.

¹²⁶ *Environmental Protocol* Annex VI art 9.

¹²⁷ The liability of the largest passenger cruise vessels which have operated in Antarctica would be more than USD 45 million House of Commons Library 'Antarctic Bill', Bill 14 of 2012-13, Research Paper

relate to currently permitted activities in the Antarctic Treaty area, and would require updating in relation to any future oil and gas activities.¹²⁸

An effective liability regime encourages the development of more effective prevention measures, as oil companies will be more likely to enforce measures to prevent pollution to minimise exposure to significant payments. CRAMRA Article 8(2) would have imposed strict liability on the operator under an oil and gas concession for damage to the Antarctic and Southern Ocean environment.¹²⁹

Mari Skåre analysed the proposed liability measures in CRAMRA, and commented that the operator could have invoked defences such as natural disasters which could not have been reasonably foreseen, or armed conflict, and that states would only have been liable for damage that would not have occurred if the state had carried out its obligations under the treaty.¹³⁰

The implementation of Arctic and Southern Ocean JDZ regimes should prioritise the financial capability of the oil company to meet potential pollution costs, and this may be effectively achieved by requiring consortia of large oil companies to ensure capability to meet environmental costs, together with joint and several liability for pollution costs for each oil company in the consortium.

E. Application to JDZ Agreements

i) Prevention and Response Regimes

In the Arctic Ocean region JDZ Agreements should require oil company operators and contractors to comply with MOPPR, including compliance inspections by the state parties. JDZ Agreements in the Southern Ocean should incorporate a similar regime to

12/63 (30 October 2012) <<http://www.parliament.uk/briefing-papers/RP12-63>> at 14 November 2012. The amount is based on the International Monetary Fund system of special drawing rights (SDR), starting from one million SDR (approximately USD 1.5 million), an increasing with tonnage. A limit equivalent to USD 4.5 million is applicable to environmental emergencies which do not involve ships i.e. land-based operations

¹²⁸ *Environmental Protocol*. Annex VI Article 12 provides that the Secretariat of the Antarctic Treaty shall maintain a fund in accordance with Decisions including terms of reference to be adopted by the Parties to provide for the reimbursement of reasonable costs incurred by state parties in taking response actions.

¹²⁹ On this basis the operator would have been responsible under *CRAMRA* irrespective of whether the operator had been negligent.

¹³⁰ Mari Skåre, 'Liability Annex or Annexes: A Review of the Process' in Davor Vidas (ed) *Implementing the Environmental Protection Regime for the Antarctic* (Springer, 2000) 163, 168.

MOPPR, and should be implemented under the Antarctic Treaty in the event that oil and gas development was permitted under the Environmental Protocol.

ii) Liability Regime

Compensation for oil pollution damage from a fixed or floating platform generally relies on the coastal state's domestic law measures relating to compensation from such facilities. However in the Southern Ocean the operator of a fixed installation may not recognise territorial claims of a state to the Antarctic coast, continental shelf and OCS. Compensation to other states may therefore need to rely on international conventions. LOSC does not include a liability regime, however, Article 235(3) requires that states further the development of criteria and procedures for payment of adequate compensation, such as compulsory insurance or compensation funds.¹³¹ As discussed, the general liability regime proposed for north-west Europe received insufficient ratifications, and has been described as 'unlikely ever to do so.'¹³²

One response would be a new international treaty for liability and compensation for oil pollution damage. The potential for such a treaty imposing strict liability on a nation, when an offshore structure within its jurisdiction causes transnational oil pollution, was discussed by Melissa B Cates.¹³³ Cates observed that LOSC, in regulating pollution from offshore oil drilling, directs coastal States to adopt national laws, and global and regional rules, and commented that this process '...lacks definitive procedures for determining liability, guaranteeing compensation, and enforcing the adoption of international rules in this area.'¹³⁴

Bosma considered the need for a liability and compensation regime, and analysed related provisions in standard oil and gas contractual agreements between states and oil companies, known as joint operating agreements (JOA).¹³⁵ The Association of International Petroleum Negotiators' Model International Operating Agreement 2002,

¹³¹ Churchill and Lowe, above n 65, 376.

¹³² *Convention on Civil Liability for Oil Pollution Damage resulting from exploration for and Exploitation of Seabed Mineral Resources*, opened for signature 1 May 1977, (1977) 16 ILM 1451 (not yet in force).

¹³³ Melissa B Cates, 'Offshore Oil Platforms Which Pollute The Marine Environment: A Proposal For An International Treaty Imposing Strict Liability' (1983-1984) 21 *San Diego Law Review* 691.

¹³⁴ *Ibid* 694.

¹³⁵ Shane Bosma, 'The Regulation Of Marine Pollution Arising From Offshore Oil And Gas Facilities – An Evaluation Of The Adequacy Of Current Regulatory Regimes And The Responsibility Of States To Implement A New Liability Regime' (2012) 26 *Australia and New Zealand Maritime Law Journal* 89, 103.

for example, provides that operators may take out other insurance at their discretion to cover clean-up costs associated with a catastrophic event.¹³⁶ The liability of drilling contracts is transferred to the operator.¹³⁷ Bosma concluded that '...the failure to include a clear and unequivocal stipulation for the JOA operator to place insurance to cover well- or reservoir-related pollution is a glaring omission from the standard forms.'¹³⁸

The prospects for a new international oil spill convention were also considered by Steven Rares.¹³⁹ Rares analysed the 2011 advisory opinion by ITLOS on Responsibilities and Obligations of States Sponsoring Persons and Entities with respect to Activities in the Area.¹⁴⁰ The opinion suggested that a state sponsoring activities in the Area may be held liable to pay compensation if it fails to carry out its responsibilities under UNCLOS with due diligence and a third party suffers damage as a result.¹⁴¹

In relation to pollution from oil carrying ships there is primary reliance on 1992 Civil Liability Convention,¹⁴² and the 1992 Fund Convention¹⁴³ considered above. The

¹³⁶ Bosma noted that the JOA almost invariably provides that the operator is not liable for, and is entitled to be indemnified by the other non-operating joint venturers to the extent of each of their respective participating percentage interests from liability for any third party claims for losses arising from the licensed operations, including if arising due to the operator's negligence.

¹³⁷ The standard form contracts most used for offshore drilling and well servicing operations internationally are the International Association of Drilling Contractors Standard Form of International Offshore Daywork Drilling Contract and the Association of International Petroleum Negotiators' International Model Well Services Agreement the exposure associated with any well blowout or pollution from the well or reservoir arising from the offshore operations is passed to the JOA operator.

¹³⁸ Bosma's proposals were as follows:

1. a species of a strict civil liability regime backed by a compulsory liability insurance scheme up to USD1 billion coupled with an industry-funded liability trust fund, thereby providing a more satisfactory and effective vehicle for transnational environmental accountability for marine pollution damage arising from offshore facilities; and
2. the imposition of corporate criminal liability for oil pollution from offshore facilities upon enterprises with faulty risk management or defective corporate culture, thereby properly recognizing such incidents as the grave social disturbances that they are, promoting accountability and encouraging a corporate culture of responsible risk management.

¹³⁹ Justice Steven Rares, 'An International Convention On Off-Shore Hydrocarbon Leaks?' (Speech delivered at the International Conference on Liability and Compensation Regime for Transboundary Oil Damage resulting from Offshore Exploration and Exploitation Activities, Bali, 21-23 September 2011).

¹⁴⁰ Ibid. Rares summarised the critical limitations of the LOSC in relation to liability and compensation as follows:

'However, this advice gave no certainty about the amount or sufficiency of compensation. Nor did it require that an insurer or financially secure person be in a position pay that compensation if the person primarily liable could, or did, not. Nor does an obligation of a State to exercise "due diligence" matter much if the State itself is impoverished and unable to make a meaningful payment of a shortfall in compensation in the event that it breaches this obligation.'

¹⁴¹ The Chamber concluded that when a State Party sponsored a person to engage in activity in the Area, the State had the responsibility to provide a means for persons, who might be injured as a result of such activity, to seek and receive compensation.

¹⁴² *International Convention on Civil Liability for Oil Pollution Damage 1992*, opened for signature 27 November 1992, 1953 UNTS 255 (entered into force 3 May 1996) ('1992 Civil Liability Convention').

related limit of approximately USD 1 billion is primarily concerned with vessel oil spills. There is, most seriously, no regime in relation to pollution from platforms and seabed activities.

In the absence of an effective international liability and compensation treaty for platform oil pollution, or amendments to 1992 Civil Liability Convention, the 1992 Fund Convention or as a new Annex to LOSC with similar effect to such a treaty, it is essential to incorporate a strict liability regime in JDZ agreements. This is a particularly urgent issue in view of the *Deepwater Horizon* oil spill costs, stated by BP to include response and clean-up costs exceeding USD 14 billion, and claims, advances and settlements of USD 12.5 billion as at 31 December 2013,¹⁴⁴ and BP's accounting provision of USD 40.9 billion in relation to the oil spill.¹⁴⁵ A primary compensation regime should accordingly be included in Arctic and Southern Ocean JDZ agreements:

- The required oil company cover should be based on environmental evaluation of potential costs.¹⁴⁶ In view of the *Deepwater Horizon* oil spill a current reference amount will be used to highlight the issue of USD 14 billion, however this amount may be expected to increase;¹⁴⁷
- The required cover is likely to increase under current Arctic conditions, however it may then decrease if global warming reduces or even eliminates ice cover in the very long time frame. Similarly Southern Ocean ice conditions may substantially decline in the time frame of potential withdrawal of oil and gas

¹⁴³ *International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage* 1992, opened for signature 19 November 1976 [1995] ATS 3 (entered into force 22 November 1994) ('1992 Fund Convention').

¹⁴⁴ BP, *Deepwater Horizon Accident*, BP's payments related to Gulf Coast recovery, <<http://www.bp.com/en/global/corporate/gulf-of-mexico-restoration.html>> at 13 August 2014. The BP settlement with the United States Government was USD 4.5 billion, 'BP Announces Resolution of All Criminal and Securities Claims by U.S. Government Against Company Relating to Deepwater Horizon Accident' (Press Release 15 November 2012)

<<http://www.bp.com/genericarticle.do?categoryId=2012968&contentId=7080497>> at 16 November 2012.

¹⁴⁵ Bosma, above n 135, 89.

¹⁴⁶ An evaluation is likely to be currently much higher for ice regions, though likely to then decline over a long time frame due to global warming.

¹⁴⁷ BP's provision for related costs of the oil spill is USD 40.9 billion. This amount should be considered in the context of the combined reported profits between 2004 and 2007 for the six super-major oil companies (BP, Chevron Corporation, ExxonMobil Corporation, Royal Dutch Shell Plc. and Total S.A.) was USD 494.8 billion. Fortune Magazine 'Global 500' 2008.

exploration and development prohibition under the Environmental Protocol from 2048;

- To make these measures meaningful in practice, compensation should be joint and severable on the oil company consortium, on a strict liability basis, with oil company selection for JDZs to require major oil companies operating in consortiums; and
- The compensation regime should apply to oil companies undertaking the activities including operator and joint venture companies, and to their ultimate parent companies. The regime should apply irrespective of limitations under conventions such as Civil Liability Convention and Fund Convention regimes, the Liability Annex to the Environmental Protocol, or a future convention relating to oil spills from oil exploration and production platforms.

These proposed terms are similar to those currently used by Greenland for offshore oil and gas licences. For example, Greenland's Licence No 09/98,¹⁴⁸ provides compensation for damages without financial limit,¹⁴⁹ and joint and several liability of oil and gas companies.¹⁵⁰ These essential terms are included in current Greenland licences, and should therefore be applied for the environmental provisions of Arctic and Southern Ocean JDZs.

F. Implications for Arctic and Southern Ocean JDZs

The environmental provisions in international conventions, state laws, and JDZ agreements will never eliminate risk of oil spills. Effective regimes for prevention and disaster response should assist in limiting potential damage. An effective environmental

¹⁴⁸ Licence No 09/98 for Exploration for and Exploitation of Hydrocarbons for an Offshore Area West of Sisimiut in West Greenland, Mineral Resources Administration for Greenland, 29 June 1998. <<http://www.geus.dk/ghexis/pdf/sislic.pdf>> at 19 November 2012 ('Greenland Licence').

¹⁴⁹ Ibid. Clause 2601 Greenland Licence provides as follows:

The licensee shall pay compensation for damages caused by the activities under the licence even if the damage is accidental and regardless of whom the damage effects...If the person who has suffered damage has deliberately or by gross negligence contributed to the damage, the compensation may be reduced or annulled.

¹⁵⁰ Ibid. Clause 2701 Greenland Licence provides as follows:

If more than one party participate in the licence these parties are jointly and severally liable for the fulfilment of any obligation under the licence including the obligation to pay compensation for damages caused by the activities under the licence irrespective of the parties participating percentages in the licence.

compensation regime may deter smaller oil companies from Arctic or Southern Ocean investment, however an effective regime is essential to ensure adequate financial strength to undertake environmental remediation.¹⁵¹

The Arctic and Southern Ocean regions may, potentially, present lower potential compensation, for example where there are fewer coastal land owners or large scale fishing industries.¹⁵² This may have the result of biasing oil and gas development activity towards regions considered less likely to seek significant compensation. It is therefore likely to be essential that remediation costs are fully incorporated in the liability regime.¹⁵³

A fully effective compensation regime may, in practice, prevent oil and gas development until substantial reduction in ice cover significantly reduces environmental risks. The reduction in ice may be expected to reduce potential compensation as conditions for oil and gas development improve over the longer time frame. This mechanism of attaching real environmental risks to oil and gas companies must be an objective of Arctic and Southern Ocean JDZs, and is incorporated in the liability regime of the proposed JDZ agreement in Chapter VII.

4. Supporting Regional Governance

A. Towards Effective Polar Regional Regimes

The United Nations has supported regional measures to protect the environment.¹⁵⁴ These measures are based on Agenda 21, adopted at the 1992 Rio de Janeiro

¹⁵¹ 'Shell Vs. Total – The Debate Over Arctic Drilling' *Seeking Alpha*, 5 October 2012 <<http://seekingalpha.com/article/906751-shell-vs-total-the-debate-over-arctic-drilling> > at 19 November 2012. A primary example is the current Royal Dutch Shell investment in the Chukchi Sea region of the United States Arctic continental shelf. Robert Blaauw of Shell summarised the issue as follows:

'There are very different Arctics. The Bering Sea is like (drilling in) the North Sea but the northeast coast of Greenland is very different. We are seriously considering how we should respond to that (region) based on the technology we have today and whether it is worth taking that risk.'

¹⁵² Arctic fishing interests, for example, may have a smaller commercial value compared to the fishing industries in the state of Louisiana, which obtained compensation in the Deepwater Horizon oil spill.

¹⁵³ An effective liability regime also needs to facilitate compensation for states which have incurred remediation costs to recover these costs. For example, in the event of a pollution emergency off the coast of the Australian Antarctic Territory, the Australian government may have difficulties recovering environmental remediation costs from a company resident in a state which does not recognise Australian sovereignty unless the right to recovery was incorporated in operating agreements with the oil companies and their contractors.

¹⁵⁴ These measures are based on the recognition that many ecosystems are connected, and because these ecosystems extend beyond state boundaries.

Conference on Environment and Development ('Agenda 21'), which promoted measures including a regional approach to protecting the environment.¹⁵⁵ These measures were described by Adalberto Vallega as an impulse to regionalisation: 'Agenda 21 strengthens the need to develop actions on a regional scale, as the result of cooperation between states, as well as between states and inter-governmental organisations.'¹⁵⁶

Regional governance is particularly significant for protection of the environment. Alan Boyle summarised the advantages of a regional approach for protecting the polar marine environment, in particular that these measures are more feasible to implement compared to global schemes.¹⁵⁷ Regional management may also be the appropriate geographical scale for ocean governance regimes.¹⁵⁸ Robert W Knecht commented as follows:

A balance must be struck between the need to allow all interests to be represented in the decision-making, on the one hand, and the need to have a process that can eventually reach decisions, even when some continuing disagreement exists.¹⁵⁹

Regional regimes particularly require the support of the member states. Rothwell commented that 'Because national interests are more immediately at stake regional

¹⁵⁵ Report Of The United Nations Conference On Environment And Development (Rio de Janeiro, 3-14 June 1992) Chapter 17 – Protection Of The Oceans, All Kinds Of Seas, Including Enclosed And Semi-Enclosed Seas, And Coastal Areas And The Protection, Rational Use And Development Of Their Living Resources, UN Doc A/CONF.151/26 (Vol. II) (1992).

¹⁵⁶ Adalberto Vallega, 'The Regional Scale of Ocean Management and Marine Region Building' (1994) 24 *Ocean & Coastal Management* 17, 35.

¹⁵⁷ Alan Boyle, 'Globalism and Regionalism' in Davor Vidas (ed) *Protecting the Polar Marine Environment - Law and Policy for Pollution Prevention* (2000) 19, 32. Boyle commented that:

- Regional approaches enable states to make commitments for common action, and these commitments can be more feasible to implement than broadly based global schemes;
- Regional approaches support the development of regional institutions which can effectively impose environmental standards. Regional approaches also tend to produce institutions that have more cohesion and may be more effective;
- Regional regimes ease organisation on technical matters such as monitoring pollution, environmental impact statements, scientific research and the dissemination of information and expertise;
- Regional regimes give effect to goals of sustainability and integrated ecosystem management proposed by the United Nations that the marine environment, including the oceans and all seas and adjacent coastal areas, forms an integrated whole that is an essential component of the global life-support system and a positive asset that presents opportunities for sustainable development based on Agenda 21; and
- Regional regimes implement the framework provisions of the environmental provisions of LOSC Part XII accommodating special needs and varying circumstances of specific regions.

¹⁵⁸ Robert W Knecht, 'A Commentary on the Institutional and Political Aspects of Regional Ocean Governance' (1994) 24(1) *Ocean & Coastal Management* 39.

¹⁵⁹ *Ibid* 41.

regimes more often engender greater support amongst participants than wide-ranging international regimes.¹⁶⁰

The Arctic Council and Antarctic Treaty are in the process of developing into effective regional governance regimes, and the two organisations have the continued support of their member states. Knecht proposed that three conditions need to be met for an effective ocean governance regime, and which arguably apply to both these organisations:¹⁶¹

The ocean-related problems which are being confronted must be seen as sufficiently real and urgent so that the highest levels of each government become involved.

Regular meetings must take place between the highest levels of government represented in the region at which the regional ocean commitments of these governments can be regularly renewed, strengthened, and extended.

Sufficient political will must be generated and maintained in each participating nation so that the requisite domestic regulations can be enacted and enforced and that the financial support necessary to maintain the regional institution is forthcoming on a continuing basis.

The Antarctic Treaty is developing as a regional governance regime with the introduction of other conventions including the Environmental Protocol, and the Arctic Council is developing as a regional governance regime including introducing MOPPR.¹⁶² The process of developing governance regimes was also described by Schofield, Potts and Townsend-Gault as '...getting the balance right between ocean development and conservation.'¹⁶³

B. Arctic and Southern Ocean Governance Issues

¹⁶⁰ Donald R Rothwell, *The Polar Regions and the Development of International Law* (Cambridge University Press, 1996) 442.

¹⁶¹ Knecht, above n 158, 48.

¹⁶² The balance of developmental and environmental objectives is demonstrated by the different working groups of the Arctic Council. Arctic Council Secretariat, 'Arctic Council Fact Sheet' (2012) <<http://www.arctic-council.org/index.php/en/>> at 23 November 2012. The Arctic Council programmes in 2012 are:

1. Arctic Contaminants Action Program (ACAP), <http://www.ac-acap.org/>
2. Arctic Monitoring and Assessment Programme (AMAP) <http://www.amap.no>
3. Conservation of Arctic Flora and Fauna (CAFF) <http://www.caff.is>
4. Emergency Prevention, Preparedness and Response (EPPR) <http://eppr.arctic-council.org>
5. Protection of the Arctic Marine Environment (PAME) <http://www.pame.is/>
6. Sustainable Development Working Group (SDWG) <http://portal.sdwg.org/>

¹⁶³ Clive Schofield, Tavis Potts and Ian Townsend-Gault, 'Boundaries, Biodiversity, Resources, and Increasing Maritime Activities: Emerging Oceans Governance Challenges for Canada in the Arctic Ocean' (2009-2010) 34 *Vermont Law Review* 35, 53.

The advantages of the Arctic Council developing regional measures such as MOPPR and the Arctic Offshore Oil and Gas Guidelines may be challenged in relation to future oil and gas development in the Area, however these activities would be regulated by ISBA. The related issue is that if the CLCS does not issue recommendations based on Russian, and potential Danish (Greenland) and Canadian claims to Lomonosov Ridge, then the Area regime in the Arctic Ocean region will be very large.¹⁶⁴

The likelihood of significant future investment in Arctic Ocean oil and gas is likely to be coupled with pressure to be members of the Arctic Council as the primary regional forum. Young summarised the increasing pressure on the Arctic Council to acknowledge other interests in Arctic resources:¹⁶⁵

One measure to support the effectiveness of ISBA's jurisdiction in the Arctic Ocean region would be to acknowledge the application of Arctic Council environmental protection measures to the Area in the Arctic Ocean region, and so contribute to a unified approach to environmental protection in the Arctic Ocean.

An effective regional regime needs to prove beneficial to its members, balancing rights and responsibilities acceptable to its members. Protection of the Arctic environment has provided a need for Arctic states to coordinate measures, and this issue has increasing importance with the development of oil and gas activities in the Arctic Ocean.

The Antarctic Treaty and related conventions under the ATS provide continued importance to states with territorial claims.¹⁶⁶ In relation to potential oil and gas exploration and development, CRAMRA proposed membership of the Regulatory

¹⁶⁴ LOSC art 76(6). The Area may include significant oil and gas resources, particularly if Lomonosov Ridge is not accepted as a 'submarine elevations that are natural components of the continental margin, such as its plateaux, rises, caps, banks and spurs,' and cannot therefore form part of a state's OCS. ISBA would control the related oil and gas development activities under LOSC Part XI.

¹⁶⁵ Oran R Young, 'The Arctic in Play: Governance in a Time of Rapid Change' (2009) 24 *The International Journal of Marine and Coastal Law* 423, 430. Young commented as follows:

Just as the original members of the Antarctic Club found it necessary to admit new members during the 1980s, it seems virtually certain that the members of the Arctic Club – whether in the form of the 5 or the 8 – will be forced in due course to acknowledge the claims of other stakeholders in the far North.

¹⁶⁶ The Antarctic Treaty is a regional regime based on the suspension of territorial claims and freedom of access for peaceful purposes. The effectiveness of the Antarctic Treaty and Antarctic Treaty System (ATS) as a regional regime is based on membership of claimant states, combined with equal voting status accorded to other status which qualify as Antarctic Treaty Consultative Parties (ATCP) as discussed in Chapter IV.

Committee to consider applications and issue permits to include the state with territorial claim in the identified area.¹⁶⁷

The oil and gas regime should recognise the rights of claimant states, as part of a balancing of interests with other parties, including ATCP and other states. The JDZ proposals should therefore balance the interests of:

- Claimant states to enforce an Antarctic oil and gas regulatory regime with reference to the Arctic Council's MOPPR and the Arctic Offshore Oil and Gas Guidelines in the continental shelf and OCS in their claimed area, together with a partial taxing right on income;
- Other states which can conduct oil and gas exploration and development activities subject to approval of a Regulatory Committee similar to the CRAMRA proposals, with a partial taxing right on income; and
- Developing and landlocked states receive royalty income on production on a similar basis to the revenues of the OCS in LOSC Part VI.

5. Summary Tables – JDZ Proposals

The following tables summarise the nature of Arctic and Southern Ocean maritime boundary disputes, revenue sharing proposals, environmental protection and regional governance proposals. As discussed, the proposals are not intended to eliminate alternative structures for JDZs. The proposals are, however, intended to support the process of the adaption of future JDZ regimes to the Arctic and Southern Ocean regions.

A. JDZ Circumstances

The geographical and other circumstances of potential JDZs in the Arctic and Southern Ocean regions can be summarised as follows:

¹⁶⁷ CRAMRA art 29(2)(a). Rothwell, above n 160, 78. Rothwell summarised claimant state membership of the Committee as follows:

... claimant states would always be represented and could participate in the decision-making process of the Committee concerning potential and actual minerals activities within their claimed Antarctic territory. These CRAMRA provisions reflected the continuing importance of the territorial claimants in the ATS.

Table 8–1 Potential Arctic and Southern Ocean JDZ Circumstances

	Agreement	Geographical Circumstances	Code
1.	Svalbard	Whether multilateral access to resources includes continental shelf and OCS under Svalbard Treaty 1920	H, M, IS
2.	United States/Canada – Beaufort Sea	Adjacent states, Canada sector based on treaty, United States based on equidistance	H
3.	United States/Russia – Bering and Chukchi Seas	Opposite coasts, United States based on 1990 Treaty	H
4.	Canada/Denmark (Greenland)/Russia – Central Arctic	Potential overlap depending on CLCS outcomes	PCS
5.	The Area – Arctic Ocean and Norwegian Sea Regions	LOSC multilateral regime for regions beyond state jurisdiction	M
6.	Norway/Australia/France/New Zealand/non-claimant states	Claimant state historical claims to land area. Non claimant states likely not recognising claimant state OCS	H, LS, M
7.	United Kingdom/Chile/Argentina	Overlapping historical claims to land area	H, LS, M
8.	Unclaimed Sector	No sovereignty claims to Antarctic land area	LS, M
9.	The Area – Southern Ocean	LOSC multilateral regime for regions beyond state jurisdiction	M

Code	Basis for claims other than equidistance
A	Archipelago claim
H	Historical circumstances or prior treaty
IS	Islands sovereignty
LS	Land sovereignty
M	Multilateral claims
PCS	Prolongation of Continental shelf
U	Unitising oil or gas field

B. Resource Sharing Proposals

Table 8– 2 JDZ Proposals Supporting Arctic and Southern Ocean Resource Sharing

Item Ref.	Arctic Ocean Region	Jurisdiction	Resource sharing	Comments
i)	United States and Russian Federation – Bering Sea	State jurisdiction from each state's boundary with the JDZ to the JDZ median line	States to tax 50 per cent of net income from the JDZ under respective tax rules, and impose royalties and excise tax on 50 per cent of production from the JDZ	
ii)	United States and Canada – Beaufort Sea	State jurisdiction from each state's boundary with the JDZ to the JDZ median line	States to tax 50 per cent net income from the JDZ under respective tax rules,	

			and impose royalties on 50 per cent of production from the JDZ	
iii)	Svalbard	Norwegian regulatory authority consistent with Svalbard Treaty	Norway to tax 50 per cent of income from Svalbard continental shelf. State of residence of operators to tax 50 per cent of the income	
iv)	Central Arctic – Canada, Denmark (Greenland) and Russia	State jurisdiction from each state's boundary with the JDZ to the JDZ median line Arctic Council	States to tax 50 per cent of the net income from oil companies in the JDZ State to impose royalties or excise tax on 50 per cent of production from the JDZ	
v)	Central Arctic and Norwegian Sea – Three Zones under the Area Regime, LOSC Part XI	<ul style="list-style-type: none"> • Norwegian regulatory regime to apply to zone in the Norwegian Sea • Canadian regime to zone adjoining Canadian Arctic Ocean OCS • Russian regime to zone adjoining the Russian Arctic Ocean OCS 	Open to State most closely connected to the oil company may tax its income from the Area. LOSC Annex III royalty regime based on production for benefit of developing and non-coastal states	LOSC Part XI Area regulatory regime likely not appropriate to environmental risks in the Arctic Ocean region. Arctic Council MOPPR and Arctic Offshore Oil and Gas Guidelines should apply
	Southern Ocean Region	Jurisdiction	Resource sharing	Comments
vi)	Antarctic Treaty – Claimant States	Joint commission under Antarctic Treaty framework with regulatory and environmental code. Claimant state enforcement	Claimant state tax on 50 per cent of related income. State with closest economic connection to the oil company would tax 50 per cent of income. Alternatively claimant state nominates and taxes one oil company in the development. LOSC Annex III royalty regime based on production for benefit of developing and non-coastal states	Enforcement by claimant state
vii)	United Kingdom, Chile and Argentina – Antarctic Peninsula Region	Joint commission under Antarctic Treaty framework with regulatory and	Antarctic claimant states share tax 50 per cent of related income ¹⁶⁸	Enforcement relies on claimant states' joint oversight

¹⁶⁸ On this basis the overlapping claims are as follows:

- Area 80° west to 74° west, Chile and United Kingdom;
- Area 74° west to 53° west, Chile, United Kingdom and Argentina; and
- Area 53° west to 25° west, United Kingdom and Argentina.

		environmental code. Joint commission enforcement with claimant states' joint oversight	State with closest economic connection to the oil company tax 50 per cent of income. Alternatively each claimant state nominates and taxes one oil companies in the development. Royalty regime based on production for benefit of developing states	
viii)	Unclaimed Sector – Marie Byrd Land	Joint commission under Antarctic Treaty framework with regulatory and environmental code	Joint Commission to tax 50 per cent of related income on behalf of ISBA. State with closest economic connection to the oil company would tax 50 per cent of income. Royalty regime for benefit of developing states	Enforcement under Antarctic Treaty framework
ix)	The Area – LOSC Part XI	Joint commission under Antarctic Treaty framework with regulatory and environmental code	Joint Commission to tax 50 per cent of related income on behalf of ISBA. State with closest economic connection to the oil company tax 50 per cent of income. Royalty regime based on production for benefit of developing states	Enforcement under Antarctic Treaty framework

C. Environmental Protection Proposals

Table 8–3 Environmental Protection Measures supporting JDZs

Item Ref.	International Convention	Vessels or Platforms	Prevention or Response Provisions	Liability and Compensation Regime	Comments
i)	International Convention for the Prevention of Pollution from Ships (MARPOL 73/78)	Vessels	Prevention – Annex 1	None	Scope includes platforms, no related general safety provisions. Broader provisions should be incorporated in JDZs
ii)	Law of the Sea Convention	Vessels and	Prevention and Response – Part XII	None	Article 235(3) requires states

	(LOSC)	Platforms			to develop liability and compensation regimes. An effective regime should be incorporated in JDZs
iii)	Oil Pollution Preparedness, Response and Coordination Convention (OPRC)	Vessels and Platforms	Preparedness and response	None	Include in JDZs
iv)	Intervention Convention	Vessels	Response – Article 1	None	Include in JDZs
v)	Civil Liability Convention and Fund Convention	Vessels	N/A	Liability for vessels	Include an effective regime in JDZs
vi)	Bunker Oil Convention	Vessels	N/A	Liability for vessels	Include in JDZs
	Arctic Ocean Regional Conventions	Vessels or Platforms	Prevention or Response Provisions	Liability and Compensation Regime	Comments
vii)	Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR)	Vessels and Platforms	Prevention – Annex III	None	North-east Atlantic implementation of OPRC, includes Danish (Greenland), Iceland and Norwegian Arctic
viii)	Arctic Marine Oil Pollution Preparedness and Response (MOPPR) and Arctic Offshore Oil and Gas Guidelines	Vessels and Platforms	Prevention, Preparedness and Response	None	Arctic state implementation of OPRC, measures to be more region specific than OSPAR
	Southern Ocean Regional Conventions	Vessels or Platforms	Prevention or Response Provisions	Liability and Compensation Regime	Comments
ix)	Environmental Protocol to the Antarctic Treaty	Vessels	Prevention – Annex IV Article 12, Response – Article 5	Liability Annex	Based on vessel pollution, as oil and gas development prohibited until at least 2048

D. Regional Governance Proposals

Table 8–4 JDZ Proposals Supporting Regional Governance

Chapter VII Item Ref.	BIICL Model Art.	Clause	Summary
i)	5	Joint Commission	Arctic Ocean – Arctic Council representation on the Joint Commission
ii)	5	Joint Commission	Southern Ocean – Integration based on CRAMRA model with Antarctic Treaty regime
vi)	5	Joint Commission	Southern Ocean – Legal Regime – Joint Commission with a specific petroleum regulatory regime for better integration with Antarctic Treaty
vii)	5	Joint Commission	Arctic and Southern Ocean – Legal Regime – The Area – Joint Commission with a specific petroleum regulatory regime for better integration with Antarctic Treaty
xix)	21	Prevention of Pollution and Protection of Marine Environment	Arctic Ocean – Supervision of regulations by Arctic Council, and implementation of Arctic Marine Oil Pollution Preparedness and Response (MOPPR) and Arctic Offshore Oil and Gas Guidelines
xx)	21	Prevention of Pollution and Protection of Marine Environment	Southern Ocean – Supervision of regulations under Antarctic Treaty based on proposed CRAMRA regime
xxvi)	23	Dispute Resolution	Southern Ocean – Adopt dispute resolution model based on CRAMRA regime under Antarctic Treaty

6. Contribution to Research Conclusions

The principal contribution to the research conclusions is that JDZs can provide an effective solution for sharing resources to resolve boundary conflicts in several regions. In the Arctic Ocean, JDZs may provide: bilateral JDZ solutions allowing joint development for the United States/Canada maritime boundary in the Beaufort Sea and Arctic Ocean, the United States/Russia maritime boundary in the Bering and Chukchi Seas and the Arctic Ocean; and a potential multilateral solutions for Norway's Svalbard Island continental shelf and OCS, and for regions subject to the Area regime.

In the Southern Ocean, JDZs may provide multilateral solutions for Southern Ocean continental shelf and OCS on a similar basis to the CRAMRA regime, for the Southern Ocean extending from: non-overlapping state sovereignty claims made by Norway, Australia, New Zealand and France; and overlapping claims in the Antarctic Peninsula

and related ocean regions, including the Weddell Sea, where Chilean, Argentine and United Kingdom potential claims overlap; the potential continental shelf and OCS relating to the Unclaimed Sector, and for regions subject to the Area regime.

JDZ proposals are, however, examples of solutions for the Arctic and Southern Ocean, and should not exclude the use of other methods of structuring JDZs to apportion the benefits and responsibilities of potential future oil and gas development. The JDZ solutions can be made in the Arctic and Southern Oceans as interim measures to resolve resource conflict, pending a final maritime boundary delimitation.

The second conclusion is that JDZs should establish an effective environmental regime by incorporating regional measures, such as the Arctic Council's MOPPR regime for oil pollution preparedness and response. The JDZ environmental protection measures should include:

- Effective measures relating to vessels or platforms, which are currently based on state regulations, and are lacking in international agreements as the IMO's MARPOL provisions which principally relate to vessels, however Annex III of the OSPAR Convention includes specific provisions for offshore installations and imposes a 'best available techniques' and 'best environmental practice' standard;¹⁶⁹
- A regional pollution response, expanded from agreements such as the IMO Oil Pollution Preparedness, Response and Coordination Convention (OPRC Convention),¹⁷⁰ and its Arctic implementation in the Arctic Council's MOPPR, towards the European Maritime Safety Agency system, based on satellite monitoring,¹⁷¹ and related standby pollution control vessels;¹⁷² and

¹⁶⁹ *OSPAR Convention*, Annex III art 2 provides:

1. When adopting programmes and measures for the purpose of this Annex, the Contracting Parties shall require, either individually or jointly, the use of:

(a) best available techniques
(b) best environmental practice

including, where appropriate, clean technology.

¹⁷⁰ *Oil Pollution Preparedness, Response and Coordination Convention*, opened for signature 30 November 1990, 30 ILM 733 (entered into force May 13, 1995) ('OPRC Convention'). The Annex provides that state bears the costs of response measures unless the response measures were requested by the other state. OPRC was extended to substances other than oil by the *Protocol on Preparedness, Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances*, 2000, opened for signature 15 March 2000 [2007] ATS 41 (entered into force 14 June 2007) ('*OPRC-HNS Protocol*').

¹⁷¹ European Maritime Safety Agency, 'Satellite Oil Spill Monitoring'

- An effective liability and compensation regime, with similar objectives to the proposed 1977 Convention on Civil Liability for Oil Pollution Damage resulting from Exploration for and Exploitation of Seabed Mineral Resources (CLEE),¹⁷³ and which is currently absent from international agreements.

The third conclusion is that JDZs should support regional governance, including Arctic Council or Antarctic Treaty membership of the respective JDZ Joint Commissions to represent regional interests, and through the control of the JDZs Joint Commission for the Unclaimed Sector and the Area. This is principally based on the need for environmental protection measures for the Arctic and Southern Ocean ecosystems, requiring coordination with other states for the effective enforcement of environmental protection measures. Close integration should also allow the Arctic Council and Antarctic Treaty systems to meet future challenges.

<<http://www.emsa.europa.eu/operations/cleanseanet.html>> at 24 April 2013.

¹⁷² European Maritime Safety Agency, 'Stand-by Oil Spill Response Vessels'

<<http://www.emsa.europa.eu/oil-recovery-vessels/vessel-inventory.html>> at 24 April 2013

¹⁷³ *Convention on Civil Liability for Oil Pollution Damage resulting from Exploration for and Exploitation of Seabed Mineral Resources*, opened for signature 1 May 1977, (1977) 16 ILM 1451 (not yet in force).

CHAPTER IX – POLICY IMPLICATIONS FOR JOINT DEVELOPMENT

1. Introduction

The development of JDZs has several policy implications relating to the Arctic and Southern Ocean JDZs and the law of the sea, including the effectiveness of enforcement for the proposed JDZ regimes, the degree of integration with LOSC, the political circumstances in developing JDZs, the potential effectiveness of JDZs under the Antarctic Treaty regime, the use of JDZs for oil and gas under ISBA in the Area regime, and the potential for promoting the development of JDZs for the peaceful settlement of current Asia Pacific boundary disputes. This chapter will briefly summarise these issues to provide the policy context to the use of JDZs.

2. Specific Policy Issues

A. JDZs and LOSC

The use of JDZs as provisional arrangements is consistent with LOSC. In relation to the continental shelf, for example, LOSC Article 83(3),¹ provides that pending agreement, the states concerned, 'in a spirit of understanding and cooperation, shall make every effort to enter into provisional arrangements of a practical nature and, during this transitional period, not to jeopardize or hamper the reaching of the final agreement. Such arrangements shall be without prejudice to the final delimitation.' The majority of JDZs are of this type as reviewed in Chapter III, where the boundary is not determined and the JDZ agreement is without prejudice to the final boundary delimitation.

In relation to the high seas, LOSC provides a form of JDZ under the ISBA provisions and Area regime of Part XI, which should apply to areas of the Arctic and Southern Oceans which are held by CLCS to be beyond coastal state OCS boundaries. The zones

¹ *United Nations Convention on the Law of the Sea*, opened for signature 10 December 1982, 1833 UNTS 396 art 83(3) (entered into force 16 November 1994) ('*LOSC*').

to which high seas treatment may apply in the Arctic Ocean were considered by IBRU, which identified three potential regions.²

The jurisdiction of ISBA over oil and gas development in the Area should apply to the parts of the Southern Ocean south of 60° south latitude which are beyond coastal state OCS boundaries. This may potentially result in a much larger area subject to the LOSC Part XI Area regime than the potential region presented in the IBRU Arctic Ocean illustration.

JDZ regimes should establish rights and obligations to a satisfactory extent between the parties to the JDZ and third party states, to ensure there is no jurisdictional ‘limbo’, where it may be unclear which state has responsibility for matters such as enforcement, interaction with third parties, and environmental protection. Better integration with LOSC would mean that LOSC would require third state recognition of the allocation of rights and responsibilities made under JDZ agreements.³

The specific categories of power and responsibilities in existing JDZs were reviewed in Chapter VII to determine how such requirements should be integrated in a JDZ agreement. Certain JDZ agreements establish the division of sovereign rights within the JDZ area. There may be a policy implication that LOSC should expressly recognise state jurisdiction within JDZ, particularly for the enforcement of rights and obligations towards third party states, on the basis agreed by parties in the JDZ agreement, so that third states would know which regulations apply in the JDZ.

There is also a much broader issue whether states are obliged under customary international law to negotiate a JDZ when they cannot agree on a maritime boundary. This issue was discussed by David M Ong, including offshore hydrocarbon deposits which either lie across delimited continental shelf boundaries, or are found in areas of overlapping continental shelf claims. He commented that the language of LOSC article 83(3) does not incorporate a specific and legally enforceable obligation, being more exhortatory than obligatory, and the requirements for cooperative efforts specify such activities as the conservation of marine living resources, protection of the marine

² ‘Maritime Jurisdiction and Boundaries in the Arctic Region’, International Boundaries Research Unit, 15 August 2008, <<http://www.durham.ac.uk/ibru>> at 15 August 2008.

³ A JDZ agreement will commonly include terms for environmental protection between the parties as reviewed in Chapter III, however it is uncertain what powers the agreeing states have towards third parties given that sovereignty over the JDZ area is unclear.

environment and coordination of marine scientific research, rather than the joint development of hydrocarbon resources.

Ong concluded that while the obligation to cooperate does not presently encompass a 'positive' requirement for joint development of common deposits, the obligation of mutual restraint may make joint development the only viable option for resolving the problems raised by common deposits, short of resort to some form of conciliation or third-party adjudication.⁴ He stated that the doctrine of mutual restraint is arguably included in Article 83(3), which provides that the states concerned shall make every effort not to jeopardize or hamper the reaching of the final agreement. Churchill commented that 'there is probably a rule of international law which prohibits States from exploiting seabed resources in disputed areas.'⁵

B. The Political Context – Negotiating JDZs

The principal issues in the process of negotiating a JDZ were discussed in Chapter VIII. These issues were summarised by David H Anderson as including: i) the choice between a boundary agreement or a joint development zone; ii) the objective of maintaining the basic positions of the respective states on their boundary claims under a JDZ using without prejudice provisions; iii) the need for balanced outcomes generally based on equal resource sharing; iv) the process of defining the JDZ and the duration of the JDZ agreement; and v) the process of determining the degree of integration of the JDZ regime with either state's existing oil and gas provisions.⁶ Becker-Weinberg commented that the adoption of interim measures, such as a joint development agreement, was not made mandatory under LOSC.⁷

The political context is an essential element in negotiations for a new JDZ, and for the continued operation of existing JDZs. The successful JDZs generally arise where the benefits of oil and gas development are substantial, and there is no perceived loss of sovereignty. The JDZs generally also arise where there is no related issue of land

⁴ David M Ong, 'Joint Development of Common Offshore Oil and Gas Deposits: Mere State Practice or Customary International Law' (1999) 93(4) *American Journal of International Law* 701.

⁵ RR Churchill, 'International Legal Issues' in Hazel Fox et al, *Joint Development of Offshore Oil and Gas, A Model Agreement for States for Joint Development with Explanatory Commentary* (1990), vol 2, 33, 57.

⁶ David H Anderson, 'Strategies for Dispute Resolution - Negotiating Joint Agreements' in *Modern Law of the Sea: Selected Essays* (Martinus Nijhoff, 2008) 491, 495.

⁷ Vasco Becker-Weinberg, *Joint Development of Hydrocarbon Deposits in the Law of the Sea* (Springer Verlag, Heidelberg, 2014) 94.

sovereignty. The JDZs also have state support, whereas certain JDZs have been terminated on a change of government. The circumstances of the United Kingdom/Argentina MOU relating to the South-West Atlantic, discussed in Chapter III, is an example where land sovereignty over the Falklands (Malvinas) Islands, and a change of government, have resulted in the termination of a JDZ agreement.⁸

The issue of political support for a JDZ was summarised at the Conference on Joint Development and the South China Sea in 2011. These issues included that the JDZ is perceived as fair and equal for both parties, and that states need to manage the expectations of their public, emphasising that the JDZ does not involve a surrender of sovereignty, and having regard to the transparency of the general negotiation process.⁹ These comments provide very useful guidance on the development of successful JDZs, particularly that the proposed outcome is fair and equal, there are effective relations with the public including discussion of benefits of the JDZ, and that states ensure that the related negotiating process is transparent.

C. JDZs and the Antarctic Treaty

The Antarctic Treaty currently suspends sovereign claims over the Antarctic and Southern Ocean south of 60° latitude south. The use of JDZs should comply with the Treaty to suspending sovereignty claims over the continent and surrounding waters.

The Antarctic has several overlapping land claims, as both the Chilean and Argentine claims overlap the United Kingdom claim. OCS claims from the disputed Antarctic

⁸ *Argentina/United Kingdom: Joint Declaration on Cooperation over Offshore Activities in the South West Atlantic*, 27 September 1995, 35 ILM 301 ('*Argentina/United Kingdom Joint Declaration*').

⁹ Robert Beckman et al, *Beyond Territorial Disputes in the South China Sea: Legal Frameworks for the Joint Development of Hydrocarbon Resources* (Edward Elgar Publishing, 2013); Tara Davenport, Ian Townsend-Gault, Robert Beckman et al, 'Conference Report', Conference on Joint Development and the South China Sea, Singapore, 16–17 June 2011) 21.

First, it is important that the JDA is perceived as fair and equal for both Parties. The provisions in the JDA itself will play an important part in determining whether the JDA is fair and equal. Provisions such as equal representation on Joint Authorities, equal sharing of revenue, without prejudice clauses, etc, will play a considerable role in demonstrating that a JDA is a 'win-win' situation for the parties concerned.

Second, States need to manage the expectations of their public. This includes refraining from stoking national sentiments when incidents occur which are perceived as a threat to national sovereignty and not taking unreasonable or extreme positions which are difficult to back down from. It also includes educating the public through the media and other avenues on the benefits of joint development and the fact that it does not involve a surrender of sovereignty.

Third, the appearance of transparency in the general negotiation process may also help to manage public perceptions of JDAs. For example, the 2009 Malaysia-Brunei JDA was met with suspicion because it was shrouded in secrecy. This does not mean that States need to reveal every gritty detail of the negotiations but at least they should appear to be transparent.'

coast would also be a potential source of conflict if the maritime boundaries were not settled. A JDZ agreement could potentially allow resolution of disputes, although the previous Argentina/United Kingdom JDZ near the Falkland (Malvinas) Islands was terminated by Argentina.

The Antarctic also contains the Unclaimed Sector, where no claims were made prior to the Antarctic Treaty, and where state action in relation to any claim is currently suspended.¹⁰ There may potentially be disputes where several states may make claims to the landmass in the Unclaimed Sector, and make EEZ, continental shelf and OCS claims from the related Antarctic coastline.

Potential solutions for better governance of the Antarctic and Southern Oceans were considered by Karen N Scott.¹¹ Alternative multilateral resource sharing models include the 1920 Svalbard Treaty,¹² the 1967 Outer Space Treaty, and the unratified 1979 Moon Treaty,¹³ and the regime of the deep seabed under Part XI of LOSC. Scott concluded there was potentially a need for a more structured management and enforcement regime.

The Southern Ocean challenges the JDZ model as a potential solution, particularly as there are multilateral overlapping claims. However there are multilateral overlapping claims in the South China Sea, and considerable research has been done on the potential for JDZs in that region.¹⁴ The Southern Ocean is, however, particularly significant for the development of multilateral JDZs. A form of JDZ would have been established under the CRAMRA proposals discussed in Chapter IV, and there was also a substantial degree of support for such a multilateral JDZ, based on the nineteen Antarctic Treaty

¹⁰ Stuart B Kaye and Donald R Rothwell 'Southern Ocean Boundaries and Maritime Claims: Another Antarctic Challenge for the Law of the Sea?' (2002) 33 *Ocean Development & International Law* 359, 371.

¹¹ Karen N Scott, 'Managing Sovereignty and Jurisdictional Disputes in the Antarctic' (Paper presented at The State of Sovereignty Conference of the International Boundaries Research Unit, Durham, 1-3 April 2009).

¹² *Treaty between Norway, the United States of America, Denmark, France, Italy, Japan, the Netherlands, the Great Britain and Ireland and the British Dominions beyond the Seas and Sweden relating to Spitsbergen of 9 February 1920*, opened for signature 9 February 1920, 2 LNTS 8 (entered into force 14 August 1925) ('Svalbard Treaty').

¹³ *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space including the Moon and Other Celestial Bodies*, opened for signature 27 January 1967, 610 UNTS 205, (entered into force 10 October 1967) ('Outer Space Treaty'), and *Agreement Governing the Activities of States on the Moon and Other Celestial Bodies*, opened for signature 18 December 1979 (not ratified at August 2012) ('Moon Treaty').

¹⁴ Mark J Valencia, 'China and the South China Sea Disputes', *Adelphi Paper No. 298* (International Institute for Strategic Studies, 1995) 39.

members which had signed CRAMRA.¹⁵ The greater challenge may be to establish effective enforcement within a multilateral JDZ regime. In the event that the Environmental Protocol was amended to allow oil and gas development the principal issue may be the need for the Antarctic Treaty system to establish binding powers to enforce related provisions.

Rothwell discussed the issue of whether a future regime would result in the 'internationalisation' of the continent, so that the related administration would be turned over to a body such as the United Nations and all sovereignty claims would be disregarded. The proposals have generally contemplated a regime operating within the Antarctic Treaty framework, and continuing to acknowledge the existence of sovereignty claims.¹⁶

D. The International Seabed Authority (ISBA)

The ISBA regime for the Area under the LOSC Part XI applies to approximately 50 per cent of the earth's surface,¹⁷ (see Illustration 2–3).¹⁸ There is a significant issue whether the structure of ISBA and the Enterprise regime is an effective form of JDZ. Activities will be carried out by the Enterprise and by commercial enterprises, without being subject to any state's sovereignty. This issue must take into account the Implementation Agreement,¹⁹ which as reviewed in Chapter IV included provisions to meet United States concerns that no substantive obligation can be imposed on a state, and no amendment can be adopted without the consent of the state which has major economic interests.²⁰

The Area regime includes two specific areas in the Arctic Ocean and one area in the Norwegian Sea which are likely to be beyond current or potential Arctic state OCS

¹⁵ Donald R Rothwell, 'The Antarctic Treaty System: Resource Development, Environmental Protection or Disintegration?' (1990) 43(3) *Arctic* 284, 290.

¹⁶ *Ibid.*

¹⁷ Donald R Rothwell and Tim Stephens, *The International Law of the Sea* (Hart Publishing, 2010) 123.

¹⁸ LOSC Part XI – International Seabed Area – International Seabed Authority

¹⁹ *Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982*, opened for signature 28 July 1994, 1994 UNTS 42 (entered into force provisionally 16 November 1994) (*Implementation Agreement*).

²⁰ *Implementation Agreement* section 3 paragraphs 5, 9, 10 and 15. Two of the chambers are likely to be controlled by major industrialised states, the United States is guaranteed a seat on one of the chambers, and decisions cannot be made if blocked by the majority in any one of the chambers.

submissions to the CLCS,²¹ and also to the areas beyond potential continental shelf and OCS limits in the Southern Ocean. The effectiveness of measures to protect and preserve the marine environment will therefore become increasingly important as activities in the Area potentially extend to the development of offshore oil and gas.

The scope of the Area regime and the related mandate of ISBA are not fully established. Oude Elferink discusses, for example, the interaction of Articles 143 and 256 of LOSC on marine scientific research in the Area and on the high seas, the relationship between Article 143 and commercial biotechnological development, and the regulatory role of the Authority with regard to the protection and preservation of the marine environment.²² A related issue is determining the responsibility to establish marine protected areas if the adverse impacts of activities in the Area have to be addressed.²³

An essential legal issue is whether the Area regime extends to the Antarctic coast, if states do not recognise territorial claims to Antarctica. The issue was considered by the Federal Court of Australia in *Humane Society International Inc v Kyodo Senpaku Kaisha Ltd.*²⁴ In the event that oil and gas development was permitted after 2048 it will be essential to establish the regulatory authority for these activities. As proposed in Chapter VIII, jurisdiction by claimant states is likely to provide better enforcement of environmental measures, and a form of JDZ is proposed in the continental shelf and OCS to share the related resources while retaining sovereignty by claimant states.

E. Progressing from JDZs as Provisional Measures to Boundary Agreements

A JDZ can be used to effectively resolve resource disputes by sharing production from the JDZ area as a provisional arrangement. This is consistent with the structure of LOSC, which provides for provisional arrangements, for example in relation to the continental shelf, Article 83(3) imposes on parties the 'duty to negotiate in good faith'

²¹ Alex G Oude Elferink and Donald R Rothwell 'Challenges for Polar Maritime Delimitation and Jurisdiction' in Alex G Oude Elferink and Donald R Rothwell (eds), *The Law of the Sea and Polar Maritime Delimitation and Jurisdiction* (Martinus Nijhoff, 2001), 351.

²² Alex G Oude Elferink, 'The Regime of the Area: Delineating the Scope of Application of the Common Heritage Principle and Freedom of the High Seas' (2007) 22(1) *The International Journal of Marine and Coastal Law*, 143, 169.

²³ *Ibid* 170.

²⁴ *Humane Society International Inc v Kyodo Senpaku Kaisha Ltd* [2008] FCA 3. The ICJ will not however be considering the extent of the Area, or Australian jurisdiction in the Southern Ocean, in the *Whaling in the Antarctic* case. The Australia application relates only to international law, and not Australian legal issues. *Whaling in the Antarctic (Australia v. Japan)* ICJ Pending Cases <<http://www.icj-cij.org/docket/index.php?p1=3&p2=1&code=aj&case=148&k=64> > at 5 September 2012

and to take a conciliatory approach to negotiations in which they would be prepared to make concessions in the pursuit of a provisional arrangement.²⁵ In the longer term a delimited maritime boundary may have significant advantages over a JDZ zone as the definite resolution of a boundary dispute.

Determining state sovereignty is also important in relation to obligations imposed on coastal states under LOSC, particularly the requirements for coastal state enforcement of environmental measures. Coastal state enforcement applies, for example, to land based pollution, sea-bed activities, and artificial islands, installations and structures under coastal state jurisdiction, under LOSC Article 213.

This may be achieved with a bilateral JDZ, where state jurisdiction is made to the median line between the two claims as proposed in Chapter VII. The respective state jurisdictions would therefore potentially not change in the event of a final boundary agreement. This approach may facilitate a future boundary delimitation agreement, where the respective states agree to sovereignty up to that median line as the new maritime boundary.

Several existing JDZs have specific regulations such as a mining code imposed by a Joint Authority as reviewed in Chapter III, including the Australia/Timor-Leste Timor Sea Treaty.²⁶ The proposed model JDZ reviewed in Chapter VII also adopts such a Joint Commission, and it is proposed that responsibility for enforcement of such provisions applies to the respective coastal state up to the median line in the JDZ between the two state claims.

This process may be more likely where the development of oil and gas resources has been successfully completed. In this case there may be less adverse publicity concerning potential loss of resources from a final boundary agreement compared to the advantages of a defined maritime boundary for other matters, such as the enforcement of maritime laws. There has however been no development of a JDZ area, made without prejudice to a future maritime boundary, into a maritime boundary made at a later date. Accordingly this is a potential future development of JDZs.

²⁵ Davenport, Townsend-Gault and Beckman et al, above n 9, 12.

²⁶ *Timor Sea Treaty between the Government of East Timor and the Government of Australia*, 20 May 2002, 2258 UNTS 3 (entered into force 2 April 2003) ('*Timor Sea Treaty*').

F. Development of Future JDZs

A number of states now have direct experience of JDZs. For example, Australia has the advantage of experience with the existing JDZ with Timor-Leste with significant oil and gas production under the Timor Sea Treaty,²⁷ and experience with the prior Timor Gap Treaty with Indonesia in the same region,²⁸ as analysed in Chapter III. There is also one area with potentially overlapping claims by Australia and France in the Southern Ocean where a JDZ solution may be effective. This relates to the potential continental shelf and OCS claims extending from the coast of the Australian Antarctic Territory and from the French Antarctic territory of Adélie Land.²⁹ It appears likely, however, that Australia and France could agree to future boundary delimitation, as the two states were able to agree on the Southern Ocean maritime boundary relating to the French Kerguelen Islands and Australian Heard Island and McDonald Islands.³⁰ There is also an issue whether states that do not recognise claims to title to territory in Antarctica would accept a specific JDZ of this kind, because this may imply recognition of such claims.

The continental shelf extending offshore from the Unclaimed Sector of the Antarctic is also an area for a potential JDZ in the event that there are future competing claims. The United States, for example could potentially assert sovereignty over the Unclaimed Sector at a future date, based on previous exploration and discovery, and may then claim the continental shelf and OCS extending from the related coast. However such a claim by the United States would currently be most unlikely. It is likely to be beneficial to all states if any dispute over the Unclaimed Sector is peaceably resolved, and in this way a JDZ solution would benefit the security and development of Antarctica and the Southern Ocean.

There is also a significant opportunity to promote a JDZ as a potential solution for the peaceful settlement of current maritime boundary disputes in the Asia Pacific region, including:

²⁷ *Timor Sea Treaty*, above n 26.

²⁸ *Treaty between Australia and the Republic of Indonesia in the Zone of Cooperation in an Area between the Indonesian Province of East Timor and Northern Australia*, 11 December 1989, 1654 UNTS 106, (entered into force 9 February 1991, terminated on independence of Timor-Leste in April 2003) (*Timor Gap Treaty*).

²⁹ Stuart Kaye, *Australia's Maritime Boundaries* (Center for Maritime Policy, 2001).

³⁰ *Agreement on Marine Delimitation between the Government of Australia and the Government of the French Republic*, 4 January 1982, 1329 UNTS 107 (entered into force 10 January 1983).

- The East China Sea, concerning land sovereignty and maritime boundaries relating to the Senkaku (Diaoyu) Islands claimed by Japan, Taiwan and China.³¹ Solutions based on JDZs have been reviewed by authors including Choon-Ho Park,³² and Gao Jianjun.³³ Japan and China established an in-principle JDZ in the East China Sea in a separate region to the north-east of the islands in 2008.³⁴ A JDZ agreement may include, for example, a solution based on a land boundary across the principal island, with a JDZ area in the surrounding EEZ, continental shelf and OCS;
- The Sea of Japan, concerning land sovereignty and maritime boundaries relating to the Takeshima (Dokdo) Islands claimed by both Japan and Korea.³⁵ Japan and Korea had previously established a JDZ relating to a different region to the south in the East China Sea, in 1974.³⁶ A JDZ agreement may include, for example, a solution based on a boundary mid-way between the two principal islands, with a JDZ area in the surrounding EEZ, continental shelf and OCS; and
- The South China Sea, concerning land sovereignty and maritime boundaries of several regions, including the Spratly Islands,³⁷ claimed by Vietnam, Malaysia, the Philippines, Taiwan, and China,³⁸ and the Paracel Islands,³⁹ claimed by Vietnam, China, and Taiwan.⁴⁰ Solutions based on JDZs have been reviewed by Mark Valencia,⁴¹ Masahiro Miyoshi,⁴² Robert C Beckman,⁴³ and Zou Keyuan,⁴⁴

³¹ The Islands are approximately equidistant between Japanese Okinawa Islands and the Taiwanese coast.

³² Choon-Ho Park, 'Joint Development of Mineral Resources in Disputed Waters: The Case of Japan and South Korea in the East China Sea', (1981) 6(11) *Energy* 1335.

³³ Gao Jianjun, 'Joint Development in the East China Sea', (2008) 23 *The International Journal of Marine and Coastal Law* 39. Gao highlighted the need for negotiations as the dispute includes island sovereignty. Gao also notes that China proposed joint development including consultations in 2006.

³⁴ Jiang Yu, Chinese Foreign Ministry 'China, Japan reach principled consensus on East China Sea issue' (Press Release, 18 June 2009), at <<http://www.china-embassy.org/eng/fyrth/t466632.htm>> at 29 July 2009.

³⁵ The islands are approximately equidistant between the South Korean and Japanese coasts.

³⁶ *Japan-Republic of Korea - Agreement concerning the Joint Development of the Southern part of the Continental Shelf adjacent to the Two Countries*, 30 January 1974, 1225 UNTS 104 (entered into force 22 June 1978), (*Japan/Korea Agreement*).

³⁷ The islands are also known as Nansha or Truong Sa Islands.

³⁸ The Spratly islands are approximately equidistant between the Vietnamese and Philippines coasts.

³⁹ The islands are also known as Xishā or Hoang Sa Islands.

⁴⁰ The Paracel Islands are approximately equidistant between the Vietnamese, Chinese and Philippine coasts. A third significant area of dispute is the Scarborough Shoal (Huangyan or Panatag) claimed by China, Taiwan and the Philippines. The Scarborough Shoal is approximately equidistant between the Paracel Islands and the Philippines coast.

⁴¹ Valencia, above n 14.

and was the subject of a combined study by Beckman, Ian Townsend-Gault and Clive Schofield et al in 2013.⁴⁵ JDZs have been used in the South China Sea, as Malaysia established a JDZ with Brunei in the South China Sea in 2009.⁴⁶ A JDZ agreement may include, for example, respective state sovereignty over islands with existing military bases,⁴⁷ and establishment of a JDZ area in the surrounding continental shelf and OCS.⁴⁸

A significant state role may be to continue to prioritise stewardship and environmental protection in the Southern Ocean, following from Australia's sponsorship, together with France, of the Environmental Protocol, and the measures taken by Australia to prevent whaling in the Southern Ocean. The potential commencement of oil and gas development in the Southern Ocean, in the event the Environmental Protocol is amended to permit these activities after 2048, would require very active promotion of environmental measures. This may include the promotion of effective measures for all Southern Ocean JDZs within the Antarctic Treaty framework, on a basis similar to the

⁴² Mark Valencia and Masahiro Miyoshi, 'Southeast Asian Seas: Joint Development of Hydrocarbons in overlapping Claim Areas' (1996) 16 *Ocean Development and International Law* 211.

⁴³ Robert Beckman, 'Maritime Claims in the South China Sea: Issues & Challenges' (Paper presented at UNCLOS in a Changing World, 7th ABLOS Conference, Monaco, 2-5 October 2012).

⁴⁴ Zou, Keyuan, 'Joint Development in the South China Sea: A New Approach', (2006) 21(1) *The International Journal of Marine and Coastal Law* 83. The dispute was the subject of a legal conference sponsored by the National University of Singapore in 2011, reviewed by Davenport, Tara, Townsend-Gault, Ian, Beckman, Robert et al, 'Conference Report', Conference on Joint Development and the South China Sea, Singapore, 16–17 June 2011).

⁴⁵ Robert C Beckman, Ian Townsend Gault, Clive Schofield et al, *Beyond Territorial Disputes in the South China Sea: Legal Frameworks for the Joint Development of Hydrocarbon Resources* (National University of Singapore, Centre for International Law, 2013).

⁴⁶ *Exchange of Letters between Malaysia and Brunei Darussalam*, 16 March 2009, (not publicly released), referred to in Jeffrey J. Smith, 'Brunei and Malaysia resolve outstanding maritime boundary issues' [2010] 1 *Law of the Sea Reports*

<<http://www.asil.org/losreports/LOSReportsVol12010w6Smith.pdf>> at 1 August 2012.

⁴⁶ 'Details Emerge of the 2009 Brunei-Malaysia Maritime Agreement' (2010) International Boundaries Research Unit

<http://www.dur.ac.uk/ibru/news/boundary_news/?itemno=10047&rehref=%2Fibru%2Fnews%2F&resubj=Boundary+news%20Headlines> at 15 August 2012.

⁴⁷ The principal bases include China on Woody Island (Yongxing Island) in the Paracel Islands, Taiwan on Taiping Island, Malaysia on Swallow Reef (Pulau Layang Layang), Vietnam on Spratly Island (Trường Sa), and the Philippines on Thitu Island in the Spratly Islands. Such an arrangement would not apply within a state's sole EEZ, continental shelf and OCS.

⁴⁸ The Philippines notified the People's Republic of China on 22 January 2013 of its intention to submit elements of the two countries' disputes concerning sovereignty and maritime jurisdiction in the South China Sea to an arbitration tribunal under Annex VII of LOSC, 'Philippines submits South China Sea disputes with China to UNCLOS Annex VII arbitration,' International Boundaries Research Unit, 22 January 2013

<http://www.dur.ac.uk/ibru/news/boundary_news/?itemno=16498&rehref=%2Fibru%2F&resubj=Boundary+news+Headlines> at 1 February 2013. China made a declaration under Article 298 of UNCLOS which excludes the application of compulsory binding procedures for the settlement of certain types of dispute, including disputes relating to maritime boundary delimitations.

CRAMRA proposals, and the effective enforcement of environmental provisions in the Southern Ocean.

3. Contribution to Research Conclusions

The primary contribution to the research conclusions is that JDZs are consistent with LOSC, however where a maritime boundary is not defined it is unclear how enforcement is carried out in respect of third parties. Proposals for oil and gas development in the Southern Ocean are likely to require a more structured enforcement regime than the Antarctic Treaty, and in particular, this may require more effective measures than made in the proposed CRAMRA regime. The development of ISBA and the Area regime will have long term policy implications for the future development of offshore oil and gas, and in particular there may be a role to contribute to ISBA in developing an effective enforcement regime to prevent oil pollution.

The successful development of JDZs needs to take into account the political circumstances, and particularly that the proposed outcome is fair and equal and is not a surrender of sovereignty.

There is also an issue whether the use of JDZ regimes may assist in determining a maritime boundary, particularly once oil and gas development is completed, or whether JDZs may perpetuate boundary uncertainties. No JDZ established without prejudice to a future maritime boundary agreement has, however, been converted into an agreed boundary, and such a conversion should only be considered as one potential outcome.

The final policy issue to be reviewed relates to the potential for the development of JDZs for the peaceful resolution of Asia Pacific maritime boundary disputes, and the promotion of effective measures for all Southern Ocean JDZs within the Antarctic Treaty framework.

CHAPTER X – POTENTIAL GAME CHANGING EVENTS

1. Introduction

This chapter is an analysis of potential game changing events which may significantly affect the prospects for future JDZs in the Arctic and Southern Ocean regions. The potential events include climate change, political developments relating to Arctic and Southern Ocean oil and gas development, changes relating to specific JDZ regimes, understanding of the marine environment, technological changes in the development of offshore oil and gas, further development of the Arctic Council and the Antarctic Treaty regimes, and the development of more effective environmental protection regimes likely to affect provisions of future JDZ agreements. The analysis is necessarily based on a partial list of potential changes, and less foreseeable events may arise over a longer time frame.

2. Political Changes

A. Arctic Ocean Region – Autonomy and Independence

Changes in government may have a significant influence on the prospects for oil and gas development, including the priority given to oil and gas activities. A new government in Greenland halted new offshore drilling licences in 2013.¹ The reasons for the halt included concerns that the oil and gas industry may adversely impact traditional hunting and fishing activities.² Full independence of Greenland may increase the priority given to conservation and preservation of the environment to protect traditional hunting and fishing activities, and may therefore result in a complete halt to oil and gas development.

There is also a trend in other regions towards increased autonomy and control over resources. Canada's Nunavut regional government has a consultative role on oil and gas

¹ 'Greenland halts new oil drilling licences' *The Guardian*, 27 March 2013

<<http://www.guardian.co.uk/world/2013/mar/27/greenland-halts-oil-drilling-licences>> at 10 April 2013.

² Ibid. This issue related to the hunting and fishing activities of the Kalaallit, Inughuit and Tunumiit peoples. It was also reported that one factor behind the halt on new licences was that the former Greenland government and the oil and gas company Cairn Energy had not released offshore environmental disaster recovery plans to public scrutiny.

development.³ For example the '2012-2013 Call For Nominations – Arctic Islands of Nunavut' issued in 2013, was an invitation to bid for exploration licences in potential gas fields related to Crown lands within the Nunavut Settlement Area.⁴ This area is subject to the *Nunavut Land Claims Agreement Act*,⁵ implementing the *1993 Nunavut Land Claim Agreement*.⁶ The Agreement provides for consultation in relation to oil and gas development,⁷ and for a royalty based on oil and gas production.⁸

In 2013 it was announced that Canada's North West Territories would become responsible for managing the land within its boundaries and granting oil and gas rights.⁹ Regional governments will have a continuing interest in revenue from resources development, including royalties on oil and gas production. The development of greater autonomy in Canada's Arctic regions may potentially increase the priority given to traditional hunting and fishing activities, and the priority given to the preservation of the environment.

Other Arctic regions have not significantly developed toward autonomy or independence although this may develop in the future. The Russian government closed the Russian Association of Indigenous Peoples of the North (RAIPON) for a six month period in 2012. RAIPON is Russia's permanent participant on the Arctic Council representing its Arctic indigenous communities.¹⁰ RAIPON received approval to renew

³ Nunavut was formerly part of the Northwest Territories.

⁴ Government of Canada, Minister of Indian Affairs and Northern Development, '2012-2013 Call For Nominations – Arctic Islands Of Nunavut' <http://www.aadnc-aandc.gc.ca/DAM/DAM-INTER-HQ-NOG/STAGING/texte-text/rm_ri_ain_ain13_ainnom2013_1360876151938_eng.pdf> at 1 May 2013.

⁵ *Nunavut Land Claims Agreement Act*, SC 1993, c 29.

⁶ *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in Right Of Canada*, 25 May 1993, tabled in the House of Commons on 26 May 1993, <http://www.nucj.ca/library/bar_ads_mat/Nunavut_Land_Claims_Agreement.pdf> at 1 May 2013 ('1993 Nunavut Land Claims Agreement').

⁷ *1993 Nunavut Land Claims Agreement* art 27.

⁸ *Ibid* art 25.

⁹ 'Canada's NW Territories to take control of its land, oil, gas' *Reuters Canada* (11 March 2013)

<<http://ca.reuters.com/article/domesticNews/idCABRE92A10L20130311>> at 1 May 2013.

The intended transfer date of these responsibilities is 1 April 2014. Joint Declaration on Northwest Territories Devolution, 11 May 2013,

<<http://www.aadnc-aandc.gc.ca/eng/1363269358714/1363269524805>> at 1 May 2013.

¹⁰ RAIPON had made a joint submission to the United Nations Human Rights Council in 2012. The submission highlighted serious concerns over indigenous land rights issues in Russia. 'NGO Submission to the Human Rights Council Universal Periodic Review Mechanism,' UPR 16th Session, April / May 2013, 9th October 2012, Submitted on behalf of the Russian Association of Indigenous Peoples of the North, the International Work Group for Indigenous Affairs, and the Institute for Ecology and Action Anthropology,

<<http://www.raipon.info/en/component/content/article/8-news/91-ngo-submission-to-the-human-rights-council-universal-periodic-review-mechanism.html>> at 1 May 2013. The NGO submission stated:

its activities in 2013, following Russian Federal Ministry of Justice approval of amendments in the organisation's statutes.¹¹ The temporary RAIPON closure raised the issue of whether other Arctic indigenous communities can gain an equivalent level of autonomy in the future.¹²

There may also be the prospect of new independent states in the longer term, and this may potentially result in political pressure to make changes to maritime boundaries. This is an issue, for example, with the potential independence of Scotland, and the related maritime boundary north of the Shetland Islands. A related referendum to adopt independence was defeated in 2014, however this development cannot be ruled out in the longer term. Such an event could require accession or changes to the current United Kingdom maritime boundary agreements with Norway in 1965,¹³ Ireland in 1990,¹⁴ and Denmark (Faroes) in 1999,¹⁵ and may affect the maritime boundary dispute with Iceland relating to the Rockall region in the North Atlantic.¹⁶

B. Arctic Ocean Region – Svalbard

One of the greatest potential changes relates to the continental shelf and OCS resources of the Svalbard Islands. Norway made a partial OCS submission to the CLCS including

During the review cycle, Russia has failed to take effective measures to create a coherent and functioning land rights regime consistent with Russia's obligations under international law. In most regions, indigenous communities therefore have no guaranteed and sustainable access to those territories and resources on which they depend for their collective survival. They have no effective remedies against encroachment by third parties and no guarantee of adequate compensation for damages suffered as a result of third-party activities. Furthermore, several legal initiatives currently underway threaten to further undermine protection of indigenous peoples' land rights.

¹¹ 'Hard-fought new life for RAIPON' *Barents Observer*, 15 March 2013,

<<http://barentsobserver.com/en/society/2013/03/hard-fought-new-life-raipon-15-03>> at 1 May 2013.

¹² These issues include longer term prospects recognition of their needs for the protection of the environment in the interests of traditional hunting and fishing activities, together with participation in the management, and deriving share of benefits, of future resources development.

¹³ *Agreement between the United Kingdom and Norway relating to the delimitation of the Continental Shelf between the Two Countries*, 10 March 1965, 551 UNTS 214 (entered into force 29 June 1965).

¹⁴ *Agreement between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of the Republic of Ireland concerning the delimitation of areas of the continental shelf between the two countries*, 7 November 1988, United Kingdom Treaty Series No. 20 (1990) (entry into force 11 January 1990).

¹⁵ *Agreement between the Government of the Kingdom of Denmark together with the Home Government of the Faroe Islands, on the one hand, and the Government of the United Kingdom of Great Britain and Northern Ireland, on the other hand, relating to Maritime Delimitation in the Area between the Faroe Islands and the United Kingdom*, 18 May 1999 United Kingdom Treaty Series No. 76 (1999) (entered into force 21 July 1999). The boundary agreement is discussed by Jonathan I Charney and R W Smith (eds) 'Denmark (Faroe Islands) – United Kingdom, Report No. 9-23' in Jonathan I Charney, Lewis M Alexander and Robert W Smith (eds), *International Maritime Boundaries* (Martinus Nijhoff, 2002) vol 4, 2955.

¹⁶ Rockall itself is within the United Kingdom EEZ.

the Western Nansen Basin region north of Svalbard.¹⁷ The CLCS recommendation in 2009 was stated to be 'without prejudice to matters relating to delimitation between States, or application of other parts of the Convention or any other treaties.'¹⁸

Torbjørn Pedersen and Tore Henriksen commented that Denmark, Iceland, Russia and Spain reacted to the Norwegian submission to the CLCS.¹⁹ These responses did not dispute Norway's right to establish a continental shelf and OCS boundary around Svalbard, but did not agree that Norway had exclusive right to its resources.²⁰ They concluded that the CLCS submission and responses brought the Svalbard region clearly within the ambit of the law of the sea, however this did not resolve the geographical extent of the Svalbard Treaty.²¹

The European Union has also not accepted Norwegian claims over an EEZ relating to Svalbard. E J Molenaar observed the acceptance by other states that Norway can negotiate maritime zones about Svalbard.²² Molenaar analysed the European Union protests over Norwegian exercise of fishery laws in the EEZ about Svalbard, including Norwegian measures against the Spanish fishing vessels *Olazar* and *Olaberri* in 2004, and the Portuguese vessel *Praia de Santa Cruz* in 2009.²³

Iceland and Russia were described as the 'most vigorous opponents of Norway's view' by Pedersen, who considered the interaction of legal and political considerations in

¹⁷ Commission on the Limits of the Continental Shelf, 'Continental Shelf Submission of Norway in respect of areas in the Arctic Ocean, the Barents Sea and the Norwegian Sea' <http://www.un.org/Depts/los/clcs_new/submissions_files> at 5 December 2012.

¹⁸ The CLCS recommendation therefore did not make any direct finding in relation to the Svalbard Treaty, however the 'without prejudice' recommendation was a recognition of the related dispute. Summary of the Recommendations of the Commission on the Limits of the Continental Shelf In Regard To the Submission Made By Norway in Respect of Areas in the Arctic Ocean, the Barents Sea and the Norwegian Sea On 27 November 2006, 2.

<http://www.un.org/Depts/los/clcs_new/submissions_files/nor06/nor_rec_summ.pdf> at 18 February 2013.

¹⁹ Torbjørn Pedersen and Tore Henriksen, 'Svalbard's Maritime Zones: The End of Legal Uncertainty?' (2009) 24 *The International Journal of Marine and Coastal Law* 141, 155.

²⁰ Ibid 156. Pedersen and Henriksen note there may be issue of determining a maritime boundary between Svalbard and Norway, as the Svalbard treaty would not apply to the Norwegian continental shelf and OCS. This issue is examined in Chapter VIII.

²¹ Ibid 161.

²² E J Molenaar, 'Fisheries Regulation in the Maritime Zones of Svalbard' (2012) 27 *The International Journal of Marine and Coastal Law* 3, 20. This included Russia issuing a Note Verbale in response to Norway's submission to the CLCS, which provided that the recommendations of the CLCS in response to Norway's submission should be without prejudice to the Svalbard Treaty. The Russian position arguably constitutes recognition of continental shelf and OCS zones about Svalbard, however it is possible that Russia will claim common rights to resources in Svalbard's maritime zones.

²³ Ibid 23.

relation to Svalbard.²⁴ Pedersen describes how Norway announced an oil and gas exploration licence program south of Svalbard in the Barents Sea South program in 1989, which partially extended into the Svalbard treaty area.²⁵ No exploration licences had however been granted in the Svalbard area north of 74° north.²⁶ Pedersen considered Denmark's policy towards Svalbard, and notes that Denmark has resolved maritime boundaries between Greenland and Norway surrounding Svalbard, but maintains Norway does not have sole sovereign rights to the resources of the related maritime zones due to the Svalbard Treaty.²⁷

This issue may potentially be referred to the ICJ or an arbitration tribunal. The potential outcome may be that a multilateral resources regime should apply, on the basis that the grant of sovereignty over Svalbard to Norway was conditional on sharing all the related resources. As discussed, there is significant potential for an effective multilateral JDZ regime, where resources are shared under Norway's administration.²⁸

This outcome should enable a clear supervision of activities in the Svalbard region with clear Norwegian authority. This outcome would also be consistent with Norwegian sovereignty over land areas, under the current application of the Svalbard Treaty. Svalbard would then, potentially, also have great significance as a model for the Southern Ocean, where Antarctic claimant states would have principal responsibility for activities in their respective areas, as analysed in Chapter VII. In this way, Svalbard may have the greatest significance as a future model of resource sharing, combined with a single effective state administration.

C. Arctic Ocean Sanctuary

²⁴ Torbjørn Pedersen, 'The Svalbard Continental Shelf Controversy: Legal Disputes and Political Rivalries' (2006) 37(3) *Ocean Development and International Law* 339.

²⁵ The Barents Sea South program extended to 74°30' north in 1989, with 30' of the licence area extending into the Svalbard Treaty area.

²⁶ Pedersen, above n 24, 347.

²⁷ Torbjørn Pedersen, 'Denmark's Policies toward the Svalbard Area' (2009) 40(4) *Ocean Development and International Law* 319. Pedersen refers to a meeting with other states including the United Kingdom in London in 2006, and that although the proceeds of the meeting were not disclosed, the United Kingdom position is similar to Denmark. Pedersen describes the Danish position as having moved from reservation on the issue in 1977, to a more confrontational position that Svalbard treaty applied, from Danish Foreign Ministry statement in 1987. However a significant point is that Denmark recognises Norway's right to exercise legislative and enforcement jurisdiction on the area.

²⁸ The potential Svalbard JDZ structure is similar to the structure proposed for the proposed Southern Ocean JDZs. As proposed in Chapter VIII, the proposal would provide multilateral access to resources, but would provide the Antarctic claimant state with a primary enforcement role of essential terms, particularly environmental protection such as oil spill prevention and emergency response measures.

A significant development in 2013 was the proposal by Finland for a network of conservation areas in the Arctic region including the seas surrounding the North Pole.²⁹ In this respect, Neil Hamilton has described the current circumstances of environmental protection in the Arctic Ocean region as 'the lowest level of protection of any ocean, in the most vulnerable place on Earth.'³⁰ The Finland strategy was followed by the European Union resolution in 2014 which included the establishment of a High Seas sanctuary about the North Pole.³¹ The potential result, in the longer term, may be a ban on oil and gas development in the Arctic Ocean, on a similar basis to the ban in the Antarctic and the Southern Ocean under the Environmental Protocol.

There may be the potential for suspension of all Arctic oil and gas development due to increased environmental concerns. The increasing concern in relation to environmental issues by NGOs, for example, was highlighted by the Greenpeace protest at the Prirazlomnoye offshore oil field in the Pechora Sea in 2013.³² The prospect of an Arctic Ocean sanctuary may appear to be distant at present, given current development of offshore oil and gas by states including the United States and Russia,³³ however in the longer term it remains a potentially game changing event. The likelihood of an Arctic sanctuary may also substantially increase in the event of a major oil pollution disaster. This may potentially occur, for example, if measures to attempt to control a future Arctic Ocean oil spill prove ineffective in a similar way to the *Deepwater Horizon* oil spill. This could take place, for example, where detection of the location of oil spill was not efficient due to absence of satellite and aircraft resources, there was no efficient coordination of pooling of skimming vessels belonging to different countries or companies, clean up measures were restricted by high seas and the absence of skimming in high sea states, and where clean up measures were prevented by ice conditions.

²⁹ Finland Government, *Finland's Strategy for the Arctic Region 2013* (Prime Minister's Office Publications, 2013).

³⁰ Neil T M Hamilton, 'Go Finland! First Arctic nation to call for a global sanctuary around the North Pole' Greenpeace, 4 September 2013
<<http://www.greenpeace.org/international/en/news/Blogs/makingwaves/go-finland-first-arctic-nation-to-call-for-a-blog/46483/>> at 13 September 2013.

³¹ European Parliament Resolution on the EU Strategy for the Arctic of 12 March 2014, (2013/2595) clause 38.

³² 'Russians Fire Shots amid Greenpeace Arctic Protest', *Rigzone*, 18 September 2013,
<http://www.rigzone.com/news/oil_gas/a/129108/Russians_Fire_Shots_amid_Greenpeace_Arctic_Protest
> at 9 October 2013.

³³ For a summary of current Arctic oil and gas developments see generally: Ernst & Young, *Arctic Oil and Gas* (Ernst & Young, 2013)
<[http://www.ey.com/Publication/vwLUAssets/Arctic_oil_and_gas/\\$FILE/Arctic_oil_and_gas.pdf](http://www.ey.com/Publication/vwLUAssets/Arctic_oil_and_gas/$FILE/Arctic_oil_and_gas.pdf)> at 2 October 2013

D. Southern Ocean – United Kingdom/Argentina

There remains the potential for conflict between Antarctic claimant states, particularly between Argentina and the United Kingdom over overlapping claims in the Arctic Peninsula and Weddell Sea regions, and this may potentially also involve the overlapping claims by Chile. This issue has particular concern due to the unresolved Falkland (Malvinas) Islands dispute which has followed the Argentine invasion and United Kingdom recovery of the islands in 1982. The potential for a military conflict relating to overlapping Antarctic claims would be a substantial game changing event, however this currently appears to be a very remote possibility.³⁴

A recent analysis of the current relations between the United Kingdom and Argentina was made in 2014 by Klaus J Dodds and Alan D Hemmings, who commented that in the last two years the situation has worsened, and that 'continuing oil and gas exploration off the Falklands is only likely to worsen matters.'³⁵ In particular, they observed that the Argentine Foreign Minister Hector Timerman wrote to the London Stock Exchange in March 2012 warning about the 'illegal activities' of five companies operating in the disputed South Atlantic waters around the Falklands. Timerman stated that these companies would face punitive action against any assets held in Argentina if the current government succeeded in a prosecution case. Dodds and Hemmings further pointed out the linkage of the Falklands sovereignty dispute to the sovereignty dispute between the United Kingdom and Argentina in Antarctica and the Southern Ocean.

The issue of the relation between domestic political processes and maritime boundary disputes was summarised by Mark J Valencia in relation to the South China Sea disputes in 1995. Valencia observed that maritime boundary disputes are easily manipulated to gain political leverage:³⁶ '...the disputes were used for just that purpose: the frequency and intensity of belligerent statements and incidents between China and Vietnam in the Spratlys ebbed and flowed with the progress made on resolving the Cambodian conflict.' This analysis provides further perspective on the Falklands, where

³⁴ Héctor Timerman, the Argentinian foreign minister, has stated that the Argentine government has ruled out the use of force in respect of the dispute. 'Falklands will be under our control within 20 years, says Argentina' *The Guardian* (London) 5 February 2013
<<http://www.guardian.co.uk/uk/2013/feb/05/falklands-under-our-control-argentina>> at 22 April 2013.

³⁵ Klaus Dodds and Alan D Hemmings 'Recent developments in relations between the United Kingdom and the Argentine Republic in the South Atlantic/Antarctic region' (2014) 50(2) *Polar Record* 119, 125.

³⁶ Mark Valencia, 'China and the South China Sea Disputes', Adelphi Paper No. 298 (International Institute for Strategic Studies, 1995) 57.

the Argentine government may potentially be viewed as intending to derive a domestic benefit from intensifying the sovereignty dispute.

Potential political conflicts may therefore prevent the use of JDZs, as a boundary dispute can become an instrument of political leverage. The Argentine termination of the 1995 United Kingdom/Argentina Joint Declaration,³⁷ demonstrated that the resolution of maritime disputes including JDZ agreements is always subject to political circumstances. In the longer time frame, however, it cannot be ruled out that cooperation in relation to this JDZ may resume.

E. Southern Ocean – Future Territorial Claims

A new Antarctic or Southern Ocean territorial claim would be a breach of the Antarctic Treaty. Such an event currently appears remote as the Antarctic Treaty has very broad acceptance as analysed in Chapter IV, however resource pressures in the longer term may provoke such a result. Prominent non-claimant states include the United States, Russia, China and Brazil. The interest in Antarctic resources by states with no territorial claims in Antarctica includes active resource exploration contrary to the Environmental Protocol.³⁸

The United States has the largest operations and commitment to scientific research, notwithstanding that it has no current territorial claim in Antarctica.³⁹ The United States together with Russia ensured that the Antarctic Treaty did not exclude the right to make territorial claims in the future.⁴⁰ Christopher C Joyner and Ethel R Theis analysed the background to United States interests in Antarctic resources and related policy statements by successive United States administrations.⁴¹ They observed that United

³⁷ *Argentina - United Kingdom: Joint Declaration on Cooperation over Offshore Activities in the South West Atlantic*, 27 September 1995, 35 ILM 301 ('*Argentina/United Kingdom Joint Declaration*').

³⁸ Ellie Fogarty, 'Antarctica: Assessing and Protecting Australia's National Interests' (2011) <<http://www.isn.ch/isn/Digital-Library/Publications/Detail/?ots591=0c54e3b3-1e9c-be1e-2c24-a6a8c7060233&lng=en&ord582=grp2&id=132284>> at 24 August 2012.

³⁹ United States permanent Antarctic bases are Amundsen-Scott South Pole Station at the South Pole, McMurdo Station on Ross Island, and Palmer Station on Anvers Island, COMNAP Scientific Committee on Antarctic Research <<https://www.comnap.aq/operations/facilities>> at 31 July 2009.

⁴⁰ *Antarctic Treaty* art 4(1)(b).

⁴¹ Christopher C Joyner and Ethel R Theis, *Eagle over the Ice – The U.S. in the Antarctic* (1997) 37. Joyner and Theis commented that this process was conducted in four stages, comprising United States policy prior to 1924 having no formulated policy, from 1924 to the mid-1930s nearly denied the possibility of states making claims to Antarctica, from the mid-1930s to the beginning of the International Geophysical Year in 1957 encouraged its nationals to claim territory on its behalf, and from 1958 to the present fully supported the international regime of cooperation.

States Antarctic Expeditions had laid foundations for a potential United States Antarctic claim, including expeditions led by Nathaniel Palmer, Charles Wilkes, Lincoln Ellsworth, and Admiral Richard Byrd.⁴² Joyner and Theis highlight the statement by Secretary of State, Charles E Hughes, in 1924 on the importance of actual settlement.⁴³ The United States maintained that the Environmental Protocol's mineral prohibition must be reviewable from 2048, to avoid 'foreclosing the options of future generations.'⁴⁴

Russian exploration of Antarctica includes the first sighting of an ice shelf attached to the Antarctic mainland. This was done in 1820 by the First Russian Antarctic Expedition.⁴⁵ The Soviet Union conducted a large number of Antarctic expeditions, commencing with the First Soviet Antarctic Expedition from 1955 to 1957.⁴⁶ Russia has significant interests in Antarctica including scientific research, particularly during the Soviet period.⁴⁷ Russia together with the United States ensured that the Antarctic Treaty did not exclude the right to make territorial claims in the future.⁴⁸

China has been increasing the state resources applied to Antarctica.⁴⁹ Zou Keyuan analysed China's Antarctic policy,⁵⁰ including China's participation in the negotiations

⁴² Ibid. Joyner and Theis commented that United States Antarctic Expeditions had laid foundations for a potential United States Antarctic claim, including the expedition led by Nathaniel Palmer from the vessel *Hero* in 1820, the United States Exploring Expedition led by Charles Wilkes from the USS *Vincennes* from 1838 to 1842, expeditions led by Lincoln Ellsworth in 1933 and 1939 from the *Wyatt Earp*, and five expeditions led by Richard Byrd, commencing with expedition from *The City of New York* from 1928 to 1930, culminating in 'Operation Highjump' led from the USS *Philippines Sea* from 1946 to 1947. Regions explored include Marie Byrd Land, Palmer Peninsula, Ross Ice Shelf, Wilkes Land, the American Highland, and the South Pole.

⁴³ Letter from Secretary Hughes to AW Prescott, Republican Publicity Association, in Bush, *Antarctica and International Law*, (1982) 3:430. Hughes states in commenting officially on whether the United States should annex Wilkes Land, that:

The discovery of lands unknown to civilisation, even when coupled with a formal taking of possession does not support a valid claim of sovereignty unless the discovery is followed by an actual settlement of the discovered territory.

⁴⁴ George H W Bush, in Daniel Grotta and Sally Grotta, 'Antarctica: whose continent is it anyway?', *Popular Science*, (1992) 240(1) 91.

⁴⁵ David Day, *Antarctica: A Biography* (Oxford University Press, 2012), 17. The First Russian Antarctic Expedition was led by Captain Fabian Gottlieb von Bellingshausen from the vessel *Vostok*. David Day commented that Bellingshausen may have been inspired by accounts of Captain James Cook's Southern Ocean voyage in 1778, and that Russia was 'not deterred by the cold, and which had found wealth aplenty in similar latitudes of the far north.'

⁴⁶ The First Soviet Antarctic Expedition was led by Mikhail Somov from the research vessel *RV Ob*.

⁴⁷ The Russian permanent Antarctic bases are Bellingshausen Station on King George Island, Leningradskaya Station at Victoria Land, Mirny Station at the Davis Sea, Molodyozhnaya Station, Novolazarevskaya Station at Queen Maud Land, Russkaya Station at Marie Byrd Land, and Vostok Station on the Antarctic Ice Sheet, COMNAP Scientific Committee on Antarctic Research <<https://www.comnap.aq/operations/facilities>> at 31 July 2009.

⁴⁸ *Antarctic Treaty* art 4(1)(b).

⁴⁹ The Chinese Antarctic bases are Great Wall Station on King George Island in the South Shetland Islands (claimed by the United Kingdom, Argentina and Chile), Zhongshan Station in Prydz Bay in the

to develop CRAMRA, negotiating for equal participation in resource activities, and negotiating for one seat on the proposed Regulatory Committee reserved for non-claimant developing countries.⁵¹ Anne-Marie Brady commented on the interest of Asian countries in the Antarctic,⁵² and summarised the position of several authors that China needed to develop the specialist knowledge to enable China's representatives at Antarctic forums to defend its interests, and that China aimed to be poised to take advantage of any opportunities to exploit the resources of Antarctica with personnel and infrastructure in place.⁵³

Brazil may have a potential Antarctic claim based on the portion of the Antarctic continent south of the Brazilian coastline from 28°W to 53°W. The basis of such a claim includes the 'Frontage Theory' proposed by Therezinha de Castro in 1958.⁵⁴ Such a potential claim would overlap the claims of the United Kingdom and Chile. Brazil has not however declared sovereignty over any portion of the Antarctic. Brazil declared its reservations with respect to its territorial rights in Antarctica when acceding to the

AAT, and Kunlun Station at Dome A, also known as Dome Argus, in the AAT, COMNAP Scientific Committee on Antarctic Research,

<<https://www.comnap.aq/operations/facilities>> at 31 July 2009.

⁵⁰ Zou Keyuan 'China's Antarctic policy and the Antarctic Treaty system' (1993) 24(3) *Ocean Development and International Law* 237.

⁵¹ Ibid 245.

⁵² Anne-Marie Brady, 'The Emerging Economies of Asia and Antarctica: Challenges and Opportunities' in Julia Jabour, Marcus Haward and Tony Press (eds), *Australia's Antarctica: Proceedings of the Symposium to Mark 75 Years of the Australian Antarctic Territory*, (Hobart, 24 August 2011) 103, <http://www.imas.utas.edu.au/__data/assets/pdf_file/0005/249692/11_Brady_Final.pdf> at 24 August 2012, and Anne-Marie Brady, *The Emerging Politics of Antarctica* (Routledge, 2012).

⁵³ Ibid 105. Brady referred to extensive academic discussion on Chinese interests in Antarctic mineral resources, and stated

'In Chinese-language debates, social and hard science scholars, government officials, and journalistic commentators all appear to agree that the exploitation of Antarctica is only a matter of time and that China should prepare itself.'

For further reference, Brady referred to the following publications in the Chinese language:

- Yan Qide, 'Nanji Ziyuan yu Guoji Fenzheng' [The international struggle for Antarctic resources], (1991) 43(4) *科学 Kexue [Science]* 261;
- Zhu Jiangang, Yan Qide, and Ling Xiaoliang, 'Nanji Ziyuan Fenzheng ji Woguo de Xiangying Duice' [The dispute of Antarctic resources and our countermeasures], (2006) 18(3) *极地研究 Jidi Yanjiu [Chinese Journal of Polar Research]* 17;
- Zou Keyuan, 'Guifan Weilai Nanji Kuanwu Ziyuan Kaifa Liyong de Falu Yuanze' [The legal principles behind standardizing the future use of Antarctic mineral resources], (1994) 3 *海洋开发与管理 Haiyang kaifa yu guanli [Ocean development and management]*; and
- Zou Keyuan, (1996) *Nanji Kuanwu Ziyuan yu Guoji Fa [Antarctic mineral resources and international law]*.

⁵⁴ This relates to Therezinha de Castro 'Antártica: Teoria da Defrontação' (The Frontage Theory). For further reference see Jack Child, *Antarctica and South American Geopolitics—Frozen Lebensraum* (Praeger, 1988), and in the Portuguese language:

- Therezinha De Castro, 'Antártica: Assunto do Momento' (The question of Antarctica) [1958] *Revista de Clube Militar* 142; and
- Therezinha De Castro, *Rumo Antártica* (Towards Antarctica) (Freitas Bastos, 1976).

Antarctic Treaty on 16 May 1975. Brazil also participated in the negotiations to develop CRAMRA.

The Unclaimed Sector may also potentially be the focus of such future claims where the states concerned do not seek political complications of establishing additional overlapping Antarctic claims. There may not, however, be significant advantages for such claims providing a state can effectively participate in multilateral resources development, such as participation under the proposed CRAMRA regime or a future JDZ regime.

3. Polar Institutions and Governance Regimes

A. Arctic Council Development

The earlier stages of Arctic Council development were characterised by concerns including the limited scope of the organisation. The limitations applying to this period included that the Arctic Council was not an international organisation, and did not have the power to adopt legally binding decisions. In relation to protection of the environment, for example, the Arctic Council was considered to lack the authority to adopt binding regulations. David VanderZwaag considered the issue of whether the Arctic Council, as a 'soft law' forum not based on legally binding agreements, could effectively meet the challenges arising in the Arctic Ocean region. He commented that there had been significant developments to strengthen the Arctic Council, however, including establishing the Standing Arctic Council Secretariat.⁵⁵ VanderZwaag analysed proposals for a binding Arctic regime,⁵⁶ which included a framework treaty formalising the existing Arctic Council arrangements,⁵⁷ a regional seas agreement with annexes or

⁵⁵ David VanderZwaag, 'The Arctic Council at 15 Years: Edging Forward in a Sea of Governance Challenges' (2011) 54 *German Yearbook of International Law* 282, 305. VanderZwaag stated:

A breakthrough occurred at the Nuuk Ministerial meeting in May 2011 where key steps towards strengthening the Arctic Council occurred. Ministers decided to establish a Standing Arctic Council Secretariat in Tromsø, Norway, to be operational no later than the beginning of the Canadian chairmanship of the Council in 2013.

⁵⁶ *Ibid*, 283.

⁵⁷ Timo Koivurova, 'Alternatives for an Arctic Treaty – Evaluation and a new proposal' (2008) 17 *Review of European Community and International Environmental Law* 14.

protocols,⁵⁸ and a multilateral agreement dedicated to protecting the Arctic environment.⁵⁹

A regional management approach based on the Arctic Council faced several challenges. Clive Schofield, Tavis Potts and Ian Townsend-Gault commented that '...states with minimal territorial geopolitical interests but seeking opportunities in emerging economic sectors will continue to press for influence and action at the Arctic table.' The Arctic Council also faces a challenge of areas beyond national jurisdiction subject to the Area regime of LOSC Part XI, where environmental standards may need to be imposed and would require the support of non-members.⁶⁰ The United Nations Regional Seas Programme may have a future role promoting Arctic Council environmental measures in the Area. In relation to the role of the Arctic Council, significant challenges are likely to include the protection of the environment, the potential further development of offshore oil and gas, and the impact of global warming.

In more recent years the Arctic Council has had a more proactive approach towards the development of an effective governance regime. This trend has been accompanied by the establishment of a more effective administration following the establishment of the Standing Arctic Council Secretariat in Tromsø in 2013.⁶¹ This very significant development was described by Michael Byers as '...arguably transforming the Arctic Council from an inter-governmental forum into an international organisation.'⁶²

A recent analysis of the Arctic Council was made by Dodds in 2013,⁶³ including reference to the statement from the Ilulissat Declaration which highlighted the unique position of the five coastal states by virtue of their sovereignty in large areas of the

⁵⁸ Hans H Hertell, 'Arctic Melt: The Tipping Point for an Arctic Treaty', (2009) 21 *Georgetown International Environmental Law Review* 565.

⁵⁹ Bonnie A Malloy, 'On Thin Ice: How a Binding Treaty Regime Can Save the Arctic' (2010) 16 *Hastings West-Northwest Journal of Environmental Law & Policy* 471.

⁶⁰ VanderZwaag, above n 55, 311. VanderZwaag commented that the Arctic Council could adopt a proactive approach, such as: convening a workshop or workshops to discuss the preferred policy future; engaging non-Arctic States and actors in understanding their governance perspectives; establishing a task force to review law and policy options; and encouraging a precautionary moratorium on future commercial living marine resource exploitations until appropriate scientific and management parameters are in place.

⁶¹ Arctic Council 'Arctic Council Secretariat in Tromsø opened by Arctic Ministers' 23 January 2013 <<http://www.arctic-council.org/index.php/en/resources/news-and-press/news-archive/676-arctic-council-secretariat-in-tromso-opened-by-arctic-ministers>> at 15 April 2013.

⁶² Michael Byers, *International Law and the Arctic* (Cambridge University Press, 2013) 9.

⁶³ Klaus J Dodds, 'Anticipating the Arctic and the Arctic Council: pre-emption, precaution and preparedness' (2013) 49(2) *Polar Record* 193, 194.

Arctic Ocean.⁶⁴ Dodds summarised a dominant characteristic of the Arctic Council as 'openness to the future.' He commented that:

...this organisation has often been imagined to be indicative of a more hopeful Arctic future; one based on interested state parties engaged in co-operation and co-ordination and explicit recognition of permanent participants as members of the AC.⁶⁵

It is also arguable that the entry of significant observer states, as at January 2014 comprising France, Germany, the Netherlands, Poland, Spain, United Kingdom, China, Italy, Japan, Korea, Singapore and India, is the strongest evidence to date of the emergence of the Arctic Council as effective for future Arctic governance. It is precisely this aspect of acceptance by other states as the regional governance regime that provides the basis for an increasingly effective role for the Arctic Council in the Arctic region.

The Arctic Council is developing significantly with the introduction of binding regimes, commencing with the Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic in 2011.⁶⁶ As discussed in Chapter IV, the Agreement commits the state parties to coordinate assistance to those in distress, and to cooperate with each other in undertaking SAR operations. The Arctic Council will also develop with the implementation of the Arctic Marine Oil Pollution, Preparedness and Response (MOPPR) as the second binding Arctic Council regime,⁶⁷ and the Arctic Offshore Oil and Gas Guidelines.⁶⁸

The principal potential change in the Arctic Ocean region would be a more comprehensive approach to oil and gas development, with new standards including rig platform and subsea equipment design and construction, rig platform and subsea equipment staff levels and training, and oil pollution emergency response, on a similar

⁶⁴ The statement was part of the Ilulissat Declaration as follows:

The Arctic Ocean stands at the threshold of significant changes. Climate change and the melting of ice have a potential impact on vulnerable ecosystems, the livelihoods of local inhabitants and indigenous communities, and the potential exploitation of natural resources. By virtue of their sovereignty, sovereign rights and jurisdiction in large areas of the Arctic Ocean the five coastal states are in a unique position to address these possibilities and challenges

⁶⁵ Dodds, above n 63, 194.

⁶⁶ *Agreement on Cooperation on Aeronautical and Maritime Search and Rescue (SAR) in the Arctic*, 12 May 2011 <<http://www.treaty-accord.gc.ca/text-texte.aspx?id=105240>> at 17 April 2013 (entered into force 19 January 2013).

⁶⁷ *Agreement on Cooperation on Marine Oil Pollution, Preparedness and Response in the Arctic*, 13 May 2013, <<http://www.arctic-council.org/index.php/en/document-archive/category/425-main-documents-from-kiruna-ministerial-meeting>> at 21 27 August 2015 (not yet in force)..

⁶⁸ Arctic Council, 'Arctic Offshore Oil and Gas Guidelines' <<http://www.pame.is/index.php/projects/offshore-oil-and-gas>> at 27 August 2015.

basis to the comprehensive regime adopted by the European Union.⁶⁹ It is significant that the European Union was able to approve such measures as a regional organisation, whereas such measures appear to be more difficult to achieve on a broader international level. The Arctic Council therefore has the opportunity to promote a similar comprehensive regime for oil and gas activities in the Arctic Ocean region. These

⁶⁹ European Union, *Directive 2013/30/EU of the European Parliament and of the Council of 12 June 2013 on safety of offshore oil and gas operations and amending Directive 2004/35/EC*, OJ L 178/66. The European Union measures include, for example, the design of rigs, missing from IMO regulations such as MARPOL, and a comprehensive liability regime, missing from LOSC. European Commission, Proposal for a Regulation Of The European Parliament and of the Council on safety of offshore oil and gas prospection, exploration and production activities, COM(2011) 688, <<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0688:FIN:EN:PDF>> at 15 April 2013, and European Commission 'Commissioner Oettinger welcomes political agreement on offshore legislation' IP/13/149 (Press Release, 21 February 2013), <http://europa.eu/rapid/press-release_IP-13-149_en.htm> at 15 April 2013. The proposed measures were described in the Press Release as follows:

- Licensing. The Directive introduces clear rules for effective prevention and response of a major accident. The licensing authority in the Member States will have to make sure that only operators with proven technical and financial capacities necessary to ensure the safety of offshore activities and environmental protection are allowed to explore for, and produce oil and gas in EU waters. Public participation is foreseen prior to the start of exploratory drilling campaigns in previously undrilled areas.
- Independent national competent authorities responsible for the safety of installations will verify the provisions for safety, environmental protection and emergency preparedness of rigs and platforms and the operations conducted on them. If companies do not respect the minimum standards, Member States will take enforcement actions and/or impose penalties; ultimately, operators will have to stop the drilling or production operations.
- Obligatory ex ante emergency planning. Companies will have to prepare a report on major hazards for their installation, containing an individual risk assessment and risk control measures and an emergency response plan before exploration or production begins. These plans will need to be submitted to national authorities who will give a go-ahead.
- Independent verifiers. Technical solutions presented by the operator need to be verified by an independent verifier prior to and periodically after the installation is taken into operation.
- Transparency. Comparable information will be made available to citizens about the standards of performance of the industry and the activities of the national competent authorities. This will be published on their websites. The confidentiality of whistle-blowers will be protected. Operators registered in Member States will be requested to submit reports of major accidents in which they have been involved overseas to enable key safety lessons to be studied.
- Emergency Response. Companies will prepare emergency response plans based on their rig or platform risk assessments and keep resources at hand to be able to put them into operation when necessary. Member States will likewise take full account of these plans when they compile national emergency plans. The plans will be periodically tested by the industry and national authorities.
- Liabilities. Oil and gas companies will be fully liable for environmental damages caused to the protected marine species and natural habitats. For damage to waters, the geographical zone will be extended to cover all EU marine waters including the exclusive economic zone (about 370 km from the coast) and the continental shelf where the coastal Member State exercises jurisdiction. For water damage, the present EU legal framework for environmental liability is restricted to territorial waters (about 22 km offshore).
- EU Offshore Authorities Group. Offshore inspectors of Member States will work together to ensure effective sharing of best practices and contribute to developing and improving safety standards.
- International. The Commission will work with its international partners to promote the implementation of the highest safety standards across the world. Operators working in the EU will be expected to demonstrate they apply the same policies for preventing major accidents overseas as they apply in their EU operations.

potential developments are likely to improve environmental protection standards for all Arctic Ocean oil and gas activities, including future JDZs.

B. Antarctic Treaty Developments

i) Southern Ocean Resources Regime

A multilateral regime for development of Antarctic and Southern Ocean resources, such as CRAMRA, may potentially arise in the event of sufficient future pressure to develop Antarctic and Southern Ocean resources. The Environmental Protocol prohibits minerals development as discussed. As discussed in Chapter IV, The Protocol may however be modified prior to 2048 by unanimous agreement of all Consultative Parties to the Antarctic Treaty,⁷⁰ however the likelihood of such a unanimous agreement would currently appear to be very low. The Protocol may also be modified after 2048 to remove the ban on resource development by the majority of all Parties, including three quarters of the twelve Consultative Parties at the time of adoption of the Protocol in 1998.⁷¹

The principal current game changer relating to the Antarctic and Southern Ocean is whether the Environmental Protocol has sufficient ratifications to ensure that the current ban on resources development remains effective.⁷² There was an initiative including a letter signed in March 2011 by the Spanish President Felipe Gonzalez, former Australian president Bob Hawke, and former French Prime Minister Michel Rocard calling on the remaining 14 Antarctic Treaty member countries to ratify the Environmental Protocol.⁷³ The ratification of the Protocol by 35 states as at 2014 is

⁷⁰ *Environmental Protocol* art 25(1) and *Antarctic Treaty* art 12(1). Article 12(1)(a) of the Antarctic Treaty requires the unanimous agreement of the Contracting Parties whose representatives are entitled to participate in the meetings provided for under Article IX.

⁷¹ *Environmental Protocol* arts 25(4). Article 25(5) requires there to be a binding legal regime on Antarctic mineral resource activities is in force for a change to the prohibition on resources development.

⁷² The Environmental Protocol has been ratified by 35 states as at 2014, Senate Standing Committees on Foreign Affairs, Defence and Trade, Inquiry into Australia's future activities and responsibilities in the Southern Ocean and Antarctic waters, Submission by the Department of Foreign Affairs and Trade, 27 June 2014.

⁷³ Australian Antarctic Division, 'Cooperative spirit steers Antarctic meeting' <<http://www.antarctica.gov.au/about-us/publications/australian-antarctic-magazine/issue-23-december-2012/cooperative-spirit-steers-antarctic-meeting>> at 22 April 2013, and Felipe Gonzalez, Bob Hawke and Michel Rocard, 'Call to restart the ratification process of the Madrid Protocol,' Antarctic Treaty Secretariat Antarctic Treaty Secretariat, 'Call to restart the ratification process of the Madrid Protocol,' <www.ats.aq/documents/ATCM34/att/ATCM34_att086_e.doc> at 22 April 2013.

significant in strengthening the regime,⁷⁴ however it is likely that a significantly higher number of ratifications is required to make its ban on resource activities fully effective.

The most significant potential change would be renewed pressure by a substantial number of Antarctic Treaty members for an Antarctic minerals regime such as CRAMRA, and cancellation of the Environmental Protocol ban on such development. This may be a possibility, for example, if there is a continued or increased need for new sources of oil and gas, or for other resources such as rare earth elements (REE).

In the event that oil and gas development was allowed at a future date, there would be the potential for adoption within the Antarctic Treaty regime of standards to promote rig safety and environmental protection for all Southern Ocean oil and gas activities including JDZs. The Antarctic Treaty regime may then introduce a binding and comprehensive regime of the kind that has been adopted by the European Union.⁷⁵ The measures will include design of rigs, missing from IMO regulations such as MARPOL, and a comprehensive liability regime, partially provided in the Liability Annex to the Environmental Protocol.⁷⁶ The Antarctic Treaty regime, similar to the Arctic Council, therefore has the potential to promote a similar comprehensive regime on Southern Ocean oil and gas activities.

ii) Unilateral Oil and Gas Development

A significant potential change to the Antarctic Treaty regime would be the withdrawal by specific states from the Antarctic Treaty regime to develop resources such as oil and gas. This may take place by a state denouncing its ratification of the Antarctic Treaty. Rothwell examined the potential of such a process, and described this process not as a disintegration of the Antarctic Treaty, but as a process by which a state party may

⁷⁴ The Environmental Protocol has been ratified as at 2014 by 35 states, Senate Standing Committees on Foreign Affairs, Defence and Trade, Inquiry into Australia's future activities and responsibilities in the Southern Ocean and Antarctic waters, Submission by the Department of Foreign Affairs and Trade, 27 June 2014, and Ecolex, Treaties - Record Details <<http://www.ecolex.org/ecolex/ledge/view/RecordDetails?id=TRE-001120&index=treaties>> at 13 August 2014.

⁷⁵ European Commission 'Commissioner Oettinger welcomes political agreement on offshore legislation' IP/13/149 (Press Release, 21 February 2013) <http://europa.eu/rapid/press-release_IP-13-149_en.htm> at 15 April 2013.

⁷⁶ European Commission, Proposal for a Regulation Of The European Parliament and of the Council on safety of offshore oil and gas prospection, exploration and production activities, COM(2011) 688 <<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0688:FIN:EN:PDF>> at 15 April 2013.

withdraw.⁷⁷ The Antarctic Treaty however provides very significant benefits for member states, including membership of the only international forum relating to Antarctica.

The more likely process may be a state's denunciation of the Environmental Protocol. This would be a breach of the Protocol, which does not provide for unilateral cancellation. As analysed in Chapter III, cancellation of treaties has occurred in relation to other international agreements, including JDZ agreements such as the 1995 United Kingdom/Argentina MOU,⁷⁸ and the 2001 Thailand/Cambodia MOU.⁷⁹ Accordingly the analysis cannot rule out this possibility.

A Russian working paper has stated that a Russian government prospecting ship had collected data on regional oil and gas reserves.⁸⁰ The Russian 2010 'Government Order on Antarctic Strategy to 2020' included discussion of the implication of Antarctic resources for Russia's future energy and economic security,⁸¹ and the strategy was submitted to the ATCM in 2011.⁸² Alan D Hemmings has commented that the issue was not discussed in the 2012 or 2013 ATCMs, although there may have been discussions at the head of delegation level.⁸³ Hemmings commented that Russian statements prior to 2003 had maintained that the programme related to scientific research allowed under the

⁷⁷ Donald R Rothwell, 'The Antarctic Treaty System: Resource Development, Environmental Protection or Disintegration?' (1990) 43(3) *Arctic* 284, 289. The process is based on Article XII (2a) of the Antarctic Treaty, which provides that any consultative party may, after the treaty has been in force for thirty years, call for a review conference. Articles XII (2b) and (2c) provide a formula for amending the treaty, and that if any of the amendments to the treaty adopted at the review conference have not entered into force within two years, then any contracting party to the treaty may withdraw.

⁷⁸ *Argentina/United Kingdom Joint Declaration*.

⁷⁹ *Memorandum of Understanding between the Royal Thai Government and the Royal Government of Cambodia regarding the Area of their Overlapping Maritime Claims to the Continental Shelf*, 18 June 2001

<http://tncbcc.rtarf.mi.th/pdf/pdf_cam190/07.pdf> at 9 April 2013.

⁸⁰ Scott Joblin, 'Oil and Ice: Petroleum Extraction in Antarctica', *RIA Novosti* (2010)

<<http://en.rian.ru/valdai/20100906/160481450.html>> at 24 August 2012, and Irina Gan, 'Russia and Antarctica' in Ann-Marie Brady (ed), *The Emerging Politics of Antarctica* (2013) 130, 135.

⁸¹ Russian Federation, 'Government Order on Antarctic Strategy to 2020', 30 October 2010, No 1926, 2. The vessel *Akademik Aleksandr Karpinsky* was working in the Cosmonauts Sea region, according to a Russian Public TV report monitored by the BBC, adjacent to the Norwegian Prince Harald Coast and the Australian Enderby coast, according to a Russian Public TV report monitored by the BBC.

⁸² Russian Federation, 'On strategy for the development of the Russian Federation activities in the Antarctic for the period until 2020 and longer-term perspective'

<http://www.ats.aq/devAS/ats_meetings_doc_database.aspx?lang=e&menu=2> at 24 August 2012.

⁸³ Alan D Hemmings commented in response to the author's questions concerning Russian oil and gas exploration in the Southern Ocean, received on 16 September 2013. He advised that there are generally no written records available of the head of delegation discussions.

Environmental Protocol, however from that date the related publications have markers of commercial mineral interests. His conclusion is that the evidence:⁸⁴

...provides fairly compelling evidence that at least parts of the Russian bureaucracy have serious interests in conducting minerals prospecting in the Antarctic Treaty Area, despite its explicit prohibition under the Protocol.

There is also a potential outcome where states or respective oil and gas companies undertake offshore oil and gas development under the Area regime of LOSC Part XI. This may potentially take place on the basis that state claims to Antarctic and Southern Ocean continental shelf and OCS regimes are not recognised, and these regions are therefore high seas. The high seas south of 60° south would be subject to the regime of the Area in Part XI of LOSC, and potentially not subject to the prohibition in the Environmental Protocol. Davor Vidas commented that the Environmental Protocol potentially conflicts with Part XI of LOSC, which provides that exploitation of deep seabed minerals of the Area beyond state continental shelf areas is regulated by ISBA as the common heritage of mankind.⁸⁵ Vidas suggested that ISBA could potentially decide to exempt the Southern Ocean seabed, south of 60° south, from the area of its competence on the grounds of special environmental vulnerability of the Antarctic region.⁸⁶ Rothwell noted the absence of the right to seabed mining at the time of the Antarctic Treaty in 1959, or the 1958 Geneva Convention on the High Seas, and considered that it '...can be asserted with some confidence that the prohibition on mining extends to 60° south latitude.'⁸⁷

The Area regime may potentially introduce environmental standards for the exploration and exploitation of oil and gas in the Area, which may then apply in the event that that offshore oil and gas activities were conducted by states in the Southern Ocean in the high seas regions beyond state jurisdiction. These standards may not however be specialised for Southern Ocean conditions, or potentially coordinated with other states as under the proposed CRAMRA regime. It may therefore be advisable to resolve the potential conflict for ISBA to confirm that the Antarctic Treaty and related agreements apply rather than the Area regime.

⁸⁴ Alan D Hemmings, 'Russia and Antarctic Prospecting' (Paper prepared in response to related questions, 13 March 2007).

⁸⁵ Davor Vidas 'Emerging Law of the sea Issues in the Antarctic Maritime Area: A Heritage for the New Century?' (2000) 31:1 *Ocean Development & International Law* 197, 210.

⁸⁶ *Ibid* 216.

⁸⁷ Donald R Rothwell, 'Polar Environmental Protection and International Law: The 1991 Antarctica Protocol' (2000) 1(3) *European Journal of International Law* 591, 596.

The unilateral withdrawal of a state or states from the Environmental Protocol, without adoption of a multilateral regime such as CRAMRA, may result in unilateral oil and gas development which would prevent JDZs. The more likely potential outcome, however, appears to be agreement to amend Article 7 of the Environmental Protocol within the Antarctic Treaty regime to allow resource development.

C. United Nations Developments

i) The Area

One potential development relating to the development of the LOSC Area regime would be deepwater oil and gas development under the Area regime in the Arctic and Southern Ocean regions. The potential areas would be subject to the recommendations on state OCS submissions by the CLCS, however they may comprise the large areas illustrated by IBRU for the Arctic Ocean region (see Illustration 5–1),⁸⁸ and by ISBA in relation to the Southern Ocean (see Illustration 6–3).⁸⁹

As discussed in Chapter IV, environmental protection measures will be of great importance for any oil and gas development at the extreme water depths in the Area. This includes in particular the need for cooperation with Arctic Council and Antarctic Treaty regimes respectively, so that resources are prepared to minimise damage to the environment in the event of significant oil spills.

ii) Effectiveness of Dispute Resolution

There is a significant issue whether states will adopt one of the peaceful dispute resolution measures provided under LOSC in relation to maritime boundary disputes. As discussed in Chapter II, states may declare under LOSC Section 298 that they do not accept specific procedures provided for specific categories of disputes, including the delimitation of maritime boundaries. No state in the Arctic Ocean region accepted compulsory arbitration in relation to maritime boundary delimitation (see Table 5–1),

⁸⁸ 'Maritime Jurisdiction and Boundaries in the Arctic Region', International Boundaries Research Unit <<http://www.dur.ac.uk/resources/ibru/arctic.pdf>> at 13 July 2012.

⁸⁹ 'Non-Living Resources of the Continental Shelf Beyond 200 Nautical Miles: Speculations on the Implementation of Article 82 of The United Nations Convention on the Law of the Sea,' ISA Technical Study No. 5, <www.isa.org.jm/files/documents/EN/Pubs/TechStudy5.pdf> at 12 February 2013, 21.

and only the United Kingdom and New Zealand, of states with Antarctic and Southern Ocean claims, accepted such compulsory arbitration (see Table 6–1).

There may also be an increased trend to come to boundary or JDZ agreements rather than the use of LOSC dispute resolution provisions. This issue was highlighted by the *Nicaragua/Colombia* case in 2012,⁹⁰ where Colombia has announced that it did not accept the ICJ decision on the case. The dispute may raise the question of whether LOSC dispute resolution provisions are effective.

iii) IMO Development

The most significant potential IMO development relating to Arctic and Southern Ocean oil and gas development may be to extend MARPOL standards to prevent pollution from fixed offshore and sub-sea installations used in the development of offshore oil and gas resources.

There would also be a very significant change if the IMO introduced an effective regime for oil spill compensation, as oil companies would proceed with projects only if effective environmental measures were in place. This development would contribute to the effectiveness of all offshore oil and gas activities including JDZs in Arctic and Southern Ocean regions. The Legal Committee of the IMO expressed support in November 2010 for the inclusion of liability and compensation issues connected with trans-boundary pollution damage resulting from offshore oil exploration and exploitation activities in its work programme.⁹¹ The Legal Committee in 2012, however, dismissed a proposal for changing IMO's strategic direction order to allow IMO to focus also on liability and compensation issues connected with transboundary pollution damage resulting from offshore oil exploration and exploitation activities.⁹²

iv) Marine biological diversity beyond areas of national jurisdiction (BBNJ)

⁹⁰ *Territorial Dispute and Maritime Delimitation (Nicaragua v. Colombia)*. [2012] (not yet reported in ICJ Rep) <<http://www.icj-cij.org/docket/index.php?p1=3&p2=3&case=124&code=nicol&p3=5>> at 6 May 2013.

⁹¹ International Maritime Organisation, 'IMO Legal Committee supports follow up to oil well incidents' (2011) 1 *IMO News* 18.

⁹² International Maritime Organisation, Legal Committee (LEG) – 99th session, 16 - 20 April 2012, <<http://www.imo.org/en/MediaCentre/MeetingSummaries/Legal/Pages/LEG-99th-session.aspx>> on 3 September 2015.

The United Nations General Assembly established the Ad Hoc Open-ended Informal Working Group in 2004 to study issues relating to marine biological diversity beyond areas of national jurisdiction (BBNJ). This programme is concerned with the protection of marine ecosystems and the biodiversity of ecosystems beyond the limits of national jurisdiction, namely in the high seas and the Area. These concerns include how isolated impacts from individual sectors concentrate, move beyond enclosed areas and seas and interact, affecting not only the local species and human communities that are dependent on coastal ecosystems, and also the larger natural systems and human societies of which they form a part.⁹³

This development is significant for future JDZs, because oil and gas development activities in the continental shelf and the OCS, in the Area, and in the Southern Ocean may have potentially adverse impacts on marine ecosystems and biological diversity. It is very likely that, as this development proceeds to potential new conventions and international agreements, these issues will need to be fully addressed in the approval process for any oil and gas development in a JDZ. This may take place, for example, in the requirements for environmental impact statements, and in the terms of the related approvals and conditions.

4. Polar Environments

A. Climate Change

The primary development relating to climate change is global warming. In the longer time frame of 50 or 100 years, for example, the potential effect of global warming may be that there is little, or no, Arctic sea ice. Such a development would reduce the present difficulty of oil and gas development, and may allow more effective measures to control oil pollution in the event of an oil spill in regions which were previously subject to sea ice and ice covered coasts. The encouragement of long term development will also, however, mean that risks of oil pollution increase as the level of oil and gas development increases. Global warming may also not reduce storms and bad weather, and so risks associated with ice may be replaced with risks arising from more active weather systems.

⁹³ United Nations, 'Marine biological diversity beyond areas of national jurisdiction' <http://www.un.org/depts/los/biodiversityworkinggroup/marine_biodiversity.htm> at 31 August 2015.

Global temperatures currently appear to be increasing as a result of carbon dioxide, or 'greenhouse gas' emissions, and the consequential trapping of the sun's energy in the earth's atmosphere.⁹⁴ The likely effects of climate change are still being debated in the scientific community, and so cannot be described with certainty.⁹⁵ The most comprehensive current research however is that significant global warming is certainly taking place. This was released by the Intergovernmental Panel on Climate Change (IPCC) in the Working Group Report 'Climate Change 2013: The Physical Science Basis.' The Report is part of the very significant IPCC Fifth Assessment Report (AR5) comprising three Working Groups: 1) The Physical Science Basis; 2) Impacts, Adaptation and Vulnerability; and 3) Mitigation of Climate Change. The AR5 Synthesis Report based on these reports was released in 2014.⁹⁶

A significant rise in global temperatures appears at present likely to reduce ice congestion in the Arctic and Southern Oceans, and may make oil and gas exploration activities more practicable, including related drilling and transportation. The earth's

⁹⁴ The primary reference for the current status of climate change is the Intergovernmental Panel on Climate Change ('IPCC'), which was established in 1988 by the United Nations Environment Programme ('UNEP') and the World Meteorological Organization ('WMO') to provide the world with a clear scientific view on the current state of climate change and its potential environmental and socio-economic consequences. Significant reports issued by the IPCC include 'Climate Change 2007: Synthesis Report - An Assessment of the Intergovernmental Panel on Climate Change' (2008) Intergovernmental Panel on Climate Change

<http://www.ipcc.ch/publications_and_data/publications_and_data_reports.htm#1> at 15 February 2010. The Report stated:

Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea level... The temperature increase is widespread over the globe and is greater at higher northern latitudes... Average Arctic temperatures have increased at almost twice the global average rate in the past 100 years.

⁹⁵The National Academies, 'Report in Brief - Abrupt Climate Change: Inevitable Surprises' (2001) <<http://www.nap.edu/html/climatechange-brief/abruptclimatechange-brief.pdf>> at 4 April 2008. The climate predictions are not however certain and contrary possibilities exist, such as possible changes in ocean currents which could lower temperatures in specific regions. The most recent research may suggest that the current change hypothesis is unlikely, and that temperature changes to date indicate that warming in the Arctic and Southern Oceans is now significantly measurable, and that this ocean warming is also increasing over time. In relation to the Arctic, this issue concerns the possibility of the reduction or cessation of the warm water Gulf Stream current in the North Atlantic. Global warming is likely to increase fresh water from melting ice, which may, possibly, reduce or cease the Gulf Stream current, which would then result in lower temperatures for some period in the North Atlantic and the Arctic. Accordingly the earth's climate model is not yet fully understood, and there is potential for unexpected results from global warming.

⁹⁶ Intergovernmental Panel on Climate Change, 'Working Group I Contribution to the IPCC Fifth Assessment Report, Climate Change 2013: The Physical Science Basis', <<http://www.ipcc.ch>> at 5 June 2013.

climate is not fully understood, and factors besides greenhouse gases may also influence long term climate trends.⁹⁷

Current research also provides strong evidence for a current trend of significantly reducing Arctic Ocean ice. Research using the European Space Agency's *CryoSat-2* satellite, for example, has demonstrated a significant decline in Arctic Ocean ice extent.⁹⁸ The research indicates that summer minimum in Arctic sea ice is one-fifth of the level in 1980. In relation to Antarctica and the Southern Ocean, evidence of global warming may include collapse of the 3,250 km² Larsen B Ice Shelf in 2002,⁹⁹ and increased melting of ice on the West Antarctic Ice Sheet reported in 2013.¹⁰⁰ The most recent study by NASA was reported on 12 May 2014. Eric Rignot stated that 'A large section of the Eastern Antarctic Ice Sheet has gone into a state of irreversible retreat. It has passed the point of no return.'¹⁰¹ The melting of ice has therefore now been observed not just in the loss of ice sheets over the ocean, but has extended to the ice cover over the Antarctic landmass itself.

The potential reduction in sea ice in the Arctic and Southern Oceans which may result from global warming would allow increased access to potential oil and gas reserves in these regions. Climate analysis is however complex and it is early to draw conclusions as research continues. Global warming may however also increase the severity of weather patterns in the polar regions.

B. Future Oil Spills

⁹⁷ These factors potentially include variations in the earth's orbit, variations in solar output, greenhouse gases derived from volcanic activity, and variations in reflection of solar energy from the earth's surface due to changes in the extent of surface ice.

⁹⁸ Seymour W Laxon, Katharine A Giles, Andy L Ridout, et al, 'CryoSat-2 estimates of Arctic sea ice thickness and volume' (2013) 40 *Geophysical Research Letters* 732. The climate is however complex, as demonstrated by the recent increase in sea ice in Southern Ocean, which may be caused by melting beneath the Antarctic ice shelves, 'Melt may explain Antarctica's sea ice expansion' *BBC News*, 1 April 2013 <<http://www.bbc.co.uk/news/science-environment-21991487>> at 18 April 2013.

⁹⁹ Therese Greenwood, 'Canada 'Ice Shelf Disintegration Threatens Environment, Queens Study' (Press Release, 3 August 2005) <http://www.eurekalert.org/pub_releases/2005-08/qu-isd080305.php> at 16 June 2008.

¹⁰⁰ 'West Antarctic Ice Sheet warming twice earlier estimate' *BBC News*, 23 December 2012 <<http://www.bbc.co.uk/news/science-environment-20804192>> at 18 April 2013.

¹⁰¹ 'West Antarctic Glacier Loss Appears Irreversible' NASA Jet Propulsion Laboratory, 12 May 2014, <www.jpl.nasa.gov/news> at 5 June 2014.

Environmental concerns have been highlighted by the *Deepwater Horizon* oil spill in the United States Gulf of Mexico.¹⁰² The flow of crude oil into the ocean has been estimated at up to 60,000 barrels per day as at 18 June 2010.¹⁰³ The limited effectiveness of the response to the oil spill provides very strong support for the prevention of oil and gas activity in the Southern Ocean at the current state of technological development.¹⁰⁴ The oil spill may also have been a contributing factor to the decision by Shell to suspend oil and gas development in the Beaufort and Chukchi Seas in 2013 until safety measures are improved.¹⁰⁵ The United States Department of the Interior issued a report recommending specific undertakings that Shell should complete before proceeding with additional offshore exploratory drilling.¹⁰⁶

¹⁰² The oil spill commenced on April 20 2010 following a methane gas explosion and resulting fire on the *Deepwater Horizon* semi-submersible mobile offshore drilling unit. The accident resulted in loss of life of eleven oil workers on the rig and an uncontrolled release of crude oil at a depth of 5,000 feet from the ocean surface. The accident occurred 41 miles from the coast in the United States exclusive economic zone adjoining the State of Louisiana in the Gulf of Mexico. The drilling rig was owned by Transocean and was leased to BP. The contractor Halliburton Energy Services was installing related equipment on the seabed at the time of the accident. The oil spill is the worst to date in the oil industry, and highlights the danger that technology and resources to control oil spills can be inadequate to control pollution.

¹⁰³ Flow Rate Technical Group (FRTG), 'Press Briefing by National Incident Commander June 18, 2010' *Deepwater Horizon Incident Joint Information Centre*, (Press Release, 18 June 2010). The United States government, universities and research institutes established the (FRTG. The related estimate was released on 18 June 2010, 'Press Briefing by National Incident Commander June 18, 2010' *Deepwater Horizon Incident Joint Information Centre*, <http://www.deepwaterhorizonresponse.com/go/doc/2931/672743/> at 30 June 2010. There were several failed attempts to cap the flow of oil into the ocean, which demonstrated that technology and methods of protecting the environment from oil spills in deep waters are very limited with current technology, and such an oil spill would likely be very damaging to the Southern Ocean marine environment.

¹⁰⁴ The issue of oil and gas development in the Southern Oceans in the event of a future entry into force of CRAMRA is overshadowed by the environment issue, particularly in the light to the *Deepwater Horizon* deep water oil spill in the Gulf of Mexico. According development should be based on a long term time horizon, when technology may potentially be much more capable of preventing or controlling oil spills.

¹⁰⁵ 'Shell suspends Arctic drilling for 2013', *BBC*, 27 February 2013.

<<http://www.bbc.co.uk/news/business-21609892> > at 10 April 2013. The BBC report described Royal Dutch Shell difficulties in the Arctic oil and gas programme prior to the temporary suspension in 2013 as follows:

- The company failed to have a spill-response barge on site before the drills reached oil-bearing zones, as it had promised, and a containment dome was damaged during testing;
- Drilling in the Chukchi Sea had to be called off less than 24 hours after it began on 9 September due to a major ice floe;
- A fire broke out on the *Noble Discoverer* rig that Shell had hired for the Chukchi Sea drilling, and the US Coast Guard discovered 16 safety violations on board, which have now been passed to the justice department; and
- The *Kulluk*, a circular drilling barge, broke away from its towing vessel and ran aground on its way to a shipyard in Washington State in late December.

Shell had also not obtained certification of its containment vessel, the *Arctic Challenger*, on a timely basis; had difficulty deploying the *Arctic Challenger*'s containment dome, designed to be lowered over a subsea well blowout, and the grounding of the drilling ship *Kulluk* at Kodiak Island.

¹⁰⁶ The requirements included a comprehensive operational plan describing its future drilling program, and complete a third-party audit of its management systems. United States Department of the Interior, 'Review of Shell's 2012 Alaska Offshore Oil And Gas Exploration Program, 8 March 2013, <<http://www.doi.gov/news/pressreleases/departement-of-the-interior-releases-assessment-of-shells-2012-arctic-operations.cfm>> at 18 April 2013.

Oil spills may have a significant impact supporting the ban on oil and gas development under the Environmental Protocol. Day commented, for example, that the *Exxon Valdez* oil spill in Alaska occurred in 1989 just six days after CRAMRA was introduced into the British House of Lords for ratification.¹⁰⁷ One potential outcome of an effective prevention, response and liability regime may be to influence oil and gas companies to focus on less environmentally risky projects in Arctic regions, such as a focus on gas development, compared to oil development, until such time as environmental protection measures are fully effective.

C. The Deep Sea Environment

It was reported in 2013 that a substantial portion of the oil pollution from the *Deepwater Horizon* oil spill was absorbed by microorganisms in the ocean, and that chemical dispersants which were used to attempt to control the oil spill reduced this absorption.¹⁰⁸ The research also suggested that microorganism activity increased as the level of oil increased.¹⁰⁹

The findings may mean that more focus is required on oil spill control in the initial period when there is greater damage to the environment. The ability of microorganisms to absorb oil pollution in polar waters may become similar to the result in the Gulf of Mexico, particularly in the longer term if polar waters become warmer due to global warming. Research on the *Deepwater Horizon* oil spill has also suggested that there

¹⁰⁷ Day, above n 45, 517.

¹⁰⁸ 'Deepwater Horizon: Gulf of Mexico 'deep-cleaned' itself', BBC News, 9 April 2013, <<http://www.bbc.co.uk/news/science-environment-22075182>> at 10 April 2013.

The Deepwater Horizon oil spill resulted in oil pollution estimated at 4.9 million barrels, equivalent to 686,000 tonnes. The natural rate of seepage in the Gulf of Mexico was estimated at 140,000 tonnes.

¹⁰⁹ Terry Hazen, (presentation at the Environmental Fate of Petroleum Oils and Dispersants in the Marine Environment, 245th National Meeting and Exposition of the American Chemical Society, 7-11 April 2013, New Orleans)

<<http://www.utk.edu/tntoday/2013/04/08/professors-research-shows-gulf-mexico-resilient-spill/>> at 10 April 2013: Hazen commented as follows:

The Deepwater Horizon oil provided a new source of nutrients in the deepest waters. With more food present in the water, there was a population explosion among those bacteria already adapted to using oil as a food source. It was surprising how fast they consumed the oil. In some locations, it took only one day for them to reduce a gallon of oil to a half gallon. In others, the half-life for a given quantity of spilled oil was six days ...

The bottom line from this research may be that the Gulf of Mexico is more resilient and better able to recover from oil spills than anyone thought. It shows that we may not need the kinds of heroic measures proposed after the Deepwater Horizon spill, like adding nutrients to speed up the growth of bacteria that break down oil, or using genetically engineered bacteria. The Gulf has a broad base of natural bacteria, and they respond to the presence of oil by multiplying quite rapidly.

may be a significant breakdown of oil pollution at lower temperatures.¹¹⁰ The American Academy of Microbiology put this issue in context:¹¹¹

Microbes can be counted on to biodegrade oil over time. However, the process may not be fast enough to prevent ecological damage. Immediate containment or physical removal of the oil is therefore an important first line of defence.

Better understanding of the environment should allow states and oil companies to more accurately estimate the damage from a potential oil spill. Research may show reducing potential harm as sea temperatures rise and sea ice reduces, particularly in the longer time frame from of 50 to 100 years. The effect of such developments may be to facilitate oil and gas development including polar JDZs if natural processes proved more effective at eliminating substantial portion of oil pollution, however these processes may not be effective once oil pollution has reached the coastline.

5. Oil and Gas Development and Energy Alternatives

A. Future Oil and Gas Discoveries

The introduction of JDZs can be facilitated by oil and gas discoveries in disputed regions. The Thailand/Cambodia overlapping claim region is an example of significant oil discoveries in the disputed region leading to the Thailand/Cambodia MOU examined in Chapter III. The likelihood of oil and gas may also lead to a full boundary agreement. The Norway/Russia Agreement in 2010 ('Barents Sea Treaty')¹¹² discussed in Chapter V was made in a region likely to have significant oil and gas resources. Oil and gas

¹¹⁰ The oil spill plume, from the depth of the undersea blow out of 1,500 metres, up to 1000 metres, was at water temperature of approximately four degrees Celsius, which was described as similar to Canadian Arctic water temperatures. 'An Appetite for Oil: Oceans Rebound from Oil Spills with the Aid of Microbes', Fisheries and Oceans Canada,

<<http://www.dfo-mpo.gc.ca/science/publications/article/2012/01-25-12-eng.html>> at 12 April 2013. The Canadian government report stated:

The ongoing research following the aftermath of the Deepwater Horizon spill is also providing answers to some of our concerns in Canada. The subsurface blowout at 1,500 metres depth and the addition of dispersants resulted in the formation of a subsurface oil plume at a depth greater than a thousand metres, where the water temperature is approximately four degrees Celsius, similar to that found in our northern waters. According to Dr. Lee, there is now "conclusive evidence" that low temperatures may not be as significant as previously thought in retarding the degradation of oil in the marine environment.

¹¹¹ 'Microbes and Oil Spills', American Academy of Microbiology, <<http://www.dfo-mpo.gc.ca/science/publications/microbes/pdf/microbes-eng.pdf>> at 12 April 2013.

¹¹² *Treaty Between the Kingdom of Norway and the Russian Federation Concerning Maritime Delimitation and Cooperation in the Barents Sea and the Arctic Ocean*, 15 September 2010, 2791 UNTS I-49095, Norwegian Government, Office of the Prime Minister, <<http://www.regjeringen.no/en/dep/smk/press-center/Press-releases/2010/treaty.html?id=614254>> at 20 February 2012 (entered into force 7 July 2011).

discoveries may lead to interest in a JDZ where the countries concerned are unwilling to give up coastal state sovereign rights over the ocean region, but have sufficiently good political relations to consider a JDZ as an interim solution to a maritime boundary dispute, and where significant economic benefits are likely to arise from oil and gas development.

B. Oil Spill Prevention and Response

One significant event following the *Deepwater Horizon* oil spill was the offer of four sea skimming oil pollution control ships by the Netherlands Government to the United States Government. It is reported that the Netherlands offer was refused because the skimming process returned a small portion of oil skimmed to the sea, notwithstanding the collection of the majority of oil.¹¹³ The United States Government reversed this decision after seven weeks, and oil skimming equipment was then flown from the Netherlands to the Gulf of Mexico.¹¹⁴ This event highlighted the need for effective emergency response plans.

There are likely to be improvements in pollution control arising from lessons learned from the *Deepwater Horizon* oil spill. The Shell Arctic drilling programme in 2012 included, for example, a containment dome directed at controlling a *Deepwater Horizon* type oil spill.¹¹⁵ There has also been comment that the dispersal chemicals used in the oil spill provided the appearance of cleaned coastline while actually causing the oil to sink below the surface.¹¹⁶

¹¹³ 'Dutch oil spill response team on standby for US oil disaster' Radio Netherlands Worldwide, 4 May 2010 <<http://www.rnw.nl/english/article/dutch-oil-spill-response-team-standby-us-oil-disaster>> at 24 April 2013.

¹¹⁴ 'US and BP slow to accept Dutch expertise' *Houston Chronicle* (Houston) 9 June 2010 <<http://www.chron.com/business/steffy/article/Steffy-U-S-and-BP-slow-to-accept-Dutch-expertise-1705573.php>> at 24 April 2013.

¹¹⁵ The United States Department of the Interior described the system as follows:

The containment dome itself is designed to contain and separate hydrocarbons from water through discrete flows of oil and gas to the processing facilities while returning most of the separated water through the bottom of the dome. The ACS represents a last line of defence to a serious loss of well control incident. Initial defences include: (1) the injection of kill-weight drilling muds into the well, (2) activation of the blowout preventer, and (3) deployment of a capping stack to shut in the well. If these measures fail, the ACS containment dome is designed to capture flows from the well and facilitate their separation and storage.

United States Department of the Interior, 'Review of Shell's 2012 Alaska Offshore Oil and Gas Exploration Program, 8 March 2013, 17.

<<http://www.doi.gov/news/pressreleases/departement-of-the-interior-releases-assessment-of-shells-2012-arctic-operations.cfm>> at 18 April 2013.

¹¹⁶ There are also concerns that the 'Corexit 9500' dispersant used by BP was potentially a toxic chemical. The United Kingdom House of Commons Select Committee, Energy and Climate Change, examined the

Future research may indicate preference for oil collection by methods such as 'skimming,' based on devices attached to ships to remove oil or oil/water mixtures. The current limitation of skimming process is the difficulty using the process in rough seas. Recent developments which may address this issue include the *Sea Barracuda* offshore oil recovery vessels (OSRV) design,¹¹⁷ and the *YAG Louh* ice breaking vessel operated by the Finnish Navy.¹¹⁸ A further development is the sea state-independent oil skimming system for the collection of oil in an opening ('moon pool') within the oil skimming vessel's hull.¹¹⁹

Other technological developments may include improvements in oil spill detection, involving improvements in satellite, vessel, and aircraft mounted oil pollution detection radar.¹²⁰ Current challenges include developing effective detection and collection of sub-surface oil and oil beneath sea-ice.

The long term key to effective oil spill detection and recovery may be the combination of effective oil detection systems, and oil spill recovery vessels capable of operating in heavy seas and partial ice conditions. An example of such a structure is the European

issue in the report 'UK Deepwater Drilling - Implications of the Gulf of Mexico Oil Spill - Energy and Climate Change'

<<http://www.publications.parliament.uk/pa/cm201011/cmselect/cmenergy/450/45012.htm>> at 23 April 2013. The House of Commons Report stated:

Dispersants are usually used on the surface, but BP injected them into the oil as it flowed from the well. BP began by using the dispersant Corexit 9527a, and then switched to Corexit 9500. Both of these products were removed from the UK Marine Management Organisation's approved list in 1998, as they proved too toxic in instances where they might end up on rocky shorelines (although existing stocks could be used).

¹¹⁷ The design may potentially allow skimming operations in sea state 5, or waves of 2.5 to 4 metres. Mavi Deniz Environmental Protection Services Co.

<http://www.mavid Deniz.com.tr/product/Oil_recovery_Vessel/Offshore/Offshore.html> at 23 April 2013.

¹¹⁸ 'Finland's Newest Oil Spill Response Vessel' Lamor Corporation

<<http://www.lamor.com/2011/04/finland%E2%80%99s-newest-oil-spill-response-vessel/>> at 23 April 2013. The vessel was commissioned by the Finnish Environment Institute and is operated by the Finnish Navy.

¹¹⁹ This system may potentially operate at wave heights of 4.5 metres. Günther Clauss and Florian Sprenger, 'An innovative offshore oil skimming system for operations in harsh seas' (Paper presented at 13th Congress of International Maritime Association of the Mediterranean, 'IMAM 2009', Istanbul, 12-15 October 2009).

¹²⁰ 'Detecting oil spills, Trouble beneath the ice' *The Economist* (London) 1 December 2012

<<http://www.economist.com/news/technology-quarterly/21567196-energy-technology-oil-exploration-moves-arctic-new-methods-are-being>> at 23 April 2013. The report stated:

A spill in the Arctic is likely to result in oil under rather than on top of the ice. Even oil on the surface may quickly be covered by snow. For such scenarios, the most promising detection technology is ground-penetrating radar (GPR), which uses high-frequency radar signals, emitted either from a sled on the surface of the ice or from a low-flying aircraft, to provide an image of the subsurface. Snow, ice and oil reflect radio waves in different ways, allowing oil spills to be seen beneath the surface.

Maritime Safety Agency's CleanSeaNet satellite oil spill detection service,¹²¹ and the stand-by oil spill response vessels available to the Agency.¹²²

The structure of JDZ agreements and related agreements for the Arctic and Southern Ocean regions should allow oil and gas developments to proceed once the potential for oil spill damage has been significantly reduced. As discussed in Chapter VII, this may include relating oil company liability to the potential amount of damage. This would enable oil companies to proceed with a new development once technological measures have significantly reduced the potential liability from an oil spill. Potential developments in oil spill control should facilitate environmental protection for all Arctic and Southern Ocean JDZs.

C. Alternative Energy Development

The further development of other sources of energy may potentially reduce the pressure for development of offshore oil and gas from the Arctic and Southern Ocean regions. This may include the further development of alternative sources of energy such as wind, solar, and wave power. These sources of energy may significantly decline in cost, and may potentially replace oil and gas in the longer term. An example is the continuing reduction in the cost of wind power. Research in 2013 has stated that wind farm power was potentially cheaper than electricity from newly built coal and gas fired power stations in Australia.¹²³ A second development is the decreasing cost of solar energy from photovoltaic cells due to the replacement of the silicon currently used in photovoltaic cells with cheaper materials.¹²⁴ On this basis energy from alternative

¹²¹ The CleanSeaNet service is based on international cooperation using the *Envisat*, *Radarsat 1*, and *Radarsat 2* satellites, and in future from the *Sentinel 1* satellite. European Maritime Safety Agency, 'Satellite Oil Spill Monitoring'

<<http://www.emsa.europa.eu/operations/cleanseanet.html>> at 24 April 2013.

¹²² European Maritime Safety Agency, 'Stand-by Oil Spill Response Vessels'

<<http://www.emsa.europa.eu/oil-recovery-vessels/vessel-inventory.html>> at 24 April 2013.

¹²³ 'Renewable energy now cheaper than new fossil fuels in Australia', *Bloomberg New Energy Finance*, 7 February 2013

<<http://about.bnef.com/press-releases/renewable-energy-now-cheaper-than-new-fossil-fuels-in-australia/>> at 16 April 2013. The report was partly based on higher anticipated financing costs for new coal power stations. The report commented as follows:

The study shows that electricity can be supplied from a new wind farm at a cost of AUD 80/MWh (USD 83), compared to AUD 143/MWh from a new coal plant or AUD 116/MWh from a new baseload gas plant, including the cost of emissions under the Gillard government's carbon pricing scheme. However even without a carbon price (the most efficient way to reduce economy-wide emissions) wind energy is 14% cheaper than new coal and 18% cheaper than new gas.

¹²⁴ 'Photovoltaics from Any Semiconductor, Berkeley Lab Technology Could Open Door to More Widespread Solar Energy Devices' Lawrence Berkley National Laboratory, 26 July 2012

sources may become competitively priced compared to oil and gas. A related trend is the increased availability of funding for alternative energy, included targeted tax credits and the issuance of 'green bonds' based on renewable energy projects.¹²⁵

These developments also relate to other sources of oil and gas. The primary current development is the use of hydraulic fracturing technology, or 'fracking'. This process generally uses water to increase fractures in rocks such as shale, allowing the recovery of oil and gas trapped in pores within the rocks.¹²⁶ BP predicted that the United States will overtake Russia and Saudi Arabia to become the world's biggest producer of oil. Hydraulic fracturing technology has associated environmental risks, such as potential contamination of groundwater and the release of drilling chemicals. The technology also results in significant use of water resources.¹²⁷

There has been a substantial reduction in oil prices evident at December 2014. The reduction was due, in part, to the state of world economy, and in part due to new sources of oil and gas such as fracking and shale oil. A continued low oil price may delay or cancel oil exploration in regions such as the Arctic Ocean which would have a substantially higher production costs than other sources of oil.¹²⁸

The greatest potential change may result from the introduction of more extensive measures to reduce carbon emissions to reduce the process of global warming. The process of reducing carbon emissions is principally based on the United Nations Framework Convention on Climate Change (UNFCCC),¹²⁹ and the related 1997 Kyoto Protocol.¹³⁰ The international measures to address global warming are essentially based on member state commitments to binding targets to reduce greenhouse gas emissions.¹³¹

<<http://newscenter.lbl.gov/feature-stories/2012/07/26/photovoltaics-from-any-semiconductor/>> at 16 April 2013. The research is based on using alternatives such as metal oxides to replace silicon in photovoltaic cells.

¹²⁵ John Abrahamson, *Tolley's International Taxation of Corporate Finance* (LexisNexis, 2014) 87.

¹²⁶ United States production of gas from shale rock was reported to have reduced gas prices from USD 13 per million British thermal units (BTU) in 2008, to USD 1-2 per million BTU in 2012. 'Deep sigh of relief – The shale gas and oil bonanza is transforming America's energy outlook and boosting its economy', *The Economist*, (London) 16 March 2013.

¹²⁷ International Energy Agency, *World Energy Outlook – Executive Summary* (2012) 7.

¹²⁸ 'Sheiks v Shale' *The Economist* (London) 6 December 2014, 13. The high oil price of nearly 115 per barrel in June 2014 had reduced to USD 57 per barrel for the West Texas Intermediate (WTI) index at the end of 2014. 'Economic and Financial Indicators' *The Economist* (London) 20 December 2014, 129.

¹²⁹ *United Nations Framework Convention on Climate Change*, opened for signature 4 June 1992, 1771 UNTS 107 (entered into force 21 March 1994) ('UNFCCC').

¹³⁰ *Kyoto Protocol to the United Nations Framework Convention on Climate Change*, opened for signature 16 March 1998, 2303 UNTS 148 (entered into force 16 February 2005) ('Kyoto Protocol').

¹³¹ Malcolm N Shaw, *International Law* (Cambridge University Press, 6th ed, 2008) 880.

It has also been argued that there should be no further hydrocarbon exploitation in the Arctic if increases in global warming are to be kept within 2° C.¹³² These measures may promote the reduced use of oil and gas as energy sources, and their replacement with alternative energy sources with lower greenhouse gas emissions. This development of alternative energy may be a long term factor reducing the need for offshore oil and gas from Arctic and Southern Ocean regions.¹³³

6. Contribution to Research Conclusions

The principal contribution to the research conclusions is that potential political developments in the Arctic Ocean region, including full independence of Greenland, and increasing regional autonomy in Northwest Territories and Nunavut in Canada, may affect the development of offshore oil and gas including the use of JDZs. These developments may prioritise the preservation of the environment to protect traditional uses of the seas. Political developments relating to Svalbard may result in multilateral JDZ regime, if the Svalbard Treaty is deemed to extend to the continental shelf and OCS.

Political developments in the Southern Ocean may potentially include disputes relating to Antarctic claims, particularly between the overlapping United Kingdom, Argentina and Chile claims, or between Antarctic claimant and non-claimant states, or in relation to the Unclaimed Sector (Marie Byrd Land). There is also the potential for unilateral oil and gas development by states which have repudiated or not ratified the Environmental Protocol. These potential events may result in resource conflicts, or may result in the adoption of a multilateral JDZ regime within the Antarctic Treaty framework on a similar basis to the CRAMRA proposals.

Developments in polar governance may include the Arctic Council developing into a treaty regime, with the power to make binding ruling on state parties. This may include

¹³² C McGlade and P Etkins, 'The Geographical Distribution of Fossil Fuels unused when limiting Global Warming to 2° C' (2015) 517 *Nature* 187.

¹³³ JDZs may still be required to peacefully resolve competition for other resources. One example of significant resources in the Arctic region is nickel. Vale Canada Limited's Voisey's Bay Mine in Canada uses the ice-strengthened bulk carriers *Umiak 1* and *Arctic* for transport nickel in ice-covered seas. 'Multitude of Challenges to operating in the Arctic' *Canadian Sailings*, 15 February 2010. There may also be significantly increased interest in rare-earth elements (REE), for example, particularly in a longer time frame such as 50 or 100 years. 'In a hole? Demand for some rare-earth elements could rapidly outstrip supply', *The Economist* (London), 17 March 2012 <<http://www.economist.com/node/21550243>> at 24 July 2012. There may also be competition over other resources in the Arctic Ocean region.

adopting a comprehensive and binding oil and gas regime similar to current European Union proposals. Developments in relation to the Antarctic Treaty regime and the Southern Ocean may include pressure to amend the Environmental Protocol to allow oil and gas activities, and the adoption of a multilateral JDZ regime within the Antarctic Treaty framework.

Global warming may potentially facilitate Arctic and Southern Ocean oil and gas development through the reduction in sea-ice, however there may also be negative effects such as increased storm activity. A major oil spill in the Arctic or Southern Ocean regions may potentially limit or suspend future oil and gas development.

Improved pollution control measures may substantially reduce dangers to the marine environment in the future. This may include improved oil spill detection, collection of oil pollution by skimming vessels in rough seas and sea-ice conditions, and collection of sub-sea oil. Improved regional oil response plans, and related measures such as prepositioning of response vessels, may also substantially reduce the potential risks to the environment.

Significant oil and gas discoveries in a disputed region may encourage new boundary agreements, or JDZ agreements if no boundary can be agreed. In the longer term the further development of alternative energy sources may reduce the need for JDZs, although this may be replaced by competition for other resources such as REEs.

There is also a significant potential change which may result from more extensive measures to reduce carbon emissions to reduce global warming. A related development is the argument that hydrocarbon development should not be undertaken in Polar regions in order to prevent dangerous increases in global warming.

The adoption of JDZs in the Arctic and Southern Ocean regions is therefore subject to several potential game changing developments. The majority of these developments appear however more likely to affect terms and conditions for all oil and gas developments including JDZs, rather than prevent their future use.

CHAPTER XI – RESEARCH CONCLUSIONS

1. Scope of Research

A. Research Undertaken

The research commenced with analysing the provisions of LOSC, particularly relating to boundary delimitation, protection and preservation of the marine environment, and resolution of disputes. The use of JDZs relating to offshore oil and gas in international agreements was then examined, specifically including the circumstances where JDZs have been adopted by states, in preference to dispute resolution forums such as the ICJ or international arbitration tribunals.

The research examined the related governance regimes including boundary delimitation decisions of the ICJ and international arbitrations, the concept of the OCS and the related process of state submissions to the CLCS, review of the Area regime under LOSC Part XI applying to the deep seabed region beyond state jurisdiction, review of the Arctic Council, and review of the Antarctic Treaty and related international agreements.

The research analysed the maritime boundaries in the Arctic and Southern Ocean regions, particularly the regions where state claims currently or potentially overlap, and the special circumstances of states with claims in the Antarctic and Southern Ocean. The provisions of a model JDZ were analysed, including the issues in adapting a model JDZ to specific issues relating to the Arctic and Southern Ocean regions, particularly for effective measures for the protection and preservation of the marine environment.

The research analysed the policy issues relating to JDZs, including support of regional governance, development of ISBA, progressing from JDZs as provisional measures to future boundary delimitations, and Australia's role in relation to promoting peaceful solution of maritime boundary resources. The maritime boundary delimitation provisions of LOSC were analysed in Chapter II. The 1958 Convention on the Continental Shelf provided the establishment of the continental shelf regime based on

the potential for exploitation, increasing the size of potential overlapping claims from opposite or adjacent coasts, and increasing the pressure to claim coastal state sovereign rights over features such as islands which could qualify for continental shelf zones.

LOSC then extended the potential for resource conflicts by establishing the EEZ and continental shelf regimes irrespective of continental shelf topography, and further extended potential maritime boundaries by introducing the OCS regime. The provision of these wider regimes allowing sovereignty over resources has been reinforced by technological developments which have enabled production of oil and gas from greater ocean depths.

Examples of existing JDZs were analysed in Chapter III. The geographical and other circumstances where JDZs have been adopted were broadly categorised based on issues causing one or more states to depart from an equidistance claim. These issues include historical background or treaties, sovereignty of islands, weight to be given to islands in determining a maritime boundary, prolongation of the continental shelf, and unitisation for specific oil and gas fields.

Chapter IV analysed the legal and governance regimes with potential application to the Arctic and Southern Ocean, including the CLCS, dispute resolution under the ICJ, arbitration panels, ITLOS, and conciliation. The Arctic Council and the Antarctic Treaty were then analysed as the principal governance bodies relating to the Arctic Ocean and Southern Ocean regions respectively.

Current and potential overlapping continental shelf and OCS claims in the Arctic Ocean region were analysed in Chapter V, and the current and potential overlapping continental shelf and OCS claims in the Southern Ocean were analysed in Chapter VI. The related issues included the Antarctic Treaty suspension of assertions of sovereignty and coastal state sovereign rights, and the Environmental Protocol suspension of minerals development including oil and gas.

In Chapter VII the standard terms for a model JDZ were reviewed, based on the BIICL Model JDZ Agreement, together with a proposal to adapt the Model JDZ to the Arctic and Southern Ocean regions. The proposed changes were not exhaustive, and the purpose of the review was to demonstrate the potential means by which a JDZ

agreement can be adapted to the circumstances of the Arctic and Southern Oceans. Specific adaptations which may be made to JDZs to address the specific resource conflicts in the Arctic and Southern Oceans were analysed in Chapter VIII. The basis of the resource sharing proposals is essentially for equal sharing of resources where claims overlap.

B. Potential Limitations

The potential limitations of the research include that the state policy-making process relating to adopting a JDZ, compared to agreeing a maritime boundary, may be based on government deliberations which may not be made public.¹ A related issue is that the state policy-making process of terminating a JDZ agreement may not be made public.² These issues relate to the political process discussed in Chapter IX, which can have a great effect on the implementation of JDZ agreements between particular states.

There is also a limitation that full technical elements of submissions to the CLCS, CLCS deliberations and CLCS recommendations may also not be made public. This issue can apply to the interpretation of 'submarine elevations that are natural components of the continental margin, such as its plateaux, rises, caps, banks and spurs' in LOSC Article 76(6), which may significantly impact potential OCS zones in the Arctic Ocean.

This issue also applies, for example, as to whether there may be current agreements or understandings that the respective Canadian, Danish and Greenland government, and revised Russian maritime boundary claims would not extend beyond the North Pole.

C. Research Implications

¹ This issue includes to the decisions of Norway and Russia to agree the boundary rather than adopt a JDZ. *Treaty Between the Kingdom of Norway and the Russian Federation Concerning Maritime Delimitation and Cooperation in the Barents Sea and the Arctic Ocean*, 15 September 2010, 2791 UNTS I-49095, Norwegian Government, Office of the Prime Minister, <<http://www.regjeringen.no/en/dep/smk/press-center/Press-releases/2010/treaty.html?id=614254>> at 20 February 2012 (entered into force 7 July 2011).

² This issue includes the Argentine cancellation of the 1995 United Kingdom and /Argentina Agreement MOU relating to the South West Atlantic, and the Thai cancellation of the 2001 Thailand/Cambodia MOU. *Argentina - United Kingdom: Joint Declaration on Cooperation over Offshore Activities in the South West Atlantic*, 27 September 1995, 35 ILM 301 (*Argentina/United Kingdom Joint Declaration*) and *Memorandum of Understanding between the Royal Thai Government and the Royal Government of Cambodia regarding the Area of their Overlapping Maritime Claims to the Continental Shelf*, 18 June 2001 <http://tncbcc.rtarf.mi.th/pdf/pdf_cam190/07.pdf> at 9 April 2013.

The primary research implication is that JDZs are a significant option for conflict resolution in relation to offshore oil and gas resources where states cannot agree to a maritime boundary. These circumstances arise where states use different approaches in their maritime boundary claims, and where there may be significant offshore oil and gas resources in the disputed maritime regions.

The use of JDZs can apply to Arctic and Southern Ocean regions to potentially prevent, or significantly reduce the risk, of conflicts relating to offshore oil and gas resources. The terms of the JDZs can also be used to promote more effective measures to prevent pollution of the marine environment.

States have a potentially significant role to promote peaceful conflict resolution over oil and gas resources in the Arctic and Southern Ocean regions, and this may include the potential use of JDZs. This role will include environmental protection, and particularly the duty which may arise after 2048 in relation to the Environmental Protocol to the Antarctic Treaty, to evaluate measures to protect and preserve the Antarctic and Southern Ocean environment relating to offshore oil and gas resources.

D. Potential for Further Research

The primary potential area for further research is to determine the best methods to promote state acceptance of potential JDZs. This includes addressing the issues of specific states and their respective foreign affairs departments with potential JDZs, and analysing the potential role of JDZs in relation to polar institutions including the Arctic Council and the Antarctic Treaty regimes.

The secondary area for research concerns incorporation of a more effective environmental regime in the Antarctic Treaty framework in the event that oil and gas development was permitted after 2048. The potential research would include review of environmental discussions relating to the proposed CRAMRA measures, and the potential for requiring cooperative measures between states and oil and gas operators to prevent pollution of the marine environment.

The third potential research area concerns specific issues for the use of JDZs in relation to the Asia Pacific region, including the potential for dividing sovereignty of disputed

islands with surrounding JDZs for the East China Sea, Sea of Japan, and South China Sea disputes.

The fourth research area concerns the development of ISBA, including the development of an effective environmental control measures under a multinational regime. This issue is particularly important as ISBA develops from deep seabed mining such as poly-metallic nodules, to the potentially more environmentally hazardous activity of deep offshore oil and gas development.

2. Research Conclusions

A. Existing JDZs and State Practice

The primary conclusion to support the research thesis is that JDZs can effectively resolve resource conflicts where it is unlikely a boundary can be agreed for some longer period of time, in addition to cases where the boundary can be agreed. This is supported by state practice in adopting JDZs analysed in Chapter III, and the related summary of existing JDZs in Appendix III. In the Arctic Ocean and surrounding region, this includes the examples of the Svalbard Treaty as early as 1920,³ and the Iceland/Norway Agreement in the Jan Mayen Island area in 1981.⁴

In the Antarctic and Southern Ocean region a form of JDZ potentially applies in the area beyond state jurisdiction under the regime of the Area under Part XI of LOSC, and a regime allowing multilateral access to resources was proposed in the CRAMRA regime.⁵ JDZs should be considered as interim solutions to resolve resource conflicts pending final boundary delimitation, consistent with LOSC Article 83(3).⁶

Chapter III reviewed the structure of JDZs. The key point is that various structures have been implemented. The JDZ structures can be broadly categorised as follows:

³*Treaty between Norway, The United States of America, Denmark, France, Italy, Japan, the Netherlands, Great Britain and Ireland and the British Overseas Dominions and Sweden concerning Spitsbergen*, opened for signature 9 February 1920, 2 LNTS 8, (entered into force 14 August 1925) ('Svalbard Treaty').

⁴*Agreement between Norway and Iceland on the Continental Shelf between Iceland and Jan Mayen*, signed 22 October 1981, 2124 UNTS 262, (entered into force 2 June 1982), ('Norway/Iceland Agreement').

⁵*Convention on the Regulation of Antarctic Mineral Resource Activities*, 2 June 1988, not in force, (1988) 27 ILM 868 (The Convention was superseded by the Protocol on Environmental Protection to the Antarctic Treaty) ('CRAMRA').

⁶ One proposal which may potentially facilitate a future final boundary delimitations would be to allow each state to have ultimate authority over oil and gas activities up to the median line within the JDZ.

- Unitisation agreements, where states agree to share the revenues from an oil and gas field straddling a maritime boundary, such as the United Kingdom/Norway - Frigg Field Agreement in 1977;⁷
- Preliminary or in-principle agreement, such as the China/Japan Agreement - East China Sea, 2008.⁸ Such agreements have developed into effective JDZ areas, as in the Malaysia/Thailand - Joint Development Area, 1979;⁹
- Agreements with one state operating in the JDZ, with revenue sharing with the other state, such as the Malaysia/Vietnam Agreement in 1992;¹⁰
- Agreements with specific state provisions applying in the same JDZ zone, such as the Australia/Timor-Leste - Timor Sea Treaty in 2002;¹¹ and
- Agreements applying each state's laws on their respective side of an agreed maritime boundary within the JDZ area, as in the Iceland/Norway Agreement in the Jan Mayen Island area in 1981.¹²

Multilateral agreements, where multiple states have access to resources, such as the Svalbard Treaty in 1920.¹³ This type of treaty is very relevant to areas with multiple claimants such as the Antarctic Peninsula.

⁷ Agreement Between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of the Kingdom of Norway relating to the Exploitation of the Frigg Field reservoir and the Transmission of Gas therefrom to the United Kingdom, 10 May 1976, 1098 UNTS 4 (entered into force 22 July 1977).

⁸ Jiang Yu, Chinese Foreign Ministry 'China, Japan reach principled consensus on East China Sea issue' (Press Release, 18 June 2009), at <<http://www.china-embassy.org/eng/fyrth/t466632.htm>> at 29 July 2009.

⁹ Memorandum of Understanding between the Kingdom of Thailand and Malaysia on the Establishment of a Joint Authority for the Exploitation of the Resources of the Sea-Bed in a Defined Area of the Continental Shelf of the two countries in the Gulf of Thailand, 21 September 1979, reprinted in Jonathan I Charney and Lewis M Alexander (eds), *International Maritime Boundaries* (Martinus Nijhoff, 1993) vol 1, 1099 (entered into force 24 October 1979).

¹⁰ Memorandum of Understanding between Malaysia and the Socialist Republic of Vietnam for the Exploration and Exploitation of Petroleum in a Defined Area of the Continental Shelf Between the Two Countries, 5 June 1992, National University of Singapore - Centre for International Law <<http://cil.nus.edu.sg/rp/il/pdf/1992%20MOU%20between%20Malaysia%20and%20Vietnam%20for%20the%20Exploration%20and%20Exploitation%20of%20Petroleum-pdf.pdf>> at 31 July 2012 (entered into force 4 June 1993).

¹¹ *Timor Sea Treaty*, 20 May 2002, 2258 UNTS 3 (entered into force 2 April 2003).

¹² *Agreement between Norway and Iceland on the Continental Shelf between Iceland and Jan Mayen*, signed 22 October 1981, 2124 UNTS 262, (entered into force 2 June 1982), ('Norway/Iceland Agreement').

JDZs have however been unsuccessful in the absence of continued political support by one of the respective states. The principle examples are the 1995 United Kingdom/Argentina Joint Declaration relating to the South West Atlantic, and more recently the stalling in development of the 2008 Japan/China JDZ, due to the dispute over the Senkaku Islands (Diaoyu Islands).

B. Alternatives to Third Party Dispute Resolution

JDZs will continue to be required because LOSC does not resolve all potential disputes over maritime boundaries. LOSC delimitation provisions were analysed in Chapter II, including the circumstances where maritime boundary disputes have arisen, such as claims based on the extension of the continental shelf, rather than equidistance, the interpretation of rights granted under historic treaties, the effect to be given to islands, and the sovereignty of land masses or islands.

Related maritime boundary delimitation decisions of the ICJ, ITLOS and arbitration tribunals analysed in Chapter IV indicate a trend in judicial dispute resolution to adopt a provisional equidistance line, and then determine if there are relevant or special circumstances which justify varying that line for the final maritime boundary, as in the ICJ in the *Black Sea* case in 2009,¹⁴ and international arbitration including the *Guyana/Suriname Arbitration* in 2007.¹⁵ States may, however, be reluctant to refer a maritime boundary dispute to a compulsory dispute resolution procedure and risk the loss of potential offshore oil and gas reserves. In particular, all Arctic coastal states, and all states with Antarctic claims, have opted to exclude compulsory jurisdiction in relation to maritime boundaries, apart from the United Kingdom and New Zealand.¹⁶ A state considering submitting an Arctic or Southern Ocean dispute to the ICJ, ITLOS or other compulsory arbitration may not know, for example:

¹³ *Treaty between Norway, The United States of America, Denmark, France, Italy, Japan, the Netherlands, Great Britain and Ireland and the British Overseas Dominions and Sweden concerning Spitsbergen*, opened for signature 9 February 1920, 2 LNTS 8, (entered into force 14 August 1925) ('Svalbard Treaty').

¹⁴ *Maritime Delimitation in the Black Sea (Romania v Ukraine)*, [2009] ICJ Rep. 61.

¹⁵ *Guyana v Suriname (Award of the Arbitral Tribunal)*, (2009) 47 ILM 164.

¹⁶ 'Settlement of Disputes Mechanism' United Nations Division for Ocean Affairs and the Law of the Sea <http://www.un.org/Depts/los/settlement_of_disputes/choice_procedure.htm> at 9 July 2012

- What interpretation may be given to the terms of a historic treaty, to support a boundary based on line of longitude, as in the Canada/United States boundary in the Beaufort Sea;
- Whether historic treaty terms have application to new economic zones such as the EEZ, continental shelf and OCS, as in the Svalbard Islands; and
- Whether specific activities in Antarctica constitute settlement to support a territorial claim, as in United Kingdom, Chile, and Argentine overlapping claims located in the Antarctic Peninsula and the Weddell Sea.

A significant strength of LOSC dispute resolution provisions is that the ICJ, ITLOS and other arbitration panels can make a determination on such issues. The reputation of the ICJ and arbitral panels is such as to expect a determination to achieve an equitable result. These determinations may, however, result in an 'all or nothing' outcome for the respective state parties.

The state considering referring a dispute to the ICJ, ITLOS or other arbitration also faces the issue that what may be an equitable result, in relation to the boundary, may not achieve an equitable result in relation to current or potential offshore oil and gas. This may occur because:

- The existence of oil and gas concessions or potential oil and gas reserves are generally not accepted as relevant or special circumstances to justify adjusting a provisional equidistance line, by both the ICJ in the *Land and Maritime Boundary Case between Cameroon and Nigeria* in 2002,¹⁷ and the Permanent Court of Arbitration in the *Guyana and Suriname* arbitration in 2007;¹⁸ and
- The ICJ, ITLOS and other arbitration panels have also not adjusted a provisional equidistance line on the basis of the location of potential oil and gas reserves, which is a critical factor for Arctic and Southern Ocean delimitations, where

¹⁷ *Case concerning the Land and Maritime Boundary between Nigeria and Cameroon* (Nigeria v Cameroon) [2002] ICJ Rep 94.

¹⁸ *Guyana v Suriname (Award of the Arbitral Tribunal)*, (2009) 47 ILM 164.

there has been limited or nil exploratory drilling, and the locations of potential oil fields are not yet known.

As analysed in Chapter IV, there is also a significant issue of whether the other state will agree to a compulsory dispute resolution process. A recent example is the Philippines submission of the South China Sea dispute with China to arbitration in January 2013, where China has made a reservation against compulsory resolution of maritime boundary disputes.¹⁹

The current trend in forum selection may be seen as preference for an ad-hoc arbitration panel. It is however necessary for the related state parties to agree to arbitration, as all Arctic states and states with Antarctic claims, other than the United Kingdom and New Zealand, have not accepted compulsory arbitration under LOSC.

C. Unresolved Arctic and Southern Ocean Boundaries

Specific Arctic and Southern Ocean region maritime boundaries have not yet been resolved:

a) In the Arctic Ocean region analysed in Chapter V, the reasons for the related boundary disputes include different interpretations of the 1825 Convention between Great Britain and Russia,²⁰ in relation to the United States/Canada maritime boundary, and in relation to Norway's rights in the Svalbard Islands region concerning interpretation of the 1920 Svalbard Treaty.²¹ The reasons for disputes also include Russian dissatisfaction with the 1990 Agreement on the Maritime Boundary,²² resulting in non-ratification of the United States/Russia

¹⁹ 'Philippines submits South China Sea disputes with China to UNCLOS Annex VII arbitration,' International Boundaries Research Unit, 22 January 2013 <http://www.dur.ac.uk/ibru/news/boundary_news/?itemno=16498&rehref=%2Fibru%2F&resubj=Boundary+news+Headlines> at 1 February 2013.

²⁰ *Convention between Great Britain and Russia concerning the limits of their Respective Possessions on the North-West Coast of America and the Navigation of the Pacific Ocean*, 16 February 1825, 75 Consolidated Treaty Series (CTS) 95.

²¹ As discussed the issue relates to the interpretation of the *Svalbard Treaty*, and in particular whether the Treaty applies to the continental shelf and EEZ.

²² *Agreement between the United States of America and the Union of Soviet Socialist Republics on the Maritime Boundary*, opened for signature 1 June 1990, (not entered into force at 18 December 2012) United States–Department of State <<http://www.state.gov/documents/organization/125431.pdf>> at 10 January 2013.

maritime boundary. The 2010 Barents Sea Treaty,²³ between Norway and Russia, is significant, where a new boundary was made generally equidistant between the respective state claims, supporting the point that JDZs are not a primary solution for maritime boundary disputes where the states concerned can agree on a final boundary delimitation; and

b) In the Southern Ocean region analysed in Chapter VI, the first consideration is the suspension of sovereignty claims under the Antarctic Treaty,²⁴ though this suspension is not without issues, such as Argentina's OCS submission to the CLCS.²⁵ The Antarctic Treaty regime has been effective in the suspension of sovereignty disputes. There are however potential disputes concerning the recognition of current Antarctic claims, the Argentina/Chile/United Kingdom overlapping landmass and maritime boundaries, the future of the Unclaimed Sector and related maritime zones, and the potential scope of the LOSC Area regime in the Southern Ocean.

D. Similarities to Current JDZs

Several Arctic and Southern Ocean maritime boundary disputes have similar characteristics to current JDZs, as analysed in Chapter VIII, and summarised in Table 8.1 and Appendix III. For example, the issue of unilateral claims were addressed in the Svalbard Treaty, the issue of historical treaties was addressed in Guinea-Bissau/Senegal JDZ,²⁶ the issue of claims based on the extension of the physical continental shelf compared to equidistance was addressed in the Australia/Timor-Leste JDZ,²⁷ the issue of disputed land sovereignty was addressed in the Malaysia/Brunei JDZ,²⁸ the issue of

²³ *Treaty Between the Kingdom of Norway and the Russian Federation Concerning Maritime Delimitation and Cooperation in the Barents Sea and the Arctic Ocean*, 15 September 2010, 2791 UNTS I-49095, Norwegian Government, Office of the Prime Minister, <<http://www.regjeringen.no/en/dep/smk/press-center/Press-releases/2010/treaty.html?id=614254>> at 20 February 2012 (entered into force 7 July 2011).

²⁴ As discussed, the principal delimitation issue relates to whether third party states will recognise territorial claims made prior to the entry into force of the *Antarctic Treaty*.

²⁵ *Outer Limits of the Continental Shelf – Argentine Submission*, 24, <http://www.un.org/Depts/los/clcs_new/commission_submissions.htm> at 9 January 2013.

²⁶ *Agreement on Management and Cooperation between the Government of the Republic of Guinea-Bissau and the Government of the Republic of Senegal*, 14 October 1993, 1903 UNTS 64, (entered into force 21 December 1995), ('*Guinea-Bissau and Senegal Agreement*').

²⁷ *Australia and Timor-Leste - Timor Sea Treaty*, 20 May 2002, 2258 UNTS 3 (entered into force 2 April 2003).

²⁸ *Exchange of Letters between Malaysia and Brunei Darussalam*, 16 March 2009, (not publicly released), referred to in Jeffrey J Smith, 'Brunei and Malaysia resolve outstanding maritime boundary issues' [2010] 1 *Law of the Sea Reports*

disputed island sovereignty was addressed in the Qatar/Abu Dhabi JDZ,²⁹ and the effect to be given to islands was addressed in the Malaysia/Vietnam JDZ.³⁰

On this basis JDZs can potentially be adapted to meet several of the circumstances of Arctic and Southern Ocean maritime boundary disputes. The analysis has included examples of cancelled JDZ agreements, as well as successful JDZs, to establish that JDZs are not a 'panacea' for all maritime boundary disputes. The prospects for a successful Argentine/United Kingdom JDZ, for example, currently appear remote, based on current Falklands/Malvinas dispute.³¹ On this basis, the success of JDZs depends largely on favourable political circumstances, where resource sharing is an acceptable outcome for both states. The analysis in Chapter III is that JDZs have overcome resource disputes in a substantial number of cases.

E. Polar Environmental Conditions

Arctic and Southern Ocean JDZs should be adapted to the related environmental conditions, and specific adaptations to the BIICL Model Agreement have been proposed. This is based on the analysis of the Model JDZ agreements and adaptations for the Arctic and Southern Ocean regions made in Chapter VII. These adaptations include integration with regional pollution prevention and control regimes such as the Arctic Council's MOPPR initiative, and state jurisdiction to the median line of a JDZ region to improve enforcement of environmental protection measures against third parties, similar to the Norway and Iceland/Jan Mayen JDZ.³² The revised BIICL Model Agreement, incorporating the proposed amendments, ('Arctic and Southern Ocean Model JDZ agreement') is included in Appendix I.

<<http://www.asil.org/losreports/LOSReportsVol12010w6Smith.pdf>> at 1 August 2012.

²⁸ 'Details Emerge of the 2009 Brunei-Malaysia Maritime Agreement' (2010) International Boundaries Research Unit

<http://www.dur.ac.uk/ibru/news/boundary_news/?itemno=10047&rehref=%2Fibru%2Fnews%2F&resubj=Boundary+news%20Headlines> at 15 August 2012. It is not known if the Agreement contains provisions for the protection of the environment.

²⁹ *Agreement Concerning Settlement of Offshore Boundaries and Ownership of Islands Between Qatar and Abu Dhabi*, 20 March 1969, 2402 UNTS 54, (entered into force 20 March 1969) ('*Qatar/Abu Dhabi Agreement*').

³⁰ *Memorandum of Understanding between Malaysia and the Socialist Republic of Vietnam for the Exploration and Exploitation of Petroleum in a Defined Area of the Continental Shelf Between the Two Countries*, 5 June 1992, National University of Singapore – Centre for International Law

<<http://cil.nus.edu.sg/rp/il/pdf/1992%20MOU%20between%20Malaysia%20and%20Vietnam%20for%20the%20Exploration%20and%20Exploitation%20of%20Petroleum-pdf.pdf>> at 31 July 2012 (entered into force 4 June 1993) ('*Malaysia/Vietnam Agreement*').

³¹ As discussed in Chapter VI, both the United Kingdom and Argentina had signed CRAMRA, however, which would have provided a multilateral JDZ regime for the Antarctic and Southern Ocean.

³² *Norway/Iceland Agreement*, 22 October 1981, 2124 UNTS 262, (entered into force 2 June 1982).

Measures are required to effectively protect the Arctic and Southern Ocean marine environments, as discussed in the analysis of the BIICL Model JDZ agreement and proposed adaptations discussed in Chapter VII. These measures include a significant liability regime, similar to the current Greenland Licence for the Exploration and Exploitation of Hydrocarbons, and the requirement for consortiums with sufficient financial strength to meet environmental costs on the scale of the *Deepwater Horizon* oil spill.³³ Arctic and Southern Ocean JDZs should also incorporate regional pollution monitoring and control measures, under the auspices of the Arctic Council and Antarctic Treaty regimes, on a similar basis to the European Maritime Safety Agency system of satellite monitoring,³⁴ and prepositioned oil spill response vessels;³⁵

F. Potential Polar JDZs

The conclusion based on the analysis in Chapter VIII is that JDZs may allow joint development of oil and gas resources in several Arctic and Southern Ocean regions. In the Arctic Ocean region, JDZs may therefore provide solutions allowing joint development for:

- The United States/Canada maritime boundary in the Beaufort Sea and Arctic Ocean as a bilateral JDZ;
- The United States/Russia maritime boundary in the Bering and Chukchi Seas and the Arctic Ocean as a bilateral JDZ; and
- Norway's Svalbard Islands continental shelf and OCS in the Greenland and Norwegian Seas and the Arctic Ocean as a multilateral JDZ.

³³ As discussed, current international treaties relating to oil pollution concern pollutions from vessels rather than oil platforms and subsea equipment, and generally limit liability in the amount of approximately USD 1 billion, compared to the costs of the *Deepwater Horizon* oil spill, which are in excess of USD 14 billion as at 2013.

³⁴ European Maritime Safety Agency, 'Satellite Oil Spill Monitoring' <<http://www.emsa.europa.eu/operations/cleanseanet.html>> at 24 April 2013.

³⁵ European Maritime Safety Agency, 'Stand-by Oil Spill Response Vessels' <<http://www.emsa.europa.eu/oil-recovery-vessels/vessel-inventory.html>> at 24 April 2013.

In the Southern Ocean, JDZs may provide multilateral solutions for joint development of the Southern Ocean continental shelf and OCS, on a similar basis to the CRAMRA regime, for:

- The Southern Ocean extending from sovereignty claims made by Norway, Australia, New Zealand and France, not generally recognised by other states;
- The Antarctic Peninsula and related ocean regions, including the Weddell Sea, where Chilean, Argentine and United Kingdom claims overlap;³⁶ and
- The potential continental shelf and OCS relating to the Unclaimed Sector.

A form of JDZ would also apply to the Arctic Ocean and Southern Ocean regions subject to the Area regime under LOSC Part XI. The potential development of the related offshore oil and gas resources will be delayed however due to the difficulties drilling at the water depths applying beyond continental shelves.

G. Terms of Polar JDZs

The terms of polar JDZs would generally provide for equal revenue sharing, based on the example of the Malaysia/Thailand JDZ, by allowing the respective states to tax an equal share of profits under their own taxation regimes. In the Southern Ocean, this principle may be extended to allow ISBA to be one of the sharing parties on behalf of the international community. The Antarctic claimant state may alternatively nominate one of the oil companies in the consortium for the development area, and then tax that company on its related income.

The provisions of JDZs should support regional governance, including measures such as Arctic Council or Antarctic Treaty representation on the respective JDZ Joint Commissions. This is based on the analysis of the public policy issues in Chapter IX. This should include environmental protection measures for the Arctic and Southern Ocean regions as regional ecological systems, based upon the interactions of plant and

³⁶ Donald R Rothwell, 'The Antarctic Treaty System: Resource Development, Environmental Protection or Disintegration?' (1990) 43(3) *Arctic* 284, 290.

animal species with the environment, rather than measures which only apply within a particular state's boundaries.

Proposals for the introduction of JDZs should also be developed with an understanding of the broader policy framework as discussed in Chapter IX. The development of new JDZs needs to take into account the political circumstances, and particularly that the proposed outcome is fair and equal, and is not perceived as a surrender of sovereignty.

H. Potential Game-changing Events

The last conclusion is that the future adoption of JDZs in Arctic and Southern Ocean regions is subject to potential game changing events, as discussed in Chapter X. These events may include the full independence in Greenland, increased autonomy in regions including Canada's Northwest Territories and Nunavut, political developments relating to the Svalbard Islands, the potential for a future Arctic Ocean Sanctuary, the potential effects of climate change, future serious oil spills in polar or other regions, and the potential for substantially improved pollution control measures.

3. Proof of Hypothesis

The principal research finding is that JDZs can effectively resolve competing claims arising where the LOSC continental shelf and OCS regimes provide potential entitlements to offshore oil and gas resources, but do not resolve the related boundary due to the proximity of opposite or adjacent coasts, the interpretation of treaties, or disputed sovereignty of land masses or islands. States may potentially also prefer not to submit boundary disputes to the ICJ or international arbitration. JDZs have been used to resolve a significant number of resource conflicts in disputed boundary regions, and several Arctic and Southern Ocean region maritime boundaries have similar characteristics to the boundary issues relating to current JDZs.

Analysis of the terms of JDZs including the BIICL Model Agreement, and their potential interaction with governance regimes such as the Arctic Council and Antarctic Treaty regimes, provides a strong basis for the development of future JDZs, including the need for effective environmental protection measures. The use of JDZs in the Arctic Ocean and Southern Ocean regions is also subject to game changing events, however,

including the potential effects of climate change, the development of polar governance regimes, and the political relations between the related states.

These research findings therefore prove the hypothesis that the establishment of Joint Development Zones for the development of offshore oil and gas resources in the Arctic and Southern Oceans can effectively resolve competing continental shelf and outer continental shelf (OCS) claims arising under the provisions of Article 76 of the United Nations Convention on the Law of the Sea.

APPENDIX I – ARCTIC AND SOUTHERN OCEAN MODEL JDZ AGREEMENT

1. Introduction

This Appendix sets out the Model JDZ agreement by the British Institute of International and Comparative Law in 1990,³⁷ together with amendments shown in italics as proposed in Chapter VII. The amendments relate, in particular, to the conditions in the Arctic and Southern Ocean regions, including the need for the strongest provisions for protection of the environment, the need for an effective liability and compensation provisions, and also take into account related developments since the publication of the BIICL Model in 1990. The amendments do not include precise legal terminology or legal drafting approaches, and retain the essential optionality provided in the original Model Agreement. The Model JDZ agreement is intended as a guide for preparing a specific bilateral JDZ agreement, which would need to incorporate the precise terms agreed between the state parties.

2. Model JDZ Agreement

THE MODEL AGREEMENT

Agreement between State X and
State Y on the Joint Development
of Petroleum in Areas of the Continental Shelf and/or the
Exclusive Economic Zone of the
Two Countries

STATE X AND STATE Y

Desiring to promote the friendly relations between them,

³⁷ Hazel Fox et al, *Joint Development of Offshore Oil and Gas, A Model Agreement for States for Joint Development with Explanatory Commentary* (British Institute of International and Comparative Law, 1990) vol 2, 1. The BIICL Working Group comprised Maurice Bathurst, DH Anderson, JP Armstrong, A Baker, RW Bentham, ED Brown, RR Churchill, MH Mendelson, J Merrett, Clive Symmons and Michael J Wilson. The Working Group was supported by Hazel Fox as Director of the BIICL and Editor of the publications, together with researchers with the BIICL.

Recognizing that the continental shelf and/or the exclusive economic zone adjacent to the two States have not been delimited and or may be subject of overlapping claims,

Noting the possibility that petroleum resources may exist in the area subject to such overlapping claims,

Considering that it is in the best interest of the two States to explore for and exploit any petroleum resources in an orderly fashion,

Convinced that such activities could best be carried out jointly,

Taking into consideration the Geneva Convention on the Continental Shelf of 1958 and the United Nations Convention on the Law of the Sea of 1982,

Affirming that the rules of international law will continue to govern questions not regulated by the provisions of this Agreement,

HAVE AGREED AS FOLLOWS:

ARTICLE 1 USE OF TERMS

For the purpose of the Agreement:

- (1) “applicable law” means the provisions of this Agreement, the terms of the development contract and the specified petroleum law;
- (2) “contractor” means any national which is a party to a development contract with development authority;
- (3) “development contract” means the agreement entered into between the development authority and a contractor pursuant to Article 11;
- (4) “contract area” means that part of a development area which is currently the subject of a development contract and excludes areas which have been relinquished by the contractor;
- (5) “development area” means the areas (if any) into which the Zone is divided for the purposes of the apportioning the supervision, administration and the regulation of petroleum activities between the development authorities;
- (6) “development authority” means the State Party, States Parties, or the Joint Commission which is empowered pursuant to this Agreement to enter into development contracts in respect of petroleum activities in the Zone or the relevant development area;
 - (a) “concurrent development authority” means a State Party which in respect of any development area is empowered under this Agreement to enter into a development contract with an applicant selected by it which in turn is required to enter into a joint operating agreement with the contractor of the other State Party exercising identical authority in the same development area;
 - (b) “joint development authority” means a State Party which in respect of any development area is empowered under this Agreement to enter into a development contract with the applicant of its choice and with the nominee of the other State Party as joint contractor each of which is required to obtain a similar development contract from the other State Party;

- (c) “sole development authority” means the Joint Commission or a State Party which in respect of any development area is alone empowered under this Agreement to enter into development contracts;
- (7) “installation” means any structure, device or artificial island utilised in petroleum activities, installed above, in, on or under the seabed including drilling vessels in situ;
- (8) “Joint Commission” means the Commission established by Article 5 with functions set out in Article 6;
- (9) *“median line” is the line within the Zone which lies equidistant between the respective maritime claims of the State Parties.*
- (10) “national” means a natural or juridical person having the nationality of one or both of the States Parties in accordance with the laws and regulations of the relevant State Party;
- (11) “operating agreement” means a contract concluded between the holders of development contracts, for the purpose of carrying out petroleum activities in the Zone;
- (12) “operator” means the holder of a development contract with a development authority appointed and acting as operator under the terms of the operating agreement which has been approved by the appropriate development authority or authorities;
- (13) “petroleum” means crude oil and natural gas deposited beneath the subsurface together with other underground minerals which are produced in association with them;
- (14) “petroleum activities” means all activities of exploration for and exploitation of the petroleum of the Zone;
- (15) “Zone Plan” means the development plan agreed by the States Parties pursuant to Articles 6 and 7 for the petroleum activities in the Zone;
- (16) “pollution” means the introduction by reason of petroleum activities in the Zone 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, impairment of quality for use of sea water and reduction of amenities;
- (17) “specified petroleum law” means the system of law applicable to petroleum activities or activities in connection therewith in the Zone, development area or contract area as established in the Zone Plan by virtue of the provisions of Articles 7 and 8;
- (18) “Zone” means that area of seabed, ocean floor and subsoil:
- (a) bounded by geodesic lines joining the following points using the Datum in the order listed:
- (i) LatLong
- (ii) LatLong
- (iii) LatLong
- (b) the sea floor limits of which are set by perpendicular lines dropped from the sea level boundary; and
- (c) extended where necessary to include a reasonable safety zone around any installation constructed within the Zone for the purpose of petroleum activities.

ARTICLE 2

JOINT DEVELOPMENT ZONE

- (1) The Zone is hereby established for the purpose of developing petroleum within its boundaries and all petroleum activities in the Zone shall be governed by this Agreement.
- (2) The States Parties by subsequent agreement may make arrangements for the development of other mineral and non-living resources of the Zone.
- (3) The Joint Commission shall, for illustrative purposes only, depict the boundaries of the Zone on a chart or charts of appropriate scale.

ARTICLE 3 PRINCIPLES OF JOINT DEVELOPMENT

- (1) The States Parties shall promote the joint development of petroleum of the Zone and share [equally or in such other agreed proportion] the rights and obligations arising from petroleum activities through the mechanism established by this Agreement.
- (2) No petroleum activities shall be conducted in the Zone except in accordance with this Agreement and measures adopted pursuant to it.
- (3) The States Parties shall:
 - (a) further joint development of the Zone's petroleum by cooperating fully in the supervision and conduct of petroleum activities;
 - (b) consult through the medium of the Joint Commission when matters arise which may affect the interests of either State Party;
 - (c) Wherever possible co-ordinate their interests in the joint development of the Zone.
- (4) The petroleum of the Zone shall be exploited efficiently and in a manner consistent with generally accepted good oilfield practice and with due regard to the protection of the marine environment.
- (5) Subject to the petroleum activities of the States' Parties under this Agreement the joint development of the Zone shall be carried on with due respect for the rights of other States in the Zone.

ARTICLE 4 WITHOUT PREJUDICE CLAUSE

- (1) Nothing contained in the Agreement shall be interpreted as a renunciation of any right or claim relating to the Zone by either State Party or a recognition of or support for the other State Party's position with regard to any right or claim to the Zone.
- (2) No act or activities taking place as a consequence of this Agreement or its operation shall constitute a basis for asserting, supporting or denying the position of either State Party with regard to rights or claims over the Zone.
- (3) Unless otherwise agreed between the States Parties negotiations on the issue of final delimitation shall be postponed for the duration of the Agreement.

ARTICLE 5
THE JOINT COMMISSION

- (1) The Joint Commission is hereby established as the body responsible for the overall supervision of petroleum activities in the Zone, for the preparation of the Zone Plan and such functions in respect of the administration of petroleum activities in the Zone as may be devolved upon it pursuant to the Zone Plan and Article 6 of this Agreement. *The Joint Commission is primarily responsible for the enforcement of the petroleum laws of each State Party on their respective sides of the median line separating the Zone between the State Parties. Each State Party however retains the ultimate power of enforcement of petroleum laws on their respective sides of the Median Line. [All petroleum regulations applying to any petroleum development in the Southern Ocean, including the region subject to the regime of the area under Part XI of the United Nations Convention on the Law of the Sea, shall require the approval of at least two thirds of the Antarctic Treaty Consultative Parties at any Antarctic Treaty Consultative Meeting].*
- (2) The Joint Commission shall consist of an equal number of representatives of each State Party *together with one representative of the [Arctic Council/Antarctic Treaty Secretariat]*, and all decisions of the Joint Commission whether on matters of procedure or of substance shall require the consent of the representatives of both States Parties.
- (3) The Joint Commission shall appoint a Technical Committee composed of equal numbers of technical advisers nominated by each State Party and possessing appropriate qualifications relevant to petroleum activities. On entry into force of this Agreement the Technical Committee shall be in continuous session.
- (4) The tasks of the Technical Committee shall be the day to day supervision of joint development including the examination of development contracts, the provision of advice and recommendations to the Joint Commission on technical matters and other issues referred to it by the Joint Commission.
- (5) The Joint Commission shall meet within [six] months of the entry into force of this Agreement and thereafter once annually or as it may agree, or on the request of either State Party or as necessary to perform its functions under this Agreement.
- (6) The Joint Commission may establish a permanent secretariat to carry out the administrative work of the Joint Commission. Where the Joint Commission is not a development authority it shall not establish a permanent secretariat without first investigating other methods of servicing its administrative needs. The Joint Commission shall meet at the site of the Secretariat or if none is established at such places alternating between the territories of the States Parties as they may determine.
- (7) The Joint Commission shall have such legal personality and shall enjoy in the territory of each of the States Parties such legal capacity as may be necessary to perform those functions which are, or may be, devolved to it under the Agreement and to enable it to achieve the objectives of this Agreement.
- (8) Unless otherwise agreed reasonable administrative expenses incurred by the Joint Commission shall be paid from the date of the establishment of the Joint Commission. These expenses shall be shared equally between the States Parties which shall make timely contributions to its funds in accordance with budgetary procedures to be agreed between them. The Joint Commission shall comply with the budgetary procedures and make efficient use of its available resources. The Joint Commission may defray its costs by charging fees or rentals in respect of

applications for development contracts which shall not exceed the reasonable costs of their processing.

- (9) The official languages of the Commission shall be X, Y or such other language as the Commission may decide.
- (10) In fulfilling the functions of the Joint Commission under this Article, the representative members of the States Parties, staff of the Joint Commission and any technical advisers shall have no financial interest in petroleum activities in the Zone. Subject to their responsibilities to the States Parties, they shall not disclose, even after the termination of their functions, any industrial secret or proprietary data which are transferred to the Joint Commission, or any other confidential information coming to their knowledge by reason of their membership of or employment with the Commission.
- (11) Subject to lawful restrictions as to disclosure and use the States Parties shall exchange information received by contractors in respect of the Zone. Each State Party undertakes to receive such information as confidential and, except for the use of the Joint Commission or the Technical Committee, not further to disclose or use it inconsistently with such restrictions.
- (12) *The Joint Commission shall establish a Finance Committee responsible for financial reporting of all Joint Commission's activities in the JDZ, together with the taxation income of State Parties from all petroleum activities in the Zone. The accounts of these activities are to be prepared annually. The accounts are to be audited by an international accounting firm in accordance with International Accounting Standards (IAS), and the audited accounts are to be made public.*

ARTICLE 6 FUNCTIONS OF THE JOINT COMMISSION

- (1) The Joint Commission shall be the body responsible to the States Parties for planning, co-ordinating and supervising the joint development of the petroleum of the Zone in furtherance of the objectives of this Agreement and in application of the principals set out in Article 2 above.
- (2) In addition to its general role under paragraph 1 above the Joint Commission shall have the following functions:
 - (a) the preparation of submissions to the States Parties in respect of the determination of the Zone under Article 1 together with the carrying out of any incidental survey work;
 - (b) the collection and exchange of scientific, technical and other data concerning petroleum in the Zone;
 - (c) the preparation and submission of the Zone Plan for the States Parties' joint approval;
 - (d) the carrying out of such tasks as development authority for the Zone or any development area as may be allocated to it under the Zone plan;
 - (e) the recommending to the States Parties the proper application of and such changes to the specified petroleum law as may be necessary to promote the development of the petroleum of the Zone, *and the enforcement of all measures for the protection of the marine environment promulgated by the [Arctic Council/Antarctic Treaty Secretariat];*
 - (f) the supervision and implementation of this Agreement;

- (g) the consideration of matters referred to it by either State Party;
- (h) the submission of proposals for the regulation of fishing, marine scientific research, the laying and maintenance of submarine cables and pipelines and the preservation of the marine environment in the Zone, having regard both to the need to facilitate the development of petroleum and to the relevant standards and rules of international law including any treaty provisions in force between the States Parties;
- (i) the recommendation of arrangements for the joint exploitation of any mineral resource, apart from petroleum, which may be discovered within the Zone;
- (j) such other functions as may be specified elsewhere in this Agreement or which the States Parties may regard as necessary to fulfill its objects and principles.

ARTICLE 7 PREPARATION OF THE ZONE PLAN

- (1) As soon as practicable following the entry into force of this Agreement the Joint Commission shall meet in order to prepare the Zone Plan which shall establish the manner in which the petroleum of the Zone shall be developed and petroleum activities regulated. The Joint Commission shall submit the completed Zone Plan to the States Parties for their approval under Article 6 above.
- (2) Preparation of the Zone Plan shall require determination of the matters set out in paragraphs 3, 4 and 5 within the framework of those provisions. The Joint Commission may consider them in any order but unless otherwise agreed by the States Parties the Joint Commission shall in making its determination be limited to the various alternatives specified in those paragraphs. The Joint Commission in preparing the Zone Plan shall be guided by the principles established in Article 3.
- (3) The States Parties shall inform each other of all claims to continuing rights in respect of petroleum activities in the Zone arising under their national laws existing at the date of this Agreement and the proposed method of dealing with those claims. The States Parties shall endeavor to reach agreement on the operation of the Zone Plan in relation to those claims without prejudice to the principle contained in Article 3(2) above.
- (4) The Joint Commission may treat the Zone as a single area or divide it into development areas for the purpose of allocating responsibility for the administration of petroleum activities in the Zone between itself and the States Parties under paragraph 5 below. In reaching its decision the Joint Commission shall take into account such factors as appear relevant to it including the size and location of the Zone, its known characteristics (including geological structure and environmental sensitivity), the degree of commercial interest in petroleum activities, and the number of potential licensing areas. Any development area into which the Zone is divided may consist of one or more contract areas whose size shall be determined by the competent development authority.
- (5) The Zone Plan shall in respect of the Zone or any development area into which it is divided designate:
 - (a) the Joint Commission as sole development authority (in which case it may delegate some or all of its administrative or regulatory functions to either State Party); or

- (b) either State Party as sole development authority; or
- (c) both State Parties, as concurrent or joint development authorities.

A development authority's powers and responsibilities shall derive from this Agreement and be exercised on behalf of both State Parties.

- (6) The Joint Commission shall in the Zone Plan establish the specified petroleum law for the Zone, development areas or contract areas as appropriate (which together with the provisions of this Agreement and the terms of the development contract shall be the applicable law governing petroleum activities in the Zone) in the following manner:
 - (a) where the Joint Commission is to be the sole development authority for the whole Zone or any development area it shall endeavor to agree in the selection of the law of either State Party in respect of petroleum activities as the specified petroleum law for the Zone or area in question. Failing agreement the Joint Commission shall be deemed to have selected the law of the State Party whose national is the contractor or (if more than one contractor) whose national is the operator as the specified petroleum law for the relevant development or contract area where appropriate;
 - (b) where a State Party is sole development authority for any development area its laws in respect of petroleum activities shall be deemed to have been selected as the specified petroleum law for the area;
 - (c) where there are concurrent or joint development authorities in respect of any development area the holders of development contracts over the same contract area shall enter into an operating agreement, and the law in respect of petroleum activities of the State Party whose national is appointed operator shall be deemed to have been selected as the specified petroleum law for the relevant contract area.
- (7) The operation of the specified petroleum law as established pursuant to paragraph 6 shall be without prejudice to either State party's claims in respect of the delimitation of its maritime boundaries affected by the Zone and shall carry no implication other than of temporary administrative convenience. Furthermore the exercise under this Agreement of any jurisdiction in respect of petroleum activities by a development authority shall be deemed to be on behalf of both States Parties.

ARTICLE 8 COMPLIANCE AND ENFORCEMENT

- (1) All petroleum activities in the Zone shall be carried on in accordance with the applicable law.
- (2) States Parties shall take all appropriate measures within their national legal systems to enforce the applicable law.
- (3) States Parties shall render all necessary and reasonable assistance and support to the Joint Commission or any other development authority in ensuring that contractors comply with the applicable law. The manner of such support shall be decided by the Joint Commission from time to time.
- (4) The taxation regime adopted pursuant to the provisions of Article 9 shall apply and prevail to the extent of any inconsistency with the specified petroleum law.

- States Parties, and in particular each State Party's national taxation authority, shall apply the taxation regime adopted pursuant to the provisions of Article 9.
- (5) Inspection rights pursuant to Article 22 paragraph 1(c) and the procedures agreed by the States Parties pursuant to Article 20 for the safety of installations and the health and safety of personnel and Article 21 for the prevention of pollution and the protection of the marine environment shall apply and prevail to the extent of any inconsistency with the specified petroleum law.

ARTICLE 9 FINANCIAL TERMS OF DEVELOPMENT CONTRACTS

- (1) The financial including fiscal obligations of contractors to the States Parties in respect of petroleum activities in the Zone shall be exclusively determined by the financial terms of development contracts established under this Article. Development authorities (subject to the consent of the Joint Commission where paragraphs 3 or 4 apply) may agree to incorporate alternative financial terms in order to encourage investment in the Zone or relevant development area. "Financial terms" shall include all obligations in the nature of taxation (whether production or income based) and other financial obligations including but not limited to royalties, payments in kind, production sharing arrangements, income and corporation taxes and resource rentals. *Unless as otherwise agreed by the State Parties, the fiscal obligations will comprise the tax on corporate profits, and royalties on petroleum production, as determined under each State Party's fiscal laws, with half the amounts so calculated to be payable to the respective State Party.*
- (2) The financial terms of a development contract between a concurrent development authority and a contractor shall be those imposed by the taxation regime of that concurrent development authority. A State Party which is a concurrent development authority for the Zone or any part thereof shall not tax a contractor with whom it does not have a development contract. Neither State Party shall tax any contractor pursuant to this paragraph in respect of installations plant and equipment used in petroleum activities in the Zone other than in proportion to the interest held by the contractor in those assets.
- (3) The States Parties may agree to adopt the taxation regime of one State Party in respect of offshore exploration or exploitation activities for application to petroleum activities in the Zone.

In this event:

- (a) the development authority or authorities shall on behalf of the States Parties incorporate the taxation regime so chosen into the terms of all development contracts;
- (b) the taxation authorities of the State Party whose taxation regime is so chosen shall be responsible to the States Parties (represented for this purpose by the Joint Commission) for the administration and collection of all taxation in respect of petroleum activities in the Zone, and shall enjoy the cooperation of the taxation authorities of the other State Party;
- (c) all revenues received by any taxation authorities pursuant to this provision shall be accounted for and divided equally between the States Parties unless otherwise agreed.

The adoption of a State Party's taxation regime pursuant to this provision shall carry no implication other than convenience and ease of administration.

- (4) Alternatively the States Parties may delegate to the Joint Commission powers to formulate and negotiate the financial terms of development contract. In this event:
 - (a) the Joint Commission shall take due account of and balance the needs to:
 - (i) obtain optimum revenues for the State Parties from commercial exploitation of the petroleum;
 - (ii) encourage commercial exploitation and provide incentives for investment;
 - (iii) ensure clarity and certainty of operation;
 - (iv) ensure to the extent reasonable and practicable that the contractors' tax payments under the financial terms qualify for double taxation relief in relevant third party States;
 - (b) at the request of the Joint Commission the taxation authorities of either or both States Parties shall administer the financial terms of the development contracts and collect and account to the Joint Commission for all payments received from the contractors. All monies so received shall be divided equally between the States Parties unless otherwise agreed.
- (5) Unless paragraphs 2, 3 or 4 apply, the financial obligations under each of the States Parties' taxation regimes in respect of national exploration and exploitation shall apply to contractors but at reduced rates calculated to ensure that liability of the contractor under each of the dual sets of financial conditions does not exceed fifty per cent (or other agreed share) of that which would obtain if the contract were subject to the particular set of financial conditions alone. Each State Party's own taxation authorities shall:
 - (a) collect the payments due from the contractor under its part of the dual financial terms and provide statements of account to the Joint Commission;
 - (b) cooperate with and assist the Joint Commission in the administration of the financial terms.
- (6) Unless the parties otherwise agree the financial terms of a development contract may be varied only in accordance with its provisions. Any such variation shall also require the consent of the Joint Commission.
- (7) The States Parties shall take all appropriate measures within their national legal systems to enforce the financial terms. In addition the States Parties shall take such steps as seem to them appropriate (including the negotiation or amendment of agreements for the avoidance of double taxation) to ensure (to the extent reasonable and practicable) that contractors' tax payments under the financial terms qualify for double taxation relief in relevant third party States.
- (8) The financial terms of development contracts established under this Article are intended to be the sole taxation system applicable to the Zone. Neither State

Party shall tax petroleum activities in the Zone or the proceeds deriving therefrom except in accordance with this Article. Nothing in this provision shall affect the States Parties' rights to tax any profits arising from the processing or further treatment of petroleum beyond the initial treatment necessary to effect its sale as a raw material.

- (9) Any sums due from one State Party to the other under the revenue sharing provisions of this Article shall not be subject to any deduction for administrative expenses except as agreed by the Joint Commission.
- (10) *The State Parties agree to provide tax stability to the parties to the development contract, and specifically to provide that the respective governments will not increase their respective corporate income taxes, or royalties, on the oil and gas investment in the Zone.*

ARTICLE 10 APPROVAL OF THE ZONE PLAN

- (1) The Zone Plan shall require the joint approval of the States Parties for its implementation. Any such approval shall be published in an appropriate manner by the States Parties.
- (2) In the event that either State Party has not approved the Zone Plan within..... months of its submission the Joint Commission shall reconsider the Zone Plan and where appropriate revise it.
- (3) If joint approval has not been obtained within two years of this Agreements entry into force the States Parties shall meet with a view to facilitating such approval.
- (4) Matters which are not included in the Zone Plan shall be governed by this Agreement, or in the absence of any provision in this Agreement by supplemental agreement between the States Parties.

ARTICLE 11 DEVELOPMENT CONTRACTS

- (1) No petroleum activities may be undertaken other than pursuant to a development contract, which may take the form of a license, concession, production sharing contract or other contractual arrangement. *Unless as agreed otherwise by the State Parties, the development contract will be made on the concession basis.*
- (2) Nationals of either State Party may apply to the appropriate development authority for a development contract covering any or all petroleum activities. Applications shall include a detailed work programme, environmental impact statement and such other information as the development authority may determine.
- (3) Development authorities other than the Joint Commission shall apply their own national application, selection and contracting procedures with such modifications as may be required by the terms of this Agreement or such guidelines as the Joint Commission may publish.
- (4) The Joint Commission or State Party acting as development authority for the Zone or a development area shall apply application, selection and contracting procedures which may or may not derive from the specified petroleum law and which it shall publish.

- (5) In exercising its development authority, the Joint Commission may refer any matter to the Technical Committee for consideration and recommendation (as to contractor or development contract).
- (6) All development authorities, including the Joint Commission, shall in addition to the requirements of the applicable petroleum law have regard to the following matters when deciding whether or not to enter into a development contract:
- (a) prior exploration and expenditure in the Zone;
 - (b) economic benefits to the States Parties likely to accrue from the implementation of the applicants' work programme;
 - (c) provision of satisfactory safeguards for the protection of the marine environment;
 - (d) any unreasonable interference with the interests of other states or other lawful uses of the Zone;
 - (e) financial and technical qualifications of the applicants including the relevant experience of the proposed operator;
 - (f) contribution of the work programme to the local employment and training policies of the States Parties.
 - (g) *capability to fully comply with all regional measures for the protection of the marine environment promulgated by the [Arctic Council/Antarctic Treaty Secretariat].*
 - (h) *proposal in the form of a consortium of at least three unrelated oil and gas companies, each member of which has undertaken to meet the full costs for environmental remediation of potential oil pollution damage, and each member of which has the financial capacity to meet such costs of at least [USD 14 billion].*

All development contracts shall contain undertakings to comply with the provisions of this Agreement and the specified petroleum law.

- (7) In the event of competing applications the Joint Commission as development authority may:
- (a) in its discretion grant to one applicant a development contract;
 - (b) invite the applicants to resolve the competition within a prescribed time amongst themselves by means of their own choice failing which the Joint Commission may, having regard to the considerations referred to in paragraph 6(e) above, award a development contract to an applicant; or
 - (c) where no grant can be achieved by (a) and (b) above, invite the applicants to make competitive bids for contracts in which case the Joint Commission shall award a development contract to the highest bidder who satisfies the other requirements of the contract.
- (8) The processing of applicants and the granting of development contracts whether by the States Parties or the Joint Commission shall proceed expeditiously following publication of the joint approval of the Zone Plan under Article 10. Where no decision has been reached on any application within [two years] of the date of its submission, such application shall be deemed to have been rejected.
- (9) Development authorities shall maintain a register open to inspection by potential contractors which shall contain up-to-date details of the identity of applicants or contractors, location and area covered by development contracts or applications, transfers and terms of contracts. The work programme and commercial terms shall remain confidential.

- (10) *The provisions of any bilateral investment treaty between any State Party, and the state of incorporation of any party under a development contract, will continue to apply in respect of that State Party's tax and royalties imposed on petroleum activities in the Zone.*
- (11) *The Finance Committee shall be responsible for enforcing compliance by parties to development contracts with the respective tax and royalty provisions, and shall appoint an international accounting firm to audit compliance with the fiscal provisions of parties under development contracts, and to certify that tax and royalties have been correctly determined and paid to the respective State Parties.*

ARTICLE 12

ACCESS TO OPERATIONS

In order to ensure the application of the principals of joint development under Article 2 above each State Party shall in addition to its rights under Article 22 be entitled to:

- (a) non-discriminatory consideration of its nationals' applications for development contracts;
- (b) monitor operations and be kept regularly informed on the progress of petroleum activities in the Zone or relevant development areas;
- (c) obtain access to geological data subject to the confidentiality provisions of this Agreement;
- (d) independently meter any petroleum activities including necessary access to installations.

Nothing in this provision shall entitle a State Party which is not a development authority for the relevant area to interfere in day to day operations except as provided in Article 22. The States Parties shall adopt procedures in respect of metering production designed to ensure agreement on the quantities of petroleum uplifted.

ARTICLE 13

RIGHTS AND DUTIES OF CONTRACTORS

- (1) Contractors shall have exclusive rights to carry out the petroleum activities authorised under the development contract for its duration subject to compliance with its terms and the specified petroleum law.
- (2) The contractor shall be entitled to dispose of any petroleum to which it is entitled under the development contract subject only to any non-discriminatory restrictions the development authority may impose on landing, identity of the purchaser and verification of the volumes uplifted.

ARTICLE 14

CANCELLATION OR SUSPENSION OF DEVELOPMENT CONTRACTS

- (1) Development contracts shall not be cancelled, suspended or revised other than for the contractor's failure to comply with the terms of the development contract of which it has notice and opportunity to remedy.
- (2) Nothing in this Article shall affect a development authority's or States Parties' rights to suspend a contractor's rights under a development contract in the event of a serious threat to the marine environment or danger to health and safety arising out of the contractor's operations.
- (3) Any breach of paragraph 1 of this Article shall entitle compensation.
- (4) In the event that a development authority cancels a development contract held jointly by more than one contractor the development authority shall offer a new development contract to the contractor(s) not in default on similar terms to those of the previous development contract subject to their acceptance of a replacement contractor of the same nationality as the defaulting contractor(s).
- (5) Should a concurrent development authority cancel a development contract it shall be responsible for ensuring that a replacement contractor enters into a new joint operating agreement with the contractor of the other concurrent development authority on similar terms to that of the existing joint operating agreement. Until this is done and unless the Joint Commission directs otherwise the remaining contractor may continue petroleum activities under the sole risk operating provisions of the existing joint operating agreement.

AGREEMENT 15 ASSIGNMENT

A contractor's rights and obligations under a development contract shall not be transferred without the consent of the relevant development authority. The development authority shall not unreasonably withhold its consent where the proposed transferee is financially and technically qualified and otherwise meets the requirements of the development authority (administered on a non-discriminatory basis) and this Agreement.

ARTICLE 16 CUSTOMS AND DUTY EXEMPTIONS

- (1) Petroleum equipment shall not be subject to any customs duties or other taxes and duties in respect of its use in the Zone or import or export incidental to that use from or to areas within the jurisdiction of either State Party unless and to the extent the Joint Commission otherwise agrees. Nothing in this Article shall affect a State Party's rights in respect of the export following the completion of its use in the Zone of petroleum equipment having the territory of that State Party as its country of origin.
- (2) The shipment of petroleum extracted from the Zone to areas within the jurisdiction of the States Parties shall be free of all taxes and duties other than those provided for in the financial terms of the relevant development contract. For the purposes of this Article "petroleum equipment" shall include installations, plant and equipment (including drilling rigs) together with materials and other goods necessary for the conduct of petroleum activities in the Zone.

ARTICLE 17
OPERATIONS BY CONTRACTORS IN THE
TERRITORY OF THE STATES PARTIES

Contractors may acquire, construct, maintain, use and dispose of in the territory of either State Party, buildings, platforms, tanks, pipelines, terminals and other facilities necessary for petroleum activities in the Zone in accordance with the laws and regulations of the State Party in whose territory such ancillary petroleum activities are being undertaken.

ARTICLE 18
UNITISATION

- (1) If any single geological petroleum structure or petroleum field extends across any diving line not being one covered by paragraph 2 below, the States Parties shall consult together in accordance with Articles 23 and 24 as appropriate.
- (2) If any single geological petroleum structure or petroleum field extends across the diving line between any development or contract areas within the Zone or across the dividing line between the Zone and any undisputed exclusive maritime area of one of the States Parties, and the part of such structure or field which is situated on one side of the said dividing line is exploitable, wholly or in part, from the other side of the said dividing line, the States Parties shall, on failure of the contractors (if any) to agree among themselves, seek to reach agreement as to the manner in which the structure or field shall be most effectively exploited and the manner in which the proceeds deriving therefrom shall be apportioned.

ARTICLE 19
EMPLOYMENT AND TRAINING OF PERSONNEL

The Joint Commission may issue guidelines in respect of the employment and training policies to be followed by contractors in the Zone for the purposes of:

- (a) enhancing the employment opportunities of nationals consistent with the efficient and safe conduct of petroleum activities;
- (b) assisting to the extent practicable the equitable division of employment and training benefits between the States Parties.

The terms of development contracts shall comply with such guidelines. The States Parties shall cooperate in the administration of their immigration and employment laws so as to facilitate the issue of visas and work permits.

ARTICLE 20
HEALTH AND SAFETY

- (1) The State Parties undertake to make every reasonable endeavour to secure the health and safety of personnel engaged in petroleum activities and safety of the installations and pipelines in the Zone.
- (2) In accordance with paragraph 1, the States Parties on the recommendation of the Joint Committee shall agree standards and procedures in respect of health and safety of personnel, design, construction, and maintenance of installations and pipelines for all petroleum activities in the Zone. In particular these measures shall:
 - (a) take into account generally accepted international standards established through a competent international body
 - (b) be implemented under the specified petroleum law agreed under Article 7 supplemented by such modifications including waivers as the Joint Commission may recommend as necessary to achieve those standards and procedures.
- (3) In order to ensure the implementation of the measures under paragraph 2 above the States Parties on the recommendation of the Joint Commission undertake to adopt administrative procedures for the exchange of information concerning health, safety and construction standards.
- (4) *The Joint Commission is primarily responsible for the enforcement of the health and safety laws of each State Party on their respective sides of the median line separating the Zone between the State Parties. Each State Party however retains the ultimate power of enforcement of health and safety laws on their respective sides of the Median Line.*
- (5) *No flag of convenience ship or vessel may be used by the operator, any consortium member, or any of their contractors, for any activity relating to petroleum operations in the Zone.*

ARTICLE 21
PREVENTION OF POLLUTION AND PROTECTION
OF THE MARINE ENVIRONMENT

- (1) The States Parties shall use all reasonable endeavors to ensure that petroleum activities in the Zone or the operation of any installation or pipeline involved in those activities shall not cause nor be likely to cause pollution of the marine environment.
- (2) In accordance with paragraph 1 the States Parties on the recommendation of the Joint Commission shall agree necessary measures and procedures to prevent and remove pollution of the marine environment resulting from petroleum activities in the Zone.

In particular those measures shall:

- (a) be implemented under the specified petroleum law agreed under Article 7 supplemented by such modifications, including waivers, as the Joint

- Commission may recommend as necessary for such agreed measures and procedures;
- (b) be based on good oilfield practice taking account of any international rules, standards, recommended practices and procedures, in particular those promulgated by the United Nations Environmental Programme, the International Maritime Organisation and other relevant international bodies;
 - (c) include provision for the prevention of blow-outs, prevention or control of discharge of petroleum from an installation or pipeline, discharge or dumping of waste, or abandonment of an installation or pipeline;
 - (d) establish a contingency plan for combating pollution from petroleum operations;
 - (e) ensure recourse in accordance with States Parties' legal systems for prompt and adequate compensation or other relief in respect of damage caused by pollution of the marine environment by natural or juridical persons under their jurisdiction.
 - (f) *apply all regional measures for the protection of the marine environment promulgated by the [Arctic Council, including the Arctic Marine Oil Pollution Preparedness and Response ('MOPPR') measures/Antarctic Treaty Secretariat].*
 - (g) *accept supervision of all measures for the prevention of the marine environment by the [Arctic Council/Antarctic Treaty Secretariat].*
 - (h) *ensure that sufficient standby emergency response vessels are provided by operator and other consortium members and that these vessels are pooled with other petroleum operations in the region of the Zone.*
 - (i) *ensure compliance with annual environmental audit by international firms to ensure that operator and other consortium members and their subcontractors meet agreed contact standards for the protection of the marine environment.*
- (3) In order to facilitate the effective monitoring of the environmental impact of operations in the Zone both States Parties shall regularly provide the Joint Commission with relevant information obtained from their contractors or inspectorate concerning level of petroleum discharge and contamination. In particular the Joint Commission shall be immediately informed of the occurrence of the following events:
- (a) petroleum spillage or event likely to cause pollution;
 - (b) discharge of large quantities of petroleum from an installation or pipeline;
 - (c) collision involving an installation or pipeline;
 - (d) evacuation of personnel from an installation due to force majeure, distress or other emergency.

The notification shall include any measures taken with respect to such events.

- (4) Nothing in this Agreement shall prejudice the taking or enforcement by each State Party or by the States Parties jointly of measures in the Zone proportionate to the actual or threatened damage to protect their coastline or related interests, including fisheries, from pollution or threat of pollution from events of the type referred to in paragraph 3(a) to (d) above which may reasonably be expected to result in major harmful consequences.

- (5) *The laws, regulations and standards for the protection of the marine environment are those as applying at any time from the date of this Agreement, including all amendments made to those laws, regulations and standards, and all provisions replacing those laws, regulations and standards.*
- (6) *To ensure that no flag of convenience ship or vessel is used for any activity relating to petroleum operations in the Zone, compliance with this prohibition is included in the annual environmental audit of the operator and other consortium members and their subcontractors.*
- (7) *Each member of the consortium of oil and gas companies must guarantee to undertake to meet the full economic damages and costs for environmental remediation of oil pollution damage, including all damages caused directly or indirectly by the operator, other consortium members and their subcontractors. This includes damages suffered by State Parties, their companies and nationals, and by other States, their companies and nationals. The guarantees are to be provided by the operator and consortium companies conducting petroleum operations in the Zone together with their ultimate parent companies.*

ARTICLE 22 INSPECTION RIGHTS

- (1) The State Party whose laws constitute the specified petroleum law ("the responsible State Party") shall have sole responsibility for the inspection of installations and pipelines and for the supervision of operations carried out on such installations situated in the Zone, development area or contract area subject to that law. The States Parties undertake to agree certification procedures for inspectors and exchange information with each other regarding inspection and supervision pursuant to this paragraph.
- (2) The responsible State Party shall grant access to the inspectors of the other State Party and for their equipment to enable its inspectors to satisfy themselves that the requirements of Articles 20 and 21 of this Agreement are being observed. Where, in the opinion of the inspectors of the other State Party, the requirements of Articles 20 or 21 are not being observed, that State Party may by written notice request the responsible State Party to remedy the situation.
- (3) In the event of disagreement between the inspectors of the two States Parties, or if the inspector of one State Party refuses to take action at the request of the inspector of the other, the matter shall be referred to the Joint Commission.
- (4) An inspector of either State Party may order the immediate cessation of any or all operations in the Zone provided:
 - (a) such a course appears to him necessary or expedient for the purpose of:
 - (i) avoiding an accident involving loss of life or danger to life, (whether the danger is immediate or not);
 - (ii) avoiding actual or threatened damage to protect the coastline or related interests of the State Party, including fishing, pollution or threat of pollution due to force majeure distress or an emergency

- which may reasonably be expected to result in major harmful consequences;
 - (iii) minimising the consequences of such a casualty or other accident; and
- (b) time and circumstances do not permit consultation between the inspectors of the two States Parties; and
 - (c) the issue and reasons for such an order are reported immediately to the Joint Commission which shall thereafter meet promptly to consider the actions necessary for the safe and speedy resumption of operations.

ARTICLE 23 SETTLEMENT OF DISPUTES

- (1) All disputes between:
 - (a) the States Parties concerning the interpretation or application of this Agreement; or
 - (b) a development authority and a contractor concerning interpretation or application of a development contract; or
 - (c) contractors of concurrent or joint development authorities concerning the interpretation or application of a joint operating agreement,

other than those within (b) in which the Joint Commission is the development authority, shall be referred first to the Joint Commission for its mediation before resolution under the ensuing paragraphs of this Article.

- (2) Unless the States Parties otherwise agree, disputes between them under paragraph 1(a) shall at the instance of either be referred to an arbitral tribunal ("the Tribunal") for resolution. Referral shall be made at any time following 60 days from referral to the Joint Commission under paragraph 1(a) by either State Party's notice to the other of its appointment under paragraph 2(a). The Tribunal shall be constituted and determine the dispute in the following manner:
 - (a) each State Party shall appoint one arbitrator and the two arbitrators so appointed shall within 60 days of the appointment of the second arbitrator appoint a national of a third State as third arbitrator who shall act as Chairman of the Tribunal;
 - (b) in the event that a State Party fails to appoint an arbitrator within 60 days of receiving notice of the other State Party's appointment or the two arbitrators fail to appoint a third arbitrator within 60 days of the appointment of the second, then the President of the International Court of Justice at the request of either State Party shall fill the vacancy by appointing a national of a third State;
 - (c) should the President of the International Court of Justice be a national of either State Party or habitually resident in the territory of a State Party or otherwise unable to act then the appointment shall be made by the next most senior judge who is not a national of either State Party or otherwise unable to act;

- (d) the Tribunal shall determine its own procedure unless the States Parties by protocol to this Agreement establish rules of arbitration in which case its procedures shall be governed by those rules. All decisions of the Tribunal shall be governed by those rules. All decisions of the Tribunal shall be by majority vote;
- (e) the Tribunal shall determine the dispute by application of the provisions of this Agreement and relevant rules and principles of international law;
- (f) the Tribunal pending its final award may issue an order indicating the interim measures which must be taken to preserve the respective rights of either State Party or prevent the aggravation or extension of the dispute.

The States Parties shall carry out in good faith all decisions of the Tribunal including any orders for interim measures. Decisions of the Tribunal shall be final and binding on the States Parties.

Any dispute between State Parties which is not resolved by this process shall be referred to the [meeting of the Arctic Council, and be decided by majority of the Member States at that meeting/Antarctic Treaty Consultative Meeting, and be decided by majority of the Antarctic Treaty Consultative Parties at that meeting.]

- (3) Disputes between a development authority and a contractor under paragraph 1(b) or between contractors under paragraph 1(c) shall unless otherwise agreed between the parties thereto be subject to binding commercial arbitration pursuant to the terms of the relevant development contract or joint operating agreement. However, any arbitral panel to which the dispute is submitted shall have no jurisdiction to determine:
 - (a) questions concerning the interpretation or application of this Agreement but insofar as they arise in connection with its decision the arbitral panel shall refer them to the States Parties to resolve pursuant to paragraph 2 above and incorporate the ruling of Tribunal in its award;
 - (b) in the case of disputes falling within paragraph 1(b), matters which are properly within the sole discretion of the development authority under the terms of the development contract or the specified petroleum law.

Any arbitral panel exercising jurisdiction pursuant to this provision shall determine the dispute in accordance with the applicable law as defined in Article 1.

- (4) Nothing shall prevent the States Parties in situations where the proviso referred to in paragraph 3(a) applies from jointly consenting to the jurisdiction of the panel over questions involving the interpretation or application of this Agreement in place of that of the Tribunal which would otherwise be constituted under paragraph 2. In this event the States Parties may participate in proceedings before the panel by the submission of oral and written evidence on the question of interpretation referred to in this paragraph.
- (5) Any commercial arbitration under paragraph 3 shall be located at such place in a country being a party to the 1958 New York Convention on Recognition and Enforcement of Foreign Arbitral Awards as the parties or failing them the arbitrators may agree. The States Parties shall recognise and enforce any award

made pursuant to the commercial arbitration referred to subject only to such rights of refusal under their respective legal systems as are not inconsistent with those contained in Article V of that New York Convention.

ARTICLE 24 THIRD PARTY RIGHTS

- (1) States Parties shall exercise their rights under this Agreement in such a manner as not to interfere unjustifiably with the rights and freedoms of other States in respect of the Zone as provided under generally accepted principles of international law.
- (2) In the event that any third party claims rights inconsistent with those of the States Parties under this Agreement then the States Parties shall consult through appropriate channels with a view to co-ordinating a response.

ARTICLE 25 ENTRY INTO FORCE AND DURATION

- (1) This Agreement shall enter into force on the exchange of instruments of ratification by both States Parties which shall take place within two years from the date of signature hereof.
- (2) This Agreement shall be of unlimited duration. However, after [45] years have elapsed from the date of its entry into force, either State Party may give [5] years' notice of termination of this Agreement. Termination pursuant to this provision shall not affect development contracts with an expiry date after that termination and this Agreement shall remain in force for the sole purpose of administering the existing contracts. On the expiry or earlier termination of the last remaining existing contract this Agreement shall terminate forthwith.
- (3) Notwithstanding the provision of paragraph 2 hereof this Agreement may be amended or terminated at any time by written agreement between the States Parties.
- (4) If notice of termination is given, the States Parties shall consult without delay about the question of future arrangements for the area of the Zone.
- (5) Termination of this Agreement shall not affect the financial obligations of the States Parties incurred prior to termination nor the rights and obligations under development contracts granted pursuant to this Agreement prior to that date. Unless otherwise agreed between the States Parties the Joint Commission shall continue to exercise such residual functions as may be necessary in respect of the continuing administration of existing contracts.

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- 3-12 Vietnam/Cambodia JDZ – Historic Waters, 1982 – Nguyen Hong Thao
- 3-13 Tunisia/Libya JDZ, 1988 – Sonde Resources
- 3-14 Australia/Indonesia – Timor Gap JDZ, 1989 (superseded by Timor Sea Treaty) – Australian Agreements, Treaties and Negotiated Settlements database
- 3-15 Malaysia/Vietnam JDZ, 1992 – Masahiro Miyoshi
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- 3-17 Columbia/Jamaica JDZ, 1993 – Masahiro Miyoshi
- 3-18 Argentina/United Kingdom JDZ, 1995 – Area of Special Cooperation
(cancelled by Argentina) – Patrick Armstrong and Vivian Forbes, IBRU
- 3-19 Nigeria/São Tome and Principe JDZ, 2001 – Jonathan I Charney, David A
Colson, Lewis M Alexander (eds) et al
- 3-20 Thailand/Cambodia MOU, 2001 – Overlapping Claims Area (repudiated by
Thailand) – Somjade Kongrawd
- 3-21 Australia/Timor-Leste – Timor Sea JDZ, 2002 – Australian Government
- 3-22 China/Japan JDZ – East China Sea, 2008 – The Japan Times
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Southampton

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- 5-5 Bering Sea – United States Department of State
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Wired Magazine
- 5-8 Lomonosov and Alpha/Mendeleev Ridges – Ron Macnab
- 5-9 Russian Arctic Claim – CLCS – Russian submission to CLCS
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- 5-11 Barents Sea – Norway Russia Maritime Boundary – Moscow Times
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- 6-2 Potential Antarctic Oil and Gas – Sedimentary Basins –John Kingston – United States Geological Service
- 6-3 Southern Ocean OCS Claims - ISBA
- 6-4 Antarctic Peninsula Region – Enlargement – Perry Castaneda Library
- 6-5 Antarctic – United Kingdom and Argentina – IBRU
- 6-6 Antarctic – United Kingdom and Norway – COMNAP
- 6-7 Antarctic – Norway, Australia, France and New Zealand – Stuart Kaye
- 6-8 Antarctic – New Zealand and Unclaimed Sector – United States Geological Service
- 6-9 Argentine Submission to the Commission on the Limits of the Continental Shelf
- 6-10 Australian Submission to the Commission on the Limits of the Continental Shelf

2. Notes to Illustrations

All illustrations are used for general illustration purposes in relation to the location of maritime boundaries, and should not be used as geographical references. All illustrations are copyright of the original copyright holders. Notations have been added to the illustrations where necessary to show related features. Principal sources for the illustrations and analysis of JDZs and for further reference are: a) Masahiro Miyoshi, Clive H Schofield (ed), 'The Joint Development of Offshore Oil and Gas in relation to Maritime Boundary Delimitation' (1999) 2(5) *IBRU Maritime Briefing*; and b) Jonathan I Charney, David A Colson, Lewis M Alexander (eds) et al, *International Maritime Boundaries* (1995) and related publications in this series.

3. Illustrations

Illustration 2-1. LOSC Maritime Boundaries

Source: Martin Pratt – IBRU –

http://www.oceanstewardship.com/IOSF%202009/Presentations_2009/MPratt_2009.pdf

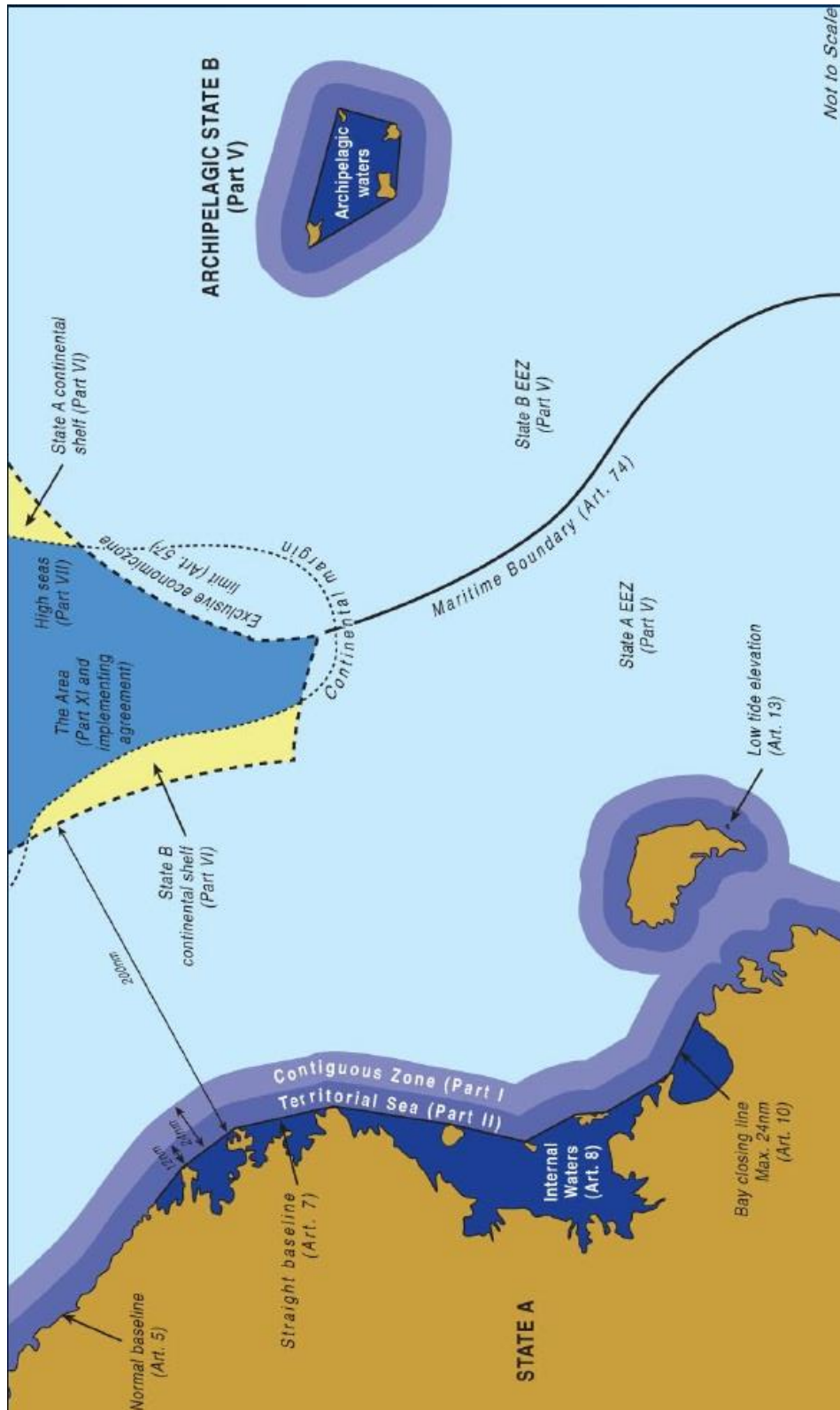


Illustration 2–2. LOSC Outer Continental Shelf Provisions

Source: GeoLimits Consulting <http://www.geolimits.com/services/extended-continental-shelf/continental-shelf/>

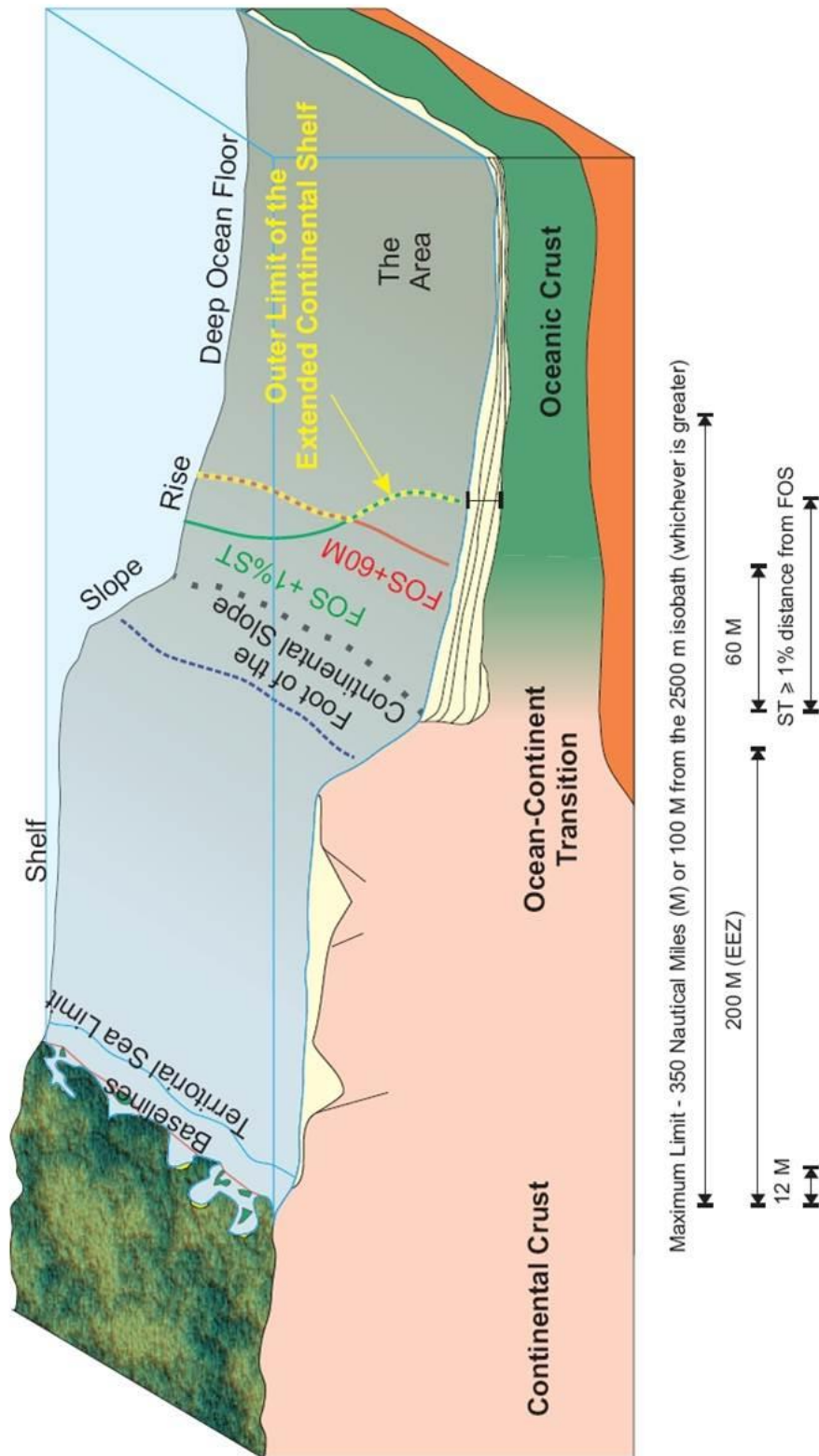


Illustration 2–3. LOSC Part XI – International Seabed Area

Source: International Seabed Authority

<http://www.isa.org.jm/en/node/399>

The region likely to be subject to the regime of the Area is marked in orange. The precise delimitation is subject to future determination of the Outer Continental Shelf (OCS) zones of all states by the Commission on the Limits of the Continental Shelf (CLCS).

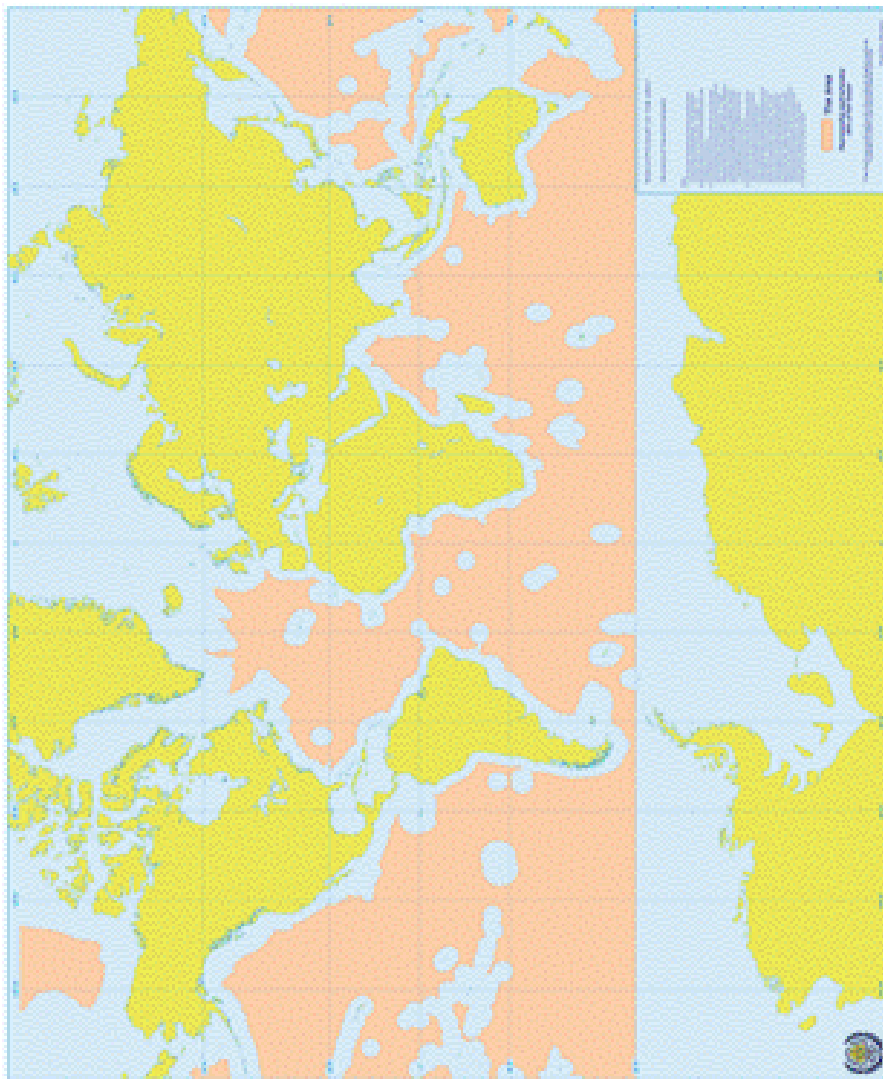


Illustration 3–1. Svalbard (Spitsbergen) Treaty Area, 1920

Source: Peter Johan Schei and Dr R Douglas Brubaker, Fridtjof Nansen Institute
<http://www.fni.no/doc&pdf/PJS-DB-2006-JANSROP1.PDF>

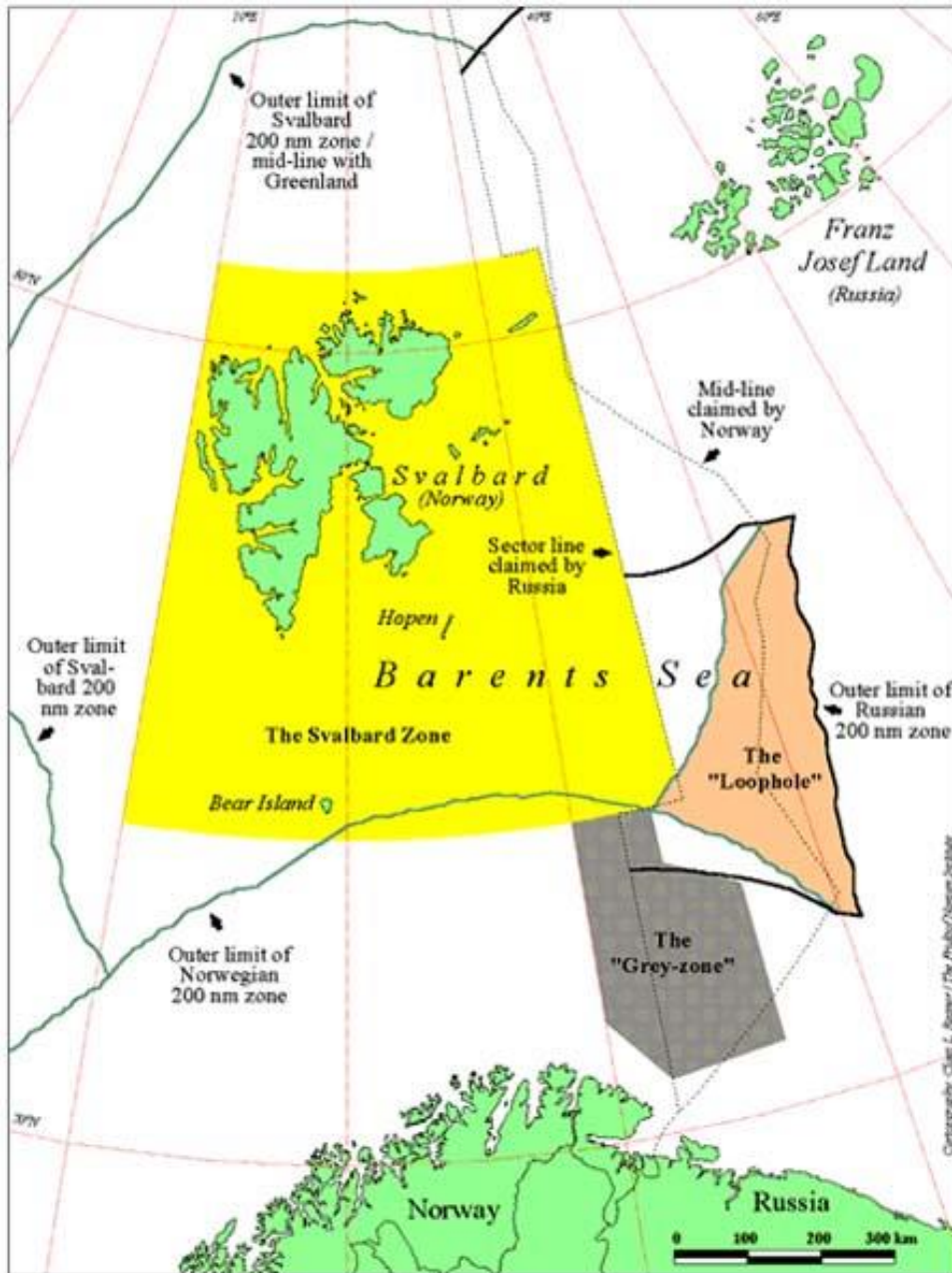


Illustration 3–2. Saudi Arabia/Kuwait – Neutral Zone JDZ, 1922 and 1965

Source: United States Energy Information Administration
<http://www.eia.gov/countries/cab.cfm?fips=sa>



Illustration 3-3. Saudi Arabia/Bahrain JDZ, 1958

Source: Masahiro Miyoshi, 'The Joint Development of Offshore Oil and Gas in relation to Maritime Boundary Delimitation' (1999) 2(5) *IBRU Maritime Briefing* 30

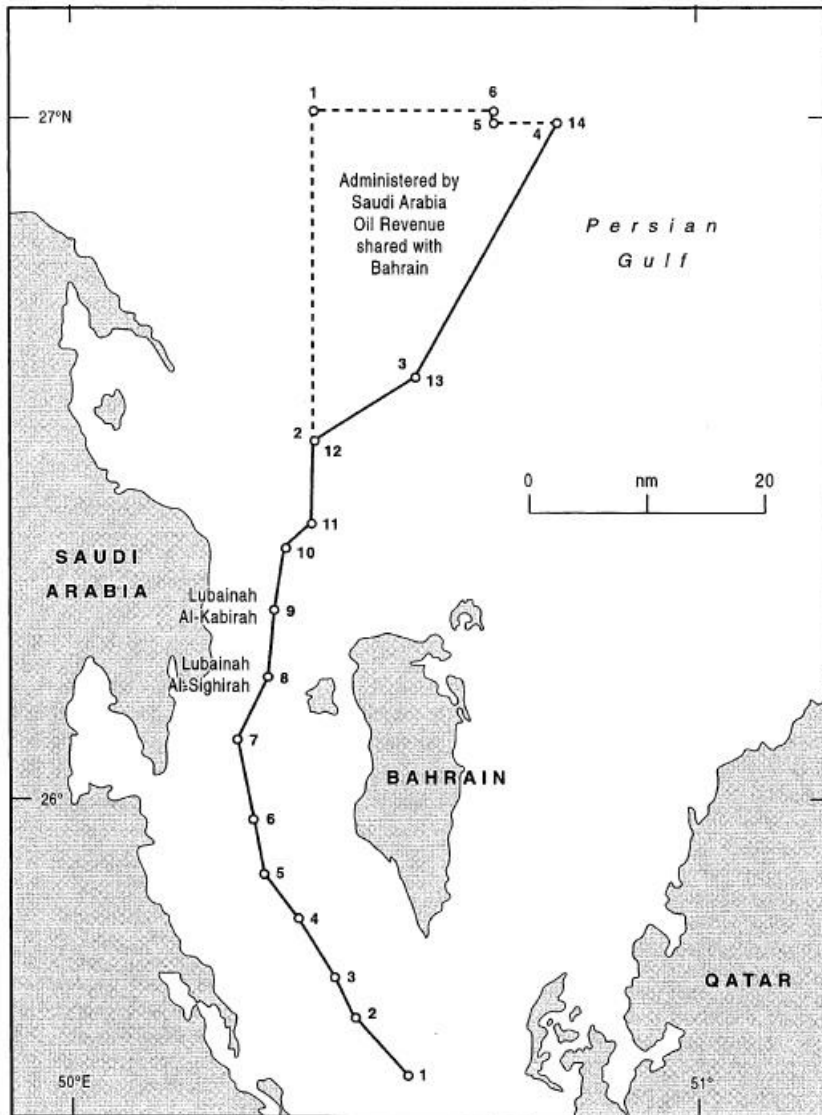


Illustration 3-4. Qatar/Abu Dhabi JDZ – Al-Bunduq Field, 1969

Source: Ali A. El-Hakim, *The Middle Eastern States and the Law of the Sea* (1980) 96.

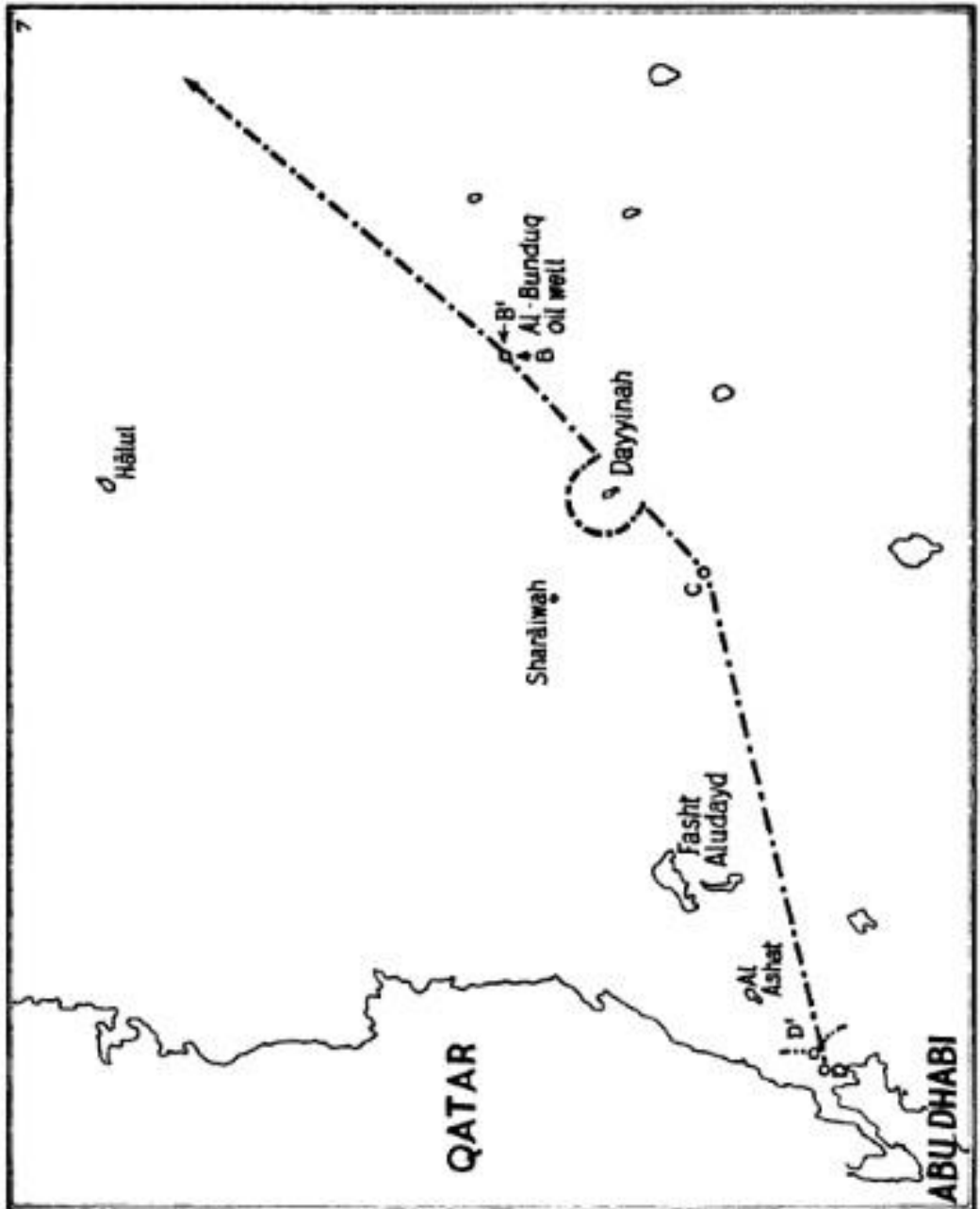


Illustration 3-5. Iran/Sharjah JDZ – Abu Musa Island, 1971

Source: Masahiro Miyoshi, 'The Joint Development of Offshore Oil and Gas in relation to Maritime Boundary Delimitation' (1999) 2(5) *IBRU Maritime Briefing* 11.

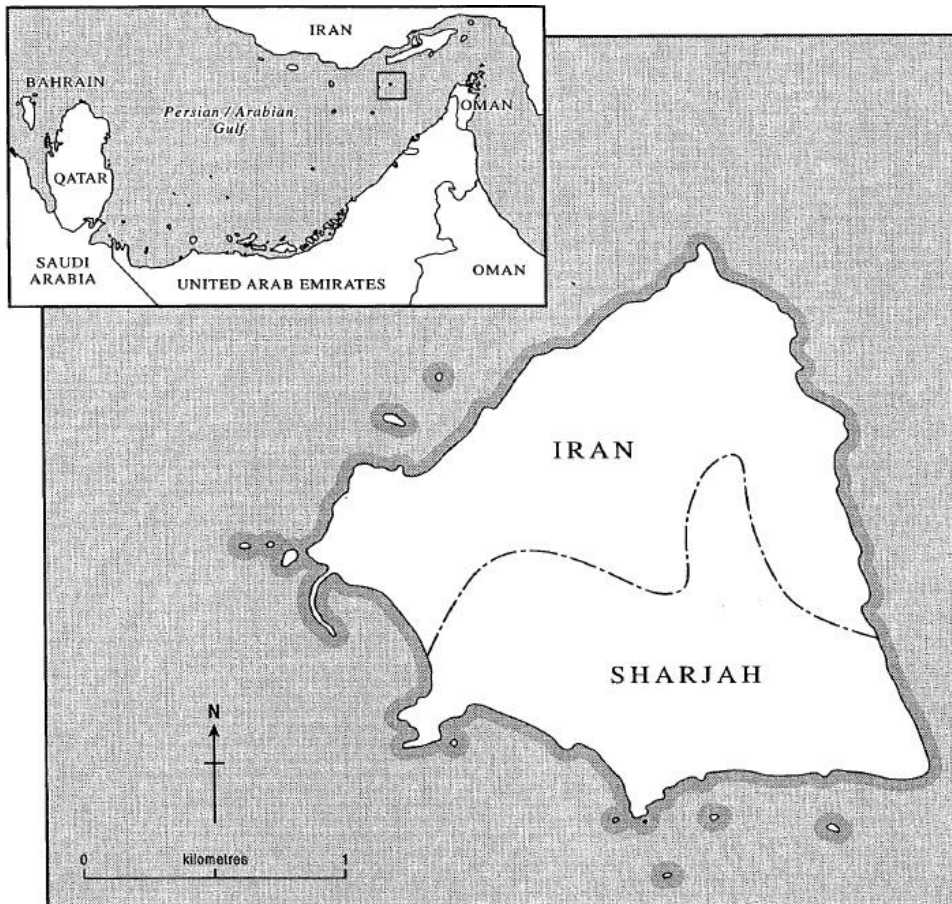


Illustration 3-6. France/Spain – Bay of Biscay JDZ, 1974

Source: Masahiro Miyoshi, 'The Joint Development of Offshore Oil and Gas in relation to Maritime Boundary Delimitation' (1999) 2(5) *IBRU Maritime Briefing* 31.

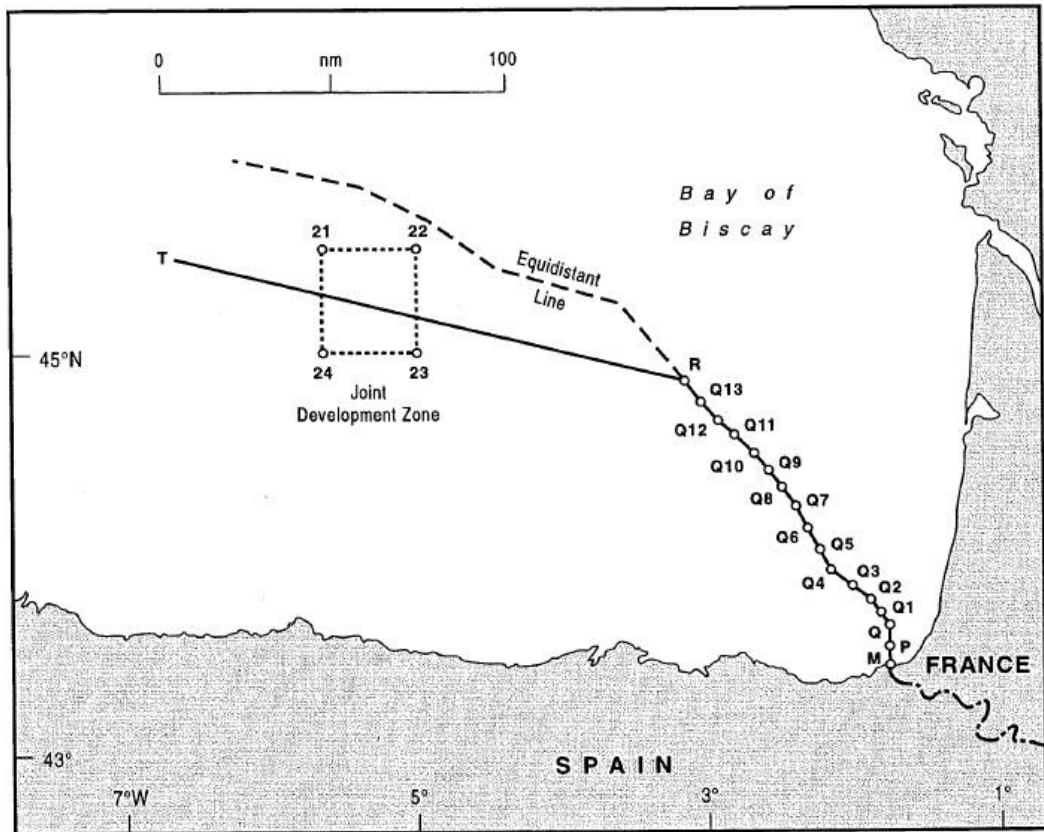


Illustration 3-7. Sudan/Saudi Arabia – Common Zone JDZ, 1974

Source: Masahiro Miyoshi, 'The Joint Development of Offshore Oil and Gas in relation to Maritime Boundary Delimitation' (1999) 2(5) *IBRU Maritime Briefing* 33. The shaded area is the Common Zone.

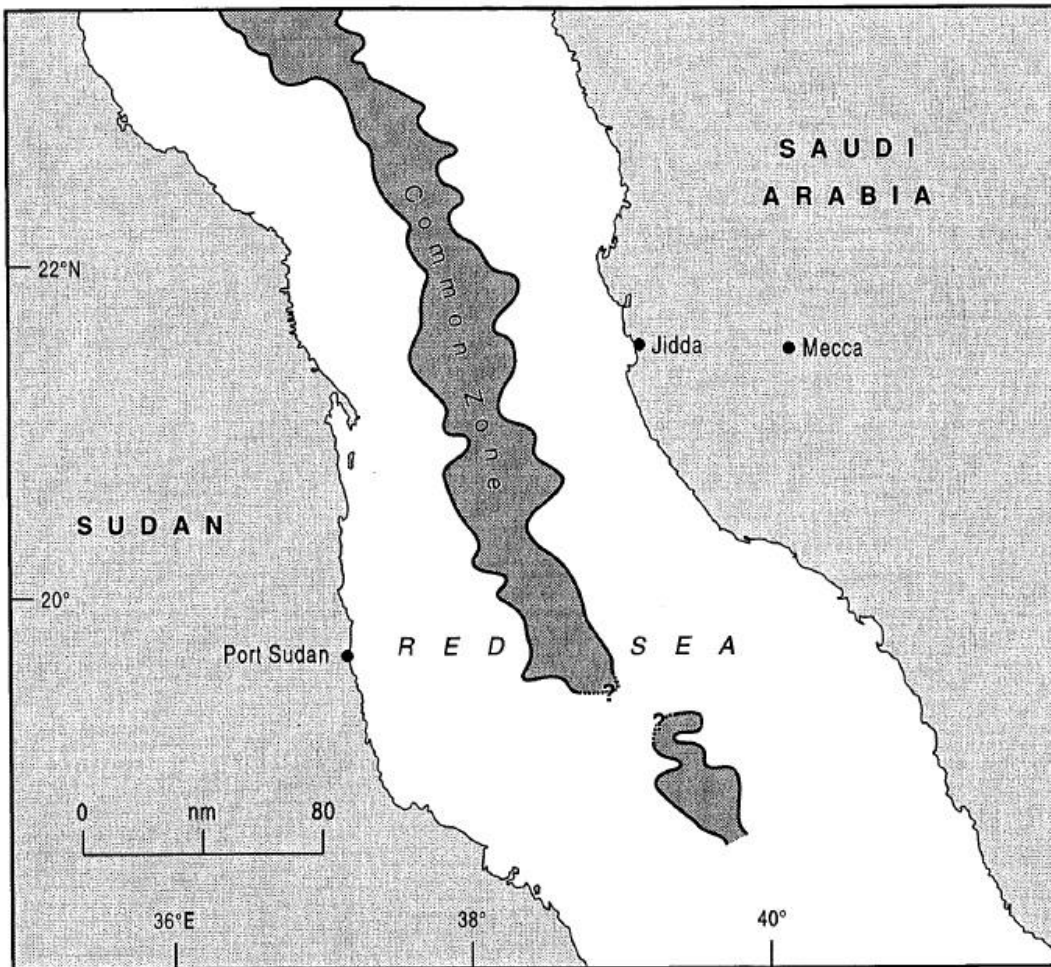


Illustration 3-8. Japan/Republic of Korea JDZ, 1974

Source: Masahiro Miyoshi, 'The Joint Development of Offshore Oil and Gas in relation to Maritime Boundary Delimitation' (1999) 2(5) *IBRU Maritime Briefing* 13.

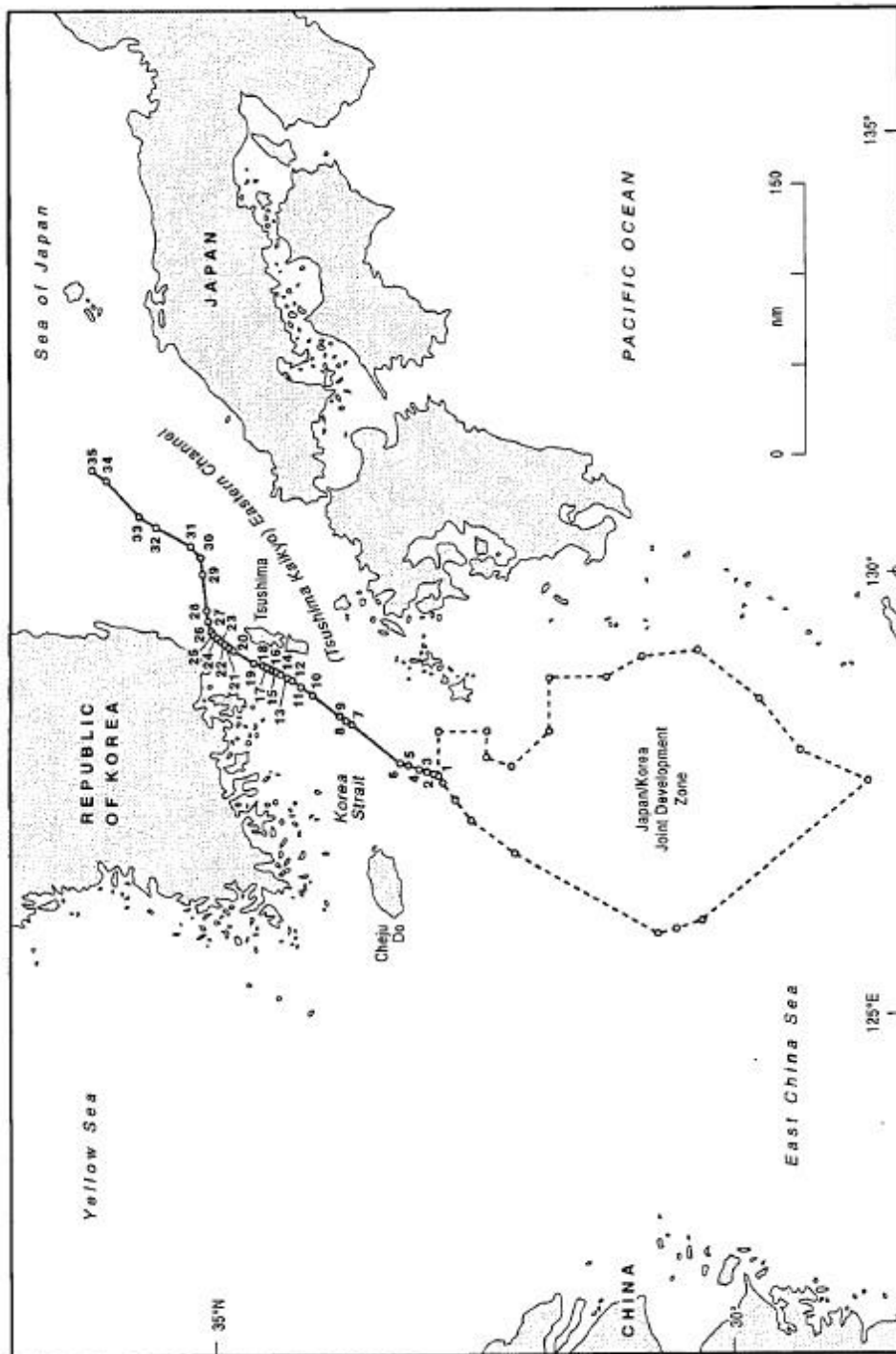


Illustration 3-9. United Kingdom/Norway – Frigg Field JDZ, 1977

Source: University of Aberdeen – Politics Economics and Society
<http://www.abdn.ac.uk/historic/energyarchive/pdf/Pol%20Ec%20&%20Soc.pdf>

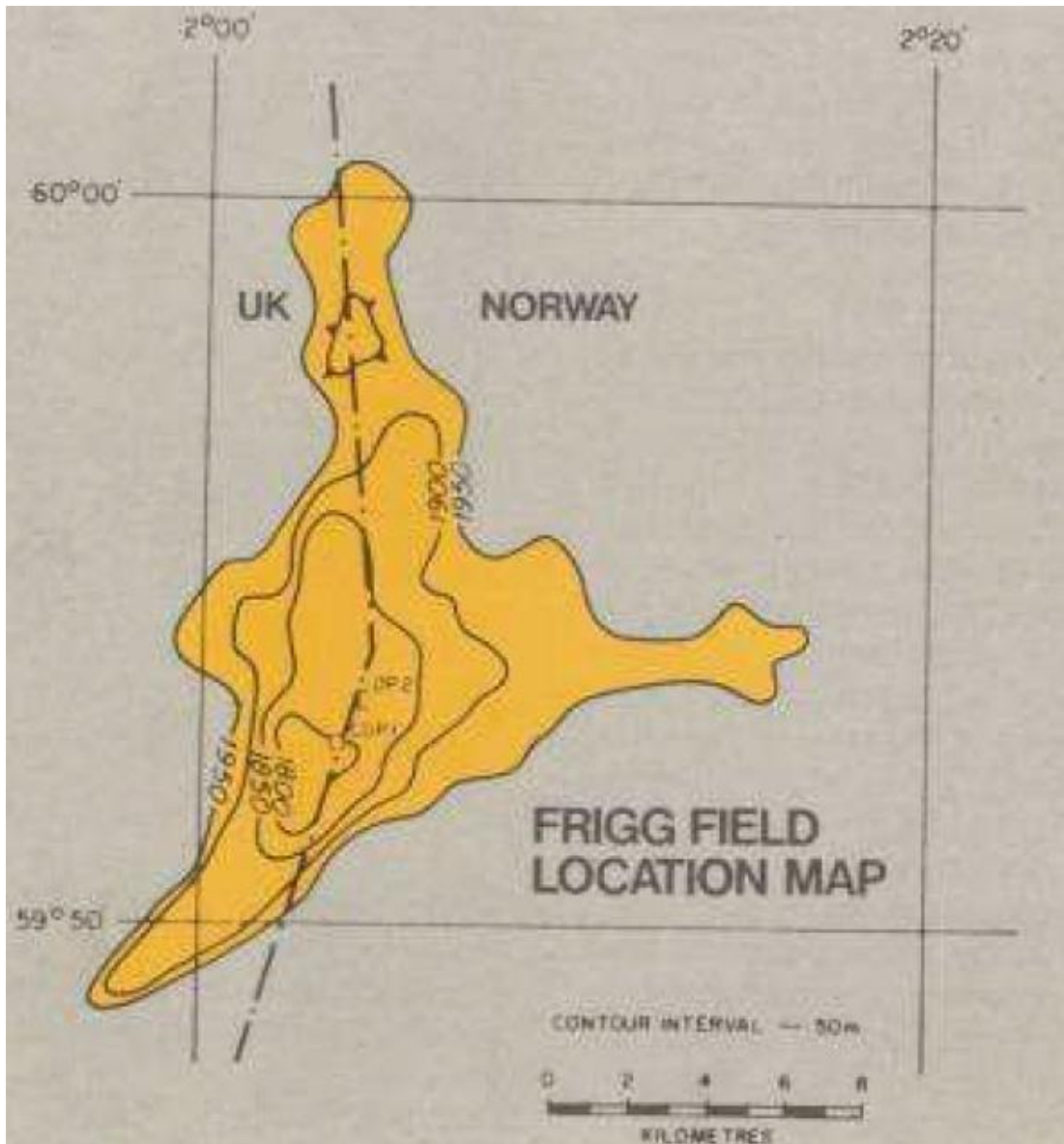


Illustration 3-10. Malaysia/Thailand JDZ, 1979

Source: Masahiro Miyoshi, 'The Joint Development of Offshore Oil and Gas in relation to Maritime Boundary Delimitation' (1999) 2(5) *IBRU Maritime Briefing* 15.



Illustration 3–11. Iceland/Norway – Jan Mayen JDZ, 1981

Source: Arctic Economics <http://arcticecon.wordpress.com/tag/maritime-boundary/>

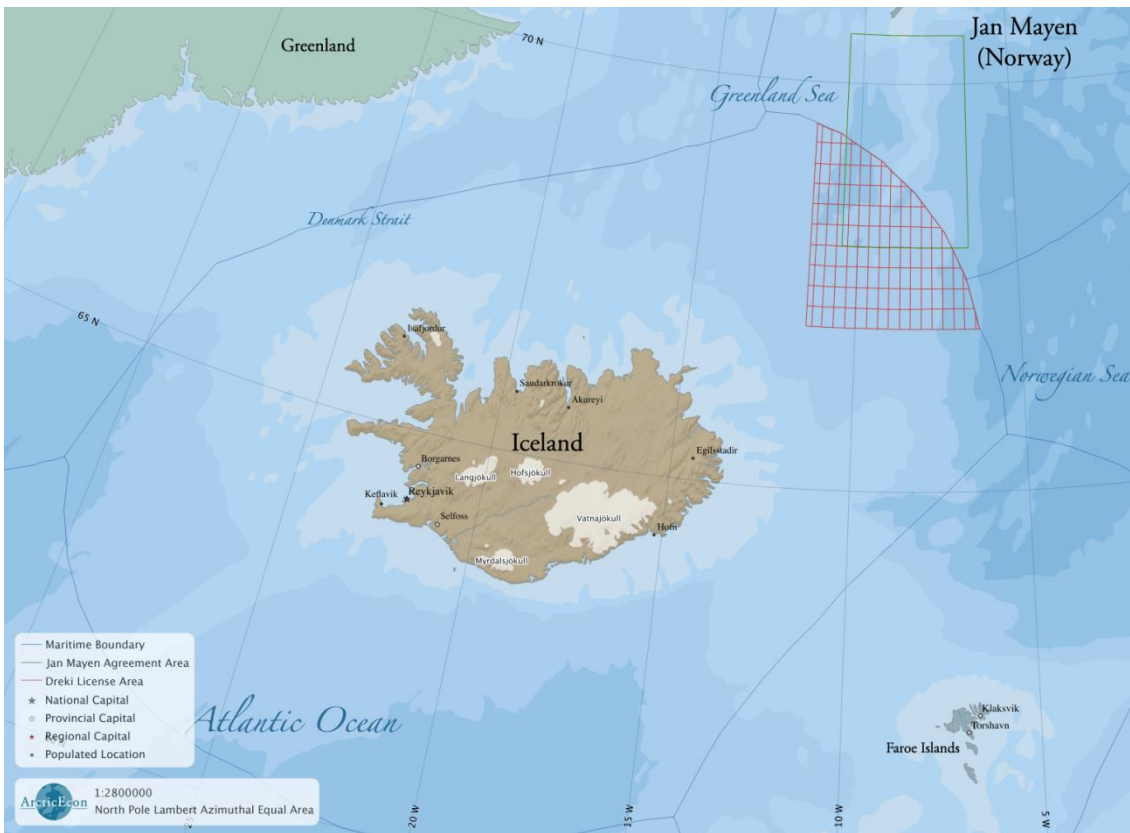


Illustration 3-12. Vietnam/Cambodia JDZ, 1982

Source: Nguyen Hong Thao 'Joint Development in the Gulf of Thailand' [1999] *IBRU Boundary and Security Bulletin* 79, 80.

http://www.dur.ac.uk/resources/ibru/publications/full/bsb7-3_thao.pdf

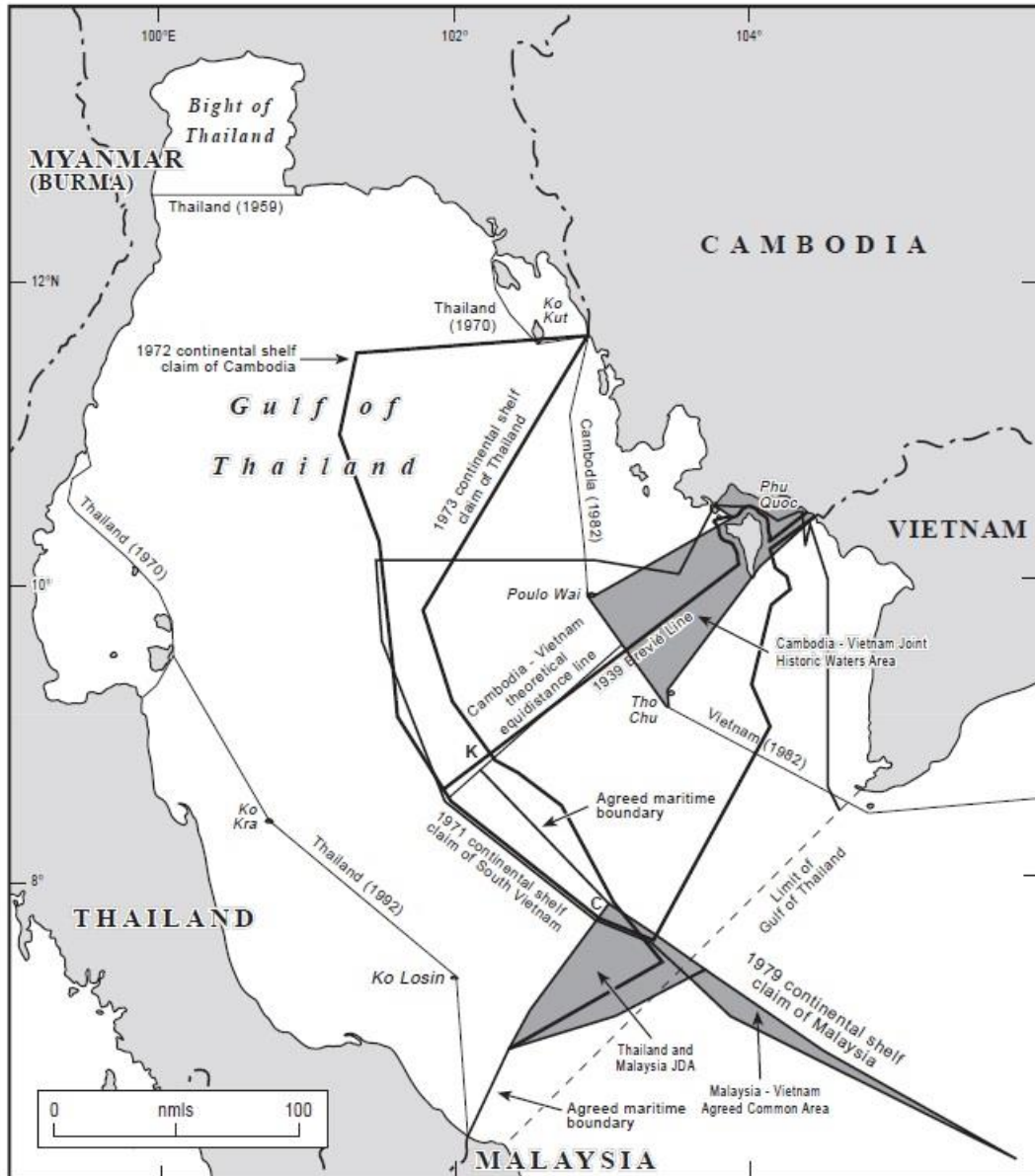


Illustration 3-13. Tunisia/Libya JDZ, 1988

Source: Sonde Resources

<http://www.sonderesources.com/operations/international/tunisia-libya>

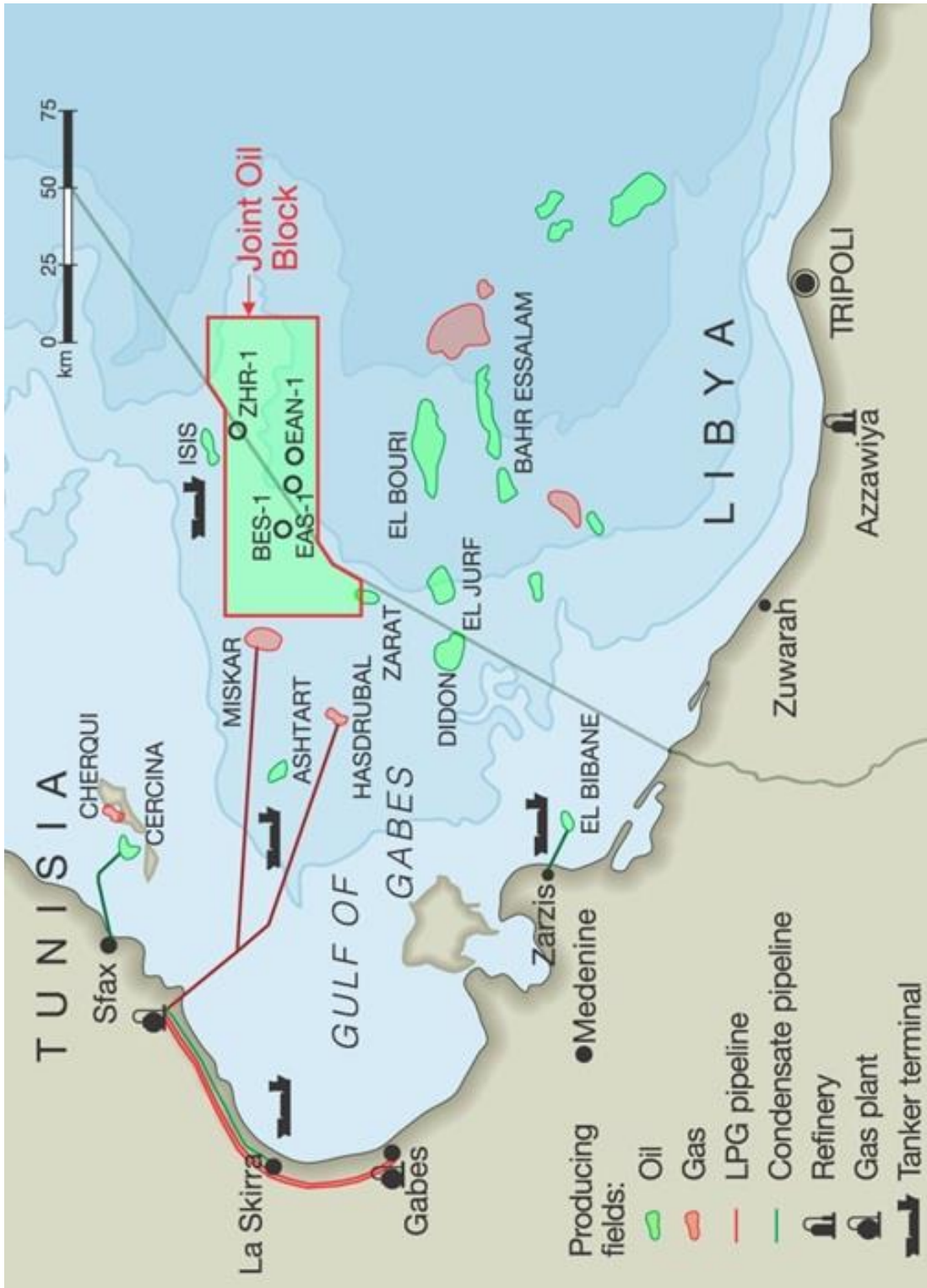


Illustration 3–14. Australia/Indonesia – Timor Gap JDZ, 1989 (superseded by the Timor Sea Treaty)

Source: 'Timor Sea Treaty' Australian Agreements, Treaties and Negotiated Settlements database (ATNS)
<http://www.atns.net.au/objects/Timor.JPG>

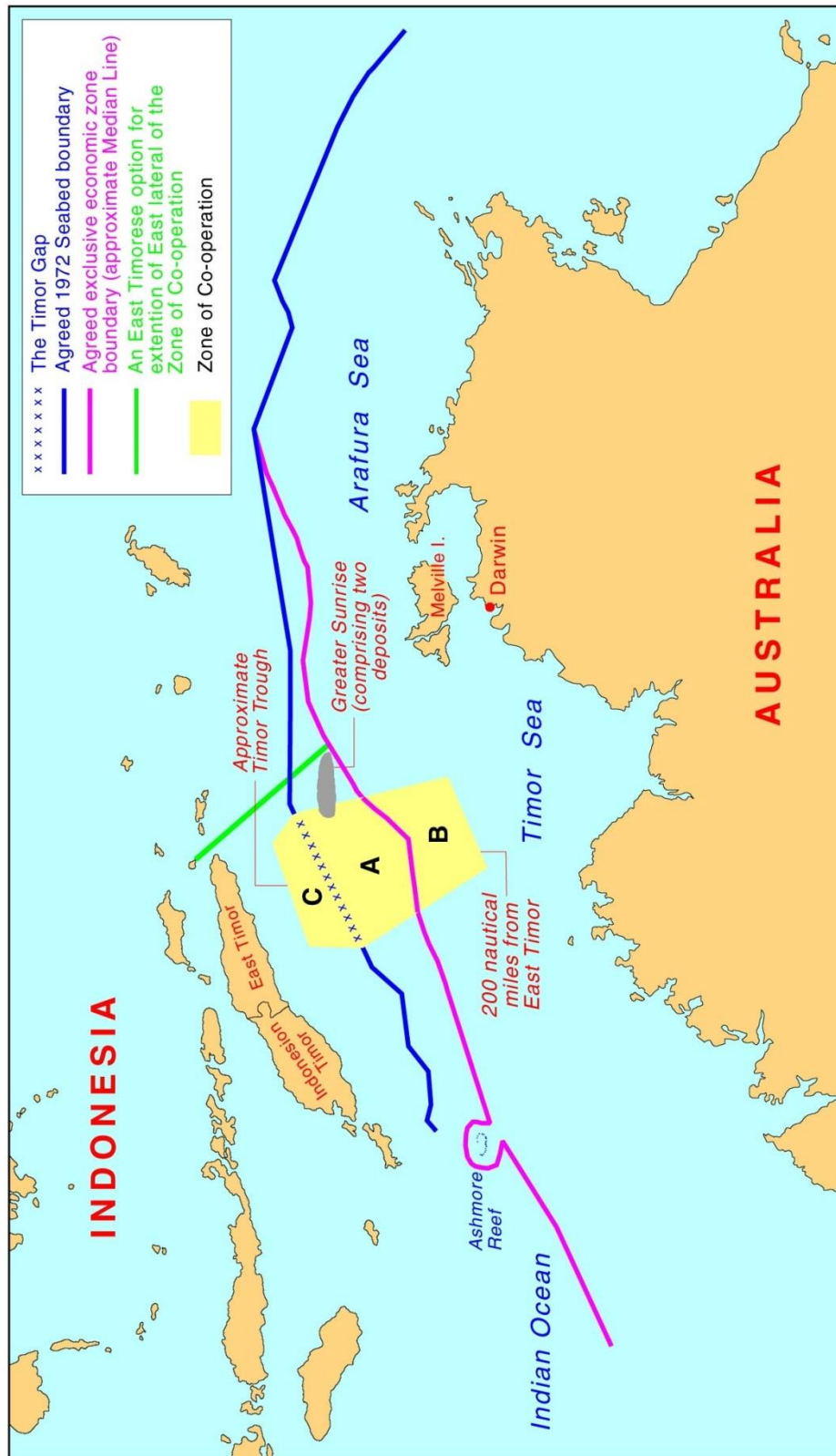


Illustration 3-15. Malaysia/Vietnam JDZ, 1992

Source: Masahiro Miyoshi, 'The Joint Development of Offshore Oil and Gas in relation to Maritime Boundary Delimitation' (1999) 2(5) *IBRU Maritime Briefing* 15

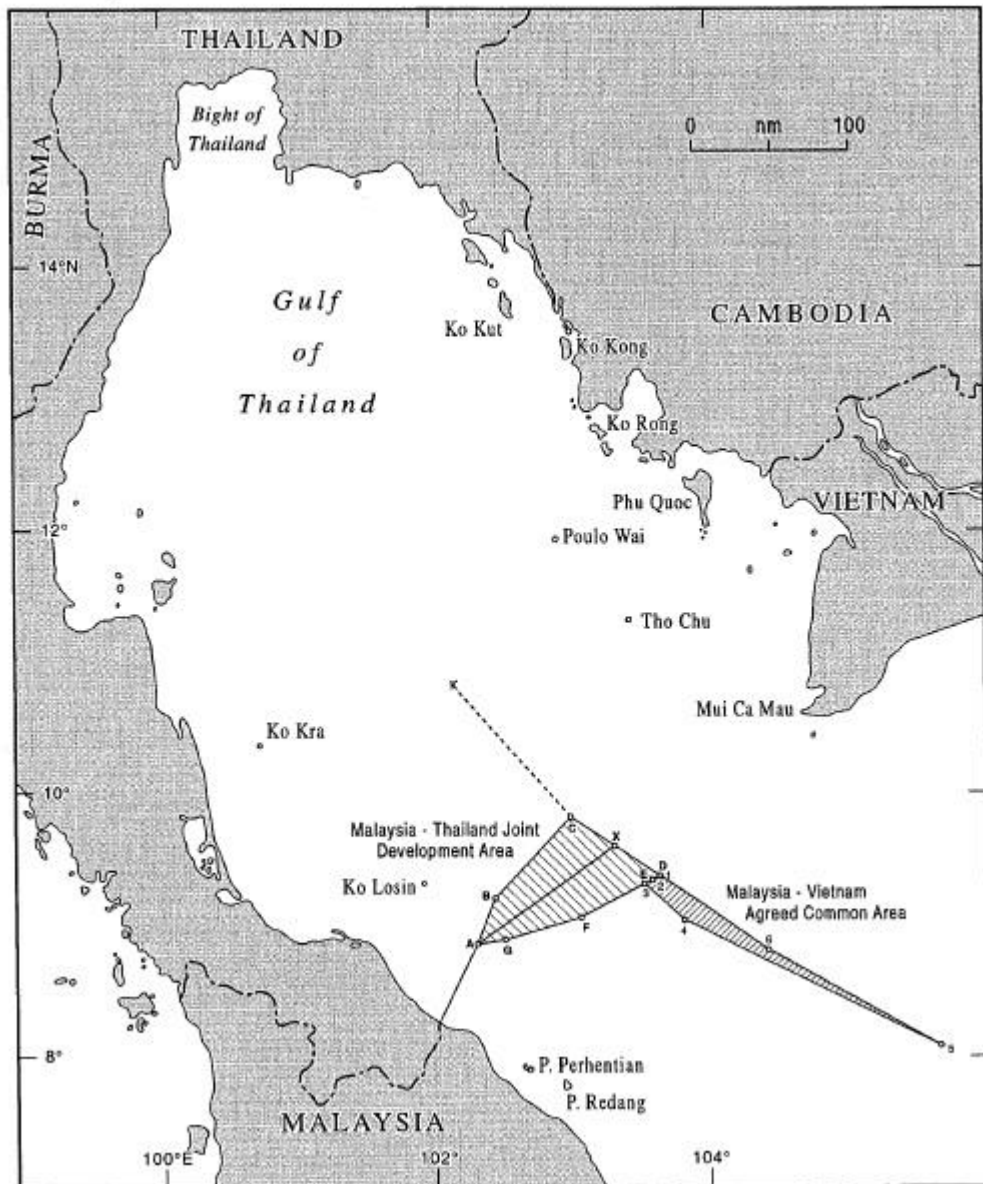


Illustration 3-16. Guinea-Bissau/Senegal JDZ, 1993

Source: Masahiro Miyoshi, 'The Joint Development of Offshore Oil and Gas in relation to Maritime Boundary Delimitation' (1999) 2(5) *IBRU Maritime Briefing* 39.

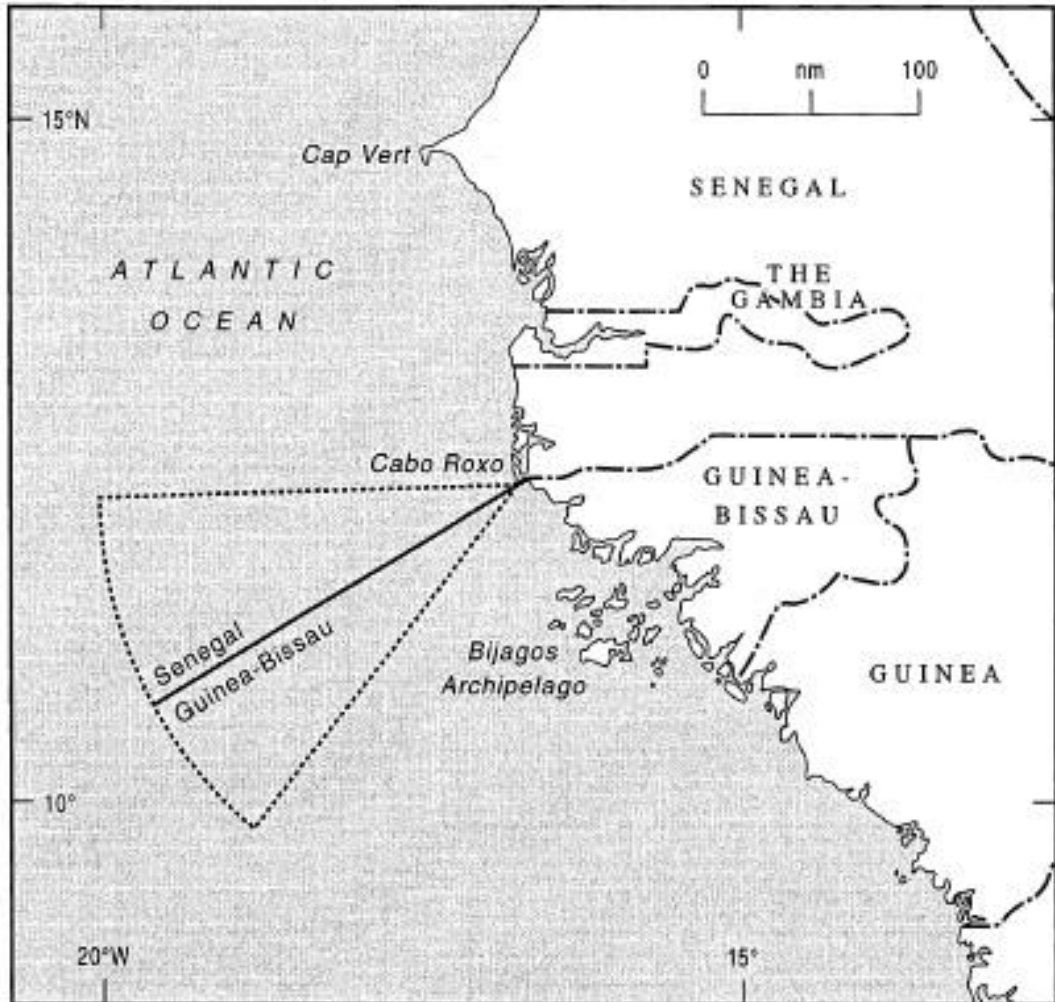


Illustration 3-17. Jamaica/Columbia JDZ, 1993

Source: Masahiro Miyoshi, 'The Joint Development of Offshore Oil and Gas in relation to Maritime Boundary Delimitation' (1999) 2(5) *IBRU Maritime Briefing* 24.

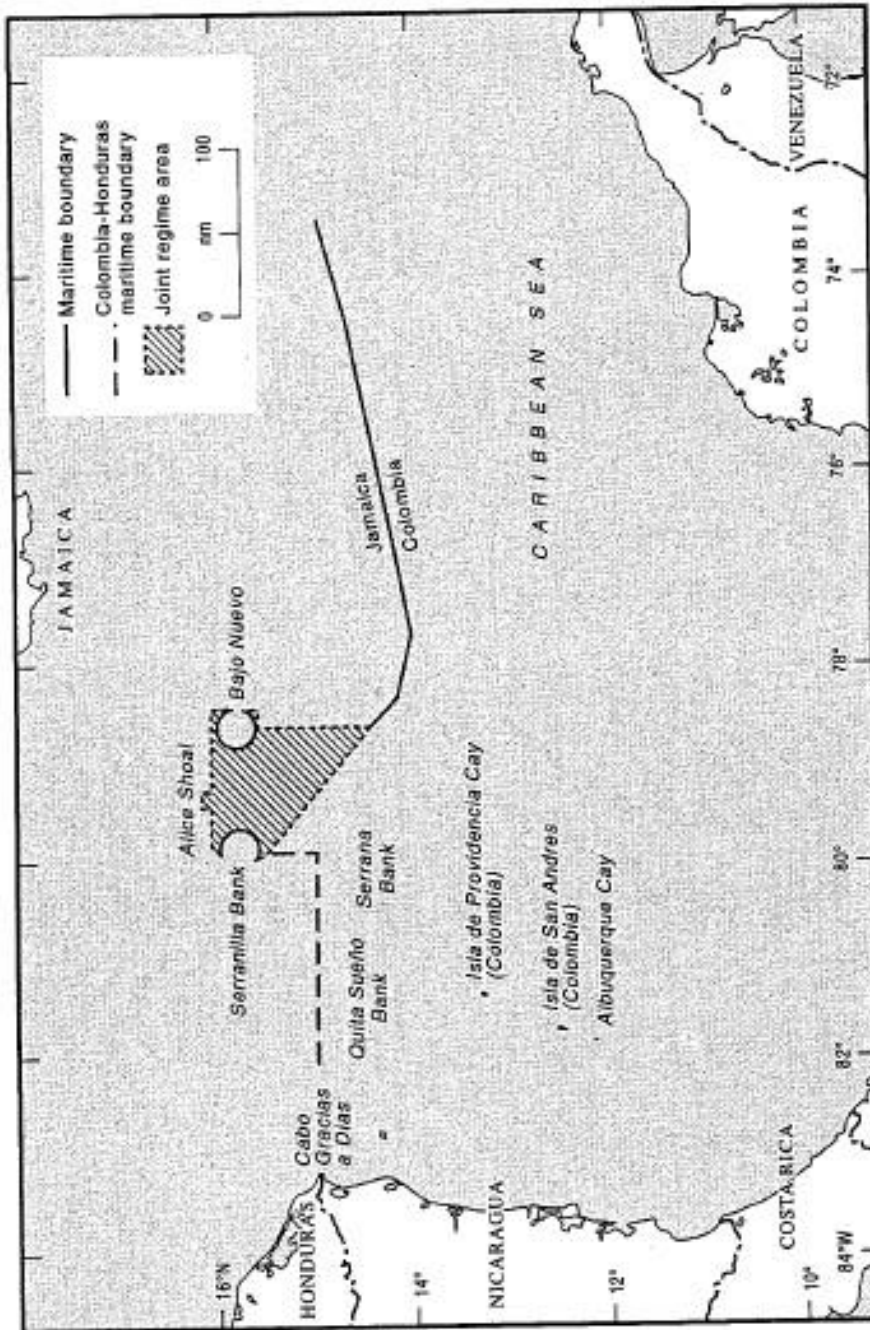


Illustration 3-18. Argentina/United Kingdom JDZ, 1995 – Area of Special Cooperation (cancelled by Argentina)

Source: Patrick Armstrong and Vivian Forbes, 'The Falkland Islands and their Adjacent Maritime Area' (1995) 2(3) *IBRU Maritime Briefing*, 27.

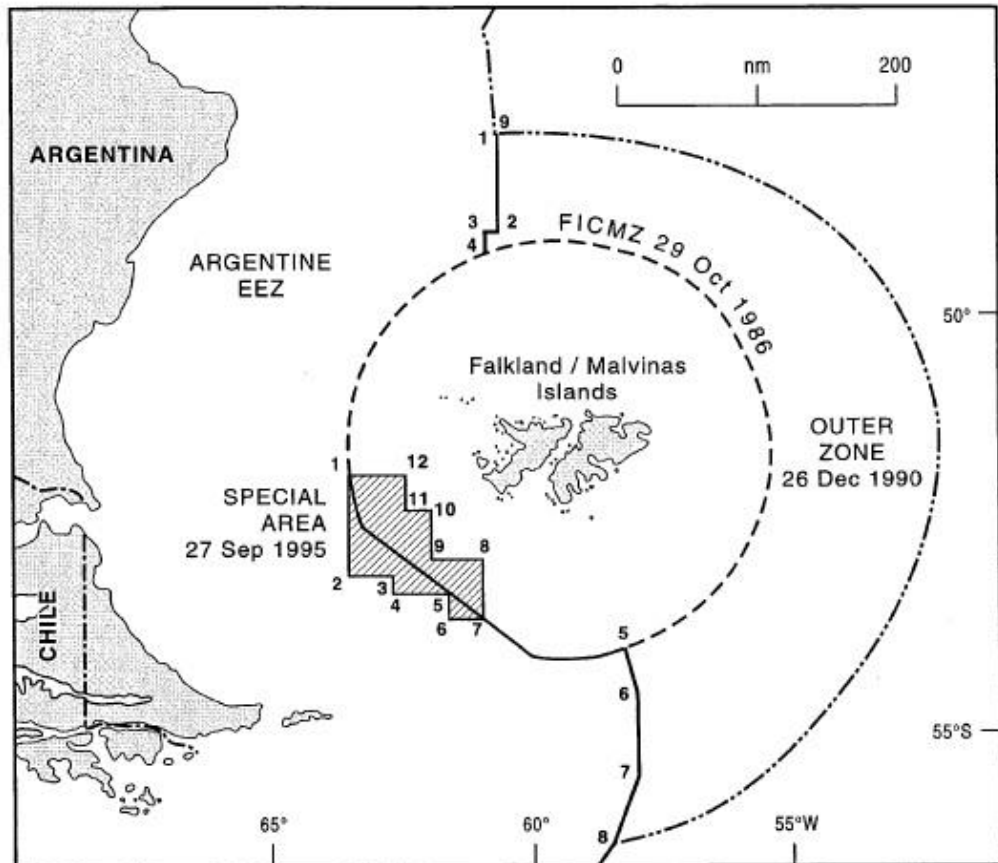
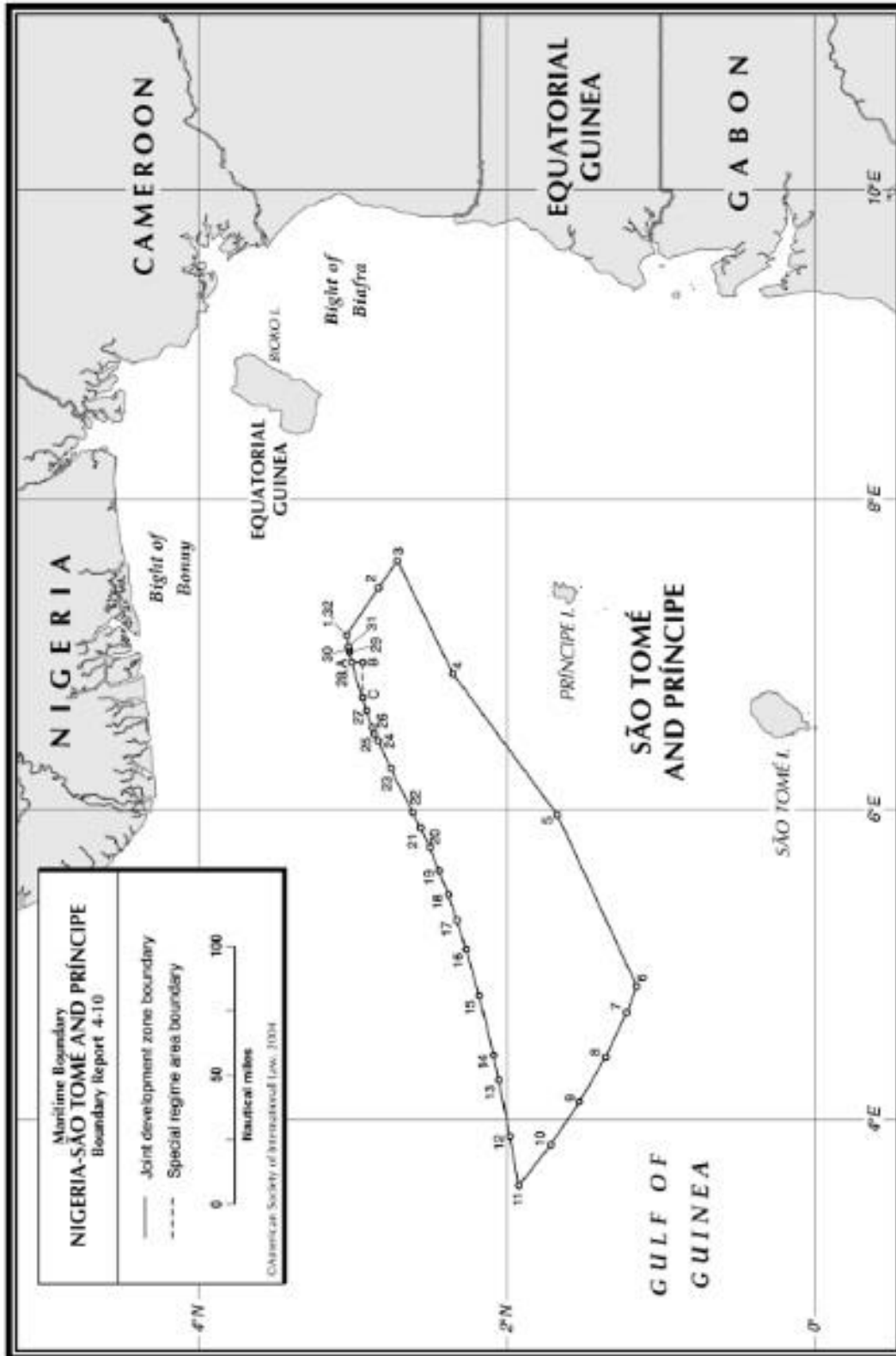


Illustration 3-19. Nigeria/São Tomé and Príncipe JDZ, 2001

Source: Jonathan I Charney, David A Colson, Lewis M Alexander (eds) et al, International Maritime Boundaries (1995)



**Illustration 3-20. Thailand/Cambodia MOU – Overlapping Claims Area, 2001
(cancelled by Thailand)**

Source: Somjade Kongrawd, Thailand and Cambodia Maritime Disputes
<<http://www.navy.mi.th/judge/Files/Thailand%20Cambodia.pdf>> at 9 April 2013

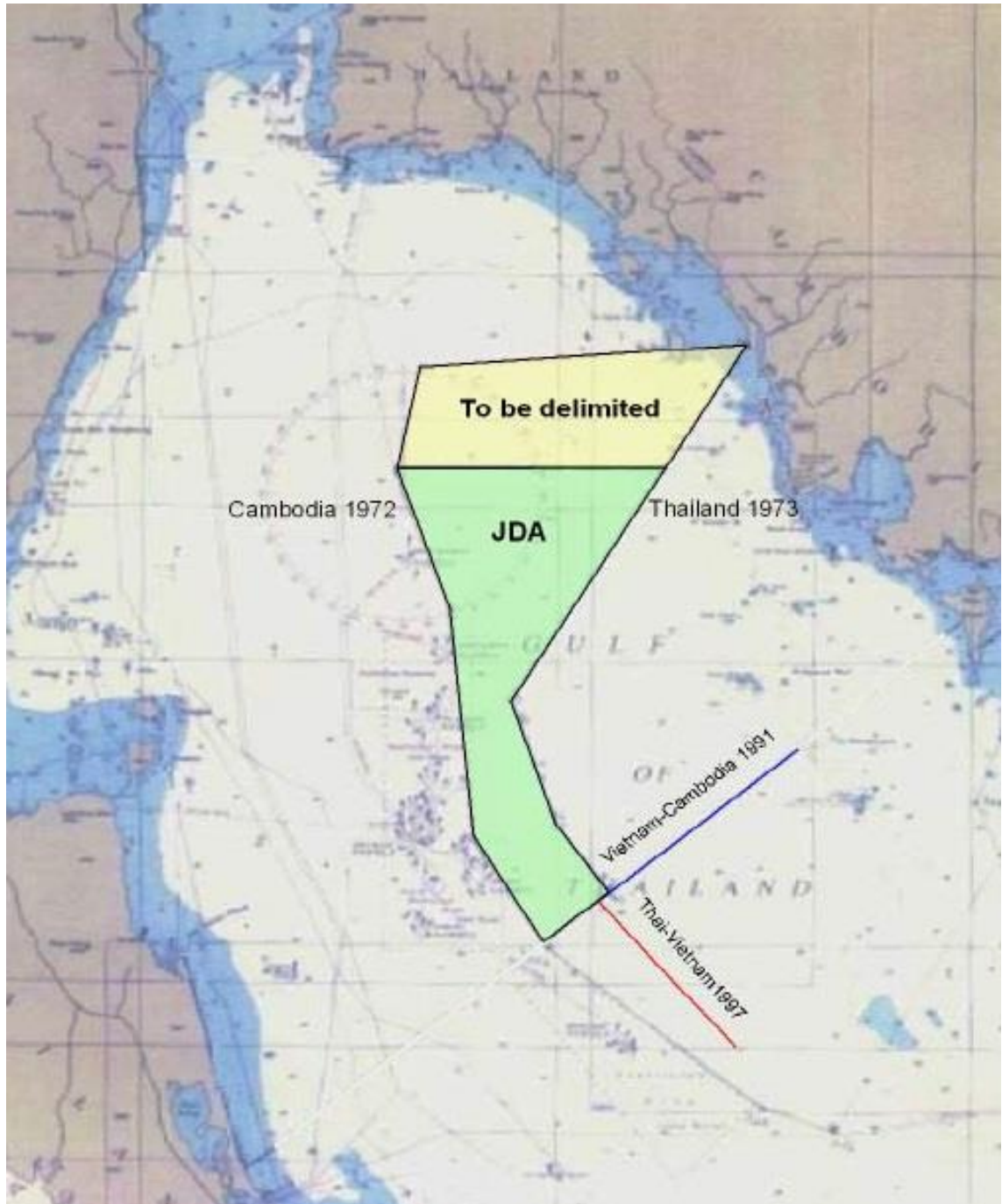


Illustration 3–21. Australia/Timor- Leste – Timor Sea JDZ, 2002

Source: Australian Government

http://www.ret.gov.au/resources/upstream_petroleum/jpdaandgreatersunrise/Pages/default.aspx

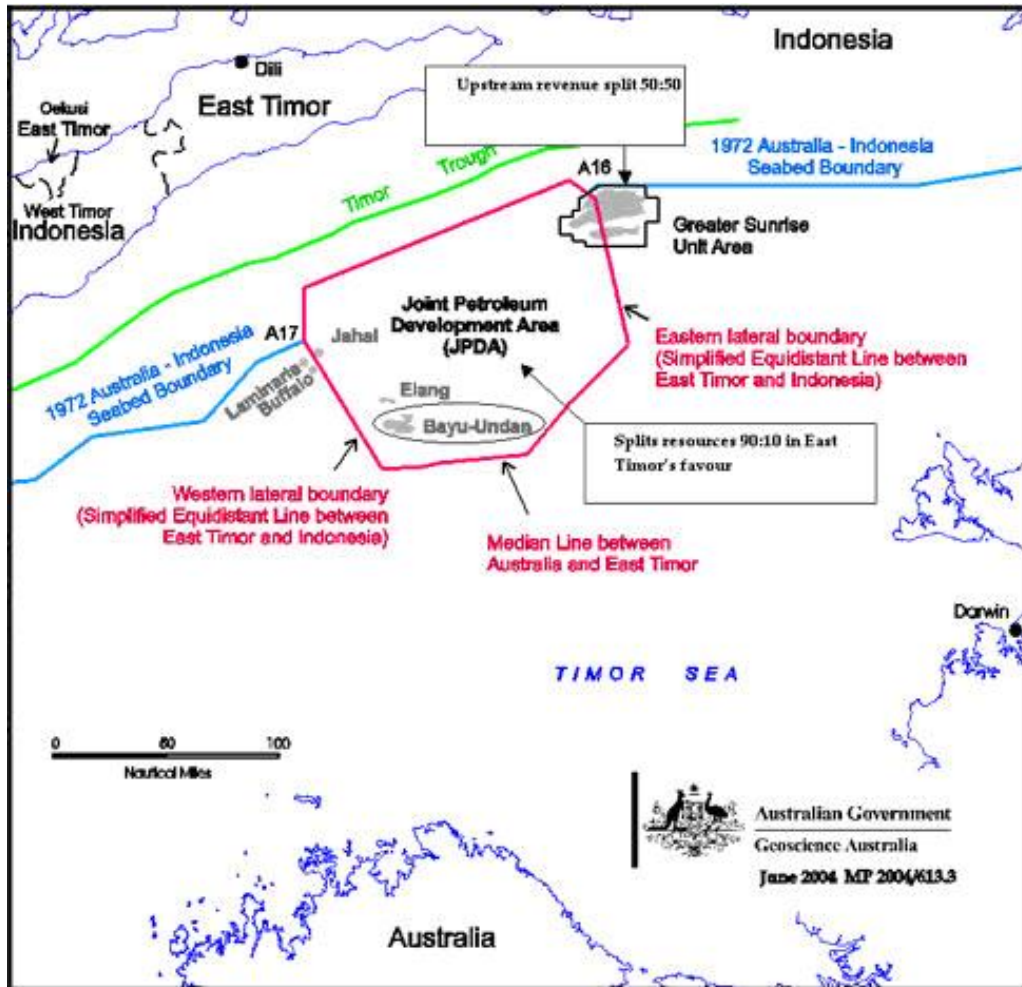


Illustration 3-22. China/Japan JDZ – East China Sea, 2008

Source: *The Japan Times*

<http://www.japantimes.co.jp/text/nn20080619a1.html>



Illustration 3–23. Malaysia/Brunei JDZ, 2009

Source: <http://dinmerican.wordpress.com/2010/05/09/malaysia-brunei-relations-a-tale-of-two-oil-blocks/>

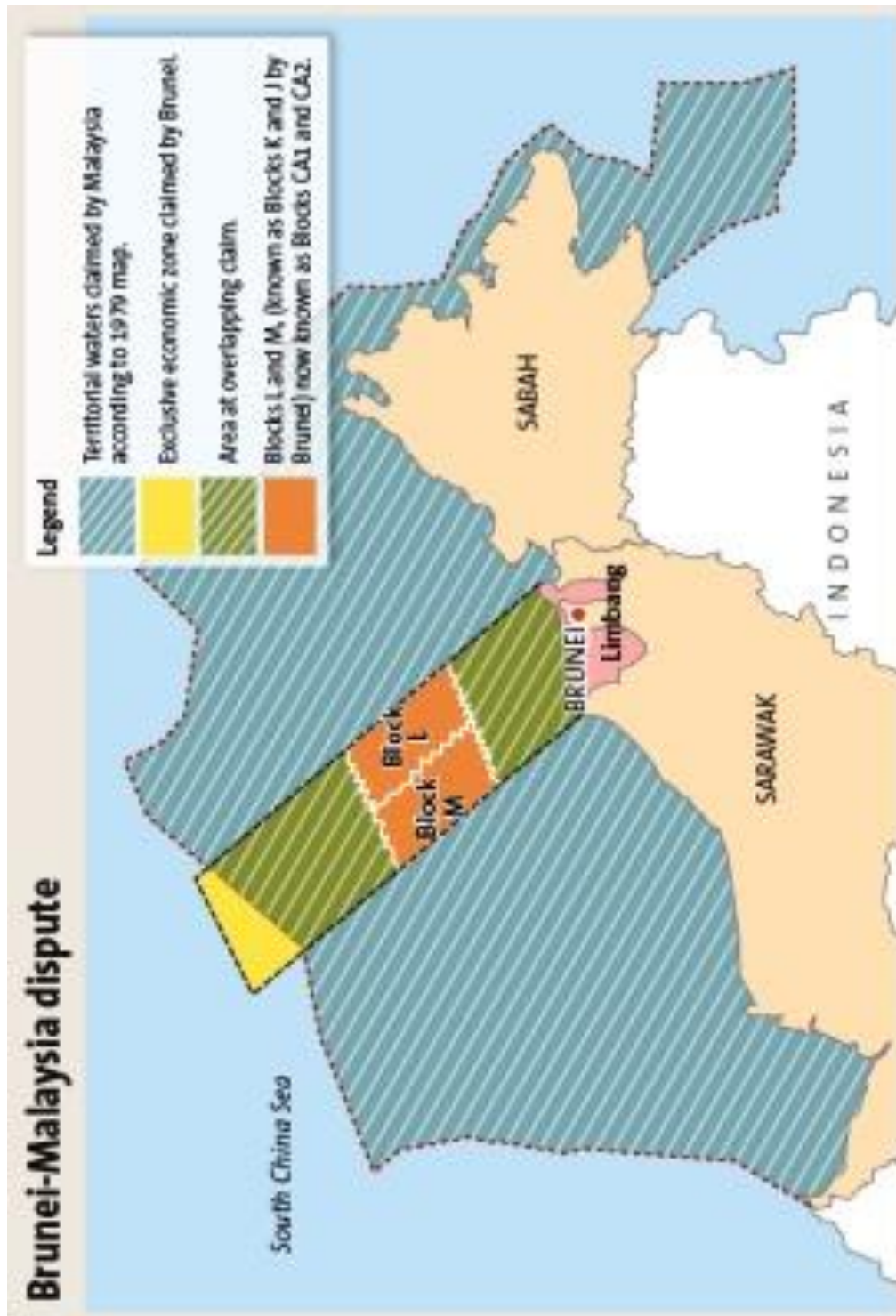


Illustration 4-1. Continental Shelf beyond 200 Nautical Miles

Source: National Oceanography Centre, Southampton
http://www.unclosuk.org/downloads/Full_183_subs-Oct2012.pdf

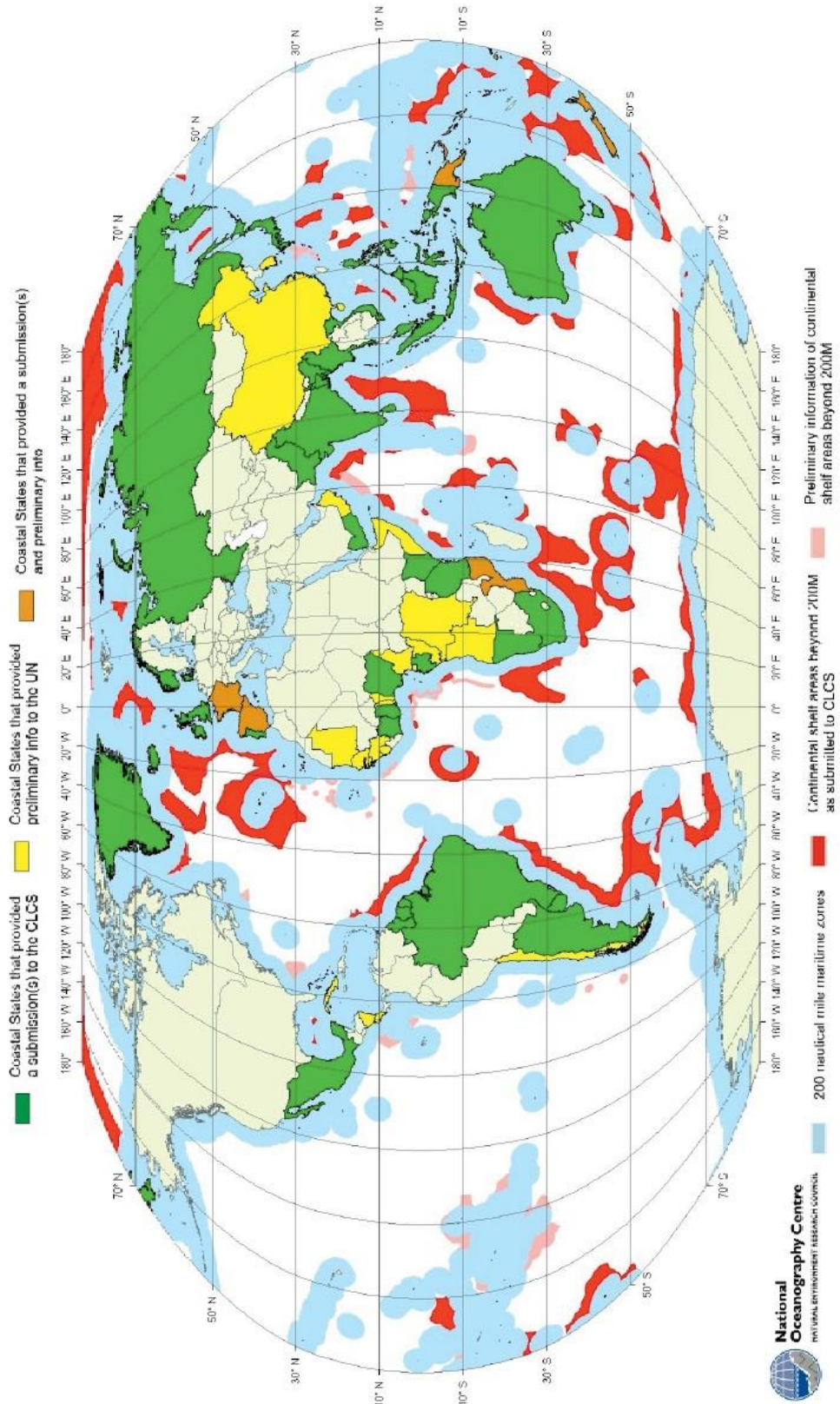


Illustration 5-1. Potential Arctic Maritime Boundary Delimitations – Martin Pratt

Source: IBRU <http://www.dur.ac.uk/resources/ibru/arctic.pdf>

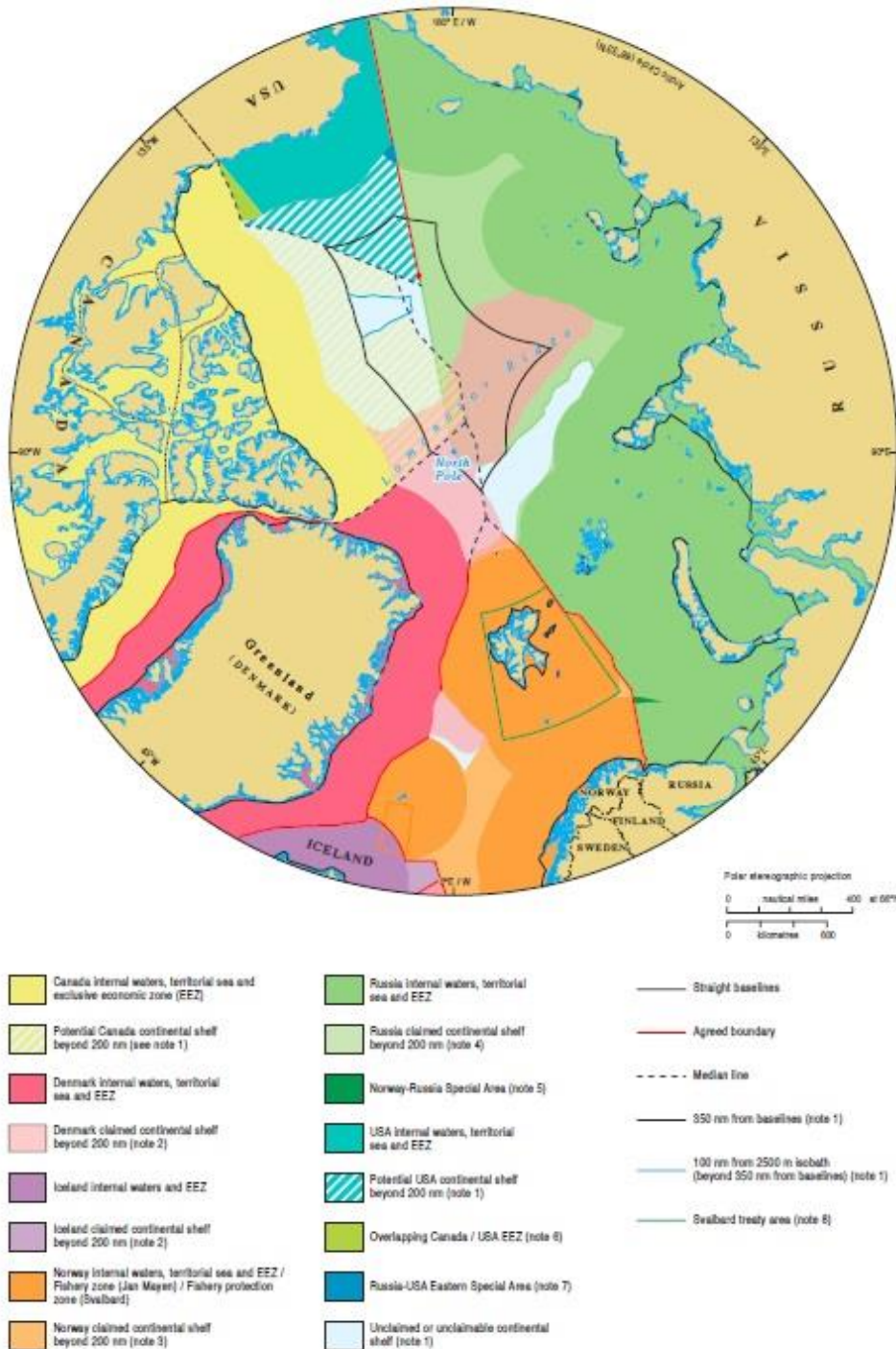


Illustration 5-2. Potential Arctic Oil

Source: United States Geological Survey <http://pubs.usgs.gov/fs/2008/3049>

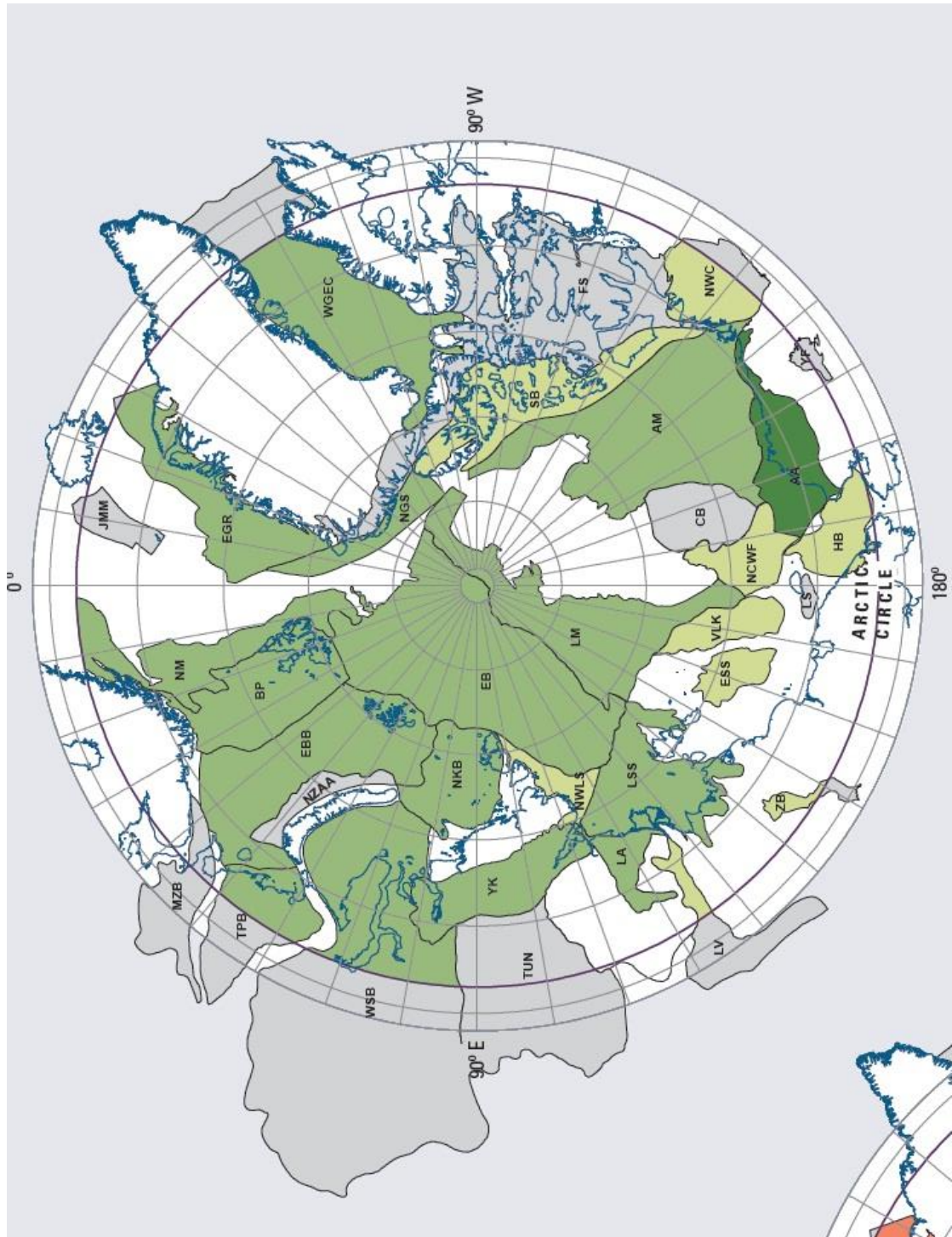


Illustration 5-3. Potential Arctic Gas

Source: United States Geological Survey <http://pubs.usgs.gov/fs/2008/3049>

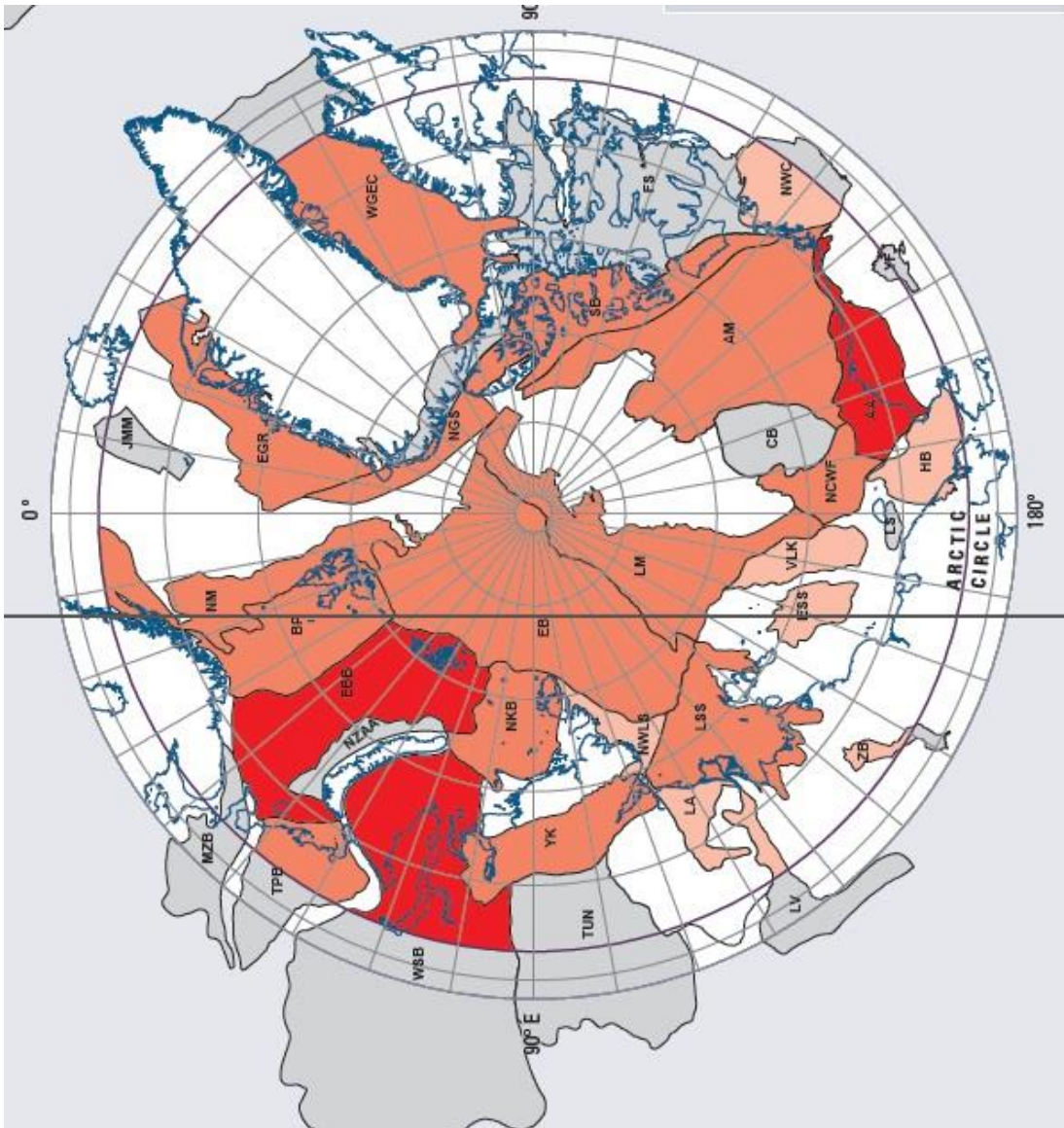


Illustration 5–4. Potential Arctic Delimitations and Oil and Gas

Source: Martin Pratt - IBRU and United States Geological Survey

http://www.oceanstewardship.com/IOSF%202009/Presentations_2009/MPratt_2009.pdf

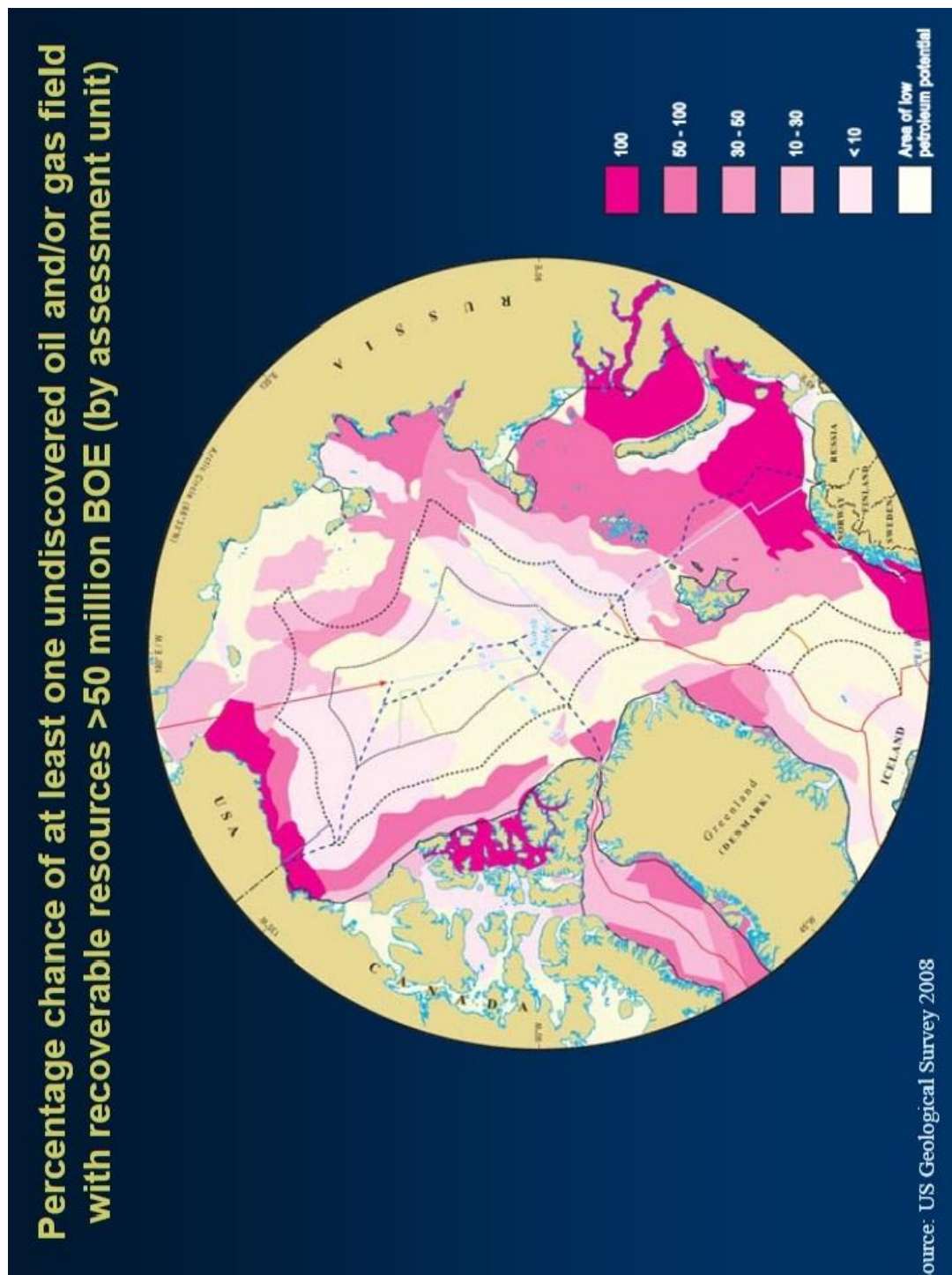


Illustration 5-5. Bering Sea

Source: United States Department of State <http://www.state.gov/p/eur/rls/fs/128740.htm>



Names are not necessarily authoritative

Illustration 5-6. Beaufort Sea

Source: Government of Canada <http://publications.gc.ca/Collection-R/LoPBdP/BP/bp322-e.htm>

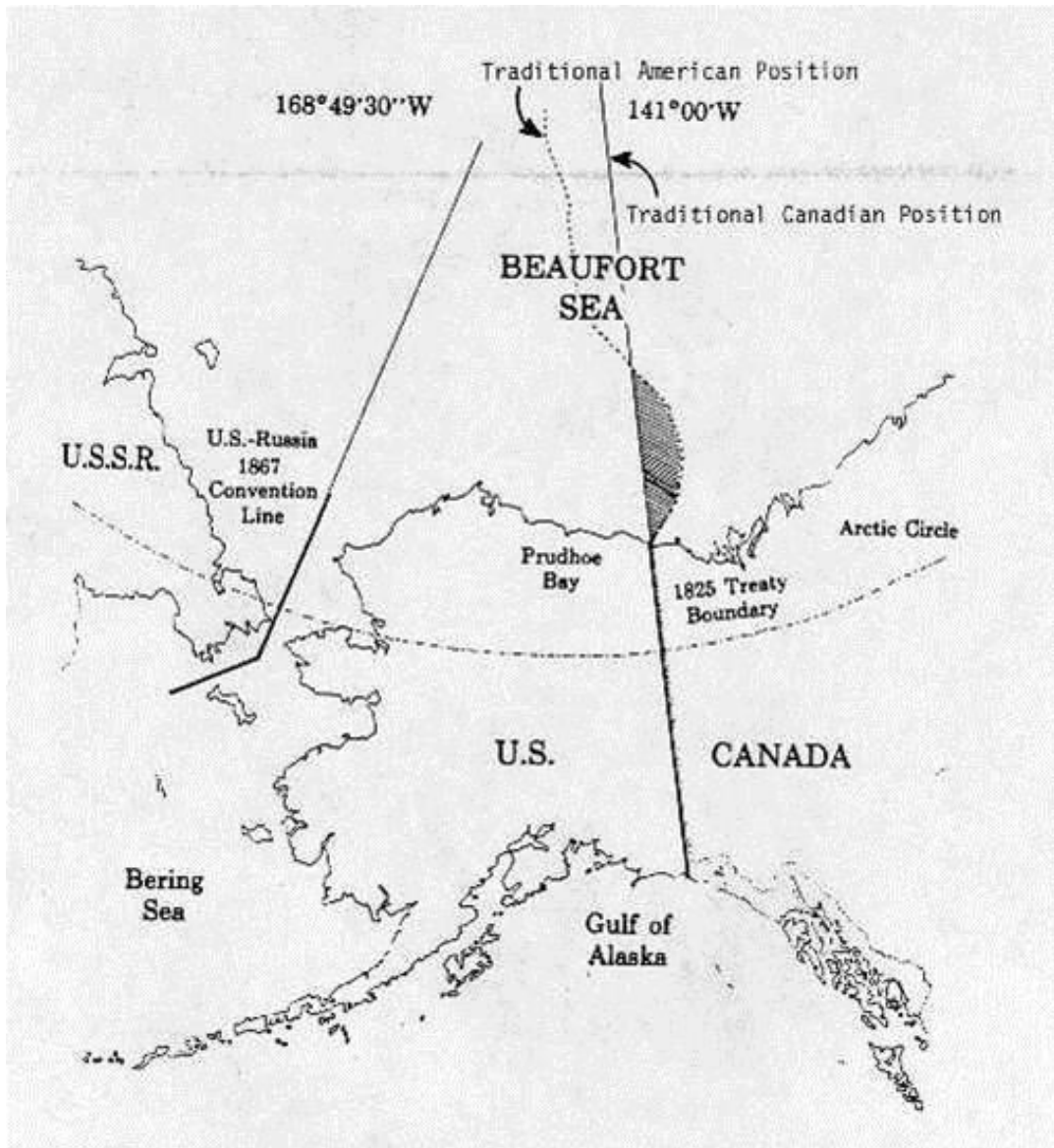


Illustration 5-7. Potential Polar Claims – The Lomonosov Ridge

Source: Chuck Carter and Paul Morin – *Wired Magazine* –

http://www.wired.com/science/planetearth/magazine/16-02/mf_continentalshelf_feud

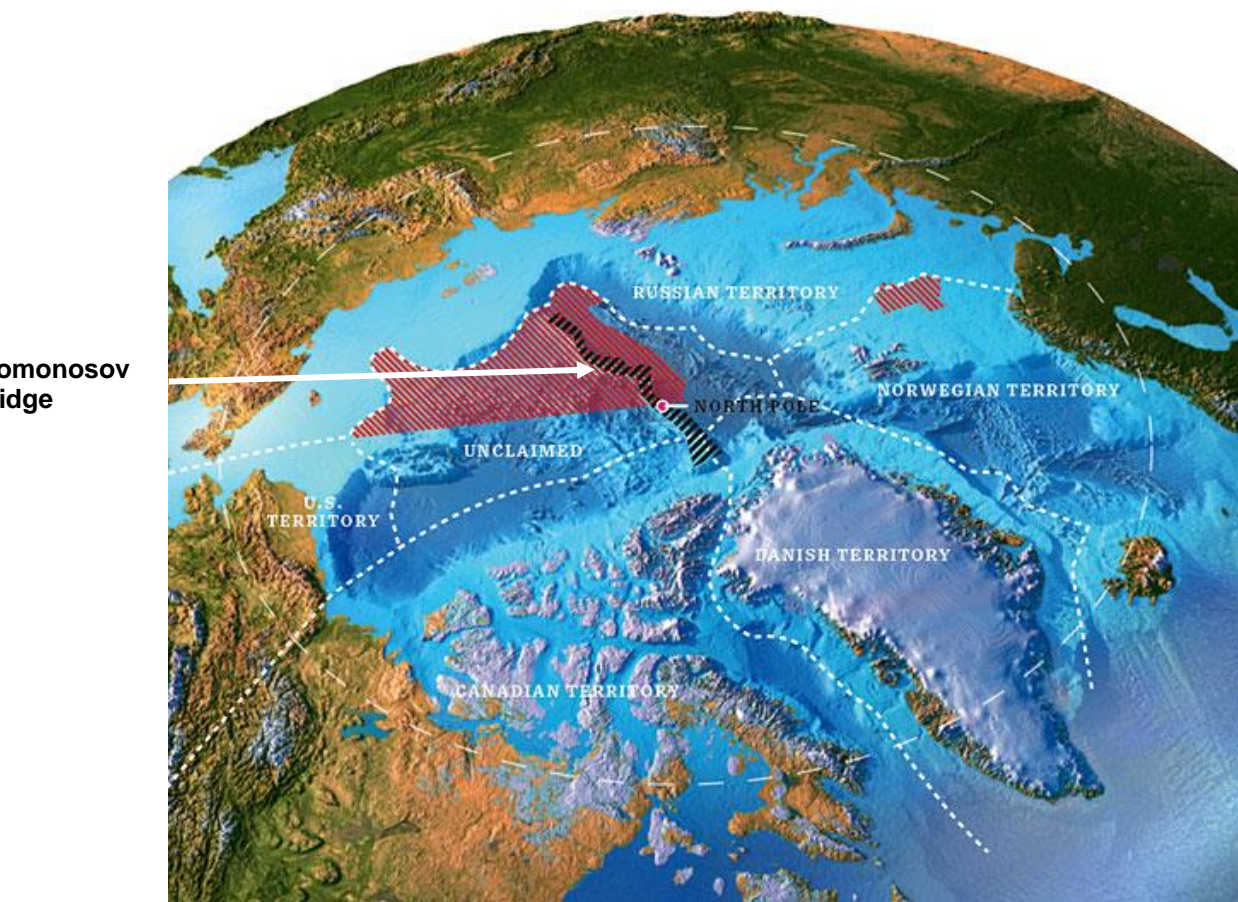


Illustration 5–8. Lomonosov and Alpha/Mendelev Ridges

Source: Ron Macnab, (2008) 39(2) 'Submarine Elevations and Ridges: Wild Cards in the Poker Game of UNCLOS Article 76' *Ocean Development & International Law* 223, 226

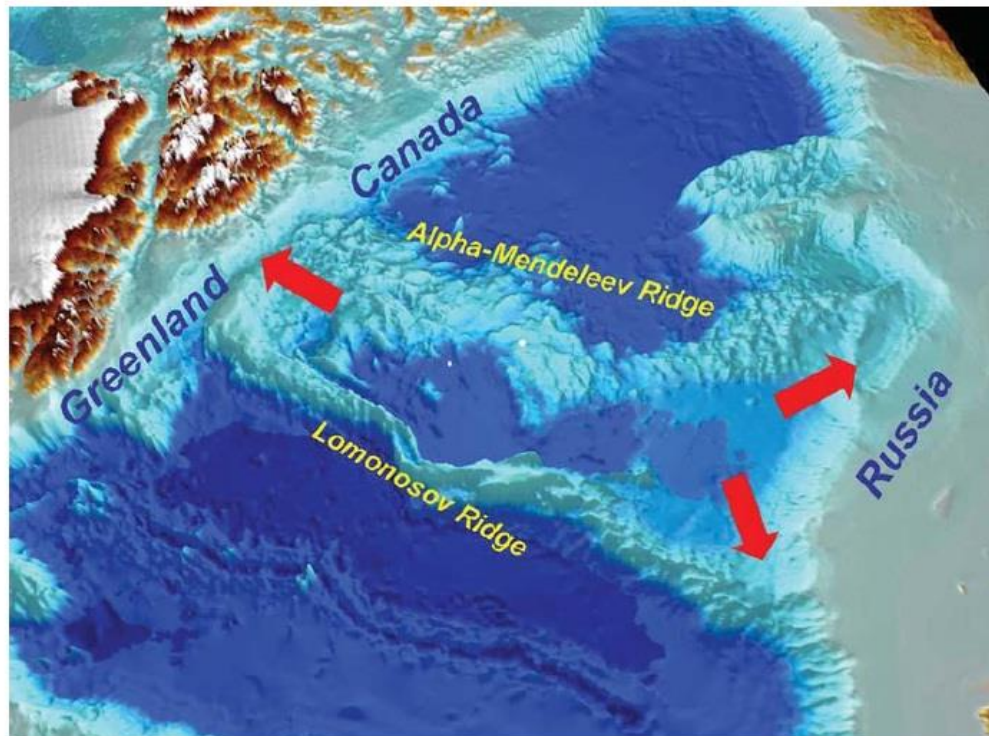


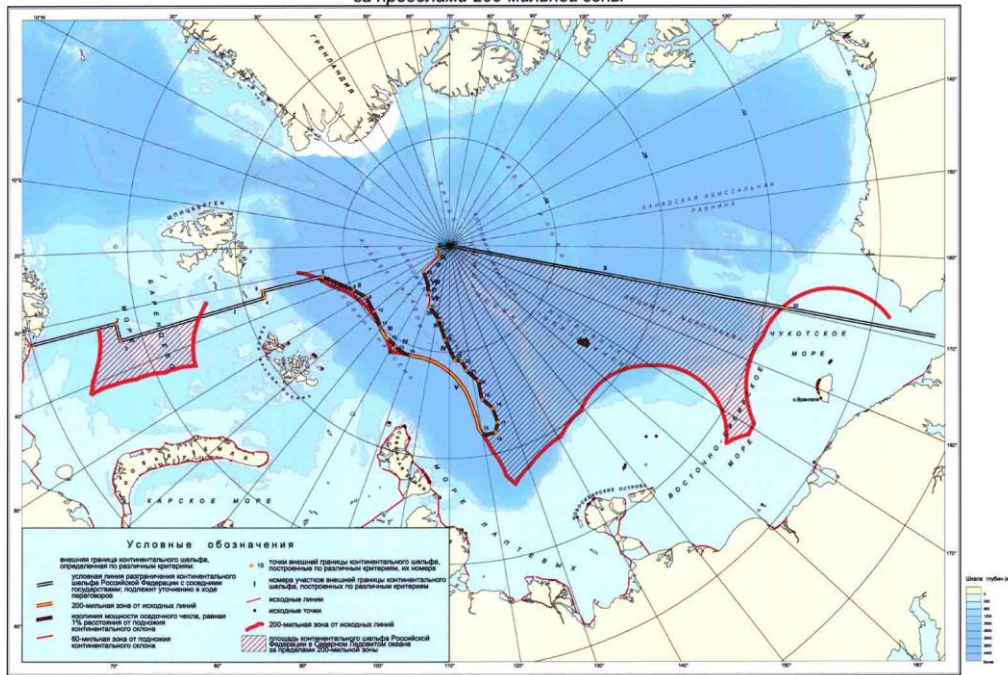
Figure 2. The Lomonosov Ridge and the Alpha-Mendelev Ridge traverse the Arctic Ocean, from the margin of Siberia (right) to that of Greenland and North America (left). Arrows indicate the locations of morphological breaks that need to be explained if the ridges are to be characterized as natural prolongations.

Illustration 5–9. Russian Arctic Claim

Source: United Nations Commission on the Limits of the Continental Shelf (CLCS) – Russian Submission

http://www.un.org/Depts/los/clcs_new/submissions_files/submission_rus.htm

Площадь континентального шельфа Российской Федерации в Северном Ледовитом океане за пределами 200-мильной зоны



Map 2

Illustration 5-10. Svalbard Region

Source: RR Churchill and Geir Ulfstein, *Marine Management in Disputed Areas; The Case of the Barents Sea* (1992)

Reproduced at <http://depts.washington.edu/jsishelp/ellison/2011/winter/Kaczynski>



Illustration 5–11. Barents Sea – Norway and Russia Maritime Boundary

Source: *The Moscow Times*, 07 July 2011

<http://www.themoscowtimes.com/business/article/arctic-treaty-with-norway-opens-fields/440178.html>



Illustration 5–12. Arctic Ocean – Denmark and Greenland CLCS Submission

Source: Commission on the Limits of the Continental Shelf, 'Partial Submission of the Government of the Kingdom of Denmark together with the Government of Greenland to the Commission on the Limits of the Continental Shelf – The Northern Continental Shelf of Greenland'

<http://www.un.org/depts/los/clcs_new/submissions_files/submission_dnk_76_2014.htm> at 16 December 2014

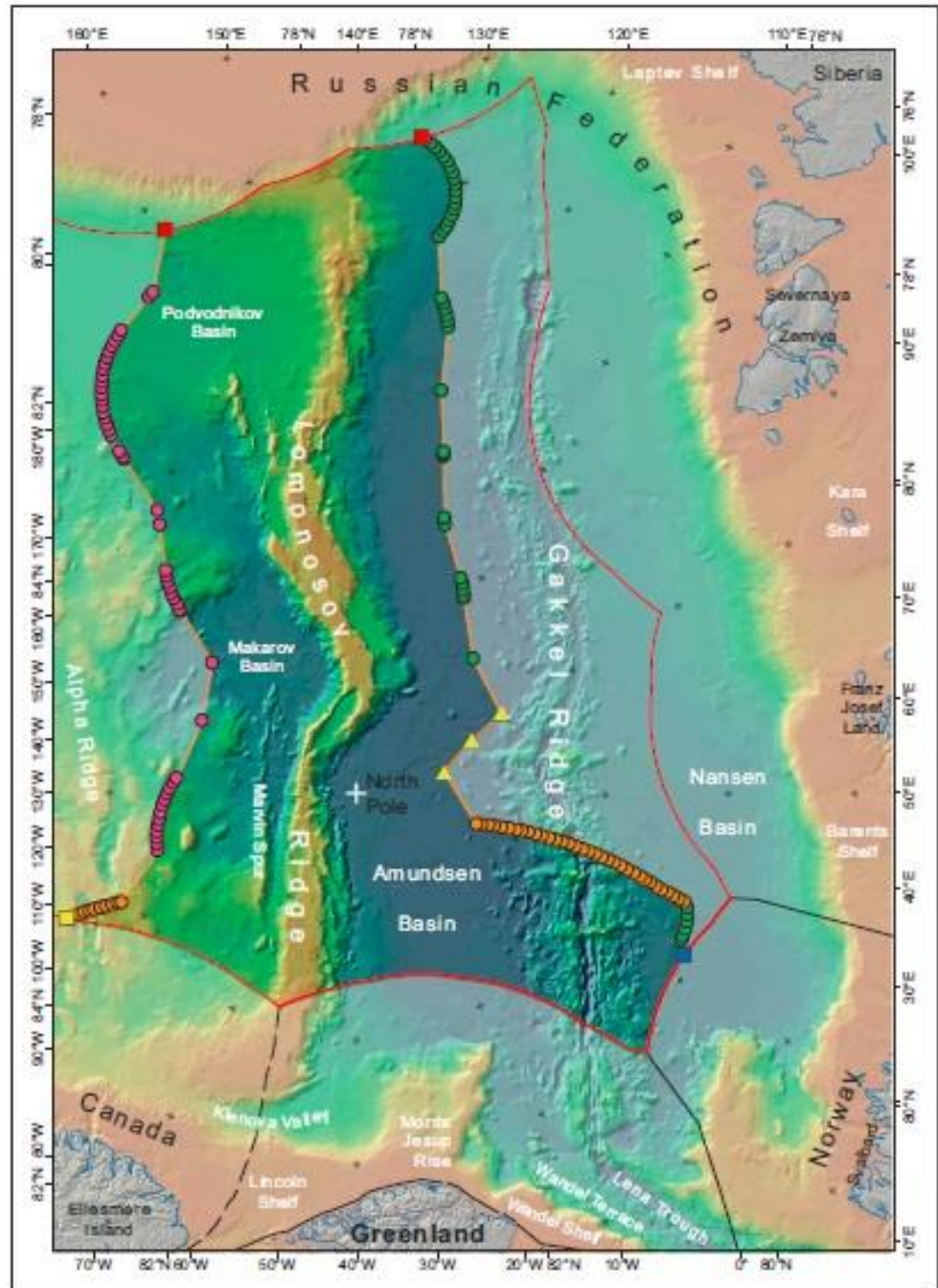


Illustration 6-1. Antarctic Region

Source: Perry Castaneda Library, University of Texas at Austin

http://www.lib.utexas.edu/maps/islands_oceans_poles/antarctic_region_pol_2005.pdf



Illustration 6-2. Potential Antarctic Oil and Gas – Sedimentary Basins – John Kingston – United States Geological Survey

Source: <http://pubs.usgs.gov/of/1991/0597/report.pdf>

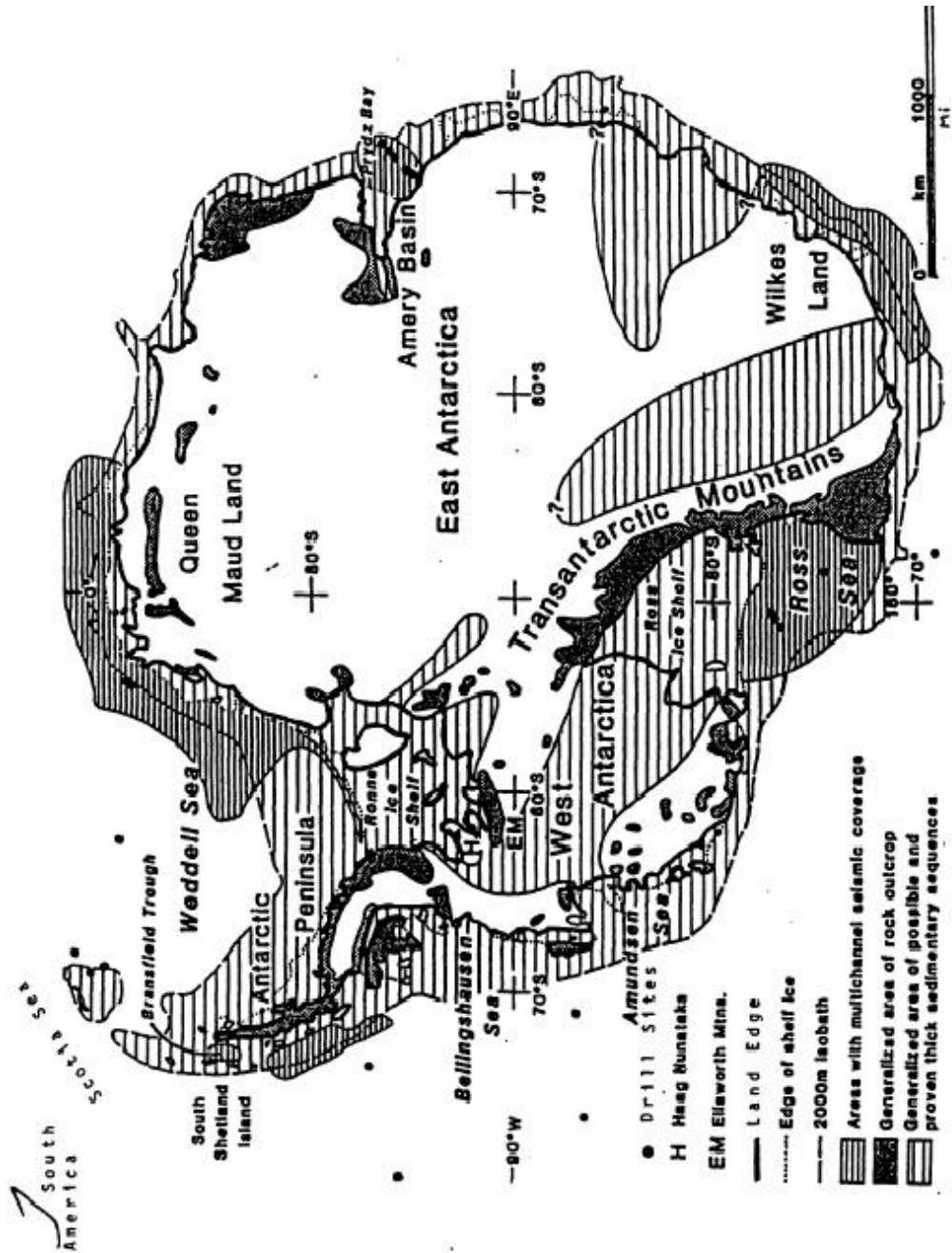


Illustration 6-3 Southern Ocean OCS Claims - ISBA

Source: 'Non-Living Resources of the Continental Shelf Beyond 200 Nautical Miles: Speculations on the Implementation of Article 82 of the United Nations Convention on the Law of the Sea,' ISA Technical Study No. 5, <www.isa.org.jm/files/documents/EN/Pubs/TechStudy5.pdf>

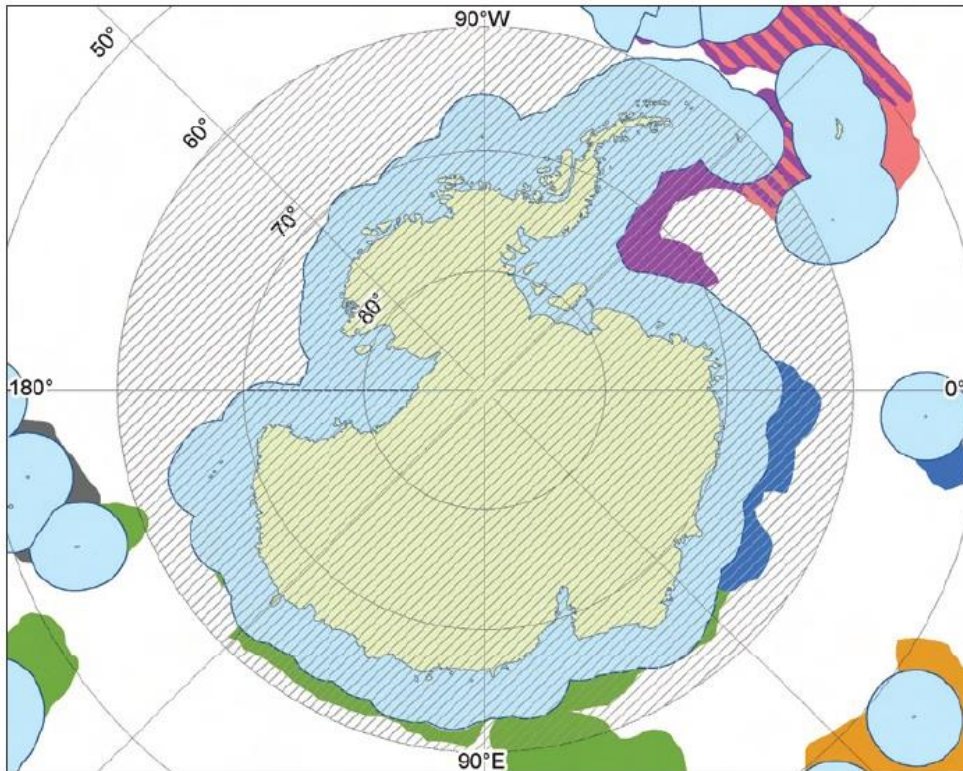


Figure 3. Stereographic polar projection of Antarctica, illustrating area within 200M of baselines in pale blue, and beyond this, the areas currently submitted by coastal States in respect of continental shelf beyond the 200M limit. Green – Australia submission;²¹ Blue – Norway submission;²² Orange – Joint submission between France and South Africa;²³ Purple – Argentina submission;²⁴ Red – UK submission;²⁵ (hatched where overlapping); Grey – New Zealand submission;²⁶ chart provided by NOCS UNCLOS Group.²⁷ Area south of 60°S²⁸ hatched in open grey lines.

Illustration 6-4. Antarctic Peninsula Region (enlargement)

Source: Perry Castaneda Library – University of Texas at Austin

http://www.lib.utexas.edu/maps/islands_oceans_poles/antarctic_region_pol_2005.pdf

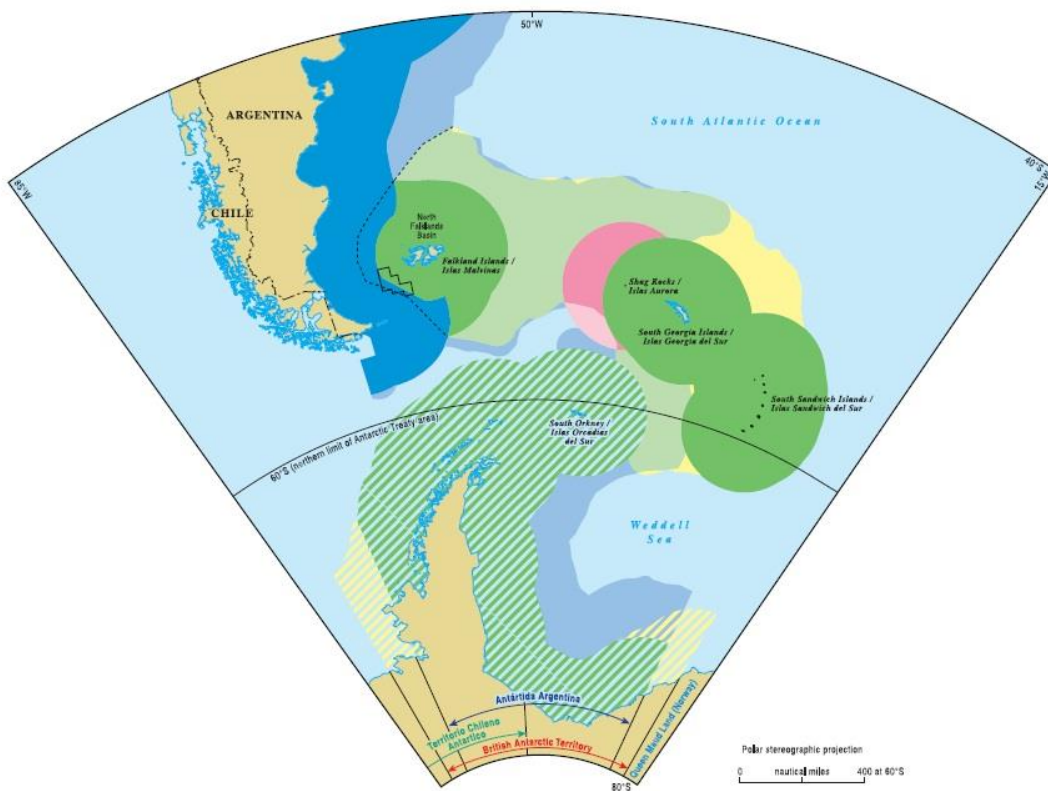


Summary:
United Kingdom 80°W to 20°W
Chile 90°W to 53°W
Argentina 74°W to 25°W

6-5 Antarctic – United Kingdom and Argentina – IBRU

United Kingdom and Argentine continental shelf and OCS claims. The Area of Special Cooperation from the repudiated 1995 JDZ agreement is shown between Argentina and the Falkland (Malvinas) Islands.

Source: 'Argentina and UK claims to maritime jurisdiction in the South Atlantic and Southern Oceans,' IBRU, https://www.dur.ac.uk/ibru/resources/south_atlantic/



Key












-  Area within 200 nm of undisputed Argentina territory **claimed** as exclusive economic zone (EEZ) by Argentina; no current UK claim
-  Area within 200 nm of disputed islands **claimed** by both Argentina and UK (note 1)
-  Area of potential **overlapping** Argentina/UK claims within 200 nm of Antarctic territory (note 2)
-  Other areas of potential UK EEZ claims within 200 nm of Antarctic territory (note 2)
-  Area beyond 200 nm covered by Argentina submission to the United Nations Commission on the Limits of the Continental Shelf (CLCS) **only**
-  Area beyond 200 nm covered by UK submission to CLCS **only**
-  Area beyond 200 nm covered by both Argentina and UK submissions to CLCS
-  Area **claimed** as EEZ by Argentina but treated as high seas / UK continental shelf by UK (note 3)
-  Area **claimed** as EEZ by Argentina but treated as high seas / the Area by UK (note 3)
-  Median line between Argentina mainland and Falkland / Malvinas Islands
-  'Special Area' for coordinated Argentina - UK hydrocarbon activities (1995-2007) (note 4)

Illustration 6–6. Antarctic – United Kingdom and Norway

Source: COMNAP Antarctic Facilities Map, Edition 5,
[https://www.comnap.aq/Publications/Comnap%20Publications/Forms/Publications.aspx](https://www.comnap.aq/Publications/Comnap%20Publications/Forms/Publications.aspx?Category=Maps)
?Category=Maps – Notations added.

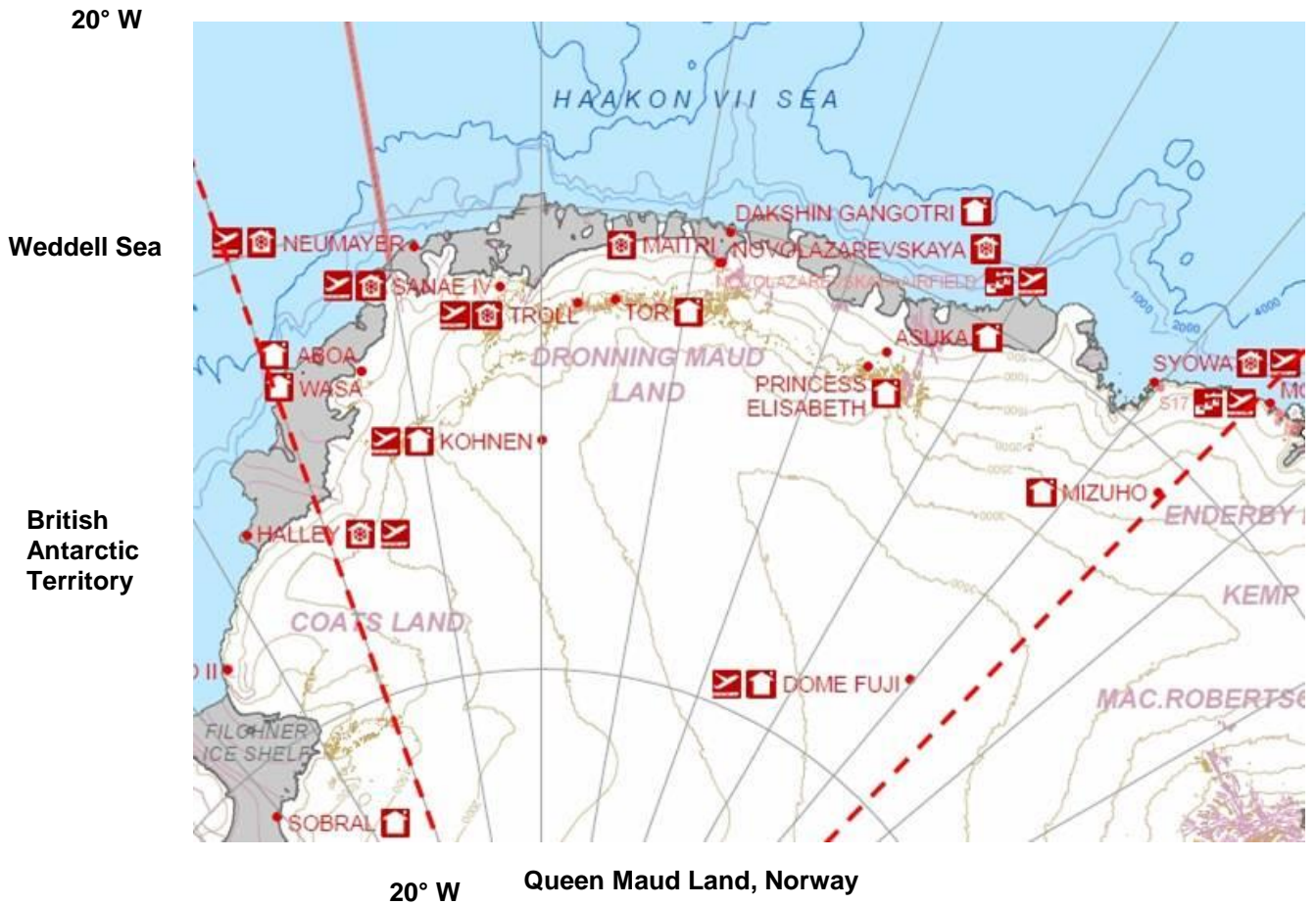


Illustration 6-7. Antarctic – Norway, Australia, France and New Zealand

Source: Stuart Kaye 'Antarctic Maritime Delimitation' in Alex G. Oude Elferink and Donald R. Rothwell (eds), *The Law of the Sea and Polar Maritime Delimitation and Jurisdiction* (2001) 169. – Notations added.

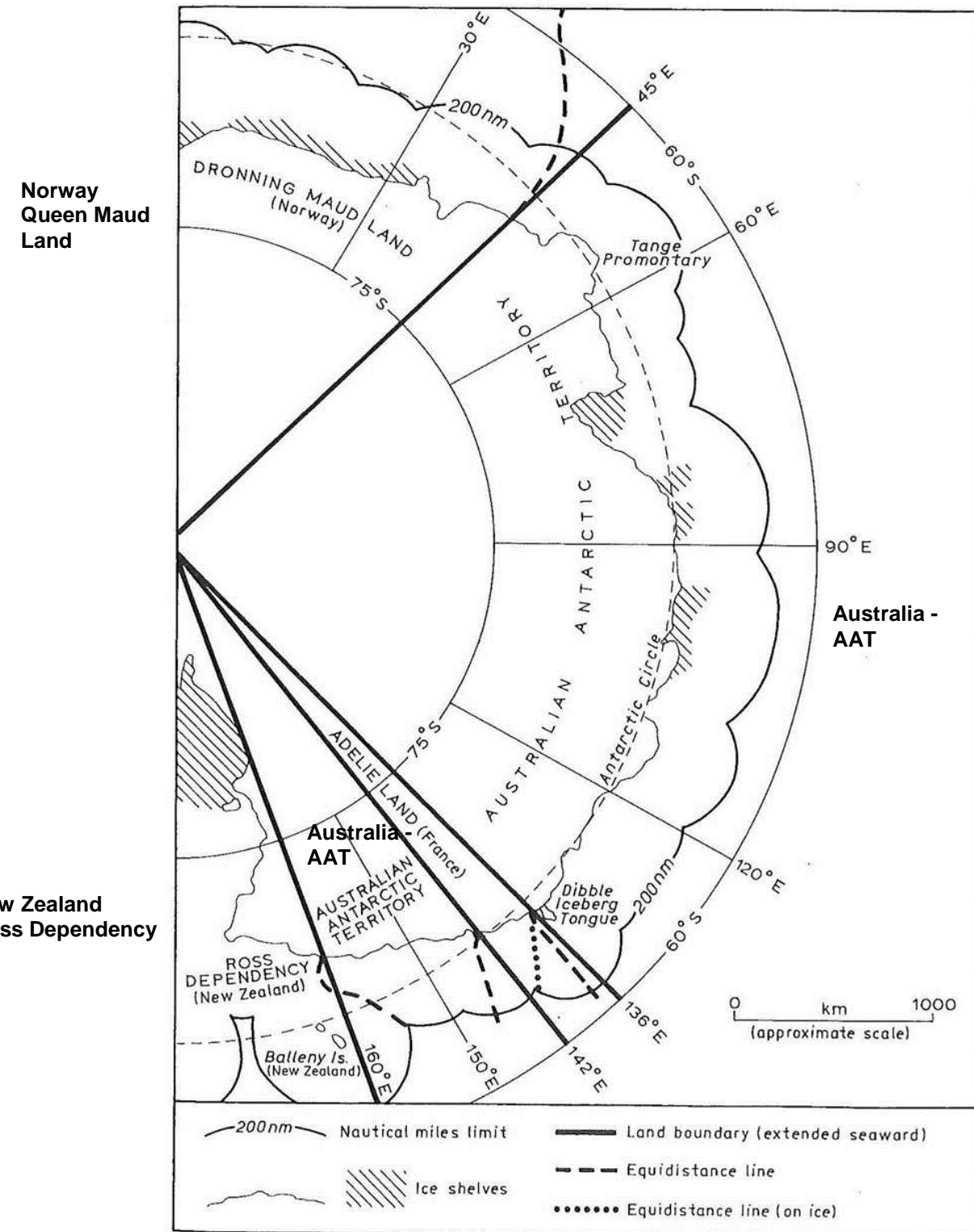


Illustration 6–8. Antarctic – New Zealand and Unclaimed Sector

Source: Polar Geospatial Center, University of Minnesota– United States Geological Survey map http://www.pgc.umn.edu/maps/antarctic/id/ANT_REF-MK2508-008
– Notations added.

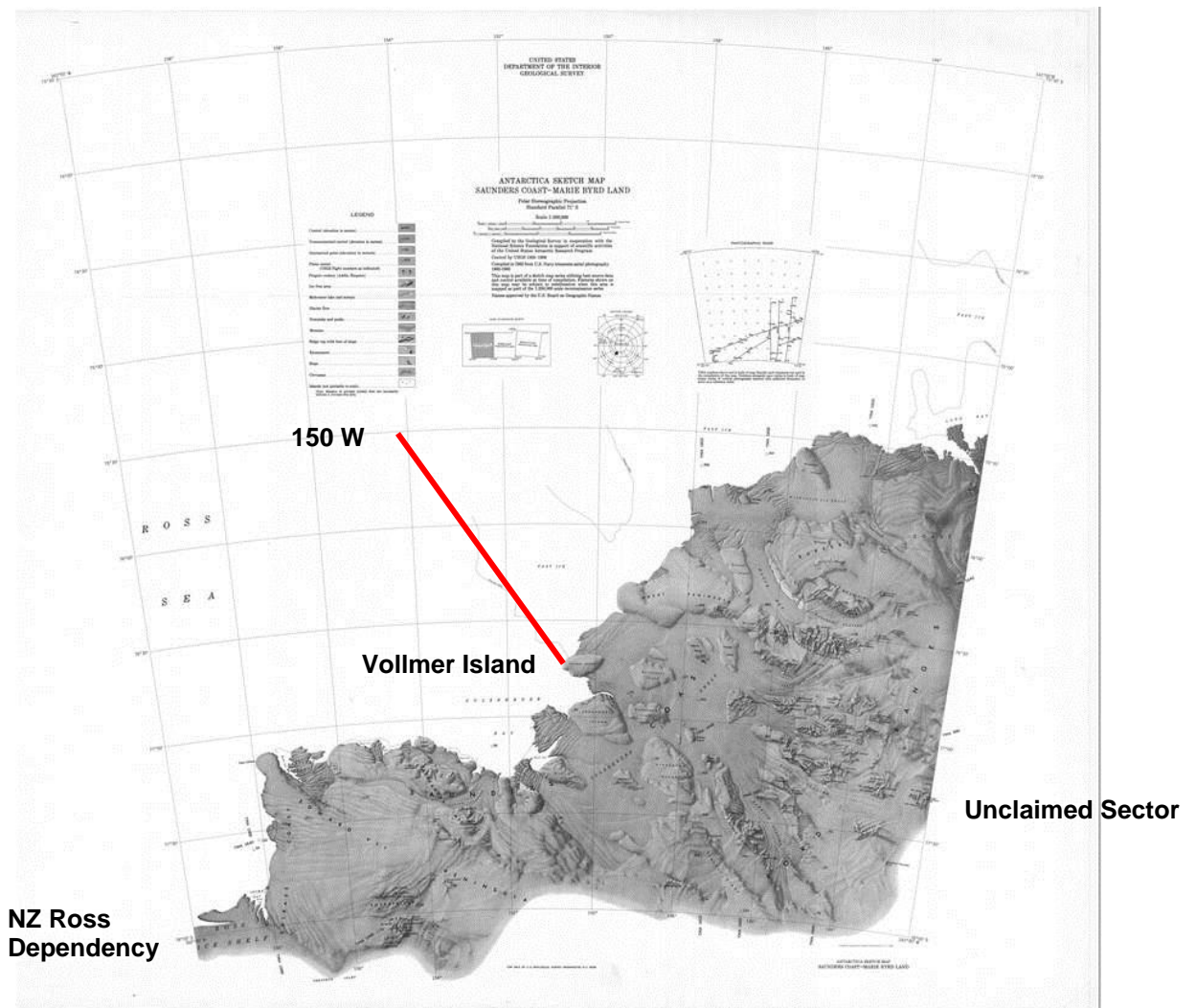


Illustration 6–9. Argentina Submission to the Commission on the Limits of the Continental Shelf

Source: 'UN Commission on the Outer Limits of the Continental Shelf – Argentine Submission,' <http://www.un.org/Depts/los/clcs_new/commission_submissions.htm>

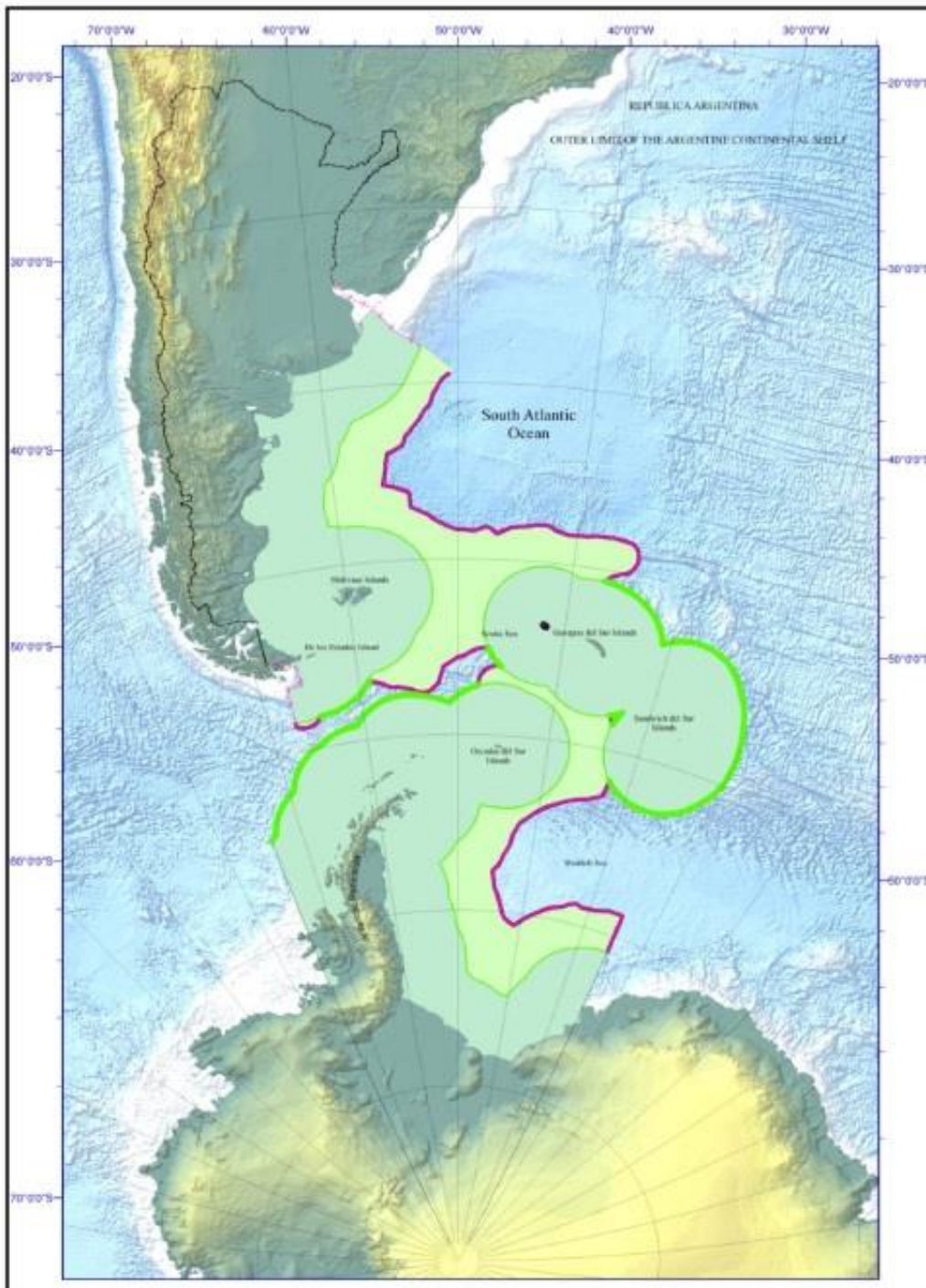
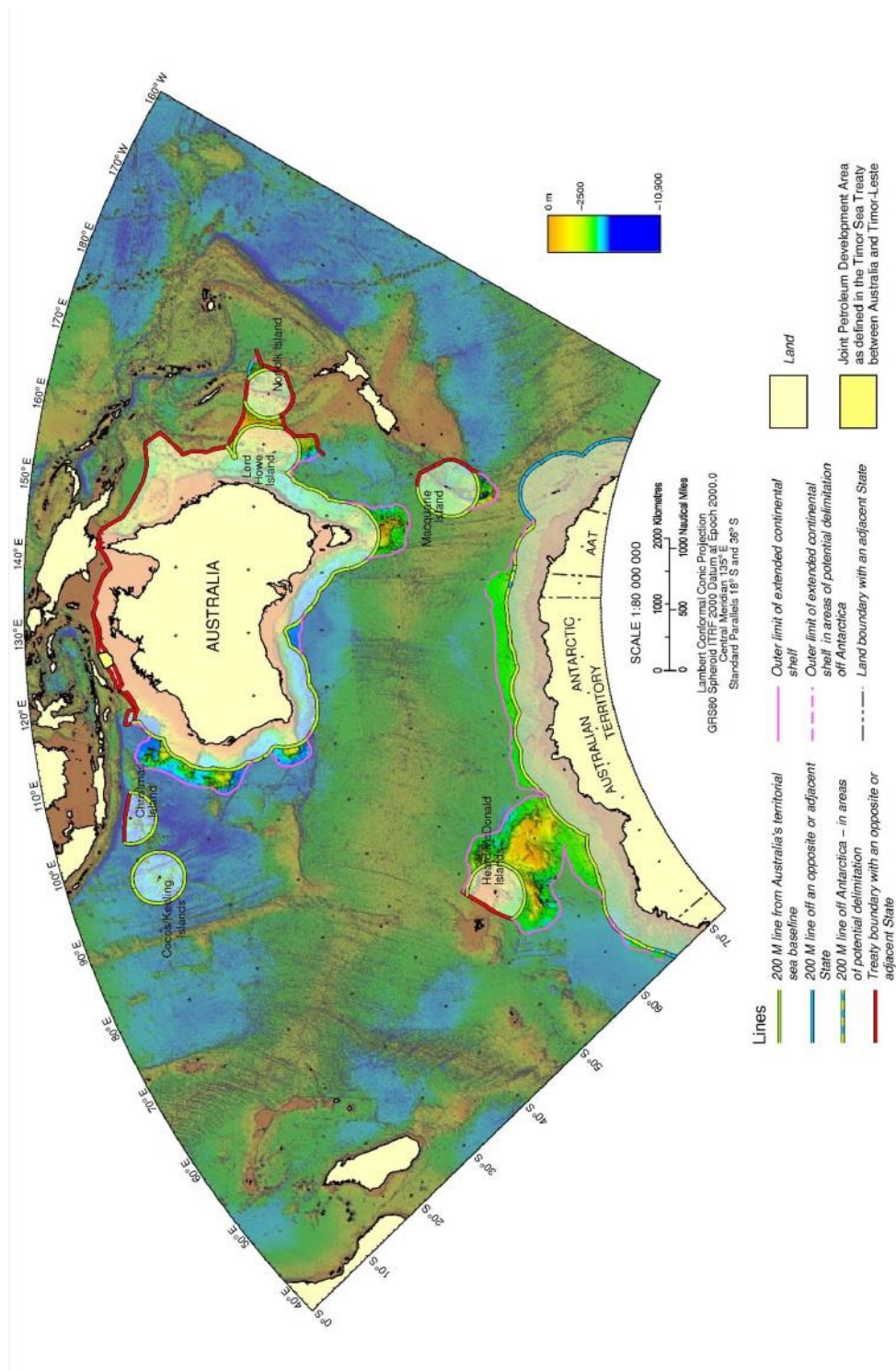


Illustration 6-10. Australian Submission to the Commission on the Limits of the Continental Shelf

Source: 'Continental Shelf Submission of Australia – Executive Summary'
 <http://www.un.org/Depts/los/clcs_new/commission_submissions.htm>



APPENDIX III – SUMMARY OF JDZ AGREEMENTS

The following table is a summary of the key geographical circumstances of the JDZ agreements reviewed in Chapter III. These JDZs are illustrated in the maps in Appendix II:

	Agreement	Geographical Circumstances	Boundary Defined	JDZ Administration Established	Special Circumstances
1.	Svalbard (Spitsbergen) Treaty, 1920, ¹	Multilateral access to resources under Svalbard Treaty 1920	Yes	No	Multilateral agreement, all state parties rights to resources. Uncertain if extends to EEZ and continental shelf
2.	Saudi Arabia/Kuwait Neutral Zone, 1922, ² Agreement, 1965, ³	Adjoining states	Yes, in 1965 Agreement	Joint venture, Joint operating committee	JDZ concerned land area, and extended to offshore zone
3.	Saudi Arabia/Bahrain, 1958, ⁴	Coastline and Island	Yes	Sole development, Saudi sovereignty	Revenue sharing from specific field
4.	Qatar/Abu Dhabi, 1969, ⁵	Opposite coasts	No	Sole development, Abu Dhabi sovereignty	Revenue sharing from specific field
5.	Iran/Sharjah (United Arab Emirates), 1971, ⁶	Island of Abu Musa situated between opposite coasts	No	Revenue sharing from specific field,	Sovereignty provisions effectively cancelled by Iran in 1992. Revenue sharing under the MOU appears in place at 2013
6.	France/Spain, Bay of Biscay, 1974, ⁷	Adjoining coasts, France	Yes	Joint venture, Each country	Partnership required for exploitation

¹*The Treaty Concerning the Archipelago Spitsbergen*, opened for signature 9 February 1920, 2 LNTS 8, (entered into force 14 August 1925) (*Svalbard Treaty*).

² *Agreement concerning the boundary between Nejd and Kuwait*, 2 December 1922, 1750 UNTS 531 (entered into force 2 December 1922) (*'Uqair Convention'*).

³ *Agreement on the partition of the Neutral Zone*, 7 July 1965, 1750 UNTS 48, (entered into force 7 July 1965) (*'Saudi Arabia/Kuwait Agreement'*).

⁴ *Agreement Between the Kingdom of Saudi Arabia and the Government of Bahrain*, 22 February 1958, 1993 UNTS 8, (entered into force 22 February 1958) (*'Saudi Arabia/Bahrain Agreement'*).

⁵ *Agreement Concerning Settlement of Offshore Boundaries and Ownership of Islands Between Qatar and Abu Dhabi*, 20 March 1969, 2402 UNTS 54, (entered into force 20 March 1969) (*'Qatar/Abu Dhabi Agreement'*).

⁶ *Memorandum of Understanding' between Iran and Sharjah*, 29 November 1971,, at <http://www.parstimes.com/history/iran_sharjah.html> at 25 July 2012 (entered into force 29 November 1971) (*'Iran/Sharjah Agreement'*).

		mid-point of ocean trough, Spain equidistance		sovereign rights in their areas	
7.	Sudan/Saudi Arabia - Common Zone, 1974, ⁸	Opposite coasts	Yes	Joint Authority, Joint Commission	North and south boundaries not delimited
8.	Japan/Korea, 1974, ⁹	Opposite coasts, Japan equidistance, Korea, continental shelf	No	Required agreement between oil companies from each country.	Agreement protested by China
9.	United Kingdom/Norway - Frigg Field, 1977, ¹⁰	Opposite coasts, effectively sharing field	Example of unitisation agreement, boundary previously agreed	Both states must approve single Unit Operator	Revenue sharing from specific field
10.	Malaysia/Thailand - Joint Development Area, 1979, ¹¹ and 1990, ¹²	Adjoining coasts, Thailand claimed island affected continental shelf	No	Joint Authority, Malaysia Thailand Joint Authority	Overlapping environmental protection jurisdictions. Partial overlapping claim by Vietnam.
11.	Iceland/Norway - Jan Mayen Island Treaty Area, 1981, ¹³	Island continental shelf	Yes	Each country sovereign rights their areas	Followed decision of conciliation commission
12.	Cambodia/Vietnam Agreement, 1982, ¹⁴	Adjoining coasts, Cambodian islands affecting	Yes	JDZ in principle only	During Vietnamese occupation of Cambodia, Vietnam obtained island sovereignty

⁷ *Convention Between the Government of the French Republic and the Government of the Spanish State on the Delimitation of the Continental Shelves of the Two States in the Bay of Biscay*, 29 January 1974, 996 UNTS 345 (entered into force 5 April 1975) ('France/Spain Agreement').

⁸ *Agreement Between Sudan and Saudi Arabia Relating to the Joint Exploitation of the Natural Resources of the Seabed and Subsoil of the Common Zone*, 16 May 1974, 952 UNTS 198 (entered into force 16 May 1974) ('Sudan/Saudi Arabia Agreement').

⁹ *Japan-Republic of Korea - Agreement concerning the Joint Development of the Southern part of the Continental Shelf adjacent to the Two Countries*, 30 January 1974, 1225 UNTS 104 (entered into force [30 January 1974]), ('Japan/Korea Agreement').

¹⁰ *Agreement Between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of the Kingdom of Norway relating to the Exploitation of the Frigg Field reservoir and the Transmission of Gas therefrom to the United Kingdom*, 10 May 1976, 1098 UNTS 4 (entered into force 22 July 1977) ('United Kingdom/Norway Agreement').

¹¹ *Memorandum of Understanding between the Kingdom of Thailand and Malaysia on the Establishment of a Joint Authority for the Exploitation of the Resources of the Sea-Bed in a Defined Area of the Continental Shelf of the two countries in the Gulf of Thailand*, 24 October 1979, reprinted in Jonathan I. Charney and Lewis M. Alexander (eds), *International Maritime Boundaries* (1993) vol 1, 1099, (entered into force 15 July 1982) ('Thailand/Malaysia Agreement').

¹² *1990 Agreement between Malaysia and Thailand on the constitution and other matters relating to the establishment of the Malaysia-Thailand Joint Authority*, 30 May 1990 <<http://cil.nus.edu.sg/1990/1990-agreement-between-the-government-of-malaysia-and-the-government-of-the-kingdom-of-thailand-on-the-constitution-and-other-matters-relating-to-the-establishment-of-the-malaysia-thailand-joint-autho/>> on 15 January 2013 (entered into force 30 May 1990).

¹³ *Norway/Iceland Agreement*, signed 22 October 1981, 2124 UNTS 262, (entered into force 2 June 1982).

¹⁴ *Agreement on Historic Waters of Vietnam and Kampuchea*, 7 July 1982, *International Maritime Boundaries*, vols 2-3, 2364, (entered into force 7 July 1982) ('Vietnam/Cambodia Agreement').

		equidistance			
13.	Tunisia/Libya Agreements, 1988, ¹⁵	Adjoining coasts following ICJ decision using equitable principles	Yes	Joint Tunisian Libyan exploration company	Agreements not made public, understood one JDZ, and one agreement sharing revenue for specific field
14.	Australia/Indonesia - Timor Gap Treaty, 1989, ¹⁶	Opposite coasts, Australia, prolongation continental shelf, Indonesia, equidistance	No	Ministerial Council and Joint Authority	No longer in force. Superseded by Australia and Timor-Leste Timor Sea Treaty in 2002
15.	Malaysia/Vietnam, 1992, ¹⁷	Opposite coasts, Vietnam equidistance, Malaysia equidistance using Redang island	No	Malaysian company PETRONAS to carry out operations	One country responsible for operations with revenue sharing
16.	Guinea-Bissau/Senegal, 1993, ¹⁸	Adjacent coasts, 1960 agreement between France and Portugal compared to equidistance	Yes	Joint Authority, Management and Cooperation Agency	1960 French and Portuguese colonial boundary appears to be in force, subject to the JDZ
17.	Columbia/Jamaica, 1993, ¹⁹	Claimed archipelagic baseline and opposite coast	No, however agreement on adjoining boundary	Joint venture, Joint Commission	Issue whether Jamaica is an archipelagic state
18.	United Kingdom/ Argentina - South West Atlantic, 1995, ²⁰	Island sovereignty issue	No	Joint Commission	Dispute over sovereignty over Falkland (Malvinas) Islands. Cancelled by Argentina in 2007

¹⁵ *Agreement between President Ben Ali of Libya Republic relating to the El Bouri Field*, 4 September 1988 (Not publicly released), reviewed in Masahiro Miyoshi, *The Joint Development of Offshore Oil and Gas*, 34 (entered into force 4 September 1988) (*Libya/Tunisia Agreements*).

¹⁶ *Treaty between Australia and the Republic of Indonesia in the Zone of Cooperation in an Area between the Indonesian Province of East Timor and Northern Australia*, 11 December 1989, 1654 UNTS 106, (entered into force 9 February 1991, terminated on independence of Timor-Leste in April 2003) (*Timor Gap Treaty*).

¹⁷ *Memorandum of Understanding between Malaysia and the Socialist Republic of Vietnam for the Exploration and Exploitation of Petroleum in a Defined Area of the Continental Shelf Between the Two Countries*, 5 June 1992, National University of Singapore - Centre for International Law <<http://cil.nus.edu.sg/tp/il/pdf/1992%20MOU%20between%20Malaysia%20and%20Vietnam%20for%20the%20Exploration%20and%20Exploitation%20of%20Petroleum-pdf.pdf>> at 31 July 2012 (entered into force 4 June 1993) (*Malaysia/Vietnam Agreement*).

¹⁸ *Agreement on Management and Cooperation between the Government of the Republic of Guinea-Bissau and the Government of the Republic of Senegal*, 14 October 1993, 1903 UNTS 64, (entered into force 21 December 1995), (*Guinea-Bissau/Senegal Agreement*).

¹⁹ *Maritime Delimitation Treaty between Jamaica and the Republic of Colombia*, 12 November 1993, 1776 UNTS 17 (entered into force 14 March 1994) (*Jamaica/Columbia Treaty*).

²⁰ *Joint Declaration on Cooperation over Offshore Activities in the South West Atlantic*, 27 September 1995, 35 ILM 301 (*Argentina/United Kingdom Agreement*).

19.	Nigeria/São Tome and Principe, 2001, ²¹	Island and opposite coast, Nigeria, length coasts, São Tome archipelagic baseline,	No	Joint Authority	JDZ influenced by special circumstances claim
20.	Thailand and Cambodia MOU, 2001, ²²	Cambodia based on no effect for Ko Kut island, Thailand gives full affect, interpretation of 1907 treaty	No	N/A	In principle agreement, cancelled by Thailand in 2009, renewed interest in 2013
21.	Australia/Timor-Leste - Timor Sea Treaty, 2002, ²³ Sunrise IUA, 2003, ²⁴ CMATS, 2007, ²⁵	Opposite coasts, Australia, prolongation continental shelf, Timor-Leste, equidistance	No	Joint Authority, Ministerial Council and Joint Authority	Replaced 1989 Timor Gap Treaty
22.	China/Japan - East China Sea, 2008, ²⁶	China on natural prolongation continental shelf, Japan, equidistance	No	N/A	In principle agreement, awaiting JDZ terms as at 2013
23.	Malaysia/Brunei, 2009, ²⁷	Adjoining coasts	Yes	Brunei sovereign rights	Unpublished, Malaysia may have agreed in return for Limbang

²¹ *Treaty between the Federal Republic of Nigeria and the Democratic Republic of São Tome and Principe on the Joint Development of Petroleum and Other Resources, in respect of the Areas of the Exclusive Economic Zones of the Two States*, 21 February 2001 (entered into force 16 January 2003), United Nations - Delimitations Treaties Infobase

<<http://www.un.org/Depts/los/legislationandtreaties/statefiles/nga.htm>> at 29 July 2012 ('Nigeria/São Tome and Principe Treaty').

²² *Memorandum of Understanding Between Thailand and Cambodia regarding the Area of their Overlapping Maritime Claims to the Continental Shelf*, 18 June 2001

<http://tncbcc.rtarf.mi.th/pdf/pdf_cam190/07.pdf> at 9 April 2013 (entered into force 18 June 2001).

²³ *Australia/Timor-Leste - Timor Sea Treaty*, 20 May 2002, 2258 UNTS 3 (entered into force 2 April 2003).

²⁴ *Agreement between the Government of Australia and the Government of the Democratic Republic of Timor-Leste relating to the Unitisation of the Sunrise and Troubadour Fields*, 6 March 2003, [2007] ATS 11 (entered into force 23 February 2007) ('Australia/Timor-Leste - Sunrise IUA').

²⁵ *Australia/Timor-Leste - CMATS Treaty*, 12 January 2006, [2007] ATS 12 (entered into force 23 February 2007).

²⁶ Jiang Yu, Chinese Foreign Ministry 'China, Japan reach principled consensus on East China Sea issue' (Press Release, 18 June 2009), at <<http://www.china-embassy.org/eng/fyrth/t466632.htm>> at 29 July 2009.

²⁷ *Exchange of Letters between Malaysia and Brunei Darussalam*, 16 March 2009, (not publicly released), referred to in Jeffrey J. Smith, 'Brunei and Malaysia resolve outstanding maritime boundary issues' [2010] 1 *Law of the Sea Reports*

<<http://www.asil.org/losreports/LOSReportsVol12010w6Smith.pdf>> at 1 August 2012.

²⁷ 'Details Emerge of the 2009 Brunei-Malaysia Maritime Agreement' (2010) International Boundaries Research Unit

<http://www.dur.ac.uk/ibru/news/boundary_news/?itemno=10047&rehref=%2Fibru%2Fnews%2F&resubj=Boundary+news%20Headlines> at 15 August 2012. It is not known if the Agreement contains provisions for the protection of the environment.

BIBLIOGRAPHY

1. ARTICLES / BOOKS / REPORTS

Abrahamson, John, *Tolley's International Taxation of Corporate Finance* (LexisNexis, 2014)

Abrahamson, John, *Tolley's International Taxation of Upstream Oil and Gas* (LexisNexis, 2014)

Akiwumi, Paul and Terttu Melvasalo, 'UNEP's Regional Seas Programme: approach, experience and future plans' (1998) 22(3) *Marine Policy* 229

Alexander, Lewis M, 'Canada – Denmark (Greenland) Report, Number 1–1' in Jonathan I Charney and Lewis M Alexander (eds), *International Maritime Boundaries* (1993) vol 1, 371

Allain, Monique Andree, 'Canada's Claim to the Arctic: A Study in Overlapping Claims to the Outer Continental Shelf' (2011) 42(1) *Journal of Maritime Law and Commerce* 1

Anderson, David H, 'The Status under International Law of the Maritime Areas around Svalbard' (2009) 40(4) *Ocean Development and International Law* 373

Anderson, David H, 'Iceland–Norway (Jan Mayen), Report Number 9–4', in Jonathan I Charney and Lewis M Alexander (eds), *International Maritime Boundaries* (1993) vol 2, 1755

Anderson, David H, 'Denmark (Greenland) –Norway (Jan Mayen), Report Number 9-19', in Jonathan I Charney and Lewis M Alexander (eds), *International Maritime Boundaries* (1998) vol 3, 2507

Anderson, David H, 'Denmark (Greenland) –Iceland', Report Number 9-22', in Jonathan I Charney and Lewis M Alexander (eds), *International Maritime Boundaries* (2002) vol 4, 2941

Anderson, David H, 'Strategies for Dispute Resolution - Negotiating Joint Agreements' in *Modern Law of the Sea - Selected Issues*, (Martinus Nijhoff, 2008) 491

Antunes, Nuno Sergio Marques, 'Estoppel, Acquiescence and Recognition in Territorial and Boundary Dispute Settlement' (2000) 2(8) *International Boundaries Research Unit Boundary & Territory Briefing* 8

Armstrong, Patrick and Forbes, Vivian, 'The Falkland Islands and their Adjacent Maritime Area' (1995) 2(3) *IBRU Maritime Briefing* 27

Auburn, F M, *Antarctic Law and Politics* (Indiana University Press, 1982) 49

Baker, James S, and Byers, Michael, 'Crossed Lines: The Curious Case of the Beaufort Sea Maritime Boundary Dispute' (2012) 43(1) *Ocean Development & International Law* 70

Barrett, Brenda, 'Occupational Health and Safety ' in Hazel Fox et al, *Joint Development of Offshore Oil and Gas, A Model Agreement for States for Joint Development with Explanatory Commentary* (British Institute of International and Comparative Law, 1990), vol 2, 187

Bastida, Ana E, Adaeze Ifesi-Okoye, Salim Mahmud et al, 'Cross-border unitization and joint development agreements: an international law perspective', (2006-2007) 29 *Houston Journal of International Law* 355

Beck, Peter J, 'Who Owns Antarctica? Governing and Managing the Last Continent' (1994) 1(1) *International Boundaries Research Unit Boundary & Territory Briefing* 19

Becker-Weinberg, Vasco, *Joint Development of Hydrocarbon Deposits in the Law of the Sea* (Springer Verlag, Heidelberg, 2014)

Beckman, Robert C, 'Maritime Claims in the South China Sea: Issues & Challenges' (Paper presented at UNCLOS in a Changing World, 7th ABLOS Conference, Monaco, 2-5 October 2012)

Beckman, Robert C, Ian Townsend-Gault, Clive Schofield et al, *Beyond Territorial Disputes in the South China Sea: Legal Frameworks for the Joint Development of Hydrocarbon Resources* (National University of Singapore, Centre for International Law, 2013)

Benitah, Marc 'Russia's Claim in the Arctic and the Vexing Issue of Ridges in LOSC' (2007) *American Society of International Law ASIL Insight* 11

Bertram, Christine, Anna Krätschell, O'Brien, Killian et al, 'Metalliferous Sediments in the Atlantis II Deep – Assessing the Geological and Economic Resource Potential and Legal Constraints' (2011) *Kiel Working Paper* no. 1688

Bird, Kenneth J et al, 'Circum-Arctic Resource Appraisal: Estimates of Undiscovered Oil and Gas North of the Arctic Circle' (2008) *U.S. Geological Survey Fact Sheet* <<http://pubs.usgs.gov/fs/2008/3049/>> at 24 October 2008

Birnie, Patricia, 'Protection of the Marine Environment' in Hazel Fox et al, *Joint Development of Offshore Oil and Gas, A Model Agreement for States for Joint Development with Explanatory Commentary* (British Institute of International and Comparative Law, 1990), vol 2, 202

Blinn, Keith W, et al, *International Petroleum Exploration and Exploitation Agreements* (The Barrows Company Inc, 1986) 210

Boczek, Boleslaw A, *International Law: A Dictionary* (Scarecrow Press, 2005) 227

Boggs, S Whittemore 'Problems of Water Boundary Definition: Median Lines and International Boundaries through Territorial Waters' (1937) 27 *Geographical Review* 445

Bosma, Shane 'The regulation of marine pollution arising from offshore oil and gas facilities – an evaluation of the adequacy of current regulatory regimes and the responsibility of states to implement a new liability regime' (2012) 26 *Australia and New Zealand Maritime Law Journal* 89

Boyle, Alan, 'Globalism and Regionalism' in Davor Vidas (ed) *Protecting the Polar Marine Environment - Law and Policy for Pollution Prevention* (Cambridge University Press, 2007) 19

Brady, Anne-Marie, 'The Emerging Economies of Asia and Antarctica: Challenges and Opportunities' in Julia Jabour, Marcus Haward and Tony Press (eds), *Australia's Antarctica: Proceedings of the Symposium to Mark 75 Years of the Australian Antarctic Territory*, (Hobart, 24 August 2011) 103

Brady, Anne-Marie, *The Emerging Politics of Antarctica* (Routledge, 2012)

Brigham, Lawson W, 'The emerging International Polar Navigation Code' in Davor Vidas (ed), *Protecting the Marine Environment – Law and Policy for Pollution Prevention* (Cambridge University Press, 2000) 244

Browne, Marjorie Ann, 'The Law of the Sea Convention and U.S. Policy' CRS Issue Brief for Congress, 11

Brubaker, R Douglas, *The Russian Arctic Straits*, (Martinus Nijhoff, 2004)

Burmester, H, 'The Zone of Co-operation between Australia and Indonesia: A Preliminary Outline with Particular Reference to Applicable Law' in Hazel Fox et al, *Joint Development of Offshore Oil and Gas, A Model Agreement for States for Joint Development with Explanatory Commentary* (British Institute of International and Comparative Law, 1990), vol 2, 132

Byers, Michael, *International Law and the Arctic* (Cambridge University Press, 2013)

Byers, Michael, *Who Owns the Arctic – Understanding Sovereignty in the Far North* (Douglas & McIntyre, 2010)

Caracciolo, Ida, *Unresolved controversy: the legal situation of the Svalbard Islands maritime areas; an interpretation of the Paris Treaty in light of UNCLOS 1982*, (paper presented at International Boundary Research Unit Conference, The State of Sovereignty, Durham, 2009)

Cates, Melissa B, 'Offshore Oil Platforms Which Pollute the Marine Environment: A Proposal for an International Treaty Imposing Strict Liability' 21 *San Diego Law Review* (1983-1984) 691

Chabason, Lucien, 'Offshore oil exploitation - A new frontier for international environmental law' *Institut du Développement Durable et des Relations Internationales* Working paper 11 (2011)

Charney, Jonathan I, International Agreements and the Development of Customary International Law, (1986) 61 *Washington Law Review* 971

Charney, Jonathan I, and Lewis M Alexander (eds), *International Maritime Boundaries* (Martinus Nijhoff, 1993) vol 1

Charney, Jonathan I, and Lewis M Alexander (eds), *International Maritime Boundaries* (Martinus Nijhoff, 1993) vol 2

Charney, Jonathan I, and Lewis M Alexander (eds), *International Maritime Boundaries* (Martinus Nijhoff, 1998) vol 3

Charney, Jonathan I, Lewis M Alexander and Robert W Smith (eds), *International Maritime Boundaries* (Martinus Nijhoff, 2002) vol 4

Jonathan I Charney, David A Colson, Lewis M Alexander (eds) et al, *International Maritime Boundaries* (Martinus Nijhoff, 2005) vol 5

Charron, Andrea, 'The Northwest Passage Shipping Channel: Sovereignty First and Foremost and Sovereignty to the Side' (2005) 7(4) *Journal of Military and Strategic Studies* 5

Child, Jack, *Antarctica and South American Geopolitics—Frozen Lebensraum* (Praeger, 1988)

Churchill, RR, 'International Legal Issues' in Hazel Fox et al, *Joint Development of Offshore Oil and Gas, A Model Agreement for States for Joint Development with Explanatory Commentary* (British Institute of International and Comparative Law, 1990), vol 2, 33

Churchill, RR, and Geir Ulfstein, *Marine Management in Disputed Areas: The Case of the Barents Sea* (Routledge, 1992)

Churchill, RR and AV Lowe, *The Law of the Sea* (Manchester University Press, 3rd ed, 1999)

Clapham, Andrew, *Brierly's Law of Nations, An Introduction to the Role of International Law in International Relations* (Oxford University Press, 7th ed, 2012)

Clauss, Günther and Sprenger, Florian, 'An innovative offshore oil skimming system for operations in harsh seas' (Paper presented at the 13th Congress of the International Maritime Association of the Mediterranean, IMAM 2009, Istanbul, 12-15 October 2009)

Coates, Ken S, P Whitney Lackenbauer, and William R Morrison, et al, *Arctic Front – Defending Canada in the Far North* (Thomas Allen & Son, 2008)

Colson, David A, and R W Smith, 'Nigeria and São Tome and Principe, Report No. 4-10', in Jonathan I Charney, David A Colson, Lewis M Alexander (eds) et al, *International Maritime Boundaries* (Martinus Nijhoff, 2005) vol 5, 3638

Crawford, James, *Brownlie's Principles of Public International Law* (Oxford University Press, 8th ed, 2012)

Davenport, Tara, 'Joint Development in Asia: Lessons for sustainable Peace in the South China Sea' (Paper presented at 8th Asian Law Institute Conference, Kyushu, 26 and 27 May 2011)

Davenport, Tara, Ian Townsend-Gault, and Robert Beckman et al, 'Conference Report', Conference on Joint Development and the South China Sea, Singapore, 16–17 June 2011)

Davis, Ruth and Edmund Lee, 'Marine Environmental Protection and the Southern Ocean' in Alex G Oude Elferink and Donald R Rothwell (eds), *The Law of the Sea and Polar Maritime Delimitation and Jurisdiction* (Martinus Nijhoff, 2001) 201

Day, David, *Antarctica: A Biography* (Oxford University Press, 2012)

De Castro, Therezinha, '*Antártica: Assunto do Momento*' (The question of Antarctica) [1958] *Revista de Clube Militar* 142

De Castro, Therezinha, *Rumo Antártica* (Towards Antarctica) (Freitas Bastos, 1976)

Dehm, Sara and David Heaton, *Australian Guide to Legal Citation*, (Melbourne University Law Review Association and Melbourne Journal of International Law, 3rd ed, 2010)

De La Fayette, Louise Angélique, 'Ocean Governance in the Arctic' (2008) 23 *The International Journal of Marine and Coastal Law*, 531

Deggim, Heike, 'International requirements for ships operating in Polar waters' (Paper presented at Meeting of experts on the management of ship-borne tourism in the Antarctic Treaty Area, Wellington, 9 to 11 Dec 2009)

Dodds, Klaus J, 'Anticipating the Arctic and the Arctic Council: pre-emption, precaution and preparedness' (2013) 49(2) *Polar Record* 193

Dodds, Klaus J and Alan D Hemmings 'Recent developments in relations between the United Kingdom and the Argentine Republic in the South Atlantic/Antarctic region' (2014) 50(2) *Polar Record* 119

Dunlap, William, 'Transit Passage in the Russian Arctic Straits' (1996) 1-7 *International Boundaries Research Unit Maritime Briefing* 26

Dunlap, William, 'Straddling Stocks in the Barents Sea Loophole' (1996-1997) *IBRU Boundary and Security Bulletin* 76

Duval, Claude, Honoré Le Leuch, and André Pertuzio et al, *International Petroleum Exploration and Exploitation Agreements: Legal, Economic and Policy Aspects* (Barrows Company Incorporated, 2009)

Egede, Edwin, 'African States and Participation in Deep Seabed Mining: Problems and Prospects' (2009) 24 *The International Journal of Marine and Coastal Law* 683

El-Hakim, Ali A, *The Middle Eastern States and the Law of the Sea* (Manchester University Press, 1980)

Evans, Malcolm D, 'Maritime Boundary Delimitation: Where Do We Go From Here?' in David Freestone, Richard Barnes and David Ong (eds) *The Law of the Sea - Progress and Prospects* (Oxford University Press, 2006) 138

Fitzgerald, Brian F, 'Port State Jurisdiction and Marine Pollution Under UNCLOS III' (1995) 11 *Maritime Law Association of Australia and New Zealand Journal* 29

Fogarty, Ellie, 'Antarctica: Assessing and Protecting Australia's National Interests' (2011) <<http://www.isn.ch/isn/Digital-Library/Publications/Detail/?ots591=0c54e3b3-1e9c-be1e-2c24-a6a8c7060233&lng=en&ord582=grp2&id=132284>> at 24 August 2012

Fox, Hazel et al, *Joint Development of Offshore Oil and Gas, A Model Agreement for States for Joint Development with Explanatory Commentary*, vol 1 (British Institute of International and Comparative Law, 1989)

Fox, Hazel et al, *Joint Development of Offshore Oil and Gas, A Model Agreement for States for Joint Development with Explanatory Commentary*, vol 2 (British Institute of International and Comparative Law, 1990)

Franckx, Erik, *Maritime Claims in the Arctic, Canadian and Russian Perspectives*, (Kluwer Academic Publishers, 1993)

Fulton, Thomas Wemyss, *The Sovereignty of the Sea - An Historical Account of the Claims of England to the Dominion of the British Seas, and of the Evolution of the Territorial Waters, with Special Reference to the Rights of Fishing and the Naval Salute* (W Blackwood, 1911)

Gan, Irina, 'Russia and Antarctica' in Ann-Marie Brady (ed), *The Emerging Politics of Antarctica* (Routledge, 2013) 130

Gao, Jianjun, 'Joint Development in the East China Sea', (2008) 23 *The International Journal of Marine and Coastal Law* 39

Geological Survey of Canada 'Scientific Results from the Mallik 2002 Gas Hydrate Production Research Well Program, Mackenzie Delta, Northwest Territories, Canada' (2005) *GSC Bulletin* 585

Górski, Tomasz, 'A Note on Submarine Ridges and Elevations with Special Reference to the Russian Federation and the Arctic Ridges' (2009) 40(1) *Ocean Development & International Law* 51

Gray, David, 'Canada's Unresolved Maritime Boundaries' (1997) *IBRU Boundary and Security Bulletin* 61

Green, Arthur R and Anatoly A Kaplan, 'The Geological Framework and Hydrocarbon Potential of Sedimentary Basins of the Arctic' in *Proceedings of the Twelfth World Petroleum Congress* (1987) vol 2, 79

Hamilton, Neil T M, 'Go Finland! First Arctic nation to call for a global sanctuary around the North Pole' Greenpeace, 4 September 2013

<<http://www.greenpeace.org/international/en/news/Blogs/makingwaves/go-finland-first-arctic-nation-to-call-for-a-blog/46483/>> at 13 September 2013

Hartmann, Jacques, 'Canada and Denmark reach agreement on the Lincoln Sea Boundary' *EJIL: Talk!*, *European Journal of International Law*, <<http://www.ejiltalk.org/canada-and-denmark-reach-agreement-on-the-lincoln-sea-boundary/>> at 29 August 2013

Hemmings, Alan D, 'Russia and Antarctic Prospecting' (Paper prepared in response to related questions, 13 March 2007)

Hemmings, Alan D, comments in response to questions concerning Russian oil and gas exploration in the Southern Ocean, received on 16 September 2013

Hemmings, Alan D, and Tim Stephens, 'Australia's Extended Continental Shelf: What Implications for Antarctica?' (1990) 20(1) *Public Law Review* 9

Hemmings, Alan D, Donald R Rothwell, and Karen N Scott (eds), *Antarctic Security in the Twenty-First Century: Legal and Policy Perspectives* (Routledge, 2012)

Henriksen, Tore and Geir Ulfstein, , 'Maritime Delimitation in the Arctic: The Barents Sea Treaty' (2011) 42 *Ocean Development and International Law* 1

Hertell, Hans H, 'Arctic Melt: The Tipping Point for an Arctic Treaty', (2009) 21 *Georgetown International Environmental Law Review* 565

Hossain, Kamal, 'Choice of Petroleum Development Regime in Joint Development of Offshore Oil and Gas' in Hazel Fox et al, *Joint Development of Offshore Oil and Gas, A Model Agreement for States for Joint Development with Explanatory Commentary* (British Institute of International and Comparative Law, 1989), vol 2, 72

Houck, James W, 'Alone on a Wide Wide Sea: A National Security Rationale for Joining the Law of the Sea Convention' (2012) 1(1) *Penn State Journal of Law & International Affairs* 1

Huebert, Rob, 'Article 234 and Marine Pollution Jurisdiction in the Arctic' in Alex Oude Elferink and Donald R. Rothwell (eds), *The Law of the Sea and Polar Maritime Delimitation and Jurisdiction* (Martinus Nijhoff, 2001) 250

Huneidi, Isa, 'Saudi/Kuwait Joint Development', in Hazel Fox (ed), *Joint Development of Offshore Oil and Gas, A Model Agreement for States for Joint Development with Explanatory Commentary*, vol 1 (British Institute of International and Comparative Law, 1989) 77

Hunter, Tina, 'The Montara oil spill and the marine oil spill contingency plan: Disaster response or just a disaster?' (2010) 24(2) *Australian and New Zealand Maritime Law Journal*, 46

Jabour, Julia, 'The Australian Continental Shelf: Has Australia's High-Latitude Diplomacy Paid Off?' *Marine Policy* 33 (2009) 429

Jorgensen-Hull, Alexander, 'A Sticky Situation: The Seepage of Liability into International Environmental Law' (Paper presented at the symposium Toward Rio+20: Contemporary Issues in International Environmental Law, Canberra, 28 May 2011)

Joyner, Christopher C, 'The Exclusive Economic Zone and Antarctica' (1980-1981) 21 *Virginia Journal of International Law* 691

Joyner, Christopher C, *Antarctica and the Law of the Sea* (Kluwer Academic Publishers, 1992)

Joyner, Christopher C and Ethel R Theis, *Eagle over the Ice – The U.S. in the Antarctic* (University Press of New England, 1997)

Joyner, Christopher C, *Governing the Frozen Commons – The Antarctic Regime and Environmental Protection* (University of South Carolina Press, 1998)

Joyner, Christopher C, 'The Status of Ice in International Law' in Alex G Oude Elferink and Donald R Rothwell (eds), *The Law of the Sea and Polar Maritime Delimitation and Jurisdiction* (Martinus Nijhoff, 2001) 23

Joyner, Christopher C, 'Potential Challenges to the Antarctic Treaty' in Paul Arthur Berkman et al (eds) *Science Diplomacy: Antarctica, Science and the Governance of International Spaces* (Smithsonian Institution Scholarly Press, 2011) 97

Kaye, Stuart, *Australia's Maritime Boundaries* (Center for Maritime Policy, 2001)

Kaye, Stuart, and Donald R Rothwell, 'Southern Ocean Boundaries and Maritime Claims: Another Antarctic Challenge for the Law of the Sea?' (2002) 33 *Ocean Development & International Law* 359, 371

Kaye, Stuart, 'Territorial sea baselines along ice covered coasts: International practice and limits of the law of the sea' (Paper presented at Third Biennial Conference of ABLOS – Addressing Difficult Issues in the Law of the Sea, International Hydrographic Bureau, Monaco, 28–30 October 2003) 21

Kaye, Stuart, 'Antarctic Maritime Delimitations' in Alex Oude Elferink and Donald R Rothwell (eds), *The Law of the Sea and Polar Maritime Delimitation and Jurisdiction* (Martinus Nijhoff, 2001), 163

Kaye, Stuart, 'The Outer Continental Shelf in the Antarctic' in Alex Oude Elferink and Donald R Rothwell (eds), *The Law of the Sea and Polar Maritime Delimitation and Jurisdiction* (Martinus Nijhoff, 2001) 125

Kingston, John, *The Undiscovered Oil and Gas of Antarctica*, (United States Geological Survey, 1992)

<<http://pubs.usgs.gov/of/1991/0597/report.pdf>> at 18 December 2012

Knecht, Robert W, 'A Commentary on the Institutional and Political Aspects of Regional Ocean Governance' (1994) 24(1) *Ocean & Coastal Management* 39

Koivurova, Timo, 'Alternatives for an Arctic Treaty — Evaluation and a new proposal' (2008) 17 *Review of European Community and International Environmental Law* 14

- Kongrawd, Somjade 'Thailand and Cambodia Maritime Disputes' <<http://www.navy.mi.th/judge/Files/Thailand%20Cambodia.pdf>> at 11 April 2013
- Kvenvolden, Keith A, Frances D Hostettler, , and Tamara J Frank, , 'Hydrocarbons In Sediment Of The Weddell Sea, Antarctica' in P. R Barker, J. P. Kennett, et al (1990) 1 *Proceedings of the Ocean Drilling Program, Scientific Results* 199 <http://www-odp.tamu.edu/publications/113_SR/VOLUME/CHAPTERS/sr113_16.pdf> at 1 November 2012
- Kwiatkowska, Barbara, 'The Eritrea/Yemen Arbitration: Landmark Progress In The Acquisition Of Territorial Sovereignty and Equitable Maritime Boundary Delimitation' [2000] *IBRU Boundary and Security Bulletin* 66
- Lagoni, Rainer, Oil and Gas Deposits across National Frontiers (1979) 73 *American Journal of International Law* 215
- Laxon, Seymour W, Katharine A Giles, Andy L Ridout, , et al, 'CryoSat-2 estimates of Arctic sea ice thickness and volume' (2013) 40 *Geophysical Research Letters* 732
- Lee, Martin Lishexian, 'The Interrelation Between the Law of the Sea Convention and Customary International Law', (2006) 7 *San Diego International Law Journal* 405
- Lefeber, René, 'The Legal Need for an Antarctic Environmental Liability Regime' in Davor Vidas (ed) *Implementing the Environmental Protection Regime for the Antarctic* (Springer, 2000) 181
- Macnab, Ron, Paul Neto, and Rob Van de Poll, 'Cooperative Preparations for Determining the Outer Limit of the Juridical Continental Shelf in the Arctic Ocean' (2001) *Boundary and Security Bulletin* 86
- Macnab, Ron, (2008) 39(2) 'Submarine Elevations and Ridges: Wild Cards in the Poker Game of UNCLOS Article 76' *Ocean Development & International Law* 223
- Manicom, James, 'China's Claims to an Extended Continental Shelf in the East China Sea: Meaning and Implications', (2009) 9(14) *China Brief* 9
- Marcussen, Christian et al, 'Exploring for extended continental shelf claims off Greenland and the Faroe Islands - geological perspectives', (2004) 4 *Geological Survey of Denmark and Greenland Bulletin* 61
- Max, Michael D and Allan Lowrie, 'Natural Gas Hydrates: Arctic and Nordic Sea Potential' in Tore O. Vorren et al. (eds) (1993) 2 *Arctic Geology and Petroleum Potential, Proceedings of the Norwegian Petroleum Society Conference* 27
- McDorman, Ted L, *Salt Water Neighbours – International Ocean Relations between the United States and Canada* (Oxford University Press, 2009)
- McIver, Richard D, 'Hydrocarbon Gases in Canned Core Samples from Leg 28 Sites 271, 272, and 273, Ross Sea' in Kaneps, Ansis G (ed), (1975) 28 *Initial Reports of the Deep Sea Drilling Project* 815 <http://www.deepseadrilling.org/28/volume/dsdp28_28.pdf> at 1 November 2012

Miyoshi, Masahiro, 'Japan South Korea Joint Development, in Hazel Fox (ed), *Joint Development of Offshore Oil and Gas, A Model Agreement for States for Joint Development with Explanatory Commentary* (British Institute of International and Comparative Law, 1989), vol 2, 96

Miyoshi, Masahiro, Clive Schofield (ed), 'The Joint Development of Offshore Oil and Gas in relation to Maritime Boundary Delimitation', (International Boundaries Research Unit, 1999) 2(5) *IBRU Maritime Briefing*

Miyoshi, Masahiro, 'Seabed Petroleum in the East China Sea: Law of the Sea Issues and the Prospects for Joint Development' in S Harrison (ed) *Seabed Petroleum in Northeast Asia: Conflict or Cooperation* (Woodrow Wilson International Center for Scholars, 2005)

<http://www.wilsoncenter.org/sites/default/files/Miyoshi_Masahiro.pdf> at 31 July 2012

Molenaar, E J, 'Fisheries Regulation in the Maritime Zones of Svalbard' (2012) 27 *The International Journal of Marine and Coastal Law* 3

Molenaar, E J, Donald R Rothwell and Alex G Oude Elferink, 'The Law of the Sea and Polar Regions' in Alex G Oude Elferink, Erik Molenaar, Donald R. Rothwell (eds), *The Law of the Sea and Polar Regions: Interactions between Global and Regional Regimes* (Brill, 2013)

Malloy, Bonnie A, 'On Thin Ice: How a Binding Treaty Regime Can Save the Arctic' (2010) 16 *Hastings West-Northwest Journal of Environmental Law & Policy* 471

Nelson, L Dolliver M, 'Reflections on the 1982 Convention on the Law of the Sea' in David Freestone, Richard Barnes and David Ong, *The Law of the Sea: Progress and Prospects*, (Oxford University Press, 2006) 35

Nordquist, Myron et al, *International Energy Policy, the Arctic and the Law of the Sea*, (Martinus Nijhoff, 2005)

O'Brien, P E, A K Cooper, and C Richter, et al, (2001) 188 *Proceedings of the Ocean Drilling Program, Initial Reports* 60

Ong, David M, '1979 and 1990 Malaysia Thailand Joint Development Agreements: A Model for International Legal Cooperation in Common Offshore Petroleum Deposits?', (1999) 14(2) *The International Journal of Marine and Coastal Law* 213

Ong, David M, 'Joint Development of Common Offshore Oil and Gas Deposits: Mere State Practice or Customary International Law' (1999) 93(4) *American Journal of International Law* 701

Onorato, William T, 'Apportionment of an International Common Petroleum Deposit' (1977) 26(2) *The International and Comparative Law Quarterly* 324

Oude Elferink, Alex G, *The law of maritime boundary delimitation: a case study of the Russian Federation* (Martinus Nijhoff, 1994)

- Oude Elferink, Alex G, 'Current Legal Developments, Denmark/Iceland/Norway' (1998) 13(4) *The International Journal of Marine and Coastal Law* 607
- Oude Elferink, Alex G, 'Submissions of Coastal States to the CLCS in Cases of Unresolved Land or Maritime Disputes' in Myron H Nordquist, John N Moore and Tomas H Heidar (eds), *Legal and Scientific Aspects of Continental Shelf Limits* (Martinus Nijhoff, 2003) 263
- Oude Elferink, Alex G, 'The Continental Shelf beyond 200 Nautical Miles: The relationship between the CLCS and Third Party Dispute Settlement' in Alex G Oude Elferink and Donald R Rothwell (eds), *Oceans Management in the 21st Century: International Frameworks and Responses* (Martinus Nijhoff, 2004) 107
- Oude Elferink, Alex G, 'The Regime of the Area: Delineating the Scope of Application of the Common Heritage Principle and Freedom of the High Seas' (2007) 22(1) *The International Journal of Marine and Coastal Law* 143
- Oude Elferink, Alex G, 'The outer limits of the continental shelf in the polar regions' in Alex G Oude Elferink, Erik Molenaar, Donald R Rothwell (eds) *The Law of the Sea and Polar Regions: Interactions between Global and Regional Regimes* (Brill, 2013)
- Oude Elferink, Alex G and Donald R Rothwell (eds), *The Law of the Sea and Polar Maritime Delimitation and Jurisdiction*, (Martinus Nijhoff, 2001)
- Oude Elferink, Alex G, 'The Outer Continental Shelf in the Arctic' in Alex G Oude Elferink and Donald R Rothwell (eds), *The Law of the Sea and Polar Maritime Delimitation and Jurisdiction* (Martinus Nijhoff, 2001) 139, 142
- Oude Elferink, Alex G, 'Arctic Maritime Delimitations' in Alex G Oude Elferink and Donald R Rothwell (eds), *The Law of the Sea and Polar Maritime Delimitation and Jurisdiction* (Martinus Nijhoff, 2001) 179
- Oude Elferink, Alex G, and Donald R Rothwell, 'Challenges for Polar Maritime Delimitation and Jurisdiction' in Oude Elferink and Donald R. Rothwell (eds), *The Law of the Sea and Polar Maritime Delimitation and Jurisdiction* (Martinus Nijhoff, 2001) 351
- Oral, Nilufer, 'Transit Passage Rights in the Strait of Hormuz and Iran's Threats to Block the Passage of Oil Tankers' (2012) 16(16) *ASIL Insights* <<http://www.asil.org/pdfs/insights/insight120503.pdf>> at 8 February 2013
- Oxman, Bernard H, 'The 1994 Agreement and the Convention' (1994) 88(4) *American Journal of International Law* 687
- Park, Choon-Ho, 'Joint Development of Mineral Resources in Disputed Waters: The Case of Japan and South Korea in the East China Sea', (1981) 6(11) *Energy* 1335
- Park, Chris, *A Dictionary of Environment and Conservation* (Oxford University Press, 2007) <<http://oxfordindex.oup.com/search?q=abyssal>> at 8 February 2013
- Pedersen, Torbjørn, 'The Svalbard Continental Shelf Controversy: Legal Disputes and Political Rivalries' (2006) 37(3) *Ocean Development and International Law* 339

- Pedersen, Torbjørn, 'Denmark's Policies toward the Svalbard Area' (2009) 40(4) *Ocean Development and International Law* 319
- Pedersen, Torbjørn, and Tore Henriksen, 'Svalbard's Maritime Zones: The End of Legal Uncertainty?' (2009) 24 *The International Journal of Marine and Coastal Law* 141
- Perry, Ronen, 'The Deepwater Horizon Oil Spill and the Limits of Civil Liability' (2011) 86(1) *Washington Law Review* 1
- Pharand, Donat, 'Canada's Arctic Jurisdiction in International Law' (1982-1983) 7 *Dalhousie Law Journal* 315
- Pharand, Donat, *The Northwest Passage: Arctic Straits* (Martinus Nijhoff, 1984)
- Pharand, Donat in *The Arctic Environment and Canada's International Relations: The Report of a Working Group of the National Capital Branch of the Canadian Institute of International Affairs* (1991)
- Pharand, Donat, *Canada's Arctic Waters in International Law* (Cambridge University Press, 2009)
- Prescott, John Robert Victor, 'Australia – Indonesia, Report Number 6-2', in Jonathan I Charney and Robert W Smith (eds), *International Maritime Boundaries* (2002) vol 4, 2697
- Prescott, John Robert Victor, and Clive H Schofield, 'Undelimited Maritime Boundaries of the Asian Rim in the Pacific Ocean', *IBRU Maritime Briefing* (International Boundaries Research Unit, 2001) 9
- Rares, Steven, 'An International Convention on Off-Shore Hydrocarbon Leaks?' (Speech delivered at the International Conference on Liability and Compensation Regime for Transboundary Oil Damage resulting from Offshore Exploration and Exploitation Activities, Bali, 21-23 September 2011)
- Read, A D, 'Protection of the Marine Environment: A View from Industry' in Hazel Fox (ed), *Joint Development of Offshore Oil and Gas*, vol 2 (British Institute of International and Comparative Law, 1990) 223
- Rosenne, S, *Provisional Measures in International Law: The International Court of Justice and the International Tribunal for the Law of the Sea* (Oxford University Press, 2005) 157
- Rothwell, Donald R, 'The Antarctic Treaty System: Resource Development, Environmental Protection or Disintegration?' (1990) 43(3) *Arctic* 284
- Rothwell, Donald R, *The Polar Regions and the Development of International Law* (Cambridge University Press, 1996)
- Rothwell, Donald R, 'Global environmental protection instruments' in Davor Vidas (ed) *Protecting the Polar Marine Environment - Law and Policy for Pollution Prevention* (Cambridge University Press, 2000) 57

- Rothwell, Donald R, 'Polar Environmental Protection and International Law: The 1991 Antarctica Protocol' (2000) 1(3) *European Journal of International Law* 591
- Rothwell, Donald R, 'Antarctic Baselines: Flexing the Law for Ice-Covered Coastlines' in Alex G Oude Elferink and Donald R Rothwell (eds), *The Law of the Sea and Polar Maritime Delimitation and Jurisdiction* (Martinus Nijhoff, 2001) 49, 56
- Rothwell, Donald R, 'Building on the Strengths and Assessing the Challenges: The Role of Law of the Sea Institutions' (2004) *Ocean Development and International Law*, 35(2), 131
- Rothwell, Donald R, 'Issues and Strategies for Outer Continental Shelf Claims' (2008) 23(2) *International Journal for Marine and Coastal Law* 185
- Rothwell, Donald R, and Tim Stephens, *The International Law of the Sea* (Hart Publishing, 2010)
- Rothwell, Donald R, 'Legal Challenges for Maritime Operations in the Southern Ocean' (Paper presented at the 2012 Comité Maritime International Beijing Conference, Beijing, 18 October 2012)
- Rudmose-Brown, Robert N, Political claims in the Antarctic (1947) *World Affairs*, Oct. 397, cited in Robert E Wilson, 'National interests and Claims in the Antarctic' (1964) 17(1) *Arctic* 15, 20
- Schachte, William Jr., 'International Straits and Navigational Freedoms', (Paper presented at 26th Law of the Sea Institute Annual Conference, Genoa, 22-26 June 1992)
- Schofield, Clive H, 'Minding the Gap: The Australia-East Timor Treaty on Certain Maritime Arrangements in the Timor Sea (CMATS)' (2007) 22(2) *International Journal of Marine and Coastal Law* 201
- Schofield, Clive H, 'No Panacea?: Challenges in the application of provisional arrangements of a practical nature' in M H Nordquist and J N Moore (eds), *Maritime Border Diplomacy* (Martinus Nijhoff, 2012) 151
- Schofield, Clive H, and Ian Townsend-Gault, 'Choppy Waters Ahead in 'a sea of peace cooperation and friendship'? - Maritime Joint Development in the East China Sea', (Paper presented at the International Boundary Research Unit Conference, Durham, 2 April 2009)
- Schofield, Clive H, Tavis Potts, and Ian Townsend-Gault, 'Boundaries, Biodiversity, Resources, and Increasing Maritime Activities: Emerging Oceans Governance Challenges for Canada in the Arctic Ocean' (2009-2010) 34 *Vermont Law Review* 35
- Scovazzi, Tullio, 'Mining, Protection of the Environment, Scientific Research and Bioprospecting: Some Considerations of the Role of the International Sea-Bed Authority', (2004) 19(4) *The International Journal of Marine and Coastal Law* 363

Scovazzi, Tullio 'The Baseline of the Territorial Sea: The Practice of Arctic States' in Alex G. Oude Elferink and Donald R. Rothwell (eds), *The Law of the Sea and Polar Maritime Delimitation and Jurisdiction* (Martinus Nijhoff, 2001) 69

Serdy, Andrew, 'Towards Certainty of Seabed Jurisdiction beyond 200 Nautical Miles from the Territorial Sea Baseline: Australia's Submission to the Commission on the Limits of the Continental Shelf' (2005) 36 *Ocean Development and International Law* 201

Shaw, Malcolm N, *International Law* (Cambridge University Press, 6th ed, 2008)

Skåre, Mari, 'Liability Annex or Annexes: A Review of the Process' in Davor Vidas (ed) *Implementing the Environmental Protection Regime for the Antarctic* (Springer, 2000) 163

Smith, Jeffrey J, 'Brunei and Malaysia resolve outstanding maritime boundary issues', (2010) 1 *Law of the Sea Reports*

St John, B, in D I M Macdonald, et al, 'A preliminary assessment of the hydrocarbon potential of the Larsen Basin, Antarctica, (1987) 5 *Marine and Petroleum Geology* 34

Stagg, Howard, 'Mapping the Antarctic Continental Shelf: Science Meets the Legal and Diplomatic Worlds' in Julia Jabour, Marcus Haward and Tony Press (eds) *Australia's Antarctica: Proceedings of the Symposium to Mark 75 Years of the Australian Antarctic Territory Occasional Paper No. 2* (2012)

Stepanov, Igor, *Legal Implications for the Northern Sea Route and Westward in the Barents Sea*, (Fridtjof Nansen Institute, 2005)

Stephens, Tim, *International Courts and Environmental Protection* (Cambridge University Press, 2009)

Symmons, Clive R, 'Regulatory Mechanisms in Joint Development Zones' in Hazel Fox et al, *Joint Development of Offshore Oil and Gas, A Model Agreement for States for Joint Development with Explanatory Commentary* (British Institute of International and Comparative Law, 1990) vol 2, 141

Symmons, Clive R, 'The Irish Partial Submission to the Commission on the Limits of the Continental Shelf in 2005: A Precedent for Future Such Submissions in the Light of the "Disputed Areas" Procedures of the Commission?' (2006) 37 *Ocean Development and International Law* 3

Thao, Nguyen Hong, 'Joint Development in the Gulf of Thailand' [1999] *IBRU Boundary and Security Bulletin* 79

Townsend-Gault, Ian, 'The Impact of a Joint development Zone on Previously Granted Interests' in Hazel Fox (ed), *Joint Development of Offshore Oil and Gas, A Model Agreement for States for Joint Development with Explanatory Commentary* (British Institute of International and Comparative Law, 1989), vol 2, 106

Townsend-Gault, Ian 'Joint Development of Offshore Mineral Resources - Progress and Prospects for the Future', (1988) 12(3) *Natural Resources Forum* 275

Treves, Tullio, '1958 Conventions on the Law of the Sea', United Nations Audio-visual Library of International Law <<http://untreaty.un.org/cod/avl/ha/gclos/gclos.html>> at 3 July 2012

Triggs, Gillian, *International Law and Australian Sovereignty in Antarctica* (Legal Books, 1986)

Triggs, Gillian, *The Antarctic Treaty Regime: Law, Environment and Resources* (Cambridge University Press, 1987)

Triggs, Gillian and Dean Bialek, 'The New Timor Sea Treaty and Interim Arrangements for Joint Development of Petroleum resources of the Timor Gap' (2002) 3 *Melbourne Journal of International Law* 322

Valencia, Mark, 'China and the South China Sea Disputes', *Adelphi Paper No. 298* (International Institute for Strategic Studies, 1995)

Valencia, Mark and Masahiro Miyoshi, , 'Southeast Asian Seas: Joint Development of Hydrocarbons in overlapping Claim Areas' (1996) 16 *Ocean Development and International Law* 211

Vallega, Adalberto, 'The Regional Scale of Ocean Management and Marine Region Building' (1994) 24 *Ocean & Coastal Management* 17

VanderZwaag, David, 'Land Based Marine Pollution and the Arctic' in Davor Vidas (ed), *Protecting the Marine Environment – Law and Policy for Pollution Prevention* (Cambridge University Press, 2000) 175

VanderZwaag, David, 'The Arctic Council at 15 Years: Edging Forward in a Sea of Governance Challenges' (2011) 54 *German Yearbook of International Law* 282

Verville, Elizabeth G, United States–Soviet Union, Report Number 1–6, in Jonathan I Charney, and Lewis M Alexander (eds), *International Maritime Boundaries* (Martinus Nijhoff, 1993) vol 1, 447

Vicuna, Francisco Orrego, *Antarctic Mineral Exploitation: The Emerging Legal Framework* (Cambridge University Press, 2009)

Vidas, Davor 'Emerging Law of the Sea Issues in the Antarctic Maritime Area: A Heritage for the New Century?' (2000) 31(1) *Ocean Development and International Law* 197

Vidas, Davor, *Implementing the Environmental Protection Regime for the Antarctic* (Springer, 2000)

Vidas, Davor, 'The Antarctic Continental Shelf beyond 200 Miles: A Judicial Rubik's Cube' in Davor Vidas (ed), *Implementing the Environmental Protection Regime for the Antarctic* (Springer, 2000) 263

Vidas, Davor, *Protecting the Polar Marine Environment: Law and Policy for Pollution Prevention* (Cambridge University Press, 2001)

Vigni, Patrizia, 'The Interaction between the Antarctic Treaty System and the Other Relevant Conventions Applicable to the Antarctic Area - A Practical approach versus Theoretical Doctrines' [2000] 4 *Max Planck Yearbook of United Nations Law*, 481

Volterra, Robert, 'Recent Developments in Maritime Boundary Delimitations: reflections on certain aspects of the two UNCLOS cases,' (Paper presented at ABLOS 2001 Conference, UN Advisory Board on the Law of the Sea, Monaco, 18-19 October 2001)

Walde, T W and Andrew McHardy, 'Introductory Note, Argentina - United Kingdom: Joint Declaration on Cooperation over Offshore Activities in the South West Atlantic' (1996) 35 *ILM* 301

Ward, Joseph J, 'Black gold in a white wilderness – Antarctic Oil: the past, present and potential of a region in need of sovereign environmental stewardship' (1998) *Journal of Land Use and Environmental Law* 13

Weber, Mel, 'Defining the Outer Limits of the Continental Shelf across the Arctic Basin: The Russian Submission, States' Rights, Boundary Delimitation and Arctic Regional Cooperation' (2009) 24 *The International Journal of Marine and Coastal Law* 653

Wilson, Robert E, 'National interests and Claims in the Antarctic' (1964) 17(1) *Arctic* 15

Yan, Qide, 'Nanji Ziyuan yu Guoji Fenzheng' [The international struggle for Antarctic resources], (1991) 43(4) *Kexue [Science]* 261

Yee, Sienho 'Conciliation and the 1982 UN Convention on the Law of the Sea' (2013) 44(4) *Ocean Development and International Law* 321

Young, Oran R, 'The Arctic in Play: Governance in a Time of Rapid Change' (2009) 24 *The International Journal of Marine and Coastal Law* 423

Zhu Jiangang, Yan Qide, and Ling Xiaoliang, 'Nanji Ziyuan Fenzheng ji Woguo de Xiangying Duice' [The dispute of Antarctic resources and our countermeasures], (2006) 18(3) *Jidi Yanjiu [Polar Research]* 17

Zou, Keyuan 'China's Antarctic policy and the Antarctic Treaty system' (1993) 24(3) *Ocean Development and International Law* 237

Zou, Keyuan, 'Guifan Weilai Nanji Kuanwu Ziyuan Kaifa Liyong de Falu Yuanze' [The legal principles behind standardizing the future use of Antarctic mineral resources], (1994) 3 *Haiyang kaifa yu guanli [Ocean Development and Management]*

Zou, Keyuan, 'Joint Development in the South China Sea: A New Approach', (2006) 21(1) *The International Journal of Marine and Coastal Law* 83

Zou, Keyuan, (1996) *Nanji Kuanwu Ziyuan yu Guoji Fa [Antarctic mineral resources and international law]*

2. CASE LAW

Aegean Sea Continental Shelf case (Greece v Turkey) [1978] ICJ Rep 3

Alleged Violations of Sovereign Rights and Maritime Spaces in the Caribbean Sea (Nicaragua v. Colombia) case, at <<http://www.icj-cij.org/docket/files/155/17806.pdf>> at 21 August 2015

Anglo-Norwegian Fisheries case [1951] ICJ Rep 116

Antarctica Case (United Kingdom v Argentina) [1956] ICJ Rep 12; *Antarctica Case (United Kingdom v Chile)* [1956] ICJ Rep 15; ('*Antarctica cases*')

Arbitral Award in the Question of the Delimitation of a Certain Part of the Maritime Boundary between Norway and Sweden (1910) *American Journal of International Law* 226

Arbitral Award of 31 July 1989 (Guinea-Bissau v. Senegal) [1991] ICJ Rep 53

Arbitration between Barbados and Trinidad and Tobago, relating to the delimitation of the exclusive economic zone and the continental shelf between them (Barbados v Trinidad and Tobago), Award (2006) 45 ILM 798

Arbitration under the Timor Sea Treaty (Timor-Leste v. Australia), Permanent Court of Arbitration, http://www.pca-cpa.org/showpage.asp?pag_id=1403> at 21 January 2014

Bay of Bengal Maritime Boundary Arbitration (Bangladesh v India) Award (2014), <http://www.pca-cpa.org/showpage.asp?pag_id=1376> at 18 October 2014

Beagle Channel Arbitration between the Republic of Argentina and the Republic of Chile (1977) 52 ILR 93

Bering Sea Fur Seals case (Great Britain/United States) (1893) 1 Moore 827

Camouco (Panama v France) (Prompt Release), ITLOS Case No. 5, (2000) 39 ILM 666

Case brought by the Republic of Tunisia and the Socialist People's Libyan Arab Jamahiriya over their Continental Shelf Boundary [1982] ICJ Rep 18

Case concerning Delimitation of the Maritime Boundary in the Gulf of Maine Area (Canada/United States of America) [1984] ICJ Rep 246

Case concerning Delimitation of Maritime Areas between Canada and the French Republic (St. Pierre et Miquelon), (1992) 31 ILM 1174

Case concerning East Timor (Portugal v Australia) [1995] ICJ Rep 90

Case concerning Land Reclamation by Singapore in and around the Straits of Johor (Malaysia v. Singapore), decision of 1 September 2005, 27 Reports of International Arbitral Awards, 133

Case concerning Maritime Delimitation in the Area between Greenland and Jan Mayen (Denmark v Norway) [1993] ICJ Rep 38

Case concerning Maritime Delimitation and Territorial Questions between Qatar and Bahrain (Qatar v Bahrain) [2001] ICJ Rep 40

Case concerning Maritime Delimitation between the Republic of Peru and the Republic of Chile (Peru v Chile) [2014] (To be reported)
<<http://www.icj-cij.org/docket/index.php?p1=3&p2=1&code=&case=137&k=88>> at 6 May 2013

Case concerning the Continental Shelf (Libyan Arab Jamahiriya/Malta) [1985] ICJ Rep 13

Case concerning the Continental Shelf (Tunisia v Libyan Arab Jamahiriya) 1982 ICJ Rep 18

Case concerning the Delimitation of Maritime Area between Canada and the French Republic (Canada v France) (1992) 31 ILM 1145

Case concerning the Land and Maritime Boundary between Nigeria and Cameroon (Nigeria v Cameroon) [2002] ICJ Rep 94

Corfu Channel Case (United Kingdom v Albania) [1949] ICJ Rep 3

Delimitation of the Continental Shelf (United Kingdom of Great Britain and Northern Ireland and the French Republic) (1979) 18 ILM 379

Dubai Sharjah Border Arbitration (Dubai Sharjah) (1993) 91 ILR 543

EnCana Corporation v. Republic of Ecuador, LCIA Case No. UN3481, UNCITRAL (2006)

Eritrea Yemen Arbitration (Eritrea and Yemen) (2001) 40 ILM 983

Fothergill v Monarch Airlines Ltd. [1981] AC 251

Guyana v Suriname (Award of the Arbitral Tribunal), (2009) 47 ILM 164

Humane Society International Inc v Kyodo Senpaku Kaisha Ltd [2008] FCA 3

Island of Palmas case (Netherlands v United States), (1928) 2 RIAA 831

Land and Maritime Boundary Case between Cameroon and Nigeria (Cameroon v Nigeria, Equatorial Guinea intervening) [2002] ICJ Rep 303

Land, Island and Maritime Frontier Dispute (El Salvador v Honduras, Nicaragua intervening) [1992] ICJ Rep 351

Legal Status of Eastern Greenland (Norway v. Denmark) [1933] PCIJ Ser. A/B, No. 53, 71

Mabo and Others v Queensland (No 2) (1992) 175 CLR 1 ('the Mabo case')

Maritime Boundary Dispute between Norway and Sweden, Permanent Court of Arbitration, (1910) 4 *American Journal of International Law* 226 ('Grisbadarna case')

Maritime Delimitation and Territorial Questions between Qatar and Bahrain (Qatar v Bahrain) [2001] ICJ Rep 40

Maritime Delimitation between Guinea-Bissau and Senegal (Guinea-Bissau v Senegal) [1995] ICJ Rep 423

Maritime Delimitation between Nicaragua and Honduras in the Caribbean Sea (Nicaragua v Honduras) [2007] ICJ Rep 145

Maritime Delimitation in the Area between Greenland and Jan Mayen (Denmark v Norway) [1993] ICJ Rep 38

Maritime Delimitation in the Black Sea (Romania v Ukraine) [2009] ICJ Rep 142

Monte Confurco (Seychelles v France) (Prompt Release), ITLOS Case No. 6, 125 ILR 203

MOX Plant Case (Ireland v United Kingdom) (2002) 41 ILM 405

North Sea Continental Shelf Cases (Federal Republic of Germany v Denmark; Federal Republic of Germany v Netherlands) [1969] ICJ Rep 42

Question of the Delimitation of the Continental Shelf between Nicaragua and Colombia beyond 200 nautical miles from the Nicaraguan Coast (Nicaragua v. Colombia) case, at <<http://www.icj-cij.org/docket/files/154/17530.pdf>> at 21 August 2015

Report and Recommendation to the Governments of Iceland and Norway of the Conciliation Commission on the Continental Shelf Area between Iceland and Jan Mayen (1981) 20 ILM 825

RosInvest Co UK Ltd v. Russian Federation, SCC Case No 075/2009; IIC 471 (2010)

Southern Bluefin Tuna Cases (New Zealand v. Japan; Australia v. Japan), Provisional Measures, (1999) 38 *International Legal Materials* 1624

Sovereignty over Pedra Branca/Pulau Batu Puteh, Middle Rocks and South Ledge (Malaysia v Singapore) [2008] ICJ Rep 153

Territorial and Maritime Dispute (Nicaragua v. Colombia) [2012] ICJ 624

The Arctic Sunrise Case (Kingdom of the Netherlands v. Russian Federation), Case No. 22, ITLOS/PV.13/C22/1

Trail Smelter case (Canada/United States) (1938 and 1941) 3 RIAA 1911

Volga (Russian Federation v Australia) (Prompt Release) ITLOS Case No. 11, (2003)
42 ILM 159

Whaling in the Antarctic case (Australia v. Japan): New Zealand Intervening, ICJ
Judgement of 14 March 2014
<<http://www.icj-cij.org/docket/files/148/18136.pdf>> at 20 December 2014

3. LEGISLATION

Australian Antarctic Territory Acceptance Act 1933 (Cth)

Australian Antarctic Territory Act 1954 (Cth)

Australian Antarctic Territory Order in Council 1933, 7 February 1933,
<<http://www.antarctica.gov.au/about-antarctica/history/exploration-and-expeditions/the-australian-antarctic-territory>> at 13 February 2013

Act of 22 March 1985 No. 11 Pertaining to Petroleum Activities, Norway, at
<<http://www.un.org/Depts/los/legislationandtreaties/statefiles/Nor.html>> at 14 March 2008

Arctic Waters Pollution Prevention Act, RS 1985, c. A-12

Australian Environmental Protection and Biodiversity Conservation Act 1999 (Cth)

British Antarctic Territory Order in Council 1962 (26 February 1962), Statutory Instrument 1962 No. 400

Crimes Ordinance 1951 (Cth)

Decree of 15 January 1985 of the Council of Ministers of the Soviet Union
<http://www.un.org/Depts/los/legislationandtreaties/pdffiles/RUS_1985_Declaration.pdf>

Deep Seabed Hard Mineral Resources Act, 30 USC § 1401 (1980)

Draft Regulations for the Exploration and Exploitation of Petroleum in the Joint Petroleum Development Area, Designated Authority for the Joint Petroleum Development Area
<<http://www.laohamutuk.org/Oil/PetRegime/NPAlaw/TechRegs/TSDATechRegs2ndDraft16Jun08.pdf>>

Environment Protection and Biodiversity Conservation Act 1999 (Cth)

Exclusive Economic Zone and Maritime Boundaries; Notice of Limits, Federal Register, 60 F.R. 43825 (Aug. 23, 1995), Public Notice 2237, United States Department of State

Fisheries Act 1952 (Cth)

Fishery Conservation and Management Act of 1976, 16 § USC 1801-1882 (1996) (also known as the *Magnuson–Stevens Act*)

Greenland Self-Government Act (Act No. 473 of 12 June 2009)

Home Rule Act of 1979 (Act No. 577 of 29 November 1978)

Imperial Order in Council dated 23 June 1870, reproduced in Statutes of Canada, First Parliament, 35th Vict., 1872, at lxiii

Imperial Order in Council, 31 July 1880, reproduced in Statutes of Canada, Fourth Parl., 44th Vict., Vols I-II, 1880-81, ix-x

Letters Patent appointing the Governor of the Colony of the Falkland Islands to be Governor of South Georgia, the South Orkneys, the South Shetlands, the Sandwich Islands, and Graham's Land, and providing for the Government thereof as Dependencies of the Colony, Westminster, July 21, 1908, *Falkland Islands Gazette* (1 September 1908) and (1912) 101 *British and Foreign State Papers* (1907-08) 76

Letters Patent, passed under the Great Seal of the United Kingdom, providing for the further Definition and Administration of certain Islands and Territories as Dependencies of the Colony of the Falkland Islands. (28 March 1917), *Falkland Islands Gazette*, (2 July 1917) and (1921) 111 *British and Foreign State Papers*, 1917-18, 16

Magnuson Act of 1950, 50 USC § 191 (1950), United States

Malaysia-Thailand Joint Authority Act 1990/ B.E. 2533

Malaysia-Thailand Joint Authority, MTJA Standards of Petroleum Operation - Regulations 1997/ B.E. 2540

Maritime Legislation Amendment Act 1994 (Cth)

Mining Ordinance 1930 (Cth)

Navigation Act 1912 (Cth)

Oil Pollution Act, 33 USC §§ 2701-2719 (2006)

Order in Council providing for the Government of the Ross Dependency 30 July 1923, reprinted in the New Zealand Government Gazette, 1923, 1

Order in Council, reprinted in the Commonwealth of Australia Gazette 16 March 1933, <<http://www.antarctica.gov.au/about-antarctica/history/exploration-and-expeditions/the-australian-antarctic-territory>> at 13 February 2013

Petroleum Mining Code for the Joint Development Area, Australia Timor-Leste Joint Production Development Area (JPDA), art 12(2), Timor-Leste Institute for Development Monitoring and Analysis
<<http://www.laohamutuk.org/Oil/PetRegime/JPDA%20PMC%208-05.pdf>> at 10 August 2012

Presidential Proclamation 5030, March 10, 1983 (3 C.F.R. 22), United States

Protection of the Sea (Prevention of Pollution from Ships) Act 1983 (Cth)

Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area (the Mining Code) at <<http://www.isa.org.jm/files/documents/EN/Regs/MiningCode.pdf>> at 24 February 2010

Rules of Procedure of the Commission on the Limits of the Continental Shelf, UN Doc. CLCS/40 (2 July 2004)

Seas and Submerged Lands Act 1973 (Cth)

Seas and Submerged Lands (Limits of Continental Shelf) Proclamation 2012. The proclamation was made pursuant to the *Seas and Submerged Lands Act 1973* (Cth)

Territorial Sea Geographical Coordinates (Area 7) Order of 10 September 1985, SOR/85-872, Canada Gazette, Part II 2 October 1985

4. TREATIES

Additional Protocol to the Agreement of 18 December 1995 between the Kingdom of Norway and the Kingdom of Denmark on the Delimitation of the Continental Shelf in the Area between Jan Mayen and Greenland and the Boundary between Fishery Zones in the Area, 11 November 1997, 2100 UNTS 180 (entered into force 27 May 1998)

Additional Protocol to the Agreement of 28 May 1980 between Norway and Iceland on Fishery and Continental Shelf Questions and the Supplementary Agreement of 22 October 1981 on the Continental Shelf in the Area Between Jan Mayen and Iceland, 11 November 1997, 2127 UNTS 227 (entered into force 27 May 1998)

Agreed Measures for the Conservation of Antarctic Fauna and Flora, opened for signature 2 June 1964, 17 UST 996, modified in 24 UST 1802 (entered into force 1 November 1982) ('Agreed Measures')

Agreed Minutes on the Delimitation of the Continental Shelf beyond 200 Nautical Miles between the Faroe Islands, Iceland and Norway in the Southern Part of the Banana Hole of the Northeast Atlantic, 20 September 2006
<<https://www.regjeringen.no/en/dokumenter/Agreed-Minutes/id446839/>> at 20 August 2015

Agreed Minutes on the Delimitation of the Continental Shelf beyond 200 Nautical Miles between Greenland and Iceland in the Irminger Sea, 16 January 2013
<<http://www.utanrikisraduneyti.is/media/thjodrettarmal/Agreed-Minutes-og-vidaukar.pdf>> at 25 August 2015

Agreement between Iceland and Norway on the Continental Shelf in the Area between Iceland and Jan Mayen, 22 October 1981, 2124 UNTS 262 (entered into force 2 June 1982)

Agreement between Norway and Iceland on Fishery and Continental Shelf Questions, 28 May 1980, 2124 UNTS 226 (entered into force 13 June 1980)

Agreement between Japan and the Republic of Korea concerning the Joint Development of the Southern part of the Continental Shelf adjacent to the Two Countries, signature 30 January 1974, 1225 UNTS 104 (entered into force 22 June 1978)

Agreement between President Ben Ali of Tunisia and Colonel Qadhafi of the Libyan Arab Jamahiriya relating to the El Bouri Field, 4 September 1988 (Not publicly released), (entered into force 4 September 1988), reviewed in Masahiro Miyoshi, *The Joint Development of Offshore Oil and Gas*, 34

Agreement between the Government of Australia and the Government of the Democratic Republic of Timor-Leste relating to the Unitization of the Sunrise and Troubadour Fields, 6 March 2003, [2007] ATS 11 (entered into force 23 February 2007)

Agreement between the Government of Malaysia and the Government of the Kingdom of Thailand on the Constitution and Other Matters relating to the Establishment of the Malaysia-Thailand Joint Authority, 30 May 1990 <<http://cil.nus.edu.sg/1990/1990->

agreement-between-the-government-of-malaysia-and-the-government-of-the-kingdom-of-thailand-on-the-constitution-and-other-matters-relating-to-the-establishment-of-the-malaysia-thailand-joint-autho/> on 15 January 2013 (entered into force 30 May 1990)

Agreement between the Government of the Commonwealth of Australia and the Government of the Republic of Indonesia establishing certain seabed boundaries in the area of the Timor and Arafura Seas, Supplementary to the Agreement of 18 May 1971, 9 October 1972, 974 UNTS 320 (entered into force 8 November 1973)

Agreement between the Government of the Kingdom of Denmark and the Government of Canada relating to the delimitation of the Continental Shelf between Greenland and Canada, 17 December 1973, 950 UNTS 151 (entered into force 13 March 1974)

Agreement between the Government of the Kingdom of Denmark and the Kingdom of Norway relating to the Delimitation of the Continental Shelf in the Area between Jan Mayen and Greenland and of the Boundary between the Fisheries Zones in the Area, 18 December 1995, 1996 UNTS 177 (entered into force 27 May 1998)

Agreement between the Government of the Kingdom of Denmark together with the Home Government of the Faroe Islands, on the one hand, and the Government of the United Kingdom of Great Britain and Northern Ireland, on the other hand, relating to Maritime Delimitation in the Area between the Faroe Islands and the United Kingdom, 18 May 1999 United Kingdom Treaty Series No. 76 (1999) (entered into force 21 July 1999)

Agreement between the Government of the Kingdom of Norway and the Government of the United Kingdom of Great Britain and Northern Ireland relating to the exploitation of the Murchison Field Reservoir and the Offtake of Petroleum Therefrom, 16 October 1979, 1254 UNTS 173

Agreement between the Government of the Kingdom of Norway and the Government of the United Kingdom of Great Britain and Northern Ireland relating to the Exploitation of the Statfjord Field Reservoirs and the Offtake of Petroleum Therefrom, 16 October 1979, 1254 UNTS 379

Agreement between the Government of the Kingdom of Norway on the one hand, and the Government of the Kingdom of Denmark together with the Home Rule Government of Greenland on the other hand, concerning the delimitation of the continental shelf and the fisheries zones in the area between Greenland and Svalbard, 20 February 2006, 2378 UNTS 21 (entered into force 2 June 2006)

Agreement between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of the Kingdom of Norway relating to the Exploitation of the Frigg Field reservoir and the Transmission of Gas therefrom to the United Kingdom, 10 May 1976, 1098 UNTS 4 (entered into force 22 July 1977)

Agreement between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of the Republic of Ireland concerning the delimitation of areas of the continental shelf between the two countries, 7 November 1988, United Kingdom Treaty Series No. 20 (1990) (entered into force 11 January 1990)

Agreement between the Government of the United Kingdom of Great Britain and Northern Ireland and the Netherlands relating to the exploitation of the Markham Field Reservoirs and the Offtake of Petroleum Therefrom, 26 May 1992, 1731 UNTS 155

Agreement between the Kingdom of Saudi Arabia and the Government of Bahrain, 22 February 1958, 1993 UNTS 8 (entered into force 22 February 1958)

Agreement between the Libyan Arab Socialist People's Jamahariya and the Republic of Tunisia to Implement the Judgment of the International Court of Justice in the Tunisia/Libya Continental Shelf Case, 8 August 1988, United Nations Delimitation Treaties Infobase

<<http://www.un.org/Depts/los/legislationandtreaties/pdf/treaties/LBY-TUN1988CS.pdf>> at 25 July 2012, (entered into force 8 August 1988)

Agreement between the United Kingdom and Germany respecting (1) the Settlement of the Frontier between Nigeria and the Cameroons, from Yola to the Sea, and (2) the Regulation of Navigation on the Cross River, 11 March 1913, TS 013/1913 231 (entered into force 11 March 1913)

Agreement between the United Kingdom and Norway relating to the delimitation of the Continental Shelf between the Two Countries, 10 March 1965, 551 UNTS 214 (entered into force 29 June 1965)

Agreement between the United States of America and the Union of Soviet Socialist Republics on the Maritime Boundary, 1 June 1990, (not yet entered into force), United States – Department of State,

<<http://www.state.gov/documents/organization/125431.pdf>> at 17 April 2013

Agreement between Sudan and Saudi Arabia Relating to the Joint Exploitation of the Natural Resources of the Seabed and Subsoil of the Common Zone, 16 May 1974, 952 UNTS 198 (entered into force 16 May 1974)

Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in Right Of Canada, 25 May 1993, tabled in the House of Commons on 26 May 1993,

<http://www.nucj.ca/library/bar_ads_mat/Nunavut_Land_Claims_Agreement.pdf> at 1 May 2013 ('1993 Nunavut Land Claims Agreement')

Agreement concerning Settlement of Offshore Boundaries and Ownership of Islands Between Qatar and Abu Dhabi, signed 20 March 1969, 2402 UNTS 54 (entered into force 20 March 1969)

Agreement concerning the boundary between Nejd and Kuwait, 2 December 1922, 1750 UNTS 533 (entered into force 2 December 1922) ('Uqair Convention')

Agreement concerning the Joint Development of the Southern Part of the Continental Shelf adjacent to the Two Countries, 30 January 1974, Japan – Republic of Korea, 1225 UNTS 104 (entered into force 22 June 1978)

Agreement governing the Activities of States on the Moon and Other Celestial Bodies, opened for signature 18 December 1979 (not ratified at January 2013) ('Moon Treaty')

Agreement on Cooperation on Aeronautical and Maritime Search and Rescue (SAR) in the Arctic, 12 May 2011 <<http://www.treaty-accord.gc.ca/text-texte.aspx?id=105240>> at 17 April 2013 (entered into force 19 January 2013)

Agreement on Cooperation on Marine Oil Pollution, Preparedness and Response in the Arctic, 13 May 2013, <<http://www.arctic-council.org/eppr/agreement-on-cooperation-on-marine-oil-pollution-preparedness-and-response-in-the-arctic/>> at 21 January 2014 (not yet in force)

Agreement on Historic Waters of Vietnam and Kampuchea, 7 July 1982, reproduced in Jonathan I Charney and Lewis M Alexander (eds), *International Maritime Boundaries* (Martinus Nijhoff, 1993) vol 2, 2364, and United States Foreign Broadcast Information Service (FBIS) Daily Report, Asia and Pacific, July 9 1982 (entered into force 7 July 1982)

Agreement on Management and Cooperation between the Government of the Republic of Guinea-Bissau and the Government of the Republic of Senegal, 14 October 1993, 1903 UNTS 64, (entered into force 21 December 1995)

Agreement on Marine Delimitation between the Government of Australia and the Government of the French Republic, opened for signature 4 January 1982, 1329 UNTS 107 (entered into force 10 January 1983)

Agreement on Maritime Delimitation between the Government of Australia and the Government of the French Republic, 4 January 1982, 1329 UNTS 107 (entered into force 10 January 1983)

Agreement on the partition of the Neutral Zone (Saudi Arabia and Kuwait), 7 July 1965, 1750 UNTS 48 (entered into force 7 July 1965)

Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982, opened for signature 28 July 1994, 1994 UNTS 42 (entered into force 16 November 1994)

Antarctic Treaty, opened for signature 1 December 1959, 402 UNTS 71, (entered into force 23 June 1961), (together with related treaties referred to as the Antarctic Treaty System or ATS)

Argentine-Chilean Declaration of Mutual Rights, 33 Ministerio de Relaciones Exteriores, Santiago 1. 948. Soberania de Chile en la Antartica, Albert Luis Quaranta, *El Sexto Continente* (1950) 130, cited in Robert E. Wilson, 'National interests and Claims in the Antarctic' (1964) 17(1) *Arctic* 15

Boundary Treaty between the Argentine Republic and Chile, 23 July 1881, 159 CTS 45 (entered into force 23 July 1881)

Charter of the United Nations, (opened for signature 26 June 1945, 1 UNTS xvi (entered into force 24 October 1945) ('UN Charter')

Convention between Great Britain and Russia concerning the limits of their Respective Possessions on the North-West Coast of America and the Navigation of the Pacific Ocean, 16 February 1825, 75 Consolidated Treaty Series (CTS) 95

Convention between the Government of the French Republic and the Government of the Spanish State on the Delimitation of the Continental Shelves of the Two States in the Bay of Biscay, 29 January 1974, 996 UNTS 345 (entered into force 29 January 1974)

Convention between the United States of America and His Majesty the Emperor of Russia, for the Cession of the Russian Possessions in North America to the United States, 30 March 1867, 134 Consolidated Treaty Series (CTS) 331

Convention for the Conservation of Southern Bluefin Tuna, opened for signature 10 May 1993, 1819 UNTS 360 (entered into force 20 May 1994)

Convention for the Conservation of Antarctic Seals, opened for signature 1 June 1972, 1080 UNTS 175 (entered into force 11 March 1978) ('CCAS')

Convention for the Pacific Settlement of International Disputes, opened for signature 29 July 1899, 1 AJIL 103 (1907) (entered into force 4 September 1900)

Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft, opened for signature 15 February 1972, 932 UNTS 3 (entered into force 7 April 1974) ('Oslo Convention') (replaced by *OSPAR Convention*)

Convention for the Prevention of Marine Pollution from Land-Based Sources opened for signature 4 June 1974, 1546 UNTS 119 (entered into force 6 May 1978) ('Paris Convention') (replaced by *OSPAR Convention*)

Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean in 1995, opened for signature 10 June 1995 (entered into force 9 July 2004). Text at <http://www.unep.ch/regional_seas/regions/med/t_barcel.htm> at 7 December 2012

Convention for the Protection of the Marine Environment of the North-East Atlantic, opened for signature 22 September 1992, 2354 UNTS 67 (entered into force 25 March 1998) ('*OSPAR Convention*')

Convention for the Protection of the Mediterranean Sea Against Pollution in 1976, opened for signature 16 February 1976, 1102 UNTS 27 (entered into force 12 February 1978) ('Barcelona Convention') Revised as the *Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean* in 1995

Convention on Civil Liability for Oil Pollution Damage resulting from Exploration for and Exploitation of Seabed Mineral Resources, opened for signature 1 May 1977, (1977) 16 ILM 1451 (not yet in force)

Convention on Fishing and Conservation of the Living Resources of the High Seas, opened for signature 29 April 1958, 559 UNTS 285 (entered into force 20 March 1966)

Convention on the Conservation of Antarctic Marine Living Resources, opened for signature 20 May 1980, 1329 UNTS 47 (entered into force 7 April 1982) ('CCAMLR')

Convention on the Continental Shelf, opened for signature 29 April 1958, 499 UNTS 311 (entered into force 10 June 1964)

Convention on the High Seas, opened for signature 29 April 1958, 450 UNTS 82, (entered into force 30 September 1962) (*High Seas convention*)

Convention on the International Regulations for Preventing Collisions at Sea, opened for signature 20 October 1972, 1050 UNTS 16 (entered into force 15 July 1977) ('*COLREGs*')

Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, opened for signature 29 December 1972, 1046 UNTS 120 (entered into force 30 August 1975) ('*London Convention*')

Convention on the Regulation of Antarctic Mineral Resource Activities, opened for signature 2 June 1988, 27 ILM 868 (not yet in force) ('*CRAMRA*')

Convention on the Territorial Sea and Contiguous Zone, opened for signature 29 April 1958, 516 UNTS 205 (entered into force 10 September 1964)

Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties, opened for signature 29 November 1969, 970 UNTS 211 (entered into force 6 May 1975) ('*Intervention Convention*')

Covenant of the League of Nations, opened for signature 29 April 1919, 225 CTS 189 (entered into force 10 January 1920)

Exchange of Letters between Malaysia and Brunei Darussalam, 16 March 2009, (not publicly released), referred to in Jeffrey J. Smith, 'Brunei and Malaysia resolve outstanding maritime boundary issues' [2010] 1 *Law of the Sea Reports*

Franco-Siamese Boundary Treaty of 23 March 1907, (1907) US Foreign Relations 2:1003; UK Cmd. 3578 (1907)

International Convention for the Prevention of Pollution from Ships (MARPOL), and *Protocol of 1978 relating to the International Convention for the Prevention of Pollution from Ships, 1973, as amended*, opened for signature 17 February 1978, 1340 UNTS 184 and 1340 UNTS 61, 62 (entered into force 2 October 1983)

International Convention for the Safety of Life at Sea, opened for signature 1 November 1974, 1184 UNTS 3 (entered into force 25 May 1980) ('*SOLAS*')

International Convention on Civil Liability for Bunker Oil Pollution Damage, opened for signature 23 March 2001, (2001) 40 ILM 1493 (entered into force 21 November 2008) ('*Bunker Oil Convention*')

International Convention on Civil Liability for Oil Pollution Damage, 1969, opened for signature 29 November 1969, 973 UNTS 3 (entered into force 19 June 1975) ('*1969 CLC Convention*')

International Convention on Civil Liability for Oil Pollution Damage, 1992, opened for signature 27 November 1992, 1953 UNTS 255 (entered into force 3 May 1996) ('*1992 Civil Liability Convention*') (updated the *1969 CLC Convention*)

International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea, opened for signature 3 May 1996, (1996) 35 ILM 1406 ('HNS Convention')

International Convention on Maritime Search and Rescue, opened for signature 1 November 1979, 1405 UNTS 97 (entered into force 22 June 1985)

International Convention on Oil Pollution Preparedness, Response and Co-operation, opened for signature 30 November 1990, 1891 UNTS 51 (entered into force 13 May 1995) ('OPRC Convention')

International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, opened for signature 7 July 1978, 1361 UNTS 2 (entered into force 28 April 1984), substantially amended in 1995, ('STCW Convention')

International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1971, opened for signature 18 December 1971 [1995] ATS 2 (entered into force 16 October 1978)

International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1992, opened for signature 19 November 1976 [1995] ATS 3 (entered into force 22 November 1994) ('1992 Fund Convention')

Joint Declaration on Cooperation over Offshore Activities in the South West Atlantic (Argentina and United Kingdom) 35 ILM 301 signed 27 September 1995 (entered into force 27 September 1995, cancelled by Argentina in 2010)

Joint Declaration on Northwest Territories Devolution, 11 May 2013, <<http://www.aadnc-aandc.gc.ca/eng/1363269358714/1363269524805>> at 1 May 2013

Kuwait-Saudi Arabia Neutral Zone Agreement, 7 July 1965, (1966) 60 *American Journal of International Law*, 744 (entered into force 7 July 1965)

Kyoto Protocol to the United Nations Framework Convention on Climate Change, opened for signature 16 March 1998, 2303 UNTS 148 (entered into force 16 February 2005) ('Kyoto Protocol')

Maritime Delimitation Treaty between Jamaica and the Republic of Columbia, 12 November 1993, 1776 UNTS 17 (entered into force 14 March 1994)

Memorandum of Understanding' between Iran and Sharjah, 29 November 1971, (entered into force 29 November 1971), <http://www.parstimes.com/history/iran_sharjah.html> at 25 July 2012

Memorandum of Understanding between Malaysia and the Socialist Republic of Vietnam for the Exploration and Exploitation of Petroleum in a Defined Area of the Continental Shelf between the Two Countries, 5 June 1992 <<http://cil.nus.edu.sg/1992/1992-memorandum-of-understanding-between-malaysia-and-the-socialist-republic-of-vietnam-for-the-exploration-and-exploitation-of-petroleum-in-a-defined-area-of-the-continental-shelf-involving-the-two-c/>> at 17 January 2013 (entered into force 4 June 1993)

Memorandum of Understanding between the Kingdom of Thailand and Malaysia on the Delimitation of the Continental Shelf Boundary between the two countries in the Gulf of Thailand, 24 October 1979, 1291 UNTS 251 (entered into force 15 July 1982)

Memorandum of Understanding between the Kingdom of Thailand and Malaysia on the Establishment of a Joint Authority for the Exploitation of the Resources of the Sea-Bed in a Defined Area of the Continental Shelf of the two countries in the Gulf of Thailand, 21 September 1979, (entered into force 24 October 1979) ('*Thailand/Malaysia Agreement*') reprinted in Jonathan I Charney and Lewis M Alexander (eds), *International Maritime Boundaries* (Martinus Nijhoff, 1993) vol 1, 1099

Memorandum of Understanding between the Royal Thai Government and the Royal Government of Cambodia regarding the Area of their Overlapping Maritime Claims to the Continental Shelf, 18 June 2001

<http://tncbcc.rtarf.mi.th/pdf/pdf_cam190/07.pdf> at 9 April 2013

Optional Protocol of Signature concerning the Compulsory Settlement of Disputes, opened for signature 29 April 1958, 450 UNTS 169 (entered into force 30 September 1962)

Protocol of 1992 to amend the International Convention on Civil Liability for Oil Pollution Damage, opened for signature 27 November 1992, 1956 UNTS 255 (entered into force 30 May 1996)

Protocol of 1997 to amend the International Convention for the Prevention of Pollution from Ships of 2 November 1973, as modified by the Protocol of 17 February 1978, opened for signature 26 September 1997 [2007] ATS 37 (entered into force 19 May 2005)

Protocol of 2003 to the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage 1992, opened for signature 16 May 2003 [2003] ATNIF 21

Protocol on Environmental Protection to the Antarctic Treaty, opened for signature 4 October 1991, 30 ILM 1455 (entered into force 14 January 1998) ('*Environmental Protocol*', also known as the 'Madrid Protocol')

Protocol on Preparedness, Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances, opened for signature 15 March 2000 [2007] ATS 41 (entered into force 14 June 2007) ('OPRC-HNS Protocol')

Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution on Heavy Metals, opened for signature 24 June 1998, 2237 UNTS 4 (entered into force 29 December 2003)

Protocol to the 1979 Convention on Long-range Transboundary Air Pollution on Persistent Organic Pollutants, opened for signature 24 June 1998, 2230 UNTS 79, (entered into force 23 October 2003)

Protocol to the Agreement between the Republic of Guinea-Bissau and the Republic of Senegal concerning the organization and Operation of the Management and

Cooperation Agency Established by the Agreement of 14 October 199, 14 October 1993, 1903 UNTS 66 (entered into force 21 December 1995)

Protocol to the International Convention on the Establishment of the International Fund for Compensation for Oil Pollution Damage Protocol to the International Convention on the Establishment of the International Fund for Compensation for Oil Pollution Damage, [1995] ATS 3 (entered into force 30 May 1996)

Protocol to the Treaties of 28 January 1971 between the Federal Republic of Germany and Denmark and the Kingdom of the Netherlands, respectively, concerning the delimitation of the continental shelf under the North Sea, 28 January 1971, 857 UNTS 155 (entered into force 28 January 1971)

Protocol relating to Intervention on the High Seas in Cases of Marine Pollution by Substances other than Oil, opened for signature 2 November 1973, 1313 UNTS 4 (entered into force 30 March 1983)

Special Maritime Frontier Zone Agreement (Chile, Ecuador and Peru) 4 December 1954, 2274 UNTS 527 (entered into force 21 September 1967)

Statute of the International Court of Justice, (opened for signature 26 June 1945, 1 UNTS xvi (entered into force 24 October 1945)

Supplementary agreement to the above-mentioned Agreement confirming the determination of the boundary line dividing the Saudi-Kuwaiti Neutral Zone, (Saudi Arabia and Kuwait) 18 December 1969, 1750 UNTS 62 (entered into force 18 December 1969)

Timor Sea Treaty between the Government of East Timor and the Government of Australia, 20 May 2002, 2258 UNTS 3 (entered into force 2 April 2003)

Treaty between Australia and the Democratic Republic of Timor-Leste on Certain Maritime Arrangements in the Timor Sea, 12 January 2006, [2007] ATS 12, (entered into force 23 February 2007) ('CMATS Treaty')

Treaty between Australia and the Republic of Indonesia in the Zone of Cooperation in an Area between the Indonesian Province of East Timor and Northern Australia, 11 December 1989, 1654 UNTS 106 (entered into force 9 February 1991, effectively terminated on independence of Timor-Leste in April 2003)

Treaty between the Federal Republic of Nigeria and the Democratic Republic of Sao Tome and Principe on the Joint Development of Petroleum and Other Resources, in respect of the Areas of the Exclusive Economic Zones of the Two States, 21 February 2001

<<http://www.un.org/Depts/los/legislationandtreaties/statefiles/nga.htm>> at 17 January 2013, (entered into force 16 January 2003)

Treaty between the Government of Australia and the Government of Indonesia Establishing an Exclusive Economic Zone Boundary and Certain Seabed Boundaries, 14 March 1997 [1997] ATNIF 4 (not yet in force)

Treaty between the Government of Australia and the Government of New Zealand establishing certain Exclusive Economic Zone and Continental Shelf Boundaries, 25 July 2004, (2006) ATS 4 (entered into force 25 January 2006)

Treaty between the Kingdom of Denmark and the Federal Republic of Germany concerning the delimitation of the continental shelf under the North Sea, 28 January 1971, 857 UNTS 109 (entered into force 7 December 1972)

Treaty between the Kingdom of Norway and the Russian Federation Concerning Maritime Delimitation and Cooperation in the Barents Sea and the Arctic Ocean, 15 September 2010, 2791 UNTS I-49095, (entered into force 7 July 2011)

Treaty between the Kingdom of the Netherlands and the Federal Republic of Germany concerning Arrangements for Co-operation in the Ems Estuary, 8 April 1960, 509 UNTS 64 (entered into force 1 August 1963) ('*Ems-Dollard Treaty*')

Treaty between the Kingdom of the Netherlands and the Federal Republic of Germany concerning the delimitation of the continental shelf under the North Sea, 28 January 1971, 857 UNTS 131 (entered into force 7 December 1972)

Treaty between Norway, the United States of America, Denmark, France, Italy, Japan, the Netherlands, the Great Britain and Ireland and the British Dominions beyond the Seas and Sweden relating to Spitsbergen of 9 February 1920, opened for signature 9 February 1920, 2 LNTS 8 (entered into force 14 August 1925) ('*Svalbard Treaty*')

Treaty concerning Territorial Questions at Issue between Colombia and Nicaragua, 24 March 1928, 105 LNTS 337

Treaty concerning the Cession of the Russian Possessions in North America by his Majesty the Emperor of all the Russias to the United States of America, 30 March 1867, 15 Stat 539, ('*Alaska Purchase*')

Treaty of Peace and Friendship of 1984 between Chile and Argentina, 29 November 1984 1399 UNTS 102 (entered into force 2 May 1985)

Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space including the Moon and Other Celestial Bodies, opened for signature 27 January 1967, 610 UNTS 205, (entered into force 10 October 1967) ('*Outer Space Treaty*')

United Nations Convention on the Law of the Sea, opened for signature 10 December 1982, 1833 UNTS 396 (entered into force 16 November 1994)

United Nations Framework Convention on Climate Change, opened for signature 4 June 1992, 1771 UNTS 107 (entered into force 21 March 1994) ('*UNFCCC*').

Vienna Convention on the Law of Treaties, opened for signature 23 May 1969, 1155 UNTS 331 art 18 (entered into force 27 January 1980) ('*VCLT*')

5. OTHER SOURCES

'A Tiny Island is where Iran Makes a Stand' *New York Times* (New York), 1 May 2012

Abrahamson, John, 'Joint Development of Seabed Resources and the United Nations Convention on the Law of the Sea' (Research Paper, Monash University, 1996)

Abrahamson, John, 'Joint Development of Arctic Ocean Oil and Gas Resources and the United Nations Convention on the Law of the Sea' (Paper presented at the Centre for International and Public Law (CIPL) Seminar, Canberra, 31 July 2009, and at the IBRU 'The State of Sovereignty' Conference, Durham, 1-3 April 2009)

Acts of the Conference for the Codification of International Law, (1930), League of Nations doc. C.351.M.145

'After Sakhalin - What does Shell's capitulation to Gazprom mean for the Russian energy industry?' *The Economist* (London) 13 December 2006

'Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic – The search and rescue regions relevant to this Agreement' Arctic Portal Library <<http://library.arcticportal.org/1474/>> at 17 April 2013

'An Appetite for Oil: Oceans Rebound from Oil Spills with the Aid of Microbes', Fisheries and Oceans Canada, <<http://www.dfo-mpo.gc.ca/science/publications/article/2012/01-25-12-eng.html>> at 12 April 2013

Antarctic Treaty, Documents of the Meetings of State Parties, UN Doc SPLOS/183 para 1(a) (13 - 20 June 2008)

Antarctic Treaty Secretariat, Measure 1 (2003), XXVI Antarctic Treaty Consultative Meeting (Spain) <http://www.ats.aq/devAS/ats_meetings_meeting_measure.aspx?lang=e> at 22 August 2012

Antarctic Treaty Secretariat, *Decision 1 (2011) - ATCM XXXIV - CEP XIV*, 1 July 2011 <http://www.ats.aq/devAS/info_measures_listitem.aspx?lang=e&id=491> at 22 August 2012

'*Arctic Climate Impact Assessment*' (2005) Cambridge University

Arctic Council, 'Arctic Council Secretariat in Tromsø opened by Arctic Ministers' 23 January 2013 <<http://www.arctic-council.org/index.php/en/resources/news-and-press/news-archive/676-arctic-council-secretariat-in-tromso-opened-by-arctic-ministers>> at 15 April 2013

Arctic Council, Arctic Offshore Oil and Gas Guidelines, 2009, <<http://www.arctic-council.org/index.php/en/about/documents/category/233-3-energy>> at 24 August 2012

Arctic Council, 'Arctic Offshore Oil and Gas Guidelines: Systems Safety Management and Safety Culture - Avoiding Major Disasters in Offshore Oil and Gas Operations' (2014), <<http://www.arctic-council.org/index.php/en/resources/news-and-press/news-archive/874-new-guidelines-from-pame-on-arctic-offshore-oil-and-gas-safety-management>> at 27 August 2015

Arctic Council, Emergency Prevention, Preparedness and Response Working Group (EPPR) Working Group Meeting Final Report (Whitehorse, June 15-16, 2011)

Arctic Council, 'Negotiations in Helsinki on New Arctic Agreement on Marine Oil Pollution Response' <<http://www.arctic-council.org/index.php/en/oceans/emergency-preparedness/570-negotiations-in-helsinki-on-new-arctic-agreement-on-marine-oil-pollution-response>> at 8 October 2012

Arctic Council, Protection of the Arctic Marine Environment Working Group, The Arctic Ocean Review Project, Phase II Report 2011-2013 <<http://www.arctic-council.org/index.php/en/oceans/arctic-ocean-review/396-phase-ii-of-the-arctic-ocean-review-project>> at 21 December 2012

Arctic Council, Senior Arctic Officials (SAO) Report to Ministers, Nuuk, Greenland, May 2011

Arctic Council Indigenous Peoples Secretariat ('IPS') 'RAIPON's Activities Suspended' (17 November 2012), <<http://www.arcticpeoples.org>> at 8 February 2013

Arctic Council Secretariat, 'Arctic Council Fact Sheet' (2012) <<http://www.arctic-council.org/index.php/en/>> at 23 November 2012

Arctic Environmental Protection Strategy, 30 ILM 1624 (1991)

'Arctic Sovereignty' *The Canadian Encyclopaedia*, <<http://www.thecanadianencyclopedia.com/articles/arctic-sovereignty>> at 27 February 2013

'Argentina and UK claims to maritime jurisdiction in the South Atlantic and Southern Oceans' IBRU <https://www.dur.ac.uk/ibru/resources/south_atlantic/> at 14 December 2012

'Argentina Ends Falklands Oil Deal', *BBC News*, 28 March 2007

Argentine Government Note to the United Nations, 31 July 1984

Argentine Government Note to Chile in response to the Notification of Chilean claims to Antarctica (12 November 1940)

'Australia and Timor-Leste', ConocoPhillips, <http://www.conocophillips.com/EN/about/worldwide_ops/asia-me/Pages/Australia.aspx> at 16 October 2012

Australian Antarctic Division <<http://www.antarctica.gov.au/antarctic-law-and-treaty/treaty-partners>> at 21 August 2012

Australian Government, 'Kerguelen Plateau', <<http://www.ga.gov.au/energy/province-sedimentary-basin-geology/petroleum/offshore-southern-australia/kerguelen-plateau.html>> at 21 December 2012

Australian submission through the Secretary-General to the Commission on the Limits of the Continental Shelf, pursuant to article 76, paragraph 8, of the Convention, United Nations Division for Ocean Affairs and the Law of the Sea, 15 November 2004 <http://www.un.org/Depts/los/clcs_new/submissions_files/aus04/Documents/aus_doc_e_s_web_delivery.pdf> at 18 February 2010

'Beaufort Sea' Government of Canada <<http://publications.gc.ca/Collection-R/LoPBdP/BP/bp322-e.htm>> at 14 December 2012

Boswell, Randy, 'Ocean Survey Looks Promising for Arctic Sovereignty Effort', *National Post* (Toronto, Canada), 16 May 2008

BP, 'BP Announces Resolution of All Criminal and Securities Claims by U.S. Government Against Company Relating to Deepwater Horizon Accident' (Press Release 15 November 2012)

BP, Deepwater Horizon Accident, 'BP's payments related to Gulf Coast recovery', <<http://www.bp.com/en/global/corporate/gulf-of-mexico-restoration.html>> at 13 August 2014

British Antarctic Survey, 'Environmental Protocol', <http://www.antarctica.ac.uk/about_antarctica/geopolitical/environmental_issues/environmental_protocol.php> at 10 September 2013

Brunei Darussalam's Preliminary Information concerning the Outer Limits of its Continental Shelf, United Nations Division for Ocean Affairs and the Law of the Sea Department <www.un.org/Depts/los/clcs_new/submissions_files> at 1 August 2012

Bush, George H W, in Daniel Grotta and Sally Grotta, , 'Antarctica: whose continent is it anyway?' *Popular Science*, (1992) 240(1) 91

Carr, Bob, 'Arbitration under the Timor Sea Treaty' (Press Release, 3 May 2013) <http://foreignminister.gov.au/releases/2013/bc_mr_130503.html> at 17 June 2013

'Chile announce ambitious Antarctica Strategic Plan', *MercoPress* (Montevideo) 15 February 2010, <<http://en.mercopress.com/2010/02/15/chile-announce-ambitious-antarctica-strategic-plan>> at 4 September 2012

'Chile-Peru spat over sea border' *BBC News*, 17 January 2008, <<http://news.bbc.co.uk/2/hi/americas/7194854.stm>> at 9 May 2013

Chilean Foreign Affairs Ministry Decree 1541, on September 7, 1939

Chilean Foreign Affairs Ministry Decree no. 1747, enacted on November 6, 1940 and published on June 21, 1955

Chilean Government note to the United Nations, 27 June 1984

'Circumstances of Australian scientist's South Pole death still unclear', ABC Radio, 24 September 2008,
<<http://www.abc.net.au/news/stories/2008/09/24/2373587.htm?site=news>> at 1 February 2013

Clinton, William Jefferson, 'Message from the President of the United States and Commentary Accompanying the United Nations Convention on the Law of the Sea and the Agreement Relating to the Implementation of Part XI Upon their Transmittal to the United States Senate for its Advice and Consent' (1994) *Georgetown International Environmental Law Review* 7, 147

'Colombia pulls out of International Court over Nicaragua' *BBC News*, 28 November 2012, <<http://www.bbc.co.uk/news/world-latin-america-20533659>> at 6 May 2013

Commission on the Limits of the Continental Shelf, 'Communications received with regard to the submission made by Argentina to the Commission on the Limits of the Continental Shelf', United Kingdom, Notes 84/09 and 273/12 to the Secretary General of the United Nations,
<http://www.un.org/Depts/los/clcs_new/submissions_files/submission_arg_25_2009.htm> at 15 February 2013

Commission on the Limits of the Continental Shelf, 'Continental Shelf Submission of Australia – Executive Summary'
<http://www.un.org/Depts/los/clcs_new/commission_submissions.htm> at 9 January 2013

Commission on the Limits of the Continental Shelf, 'Continental Shelf Submission of Norway in respect of areas in the Arctic Ocean, the Barents Sea and the Norwegian Sea'
<http://www.un.org/Depts/los/clcs_new/submissions_files> at 5 December 2012

Commission on the Limits of the Continental Shelf, 'Continental Shelf Submission of Norway in respect of Bouvetøya and Dronning Maud Land, 4 May 2009'
http://www.un.org/Depts/los/clcs_new/submissions_files/nor30_09/nor2009_executivesummary.pdf on 27 July 2009

Commission on the Limits of the Continental Shelf, 'Joint Submission to the Commission on the Limits of the Continental Shelf pursuant to Article 76, paragraph 8 of the United Nations Convention on the Law of the Sea 1982 in respect of the Southern part of the South China Sea, Malaysia and Vietnam',
<www.un.org/Depts/los/clcs_new/submissions_files/submission_mysvnm_33_2009.htm> at 1 July 2012

Commission on the Limits of the Continental Shelf, 'New Zealand submission through the Secretary-General to the Commission on the Limits of the Continental Shelf, pursuant to article 76, paragraph 8, of the Convention, 19 April 2006

Commission on the Limits of the Continental Shelf, 'Note from the Permanent Mission of New Zealand to the Secretary-General of the United Nations accompanying the lodgement of New Zealand's submission,' NZ-CLCS-TPN-02, 19 April 2006,
<http://www.un.org/Depts/los/clcs_new/submissions_files/nzl06/nzl_doc_es_attachment.pdf> at 9 January 2013

Commission on the Limits of the Continental Shelf, 'Outer limits of the continental shelf beyond 200 nautical miles from the baselines: Submission by the Kingdom of Denmark' <http://www.un.org/Depts/los/clcs_new/submissions_files> at 5 December 2012

Commission on the Limits of the Continental Shelf, 'Partial Submission of the Government of the Kingdom of Denmark together with the Government of Greenland to the Commission on the Limits of the Continental Shelf – The Northern Continental Shelf of Greenland' – Executive Summary <http://www.un.org/depts/los/clcs_new/submissions_files/submission_dnk_76_2014.htm> at 16 December 2014

Commission on the Limits of the Continental Shelf, 'Statement by the Chairman of the Commission on the Limits of the Continental Shelf on the progress of work in the Commission' (24-28 June 2002) UN Doc. CLCS/34, 33

Commission on the Limits of the Continental Shelf, 'Summary of the Recommendations of the Commission on the Limits of the Continental Shelf In Regard To the Submission Made By Norway in Respect of Areas in the Arctic Ocean, the Barents Sea and the Norwegian Sea on 27 November 2006,' 2. <http://www.un.org/Depts/los/clcs_new/submissions_files/nor06/nor_rec_summ.pdf> at 18 February 2013

Conference on Joint Development and the South China Sea', (Conference Report, at Conference on Joint Development and the South China Sea, Singapore, 16–17 June 2011) <http://www.un.org/Depts/los/clcs_new/submissions_files> at 18 December 2012

'Continental Shelf beyond 200 Nautical Miles', National Oceanography Centre, Southampton <http://www.unclosuk.org/downloads/Full_183_subs-Oct2012.pdf> at 12 February 2013

Contract Regarding an Interim Supplement to Tanker Liability for Oil Pollution (CRISTAL) (ceased to accept claims in February 1997, replaced by Civil Liability Convention)

Council of Managers of National Antarctic Program (COMNAP), Scientific Committee on Antarctic Research <<https://www.comnap.aq/operations/facilities>> at 31 July 2009

'Country Profile, South America and South Atlantic Islands Falkland Islands (British Overseas Territory)', Foreign and Commonwealth Office, 27 July 2008 <<http://www.fco.gov.uk/en/travel-and-living-abroad/travel-advice-by-country/country-profile/south-america/falkland-islands/>> at 15 August 2012

Decision regarding the date of commencement of the ten-year period for making submissions to the Commission on the Limits of the Continental Shelf set out in article 4 of Annex II to the United Nations Convention on the Law of the Sea, Meeting of States Parties, Eleventh Meeting, (New York), 14-18 May 2001 ('SPLOS/72')

Decision regarding the workload of the Commission on the Limits of the Continental Shelf and the ability of States, particularly developing States, to fulfil the requirements of article 4 of annex II to the United Nations Convention on the Law of the Sea, as well as the decision contained in SPLOS/72, paragraph (a), Meeting of States Parties, United

Nations Convention on the Law of the Sea, Eighteenth Meeting, (New York), 13-20 June 2008

Declaration on the Establishment of the Arctic Council, 19 September 1996 <<http://www.arctic-council.org/index.php/en/about/documents/file/13-ottawa-declaration>> at 17 September 2012 ('Ottawa Declaration')

'Deep sigh of relief – The shale gas and oil bonanza is transforming America's energy outlook and boosting its economy', *The Economist*, (London) 16 March 2013

'Deepwater Horizon Accident', BP <<http://www.bp.com/sectiongenericarticle800.do?categoryId=9036575&contentId=7067541>> at 18 October 2012

'Deepwater Horizon: Gulf of Mexico 'deep-cleaned' itself', BBC News, 9 April 2013, <<http://www.bbc.co.uk/news/science-environment-22075182>> at 10 April 2013

'Details Emerge of the 2009 Brunei-Malaysia Maritime Agreement' (2010) International Boundaries Research Unit <http://www.dur.ac.uk/ibru/news/boundary_news/?itemno=10047&rehref=%2Fibru%2Fnews%2F&resubj=Boundary+news%20Headlines> at 15 August 2012

'Detecting oil spills, Trouble beneath the ice' *The Economist* (London) 1 December 2012 <<http://www.economist.com/news/technology-quarterly/21567196-energy-technology-oil-exploration-moves-arctic-new-methods-are-being>> at 23 April 2013

'Dispute resumes between Iran and United Arab Emirates over island of Abu Musa' International Boundaries Research Unit, 3 May 2012, <https://www.dur.ac.uk/ibru/news/boundary_news/?itemno=14513&rehref=%2Fibru%2Fnews%2F&resubj=Boundary+news+Headlines> at 8 February 2013

'Draft Report on Article 82 of the 1982 UN Convention on Law of the Sea (UNCLOS)' (Paper presented at International Law Association, Rio de Janeiro, 20 October 2008)

'Drilling Activities in the Joint Development Zone', Nigeria - Sao Tome and Principe Joint Development Authority <http://n-stpjda.com/nstpjda/?page_id=82> at 3 August 2012

'Dutch oil spill response team on standby for US oil disaster' Radio Netherlands Worldwide, 4 May 2010 <<http://www.rnw.nl/english/article/dutch-oil-spill-response-team-standby-us-oil-disaster>> at 24 April 2013

'East Asian rivalry - Protesting too much - Anti-Japanese demonstrations run the risk of going off-script' *The Economist* (London) 22 September 2012

'East China Sea Gas Fields' *The Japan Times* <<http://www.japantimes.co.jp/text/nn20080619a1.html>> at 14 December 2012

'East Timor spy row: Australia, East Timor postpone ICJ case to seek 'amicable settlement' ABC News, 7 September 2014 <<http://www.abc.net.au/news/2014-09-06/icj-postpones-australia-etimor-spy-row-case/5724918>> at 18 December 2014

Ecolex, Treaties - Record Details

<<http://www.ecolex.org/ecolex/ledge/view/RecordDetails?id=TRE-001120&index=treaties>> at 13 August 2014

'Economic and Financial Indicators' *The Economist* (London) 20 December 2014, 129

Ernst & Young, *Arctic Oil and Gas* (2013)

<[http://www.ey.com/Publication/vwLUAssets/Arctic_oil_and_gas/\\$FILE/Arctic_oil_and_gas.pdf](http://www.ey.com/Publication/vwLUAssets/Arctic_oil_and_gas/$FILE/Arctic_oil_and_gas.pdf)> at 2 October 2013

Ernst & Young, *Global Oil and Gas Guide 2012* <www.ey.com/GL/en/Industries/Oil---Gas> at 4 October 2012

European Commission 'Commissioner Oettinger welcomes political agreement on offshore legislation' IP/13/149 (Press Release, 21 February 2013), <http://europa.eu/rapid/press-release_IP-13-149_en.htm> at 15 April 2013

European Commission, Proposal for a Regulation of the European Parliament and of the Council on safety of offshore oil and gas prospection, exploration and production activities, COM(2011) 688,

<<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0688:FIN:EN:PDF>> at 15 April 2013

European Maritime Safety Agency, 'Satellite Oil Spill Monitoring'

<<http://www.emsa.europa.eu/operations/cleanseanet.html>> at 24 April 2013

European Maritime Safety Agency, 'Stand-by Oil Spill Response Vessels'

<<http://www.emsa.europa.eu/oil-recovery-vessels/vessel-inventory.html>> at 24 April 2013

European Science Foundation '*Aurora Borealis - European Research Icebreaker*' (2012)

<<http://www.eri-aurora-borealis.eu/en/home/>> at 26 June 2008

European Union, *Directive 2013/30/EU of the European Parliament and of the Council of 12 June 2013 on safety of offshore oil and gas operations and amending Directive 2004/35/EC*, OJ L 178/66

'Eye on the Arctic – Understanding the Milne ice shelf' Radio Canada International, 9 August 2013 <<http://www.rcinet.ca/en/2013/08/09/eye-on-the-arctic-understanding-the-milne-ice-shelf/>> at 17 October 2013

Falkland Islands Continental Shelf Proclamation, 17 February 1997, No.1 of 1991, at <<http://www.falklands.info/history/95proc.html>> at 14 August 2012

Falkland Islands Department of Mineral Resources, 'Exploration History' <http://www.bgs.ac.uk/falklands-oil/exp_history.html> at 3 December 2012

Falkland Oil and Gas Limited, Investor Presentation, November 2011, <<http://www.fogl.com/fogl/uploads/companypresentations/CorporatePresentationnonUViewer.pdf>> at 3 December 2012

'Falklands will be under our control within 20 years, says Argentina' *The Guardian* (London) 5 February 2013 <<http://www.guardian.co.uk/uk/2013/feb/05/falklands-under-our-control-argentina>> at 22 April 2013

Flow Rate Technical Group (FRTG), 'Press Briefing by National Incident Commander June 18, 2010' Deepwater Horizon Incident Joint Information Centre, (Press Release, 18 June 2010)

Foreign & Commonwealth Office 'Queen Elisabeth Land' (Press Release, 18 December 2012)
< <https://www.gov.uk/government/news/queen-elizabeth-land>> at 18 June 2013

Foreign and Commonwealth Office, United Kingdom, 'Country Profile– South America and South Atlantic Islands Falkland Islands (British Overseas Territory)', 27 July 2008 < www.fco.gov.uk> at 1 May 2013

Foreign and Commonwealth Office, United Kingdom, Note No. 168/08 of 9 May 2008, <<http://www.fco.gov.uk/en/news/latest-news/?view=News&id=16346920>> at 15 February 2010

'France's new ECS submission', Geopolitical Boundaries, <<http://geoboundaries.wordpress.com/2009/02/06/frances-new-ecs-submission/>> at 21 December 2012

French Government Decree, Adélie Land, 1 April 1938

'German Council of Science and Humanities recommends Building of Polarstern II', Alfred Wegener Institute for Polar and Marine Research, 15 November 2010, <http://www.awi.de/index.php?id=71&type=123&cHash=af826958c7ce4c8027a9bed5bc4467b4&L=0&tx_list_pi1%5Buid%5D=830&filename=awi.pdf> at 14 June 2013

'Global 500' *Fortune Magazine* (2008)

Gonzalez, Felipe, Hawke, Bob, and Rocard, Michel 'Call to restart the ratification process of the Madrid Protocol,' Antarctic Treaty Secretariat, <www.ats.aq/documents/ATCM34/att/ATCM34_att086_e.doc> at 22 April 2013

Government of Canada, 'Canada and Kingdom of Denmark Reach Tentative Agreement on Lincoln Sea Boundary', (Press Release, 28 November 2012) <<http://www.international.gc.ca/media/aff/news-communications/2012/11/28a.aspx?view=d>> at 14 January 2013

Government of Canada, Fisheries and Oceans Canada, 'Canada's Submission to the Commission on the Limits of the Continental Shelf Under the United Nations Convention on the Law of the Sea (The "Continental Shelf Program")' <<http://www.dfo-mpo.gc.ca/ae-ve/evaluations/09-10/6b060-eng.htm>> at 1 October 2013

Government of Canada, Minister of Indian Affairs and Northern Development, '2012-2013 Call For Nominations – Arctic Islands Of Nunavut' <http://www.aadnc-aandc.gc.ca/DAM/DAM-INTER-HQ-NOG/STAGING/texte-text/rm_ri_ain_ain13_ainnom2013_1360876151938_eng.pdf> at 1 May 2013

Government of Canada, 'Pollution Prevention in the Canadian Arctic' <<http://www.tc.gc.ca/eng/marinesafety/debs-arctic-environment-pollution-496.htm>> at 23 November 2012

Government of Southern Sudan, Natural Resources Management Group, 'Sudan Saudi Arabia Sign Mining License' (Press Release, 31 May 2010)

'Greenland halts new oil drilling licences', *The Guardian*, 27 March 2013 <<http://www.guardian.co.uk/world/2013/mar/27/greenland-halts-oil-drilling-licences>> at 10 April 2013

Greenland Representation to the E.U., Brussels, 'Politics in Greenland' <<http://eu.nanoq.gl/Emner/About%20Greenland/Politics%20in%20Greenland.aspx>> at 28 February 2013

Greenwood, Therese, 'Canada 'Ice Shelf Disintegration Threatens Environment, Queens Study' (Press Release, 3 August 2005) <http://www.eurekaalert.org/pub_releases/2005-08/qu-isd080305.php> at 16 June 2008

Guidelines for Ships Operating in Ice Covered Waters, International Maritime Organisation, DE 45/27/Add.2 (2002) (Report to the Maritime Safety Committee, Sub-Committee on Ship Design and Equipment 45th session)

Hard-fought new life for RAIPON' *Barents Observer*, 15 March 2013, <<http://barentsobserver.com/en/society/2013/03/hard-fought-new-life-raipon-15-03>> at 1 May 2013

Hazen, Terry, presentation at the Environmental Fate of Petroleum Oils and Dispersants in the Marine Environment, 245th National Meeting and Exposition of the American Chemical Society, 7-11 April 2013, New Orleans, <<http://www.utk.edu/tntoday/2013/04/08/professors-research-shows-gulf-mexico-resilient-spill/>> at 10 April 2013

Headland, R K, 'Ships (icebreakers) which have reached the North Pole', Scott Polar Research Institute, University of Cambridge <<http://www.spri.cam.ac.uk/resources/infosheets/14.html>>

House of Commons Library 'Antarctic Bill', Bill 14 of 2012-13, Research Paper 12/63 (30 October 2012) <<http://www.parliament.uk/briefing-papers/RP12-63>> at 14 November 2012

Hull, Cordell, United States Secretary of State, Statement of May 24, 1940

'In a hole? Demand for some rare-earth elements could rapidly outstrip supply', *The Economist*, (London), March 17, 2012 <<http://www.economist.com/node/21550243>> at 24 July 2012

Indian Ministry of Earth Sciences <<http://dod.nic.in>> at 26 February 2010

Intergovernmental Panel on Climate Change 'Climate Change 2007: Synthesis Report - An Assessment of the Intergovernmental Panel on Climate Change' (2008)
<http://www.ipcc.ch/publications_and_data/publications_and_data_reports.htm#1> at 15 February 2010

Intergovernmental Panel on Climate Change 'Working Group I Contribution to the IPCC Fifth Assessment Report, Climate Change 2013: The Physical Science Basis, <<http://www.ipcc.ch/index.htm#.Uk0YvCZ--vE>> at 3 October 2013

International Court of Justice, 'List of Cases referred to the Court since 1946 by date of introduction'
<<http://www.icj-cij.org/docket/index.php?p1=3&p2=2>> at 8 February 2013

International Energy Agency, *World Energy Outlook – Executive Summary* (2012)

International Maritime Organisation, 'Guidelines for ships operating in Arctic ice-covered waters' (2010)

International Maritime Organisation, 'IMO/UNEP Guidelines on oil spill dispersant application including environmental considerations' (1995)

International Maritime Organisation, 'IMO Legal Committee supports follow up to oil well incidents' (2011) 1 IMO News 18

International Maritime Organisation, 'International Convention on Maritime Search and Rescue (SAR)'
<[http://www.imo.org/About/Conventions/listofconventions/pages/international-convention-on-maritime-search-and-rescue-\(sar\).aspx](http://www.imo.org/About/Conventions/listofconventions/pages/international-convention-on-maritime-search-and-rescue-(sar).aspx)> at 17 April 2013

International Maritime Organisation, 'International Convention on Standards of Training, Certification and Watchkeeping for Seafarers
<[http://www.imo.org/About/Conventions/ListOfConventions/Pages/International-Convention-on-Standards-of-Training,-Certification-and-Watchkeeping-for-Seafarers-\(STCW\).aspx](http://www.imo.org/About/Conventions/ListOfConventions/Pages/International-Convention-on-Standards-of-Training,-Certification-and-Watchkeeping-for-Seafarers-(STCW).aspx)> at 4 April 2013

International Maritime Organisation, Legal Committee (LEG) – 99th session, 16 - 20 April 2012,
<<http://www.imo.org/en/MediaCentre/MeetingSummaries/Legal/Pages/LEG-99th-session.aspx>> on 3 September 2015

International Maritime Organisation, 'Pollution Prevention',
<<http://www.imo.org/OurWork/Environment/PollutionPrevention/Pages/Default.aspx>> at 12 August 2014

International Oil Pollution Compensation Funds (IOPC Funds)
<<http://www.iopcfund.org/intro.htm>> at 13 November 2012

International Seabed Authority, 'Contractors'
<<http://www.isa.org.jm/en/scientific/exploration/contractors>> at 18 April 2013

International Seabed Authority, 'Decision of the Assembly relating to the regulations on prospecting and exploration for poly-metallic nodules in the Area' (13 July 2000) UN Doc. ISBA/6/A/18 ('Mining Code')

International Tanker Owners Pollution Federation Ltd, Oil Tanker Spill Statistics, <<http://www.itopf.com/knowledge-resources/data-statistics/statistics/>> at 12 August 2014

International Tribunal for the Law of the Sea, (Press Release, 29 January 2010) ITLOS/Press 142 <http://www.itlos.org/start2_en.html> at 18 February 2010

International Tribunal for the Law of the Sea, (Press Release, 14 March 2012) ITLOS/Press 175 <<http://www.itlos.org/index.php?id=108>> at 7 September 2012

'Iran v the United States – Iran's warning' *The Economist* (London), 7 January 2012

'Jamaica's Maritime Claims and Boundaries', 125 *Limits in the Seas*, United States Department of State <<http://www.state.gov/documents/organization/57677.pdf>> at 3 August 2012

Jiang, Yu, Chinese Foreign Ministry 'China, Japan reach principled consensus on East China Sea issue' (Press Release, 18 June 2009) <<http://www.china-embassy.org/eng/fyrth/t466632.htm>> at 29 July 2009

Joblin, Scott, 'Oil and Ice: Petroleum Extraction in Antarctica', *RIA Novosti* (2010) <<http://en.rian.ru/valdai/20100906/160481450.html>> at 24 August 2012

Korea National Oil Corporation (KNOC) - 'Operations - Korea', <http://www.knoc.co.kr/ENG/sub03/sub03_1_1_4.jsp> at 2 October 2012

'Kuwait, Saudi boost Neutral Zone output Arab Times', *Arab Times* (Kuwait), 27 April 2012

Licence No 09/98 for Exploration for and Exploitation of Hydrocarbons for an Offshore Area West of Sisimiut in West Greenland, Mineral Resources Administration for Greenland, 29 June 1998. <<http://www.geus.dk/ghexis/pdf/sislic.pdf>> at 19 November 2012

Malaysia Thailand Joint Authority, 'Fiscal Regime for the JDA' <<http://www.mtja.org/fiscalregime.php>> at 2 August 2013

Malaysia Thailand Joint Authority, 'Milestone and Progress of Malaysia Thailand Joint Authority' <<http://www.mtja.org/chronicle.php>> at 25 July 2012

Manicom, James, 'Disputed Claims in the East China Sea', interview by Chris Acheson, The National Bureau of Asian Research, Seattle, 25 July 2011, <<http://www.nbr.org/research/activity.aspx?id=159>> at 3 April 2013

'Maritime Jurisdiction and Boundaries in the Arctic Region' (2008) International Boundaries Research Unit <<http://www.durham.ac.uk/ibru>> at 15 August 2008

'Mark Lyall Grant's rebuttal of Timmerman's accusations of British militarisation of the South Atlantic', *Falklands News* (March 2012)
<<http://falklandsnews.wordpress.com/2012/03/page/2>> at 30 October 2012

Memorandum by the British Foreign and Commonwealth Office 10 November 1982, in Peter J Beck, 'Who owns Antarctica? Governing and Managing the Last Continent' (1994) 1(1) *IBRU Boundary and Territory Briefing* 44

Memorandum by the New Zealand Department of External Affairs, Ross Dependency, 21 February 1947

'Microbes and Oil Spills', American Academy of Microbiology, <<http://www.dfo-mpo.gc.ca/science/publications/microbes/pdf/microbes-eng.pdf>> at 12 April 2013

'Mining', Australian Antarctic Division, <<http://www.antarctica.gov.au/about-antarctica/fact-files/geology/mining>> at 24 August 2012

'Multitude of Challenges to operating in the Arctic' *Canadian Sailings*, 15 February 2010

'Negotiations in Helsinki on New Arctic Agreement on Marine Oil Pollution Response', Arctic Council, <<http://www.arctic-council.org/index.php/en/oceans/emergency-preparedness/570-negotiations-in-helsinki-on-new-arctic-agreement-on-marine-oil-pollution-response>> at 8 October 2012

New Zealand Government note to the United Nations, Ross Dependency, 6 July 1984

New Zealand Ministry of Foreign Affairs and Trade, Treaties and International Law, 'Convention on the Regulation of Antarctic Mineral Resource Activities'
<<http://www.mfat.govt.nz/Treaties-and-International-Law/01-Treaties-for-which-NZ-is-Depositary/0-Antarctic-Mineral-Resource.php>> at 22 April 2013

'NGO Submission to the Human Rights Council Universal Periodic Review Mechanism,' UPR 16th Session, April/May 2013, 9th October 2012, submitted on behalf of the Russian Association of Indigenous Peoples of the North, the International Work Group for Indigenous Affairs, and the Institute for Ecology and Action Anthropology,
<<http://www.raipon.info/en/component/content/article/8-news/91-ngo-submission-to-the-human-rights-council-universal-periodic-review-mechanism.html>> at 1 May 2013

Nguyen, Lan-Anh T, 'Joint Development between Malaysia and Vietnam'
<<http://cil.nus.edu.sg/wp/wp-content/uploads/2011/06/Session-5-Lan-Anh-Joint-development-between-Malaysia-Vietnam-pdf.pdf>> at 31 July 2012

'Non-Living Resources of the Continental Shelf Beyond 200 Nautical Miles: Speculations on the Implementation of Article 82 of the United Nations Convention on the Law of the Sea,' ISA Technical Study No. 5,
<www.isa.org.jm/files/documents/EN/Pubs/TechStudy5.pdf> at 12 February 2013

Norway submission to the Commission on the Limits of the Continental Shelf, in accordance with Article 76, paragraph 8 of the United Nations Convention on the Law of the Sea, 27 November 2006

'Norwegian Maritime Boundaries', Norwegian Ministry of Foreign Affairs
<<http://www.regjeringen.no/en/dep/ud/selected-topics/civil--rights/spesiell-folkerett/folkerettslige-sporsmal-i-tilknytning-ti.html?id=537481>> at 16 October 2012.

Norwegian Royal Decree, 14 January 1939

Nunavut Land Claims Agreement Act, SC 1993, c 29

'Oil and Gas blocks' *Open Development – Cambodia*,
<<http://www.opendevdevelopmentcambodia.net/briefings/oil-and-gas-concessions/>> at 11 April 2013

'Oil, Gas and Improving Thai Cambodian Relations' *Bangkok Post*, 18 Nov 2011
<<http://www.bangkokpost.com/business/economics/266790/oil-gas-and-improving-thai-cambodian-relations>> at 9 April 2013

'Offshore Oil and Gas Exploration', Shell Global,
<<http://s03.static-shell.com/content/dam/shell/static/usa/downloads/alaska/os101-ch2.pdf>> at 9 October 2013

OSPAR Commission, 'Quality Status Report 2010', Offshore Oil and Gas Industry,
<http://qsr2010.ospar.org/en/ch07_01.html#environmental_pressures> at 21 March 2013

Outer Continental Shelf Committee of the International Law Society (ILS) Berlin Conference 2004 <<http://www.ila-hq.org/en/committees/index.cfm/cid/33>> at 4 December 2012

Outer Limits of the Continental Shelf – Argentine Submission,
<http://www.un.org/Depts/los/clcs_new/commission_submissions.htm> at 9 January 2013

'Overlapping Claims Area', Cambodian National Petroleum Authority,
<<http://cnpa.gov.kh/index.php?Id=00022>> at 24 April 2013

Partial Submission to the Commission on the Limits of the Continental Shelf pursuant to Article 76 paragraph 8 of the United Nations Convention on the Law of the Sea in respect of the areas of the French Antilles and the Kerguelen Islands, France
<http://www.un.org/Depts/los/clcs_new/submissions_files> at 18 December 2012

Partial Submission to the Commission on the limits of the Continental Shelf pursuant to Article 78 paragraph 8 of the United Nations Convention on the Law of the Sea in respect of La Réunion and Saint-Paul and Amsterdam Islands, France,
http://www.un.org/Depts/los/clcs_new/submissions_files/fra40_09/fra2009executivesummary.pdf> on 27 July 2009

Partial Submission of the Government of the Kingdom of Denmark together with the Government of Greenland to the Commission on the Limits of the Continental Shelf regarding the Southern Continental Shelf of Greenland, to be posted at
<http://www.un.org/Depts/los/clcs_new/commission_submissions.htm> at 12 December 2012

Partial Submission of the Government of the Kingdom of Denmark together with the Government of the Faroes to the Commission on the Limits of the Continental Shelf - The Continental Shelf North of the Faroe Islands, 29 April 2009 <http://www.un.org/Depts/los/clcs_new/submissions_files/dnk28_09/dnk2009executive_summary.pdf> at 27 July 2009

Permanent Court of Arbitration, 'Ad Hoc Arbitration under Annex VII of the United Nations Convention on the Law of the Sea', <http://www.pca-cpa.org/showpage.asp?pag_id=1288 > at 14 January 2013

'Philippines submits South China Sea disputes with China to UNCLOS Annex VII arbitration,' International Boundaries Research Unit, 22 January 2013 <http://www.dur.ac.uk/ibru/news/boundary_news/?itemno=16498&rehref=%2Fibru%2F&resubj=Boundary+news+Headlines> at 1 February 2013

'Photovoltaics from Any Semiconductor, Berkeley Lab Technology Could Open Door to More Widespread Solar Energy Devices' Lawrence Berkley National Laboratory, 26 July 2012 <<http://newscenter.lbl.gov/feature-stories/2012/07/26/photovoltaics-from-any-semiconductor/>> at 16 April 2013

Pratt, Martin, 'Potential Arctic Maritime Boundary Delimitations' International Maritime Boundaries Research Unit, <<http://www.dur.ac.uk/resources/ibru/arctic.pdf>> at 24 January 2015

Preliminary Information concerning the outer limits of the continental shelf of Canada in the Arctic Ocean, <http://www.un.org/depts/los/clcs_new/commission_preliminary.htm> at 10 August 2014

Preliminary Information indicative of the Outer limits of the Continental Shelf and description of the status of preparation and the intended date of making a submission to the Commission on the Limits of the Continental Shelf, Chile, <http://www.un.org/Depts/los/clcs_new/submissions_files/preliminary/chl2009preliminaryinformation.pdf> at 8 June 2012

Proclamation No 2667, 'Policy of the United States with Respect to the Natural Resources of the Subsoil of the Seabed and the Continental Shelf', (1945)10 Fed. Reg. 12,305 ('Truman Proclamation')

Quaranta, Albert Luis, *El Sexto Continente* (1950) 130, cited in Robert E. Wilson, 'National interests and Claims in the Antarctic' (1964) 17(1) *Arctic* 15

'Renewable energy now cheaper than new fossil fuels in Australia', *Bloomberg New Energy Finance*, 7 February 2013 <<http://about.bnef.com/press-releases/renewable-energy-now-cheaper-than-new-fossil-fuels-in-australia/>> at 16 April 2013

Revenue Watch Institute, *Timor Sea Designated Authority First Tranche Petroleum and Profit Oil* (2009) < http://www.revenuewatch.org/training/resource_center/timor-sea-designated-authority-first-tranche-petroleum-and-profit-oil> at 15 August 2012

Report of the Second Commission, (1930) League of Nations Publication V. Legal, 9 (C 230, MI 17)

Report Of The United Nations Conference On Environment And Development (Rio de Janeiro, 3-14 June 1992) Chapter 17 – Protection Of The Oceans, All Kinds Of Seas, Including Enclosed And Semi-Enclosed Seas, And Coastal Areas And The Protection, Rational Use And Development Of Their Living Resources, UN Doc A/CONF.151/26 (Vol. II) (1992)

'Russian submits new Arctic Ocean claim' International Boundary Research Unit (IBRU), 4 November 2014,
<https://www.dur.ac.uk/ibru/news/boundary_news/?itemno=22658&rehref=%2Fibru%2Fnews%2F&resubj=Boundary+news+Headlines> at 29 December 2014

Russian Federation, 'Government Order on Antarctic Strategy to 2020', October 30 2010, No 1926 2, referred to in Fogarty, Ellie, 'Antarctica: Assessing and Protecting Australia's National Interests' (2011)
<<http://www.isn.ch/isn/Digital-Library/Publications/Detail/?ots591=0c54e3b3-1e9c-be1e-2c24-a6a8c7060233&lng=en&ord582=grp2&id=132284>> at 24 August 2012

Russian Federation, 'On strategy for the development of the Russian Federation activities in the Antarctic for the period until 2020 and longer-term perspective'
<http://www.ats.aq/devAS/ats_meetings_doc_database.aspx?lang=e&menu=2> at 24 August 2012

Russian Federation submission through the Secretary-General to the Commission on the Limits of the Continental Shelf, pursuant to article 76, paragraph 8, of the Convention, 20 December 2001

'Russians Fire Shots amid Greenpeace Arctic Protest', *Rigzone*, 18 September 2013,
<http://www.rigzone.com/news/oil_gas/a/129108/Russians_Fire_Shots_amid_Greenpeace_Arctic_Protest> at 9 October 2013

Scandinavian Oil and Gas Magazine, 3 September 2009,
<<http://www.scandoil.com/moxie-bm2/news/transoceans-deepwater-horizon-drills-worlds-deepes.shtml>>

Scott, Karen N, 'Managing Sovereignty and Jurisdictional Disputes in the Antarctic' (Paper presented at The State of Sovereignty Conference of the International Boundaries Research Unit, Durham, 1-3 April 2009)

Senate Standing Committees on Foreign Affairs, Defence and Trade, Inquiry into Australia's future activities and responsibilities in the Southern Ocean and Antarctic waters, Submission by the Department of Foreign Affairs and Trade, 27 June 2014

'Shell confirms deepwater oil discovery offshore French Guiana' Killajoules,
<<http://killajoules.wikidot.com/blog:1278> > at 5 October 2012

'Shell suspends Arctic drilling for 2013', *BBC News*, 27 February 2013
<<http://www.bbc.co.uk/news/business-21609892> > at 10 April 2013

'Shell vs. Total – The Debate Over Arctic Drilling' *Seeking Alpha*, 5 October 2012
<<http://seekingalpha.com/article/906751-shell-vs-total-the-debate-over-arctic-drilling>> at 19 November 2012

Sond Resources, 'Tunisia/Libya',
<<http://www.sonderesources.com/operations/international/tunisia-libya>> at 25 July 2012

'Settlement of Disputes Mechanism' United Nations Division for Ocean Affairs and the Law of the Sea
<http://www.un.org/Depts/los/settlement_of_disputes/choice_procedure.htm> at 9 July 2012

'Sheiks v Shale' *The Economist* (London) 6 December 2014, 13

Singh, Bhupinder, Head of Tax, Petroliam Nasional Berhad ('Petronas'), discussion on the Malaysia/Thailand JDZ on 6 September 2013

Statement Made by the Deputy Minister for Natural Resources of the Russian Federation During Presentation of the Submission Made by the Russian Federation to the Commission on 28 March 2002, Doc. CLCS/31, (5 April 2002)

Anders Stenbakken, 'History of East Greenland'
<<http://www.eastgreenland.com/database.asp?lang=eng&num=201>> at 17 June 2013

'Strained relations between Japan and South Korea - Lame ducks and flying feathers - Domestic political upheaval in both countries makes a damaging row worse' *The Economist* (London) 8 September 2012

Submission to the Commission on the Limits of the Continental Shelf pursuant to Article 76 paragraph 8 of the United Nations Convention on the Law of the Sea 1982 in respect of the Falkland Islands, and of South Georgia and the South Sandwich Islands' on 11 May 2009, United Kingdom,
<http://www.un.org/Depts/los/clcs_new/submissions_files/submission_gbr_45_2009.htm> at 15 February 2010

Submissions, through the Secretary-General of the United Nations, to the Commission on the Limits of the Continental Shelf, pursuant to article 76, paragraph 8, of the United Nations Convention on the Law of the Sea of 10 December 1982,
<http://www.un.org/Depts/los/clcs_new/commission_submissions.htm> at 5 December 2012

Summary of the Recommendations of the Commission on the Limits of the Continental Shelf (CLCS) in Regard to the Submission made by Australia on 15 November 2004, 1
<http://www.un.org/Depts/los/clcs_new/submissions_files/aus04/Documents/aus_doc_es_web_delivery.pdf> at 30 November 2012

Summary Of The Recommendations Of The Commission On The Limits Of The Continental Shelf In Regard To The Submission Made By Norway In Respect Of Areas In The Arctic Ocean, The Barents Sea And The Norwegian Sea on 27 November 2006,
<http://www.un.org/Depts/los/clcs_new/commission_submissions.htm> at 31 October 2012

Tanker Owners' Voluntary Agreement concerning Liability for Oil Pollution (opened for signature 7 January 1969) 8(3) ILM 497 ('*TOVALOP*') (ceased to accept claims in February 1997, replaced by Civil Liability Convention)

'Thailand', Idemitsu Oil and Gas Co Ltd,
<<http://www.iog-idemitsu.co.jp/eng/project/thailand/>> at 24 April 2013

'Thailand-Cambodia dispute: Key points' *BBC News*, 11 November 2009
<<http://news.bbc.co.uk/2/hi/asia-pacific/8354489.stm>> at 9 April 2013

'The Arctic - Gold Rush under the Ice', *The Economist* (London), 3 August 2007

The International Regime for Compensation for Oil Pollution Damage, IOPC Funds, Explanatory Note, November 2012,
<http://www.iopcfunds.org/fileadmin/IOPC_Upload/Downloads/English/explanatorynote_e.pdf> at 1 November 2012

'The Mubarek Field', Crescent Petroleum,
<http://www.crescent.ae/html/mubarek_field.html> at 11 April 2013

The National Academies, 'Report in Brief - Abrupt Climate Change: Inevitable Surprises' (2001) <<http://www.nap.edu/html/climatechange-brief/abruptclimatechange-brief.pdf>> at 4 April 2008

'The New Russia Norway Border' *Moscow Times*
<<http://dmacc50222.blogspot.com.au/2011/07/arctic-treaty-with-norway-opens-fields.html>> at 14 December 2012

'The struggle between Thailand and Cambodia over oil and gas resources,' CLC Asia, 16 September 2010
<<http://www.clc-asia.com/the-struggle-between-thailand-and-cambodia-over-oil-and-gas-resources/>> at 24 April 2013

'Timor may walk away from gas treaty with Australia' Australia Network News, *ABC*, 17 October 2012, <<http://www.abc.net.au/news/2012-10-15/an-timor-to-walk-away-from-treaty/4313128>> at 10 April 2013

'Timor-Leste and Australia – Bugs in the Pipeline' *The Economist* (London) 8 June 2013, 52

Turner, John, 'Accession to the 1982 Law of the Sea Convention and Ratification of the 1994 Agreement Amending Part XI of the Law of the Sea Convention', Testimony before the Senate Environment and Public Works Committee (Washington, 23 March 2004) Senate Treaty Document 103-39; Senate Executive Report 108-10

'Twilight for BP in Russia?' *The Economist* (London) 9 June 2012

United Kingdom, House of Commons Select Committee, Energy and Climate Change, 'UK Deepwater Drilling - Implications of the Gulf of Mexico Oil Spill - Energy and Climate Change'

<<http://www.publications.parliament.uk/pa/cm201011/cmselect/cmenergy/450/45012.htm>> at 23 April 2013

'United Nations Commission on the Outer Limits of the Continental Shelf – Argentine Submission,'

<http://www.un.org/Depts/los/clcs_new/commission_submissions.htm> at 9 January 2013

United Nations, Commission on the Limits of the Continental Shelf 'Statement by the Chairman of the Commission on the Limits of the Continental Shelf on the progress of work in the Commission' (24-28 June 2002) UN Doc. CLCS/34

United Nations, Division for Ocean Affairs and the Law of the Sea, 'Chronological lists of ratifications of, accessions and successions to the Convention and the related Agreements,'

<http://www.un.org/Depts/los/reference_files/chronological_lists_of_ratifications.htm> at 28 November 2012

United Nations, Division for Ocean Affairs and the Law of the Sea, 'Settlement of disputes mechanism,'

<http://www.un.org/Depts/los/settlement_of_disputes/choice_procedure.htm> at 14 January 2013

United Nations, Division for Ocean Affairs and the Law of the Sea, Preliminary information indicative of the outer limits of the continental shelf beyond 200 nautical miles <http://www.un.org/Depts/los/clcs_new/commission_preliminary.htm> at 8 June 2012

United Nations, Document CLCS/11 of 13 May 1999; CLCS/11/Add.1 of 03 September 1999; CLCS/11/Corr.1 of 24 February 2000, Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf,

<http://www.un.org/Depts/los/clcs_new/commission_documents.htm#Guidelines> at 25 February 2013

United Nations, Document CLCS/40 Rev. 1 of 17 April 2008, Rules and Procedures of the Commission on the Limits of the Continental Shelf,

<http://www.un.org/Depts/los/clcs_new/commission_documents.htm#Rules%20of%20Procedure> at 25 February 2013

United Nations, Report of the Secretary-General - Fifty-seventh session Agenda item 25 (a) Oceans and the law of the sea, UN Doc A/57/57/Add.1 <<http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N02/629/28/PDF/N0262928.pdf?OpenElement>> at 5 December 2012

United Nations, Report of the Secretary General on the Question of Antarctica, Views of States, Part II Volume 2, (1984) UN Doc A/39/583

United Nations, Report of the United Nations Conference on Environment and Development (Rio de Janeiro, 3-14 June 1992) Chapter 17 – Protection Of The Oceans, All Kinds Of Seas, Including Enclosed And Semi-Enclosed Seas, And Coastal Areas And The Protection, Rational Use And Development Of Their Living Resources, UN Doc A/CONF.151/26 (Vol. II) (1992)

United Nations, Report on Article 82 of the 1982 UN Convention on Law of the Sea', International Law Association Rio De Janeiro Conference (2008) Outer Continental Shelf <<http://www.ila-hq.org/en/committees/index.cfm/cid/33>> at 4 December 2012

United Nations Environment Programme (UNEP),
<<http://www.unep.org/regionalseas/about/default.asp>> at 24 February 2010

United Nations Environment Programme, *UNEP Year Book 2013*, 'The View from the Top' (2013)

United States, Arctic Research Commission and the United States Army Corps of Engineers Cold Regions Research and Engineering Laboratory, 'Oil Spills in Arctic Waters, An Introduction and Inventory of Research Activities and USARC Recommendations' (2012)

United States Department of the Interior, 'Review of Shell's 2012 Alaska Offshore Oil And Gas Exploration Program, 8 March 2013
<<http://www.doi.gov/news/pressreleases/departement-of-the-interior-releases-assessment-of-shells-2012-arctic-operations.cfm>> at 18 April 2013

United States, Department of State, Fact Sheet, Bureau of European and Eurasian Affairs, Washington, 20 May 2003, <<http://www.state.gov/p/eur/rls/fs/20922.html>> at 14 March 2008

United States, Department of State, International Boundary Study, Series A, Limits in the Seas, No. 18, Continental Shelf Boundary Abu Dhabi – Qatar, (1970)
<<http://www.state.gov/documents/organization/61608.pdf>> at 20 December 2012

United States, Department of State, 'Law of the Sea Convention Letters of Transmittal and Submittal and Commentary', Dispatch Volume 6, Supplement Number 1, 1995

United States, Department of State, 'Message from the President of the United States Transmitting the Agreement Between the United States of America and the Union of Soviet Socialist Republics on the Maritime Boundary, with Annex, Signed at Washington, June 1, 1990,'
<<http://www.state.gov/documents/organization/125431.pdf>> at 10 January 2013

United States, Department of State, 'The Antarctic Treaty',
<www.state.gov/s/l/treaty/depository/index.htm#ANTARCTICA> at 2 September 2015

United States, National Oceanic and Atmospheric Administration, Coastal Services Center, FGDC Marine Boundary Working Group,
<http://www.csc.noaa.gov/mbwg/htm/cad_mar.html>at 14 March 2008

United States, National Oceanic and Atmospheric Administration, Office of Response and Restoration, 'Activities in the Arctic',
<<http://response.restoration.noaa.gov/oil-and-chemical-spills/oil-spills/activities-arctic.html>> at 21 March 2013

United States of America: Notification Regarding the Submission Made by the Russian Federation to the Commission on the Limits of the Continental Shelf, Ref. No. CLCS.01.2001.LOS/USA (18 March 2002)

'US and BP slow to accept Dutch expertise' Houston Chronicle (Houston) 9 June 2010 <<http://www.chron.com/business/steffy/article/Steffy-U-S-and-BP-slow-to-accept-Dutch-expertise-1705573.php>> at 24 April 2013

Van Meurs, Pedro, Van Meurs Corporation, World Fiscal Systems for Oil and Gas <www.vanmeurs.org/Training.aspx> at 4 October 2012

'West Antarctic Glacier Loss Appears Irreversible', NASA Jet Propulsion Laboratory, 12 May 2014, <www.jpl.nasa.gov/news> at 5 June 2014

Wilson, Robert E, 'National interests and Claims in the Antarctic' (1964) 17(1) *Arctic* 15

Wood Mackenzie, 'Upstream Service, Country Fiscal Models and Analysis', <www.woodmacresearch.com> at 4 October 2012

World Wildlife Fund (WWF) International Arctic Programme, *Oil Spill Response Challenges in Arctic Waters* (2007)

'Yamal LNG, Harnessing the Arctic's gas resources', Total S.A. <<http://total.com/en/energies-expertise/oil-gas/exploration-production/projects-achievements/lng/yamal-lng>> at 9 October 2013

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