

Appendix A

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RESEARCH DESIGN: RECORD OF DISCUSSIONS

Expert	Mode	Topics of Discussion
Vice Admiral P. J. Jacob, Director General Coast Guard, New Delhi.	Direct Discussion, Joint Activities. (1996)	Maritime Security (Nonmilitary)
Vice Admiral Mihir Roy (Retd), Society for Indian Ocean Studies, New Delhi.	Direct Discussion, Seminar and Workshops. (1996, 1997, 2000)	Maritime Security (Nonmilitary)
Dr Z. A. Quasim, Former Secretary, Department of Ocean Development, New Delhi.	Direct Discussion, Seminar. (1997)	Ocean Resources
Dr A. E. Muthunaikam, Secretary, Department of Ocean Development, New Delhi.	Direct Discussion. (1997)	Ocean Development
Vice Admiral R. Ganesh, Director General, Coast Guard, New Delhi.	Direct Discussion, Joint Activities. (1998)	Maritime Security (Nonmilitary)
Dr Narendra Nath, Director, INCOIS, NRSA Hyderabad.	Direct Discussion. (1998, 1999)	Space Application in Maritime Security
Mr. George Everet, Director (Fisheries), FAO, Rome.	Direct Discussion, Workshops. (1998, 1999, 2000)	Fisheries Code, Food Security
Dr A. P. J. Abdul Kalam, Scientific Advisor to Government of India, New Delhi.	Direct Discussion, Seminar. (August 1999)	National Security, RMA, Importance of Oceans
Vice Admiral John C. DeSilva, Director General, Coast Guard, New Delhi.	Direct Discussion, Joint Activities. (1999)	Maritime Security, (Military and Nonmilitary)
Mr. Debi Goenka, Environmentalism, Mumbai.	Direct Discussion, Workshop. (1999)	Environmental Security
His Excellency K. S. Jasrotia, High Commissioner of India, Male, Maldives.	Direct Discussion. (September 1999)	Geostrategic Security (Indian Ocean)

Col. Ahmed Zahir, Director General, Marine Security Agency (Coast Guard), Male, Maldives.	Direct Discussion, Workshop. (February 2000, September 2001)	Geostrategic Security, Maritime Security, Indo- Maldives Maritime Relations
Cmdr P. C. B. Nair, Area Manager, COFLEX, Mumbai.	Direct Discussion. (January 2001)	Track II approach on fisheries: India-Pakistan
Dr K. K.N. Kurup, Vice Chancellor, Calicut University, Calicut.	Direct Discussion, Seminar. (March 2001)	Maritime History of India
Prof M. Ravindran, Director, National Institute of Ocean Technology, Chennai.	Direct Discussion, (March 2001)	Deep Sea Mining Prospects of India
Mr. Krishna Rao, Secretary, Association of Indian Fishery Industries, Vishakhapatnam	Direct Discussion. (April, 2001)	Problems of Fisheries
Dr K. S. R. Murthy, Scientist, National Institute of Oceanography, Vishakhapatnam	Direct Discussion. (April 2001)	Legal Continental Shelf and Scientific Advancements
Dr Bhaskar Rao, Head of the Department of Meteorology and Oceanography, Andhra University, Vishakhapatnam.	Direct Discussion. (April 2001)	Oceanographic and metrological advancements-India
Lt Col. P.M. Vasudevan, Intelligence Corps, College of Military Intelligence, Pune	Direct Discussion, (June 2001)	Military intelligence and integration, post Kargil
Mr. J. P. Singh, General Manager, Land Earth Station, Arvi.	Direct Discussion. (June 2001)	Space applications and maritime search and rescue
Col. Prabhakaran Nair, Military Intelligence, Pune.	Direct Discussion. (June 2001)	Integration of intelligence

EVOLUTION OF ELEMENTS: NATIONAL SECURITY

	Origin	Definition Dilemma	Constituent Elements	Elements Identified for Examination
1	Prehistoric	Survival	Physical security	Muscle power
2	Hunters	Survival	Physical security	Muscle power
3	Epics	Survival	Physical security	Campaigns
4	Spirituality	Supplements needs	Mental aspects for existential balance	Religion and inner self
5	Yale undergraduates (1790)	Earliest reference to the term national security	Fostering domestic industries	Nonmilitary security for military security
6	Adler (1870-1937)	Apparent security	Communal living	Organised protection
7	Maslow (1908-1970)	Hierarchy of needs	Physical and psychological needs	Existentialistic deeds
8	US Senate (1945)	Security is not just defence	Other than Navy and the Army	Non-military aspects
9	NSC (US) (1947)	Flexible for wider use	Value based protection for freedom	Military and nonmilitary
10	Lasswell (1950)	Balancing instruments of policy	Arms, Diplomacy, Information, Economics	Military, and nonmilitary
11	Wolfers (1962)	Absence of threats and fear	Value based protection	Military and nonmilitary.
12	IDSIA (India) (1965)	Ambiguity	National defence and national security	Military and nonmilitary
13	International Encyclopaedia of Social Sciences (1968)	Power to protect external threats	Value protection	Military and nonmilitary
14	Blair (1972)	Dependency on economics	Balance of payments and foreign assistance	Nonmilitary
15	Moss (1973)	Ill defined phrase	Freedom of information	Nonmilitary security

16	Yale Law Review (1976)	National military capability	Military to protect interests	Military security
17	Taylor, Maxwell (1979)	Nonmilitary threats and the State	Energy, Population, Economy, Technology, International trade, Inflation	Military and nonmilitary security.
18	Brown (1977)	Nonmilitary	Energy, Environment, Climate, Economy, Illegal immigration, Food	Nonmilitary security
19	Taylor, William (1981)	Larger scope than physical security	Protection of values and vitality	Military and nonmilitary
20	Ullman (1983)	Threat based perception	Quality of life, Policy choices	Military and nonmilitary
21	Buzan (1983)	Power maximisation	Political and military power as leverage for domestic affairs	Power: military and political
22	Mathews, Jessica (1989)	Broadening definition	Resource, Demography, Environment	Military and nonmilitary
23	Maier (1990)	Power of control domestic and foreign conditions	Self-determination, Autonomy, Well-being, Prosperity,	Military and nonmilitary
24	Moran (1990/91)	Cold War fixation	Soviet Union, International relations, globalisation, Energy, Economics, Narcotics	Military and nonmilitary
25	Lippman (1993)	National military capability	Military to protect other interests	Military security
26	NDC Seminar (India) (1996)	Multidimensional	Politics, environment, Economics, Defence, Culture, Technology, Resources, Military	Military and nonmilitary

27	Chinoy, Anuradha (2000)	State security	Maintaining political and other structures with military might	Military security
28	Saighal (2000)	Overstretched. Need to redefine.	Military, Economics, Global Power Support, Strong UN Institutions, Unidentified factors	Military and nonmilitary security
29	Saighal (2000)	Insecurity model	Economic vulnerability, reduced military might, Political unrest, Social unrest	Chaotic situation edging towards disorder
30	Kargil Report (1999)	Military security	Military Security against intelligence	Military Security
31	Report of the Group of Minsters (2001)	Military security	Border security, Intelligence, Unified command concept	Military security combined with nonmilitary
32	Study by the Researcher (2002)	Well-being measurable through National Security Index	15 identified elements	Military security through intelligent military might, and nonmilitary security

Appendix C
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CHRONOLOGICAL LIST OF RATIFICATIONS: UNCLOS

1	Fiji	10 Dec 1982
2	Zambia	07 Mar 1983
3	Mexico	18 Mar 1983
4	Jamaica	21 Mar 1983
5	Namibia	18 Apr 1983
6	Ghana	07 Jun 1983
7	Bahamas	29 Jul 1983
8	Belize	13 Aug 1983
9	Egypt	26 Aug 1983
10	Cote d'Ivoire	26 Mar 1984
11	Philippines	08 May 1984
12	Gambia	22 May 1984
13	Cuba	15 Aug 1984
14	Senegal	25 Oct 1984
15	Sudan	23 Jan 1985
16	Saint Lucia	27 Mar 1985
17	Togo	16 Apr 1985
18	Tunisia	24 Apr 1985
19	Bahrain	30 May 1985
20	Iceland	21 Jun 1985
21	Mali	16 Jul 1985
22	Iraq	30 Jul 1985
23	Guinea	06 Sep 1985
24	United Republic of Tanzania	30 Sep 1985
25	Cameroon	19 Nov 1985
26	Indonesia	03 Feb 1986
27	Trinidad and Tobago	25 Apr 1986
28	Kuwait	02 May 1986
29	Nigeria	14 Aug 1986
30	Guinea-Bissau	25 Aug 1986
31	Paraguay	26 Sep 1986
32	Yemen	21 Jul 1987
33	Cape Verde	19 Aug 1987
34	Sao Tome and Principe	03 Nov 1987
35	Cyprus	12 Dec 1988
36	Brazil	22 Dec 1988
37	Antigua and Barbuda	02 Feb 1989

38	Democratic Republic of the Congo	17 Feb 1989
39	Kenya	02 Mar 1989
40	Somalia	24 Jul 1989
41	Oman	17 Aug 1989
42	Botswana	02 May 1990
43	Uganda	09 Nov 1990
44	Angola	05 Dec 1990
45	Grenada	25 Apr 1991
46	Micronesia	29 Apr 1991
47	Marshall Islands	09 Aug 1991
48	Seychelles	16 Sep 1991
49	Djibouti	08 Oct 1991
50	Dominica	24 Oct 1991
51	Costa Rica	21 Sep 1992
52	Uruguay	10 Dec 1992
53	Saint Kitts and Nevis	07 Jan 1993
54	Zimbabwe	24 Feb 1993
55	Malta	20 May 1993
56	Saint Vincent and the Grenadines	01 Oct 1993
57	Honduras	05 Oct 1993
58	Barbados	12 Oct 1993
59	Guyana	16 Nov 1993
60	Bosnia and Herzegovina	12 Jan 1994
61	Comoros	21 Jun 1994
62	Sri Lanka	19 Jul 1994
63	Viet Nam	25 Jul 1994
64	The former Yugoslav Republic of Macedonia	19 Aug 1994
65	Australia	05 Oct 1994
66	Germany	14 Oct 1994
67	Mauritius	04 Nov 1994
68	Singapore	17 Nov 1994
69	Sierra Leone	17 Nov 1994
70	Lebanon	05 Jan 1995
71	Italy	13 Jan 1995
72	Cook Islands	15 Feb 1995
73	Croatia	05 Apr 1995
74	Bolivia	28 Apr 1995
75	Slovenia	16 Jun 1995
76	India	29 Jun 1995
77	Austria	14 Jul 1995
78	Greece	21 Jul 1995
79	Tonga	02 Aug 1995
80	Samoa	14 Aug 1995
81	Jordan	27 Nov 1995
82	Argentina	01 Dec 1996

83	Nauru	23 Jan 1996
84	Republic of Korea	29 Jan 1996
85	Monaco	20 Mar 1996
86	Georgia	21 Mar 1996
87	France	11 Apr 1996
88	Saudi Arabia	24 Apr 1996
89	Slovakia	08 May 1996
90	Bulgaria	15 may 1996
91	Myanmar	21 May 1996
92	China	07 June 1996
93	Algeria	11 June 1996
94	Japan	20 June 1996
95	Czech Republic	21 June 1996
96	Finland	21 June 1996
97	Ireland	21 June 1996
98	Norway	24 June 1996
99	Sweden	25 June 1996
100	Netherlands	28 June 1996
101	Panama	1 July 1996
102	Mauritania	17 July 1996
103	New Zealand	19 July 1996
104	Haiti	31 July 1996
105	Mongolia	13 August 1996
106	Palau	30 September 1996
107	Malaysia	14 October 1996
108	Brunei Darussalam	5 November 1996
109	Romania	17 December 1996
110	Papua New Guinea	14 January 1997
111	Spain	15 January 1997
112	Guatemala	11 February 1997
113	Pakistan	26 February 1997
114	Russian Federation	12 March 1997
115	Mozambique	13 march 1997
116	Solomon Islands	23 June 1997
117	Equatorial Guinea	21 July 1997
118	United Kingdom of Great Britain and Northern Ireland	25 July 1997
119	Chile	25 August 1997
120	Benin	16 October 1997
121	Portugal	3 November 1997
122	South Africa	23 December 1997
123	Gabon	11 March 1998
124	European Community	1 April 1998
125	Lao People's Democratic Republic	5 June 1998
126	Suriname	9 July 1998
127	Nepal	2 November 1998

128	Belgium	13 November 1998
129	Poland	13 November 1998
130	Ukraine	26 July 1999
131	Vanuatu	10 August 1999
132	Nicaragua	3 May 2000
133	Maldives	7 September 2000
134	Luxembourg	5 October 2000
135	Yugoslavia	12 March 2001
136	Bangladesh	27 July 2001
137	Madagascar	22 August 2001

Appendix D**(Refers to Page 151)****ARTICLE 58, UNCLOS****(Rights and Duties of other States in the Exclusive Economic Zone)**

1. *In the exclusive economic zone all States, whether coastal or land-locked, enjoy, subject to the relevant provisions of this Convention, the freedoms referred to in article 87 of navigation and over flight and of the laying of submarine cables and pipelines, and other internationally lawful uses of the sea related to these freedoms, such as those associated with the operation of ships, aircraft and submarine cables and pipelines, and compatible with the other provisions of this Convention.*
2. *Articles 88 to 115 and other pertinent rules of international law apply to the exclusive economic zone in so far as they are not incompatible with this Part.*
3. *In exercising their rights and performing their duties under this Convention in the exclusive economic zone, States shall have due regard to the rights and duties of the coastal State and shall comply with the laws and regulations adopted by the coastal State in accordance with the provisions of this Convention and other rules of international law in so far as they are not incompatible with this Part.*

INDIA'S OCEAN POLICY STATEMENT (1982)

1. The oceans are known to be our last frontiers. Our long coast and sense of adventure of our ancients fostered a great marine tradition. The Indian Ocean, which washes our shore provide opportunities, which need to be utilised. For success in ocean development, the entire nation should be permeated by the spirit of enterprise and the desire to explore the frontiers of knowledge. Our experience in other fields of scientific endeavour will help our efforts in ocean development. What is necessary is a structure to facilitate a dynamic thrust keeping in view developments in other parts of the world.
2. The adoption by an overwhelming majority of nations of the Convention of the UN Conference on the Law of the Seas has established a new international order for the oceans. This extends the economic jurisdiction of coastal states to an area ranging from 200 to 350 miles from the coastline. According to this regime nearly 2.02 million square kilometers of area, or nearly two thirds of the land mass has come under India's national jurisdiction. In this area the exclusive right to utilise the living and non-living resources rests with the nation. Besides, India has been recognised as a "Pioneer Investor" in an area of up to 1,50,000 square kilometers in the deep seas for the recovery and processing of polymetallic nodules.

For ages, the sea has enabled our people to sail to near and distant lands and has been a source of livelihood to large numbers of people. Even now Indian public and private enterprises do use ocean resources. The country is producing significant quantities of fish and hydrocarbons from the sea and much scientific work has been done in collecting basic knowledge and information about the sea and the sea-bed and in surveying, charting, and exploiting it. Progress has also been made in the construction and development of offshore structures.

The vastness, complexity and uncertainty of ocean environment call for a coordinated, centralised and highly sophisticated development response. This should be based on adequate knowledge of marine space (sea-bed, water and air columns included) as a fundamental prerequisite to the control, management and utilisation of the rich and varied natural resources available in the sea. In addition to basic knowledge to determine the potentialities inherent in the Indian sea-space, we have to develop appropriate technologies to harness these resources. A supporting infrastructure has to be built. Effective systems of management and control of the entire set up are also necessary.

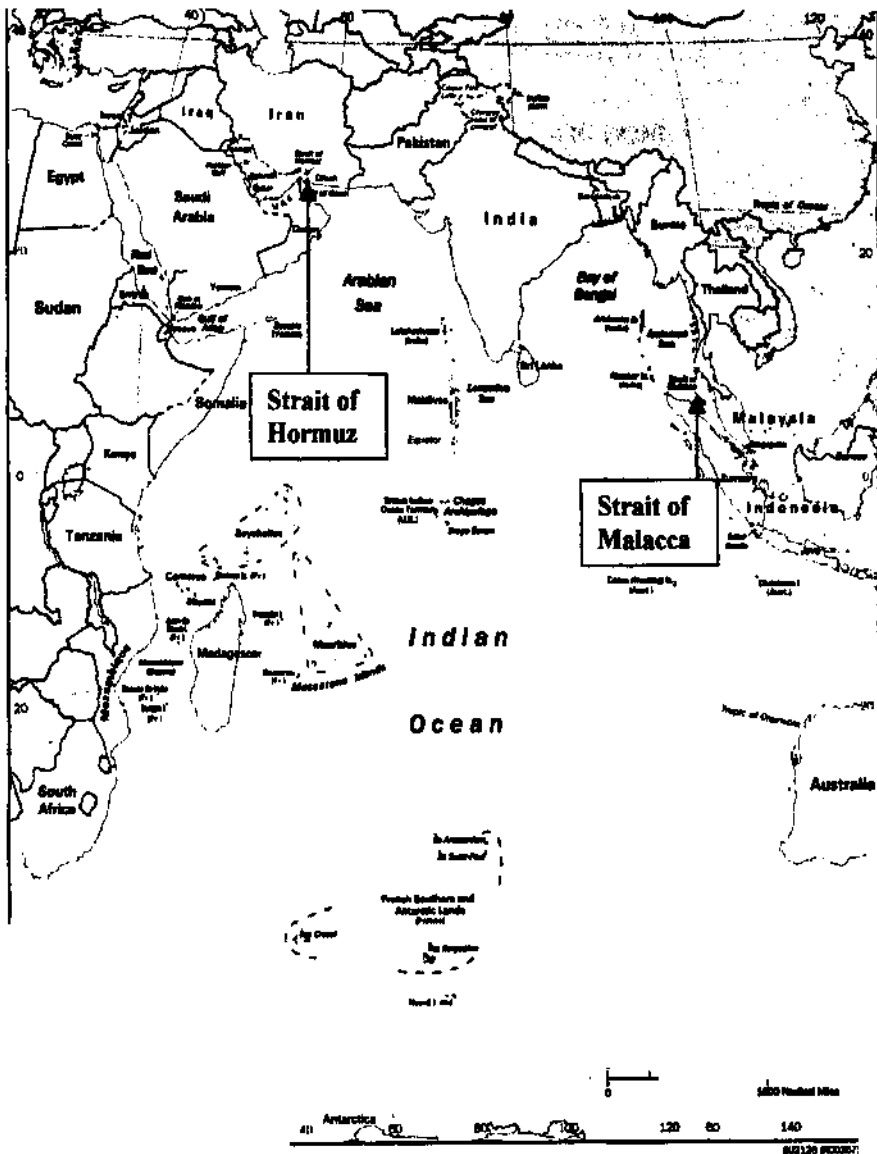
5. We need to map living resources, prepare an inventory of commercially exploitable fauna, and to map and assess the availability of minerals from the deep sea. The supporting infrastructure and incentives required are research vessels of different types, manpower, well-laid out programmes of resource exploitation, advance technology, and everything necessary to promote the growth of ocean technology. In the management sector, the high seas and the Exclusive Economic Zone (EEZ) up to 320 kilometers, have to be looked into for the exploitation of wealth occurring therein.
6. The main thrust should be on the optional utilisation of living resources like fish and seaweeds, exploitation of non-living resources such as hydrocarbons and heavy placer deposits, harnessing renewable resources of ocean energy from waves, temperature differences in the water column, tidal heights, salinity gradients and the collection and processing of polymetallic nodules from the deep sea.
7. Marine development is linked with scientific and technological achievements in other areas. Hence while we develop basic marine science and technology, i.e. technology for marine environment, our technological advances have to be geared to the utilisation and preservation of the marine environment. The extension of national frontiers by an area of 2 million square kilometers of ocean space and the consequent access to new sources of energy, minerals, and food requires great stride in ocean engineering, specially in tasks related to structures, materials, instrumentation, submersibles and systems of propulsion of ships. The exploitation of natural food resources such as fish and seaweeds, and the generation of additional food resources by cultivation, need scientific methods of aquaculture and mariculture. To survey and predict the ocean environment, the main tasks necessary are sea floor mapping, charting geodesy, ocean dynamics, currents, waves, cyclones, marine fauna, chemistry, and physics of the oceans, and seabed mineral mapping, delineation and assessment. Research in all these areas must examine the various processes and their origins so as to have a fundamental understanding, ensuring predictive capacities. Marine science and technology has also to look beyond the current state-of-the-art to achieve major technological breakthroughs in the future.
8. Besides research and development in basic sciences, we should survey the deeper part of the ocean. Similarly in the deep sea, detailed survey and sampling in the regions of EEZ and the adjacent ocean will be necessary to locate and evaluate the rich and economically viable deposits of polymetallic nodules, heavy metals, fossil placers, and phosphorite deposits. The gathering of data forms surveys should be coordinated and a cost effective system of integrated surveys be established.

9. Much more needs to be done for the development of indigenous technology and exploitation of fish from deeper waters. This also means setting up of infrastructure facilities and services to operate large-sized fishing vessels.
10. An important component of the development programme should be the acquisition of technology. To be self-reliant such technologies would have to be largely developed, tested, and operated indigenously. Technologies relating to instrumentation of diving systems, position fixing and position maintenance, materials development, oceanic data collecting devices, anti-erosion capabilities, submersible, energy and energy-saving devices are priority items. Several new technologies have to be commercialised and made cost effective.
11. Infrastructural support forms an essential prerequisite for ocean development. The variegated infrastructure already available in the country will have to be appropriately augmented, and more particularly in basic supporting facilities like safety and rescue at sea, navigational chains, communication network, development of appropriate maps and charts etc. Infrastructural support for providing a complete and reliable information system through a network of data centres on marine resources, processing and marketing systems, advanced technologies and financial assistance would also be necessary. This requires a broadening and strengthening of available Infrastructural facilities. Provision of adequate ports and harbours, ship building and ship repair facilities will be needed in addition to adequate skilled manpower in various sectors of development.
12. Surveillance and conservation of marine environment and its resources call for an integrated legal framework and its concomitant enforcement. Several laws have already been promulgated regarding the maritime zones, fisheries, etc. The Coast Guard organisation looks after the enforcement aspects of several of these legislative measures. The coordinating mechanisms of the overall structure of legislation will have to be suitably strengthened under the aegis of the Department of Ocean Development.
13. In the light of this, we must have a database to coordinate efforts made by different agencies. This is all the more necessary because of the rapid growth of information in ocean science and technology. A centralised data system will be set up by the Department of Ocean Development with a proper mechanism for collection, collation and dissemination of information acquired both indigenously and from foreign sources.
14. The creation of self-reliant technological base puts a heavy demand on fully trained personnel. The training of skilled manpower is to be adequately planned. Young scientists, technologists, and engineers will be encouraged to participate in the programme of ocean development and steps will be taken to induce Indian scientists from within the country and abroad to participate in it.

15. Existing agencies will have to be appropriately strengthened to meet the demands of this growing challenge. The Department of Ocean Development will function in conjunction with other concerned agencies as a focal point to promote institutional capability in areas where significant work is lacking. The complex programme that ocean development entails will require well designed management and institutional extension of the Department of Ocean Development will function in conjunction with other concerned agencies as a focal point to promote institutional capability in areas where significant work is lacking. The complex programme that ocean development entails will require well designed management and institutional extension of the Department of Ocean Development with sufficient powers *vis-à-vis* other agencies help proper and speedy ocean development, which enables India to be in the forefront of the international effort. This would also mean close cooperation with both developing and developed countries in a spirit of understanding of the concept that the oceans are a common heritage of humankind.

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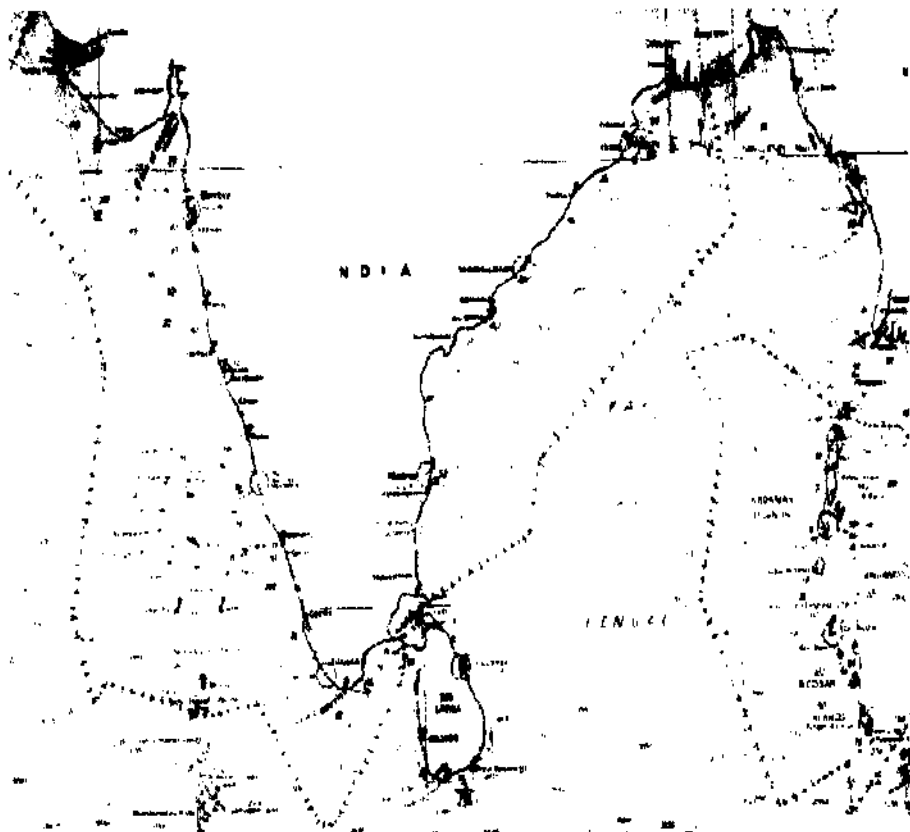
Indian Ocean Area



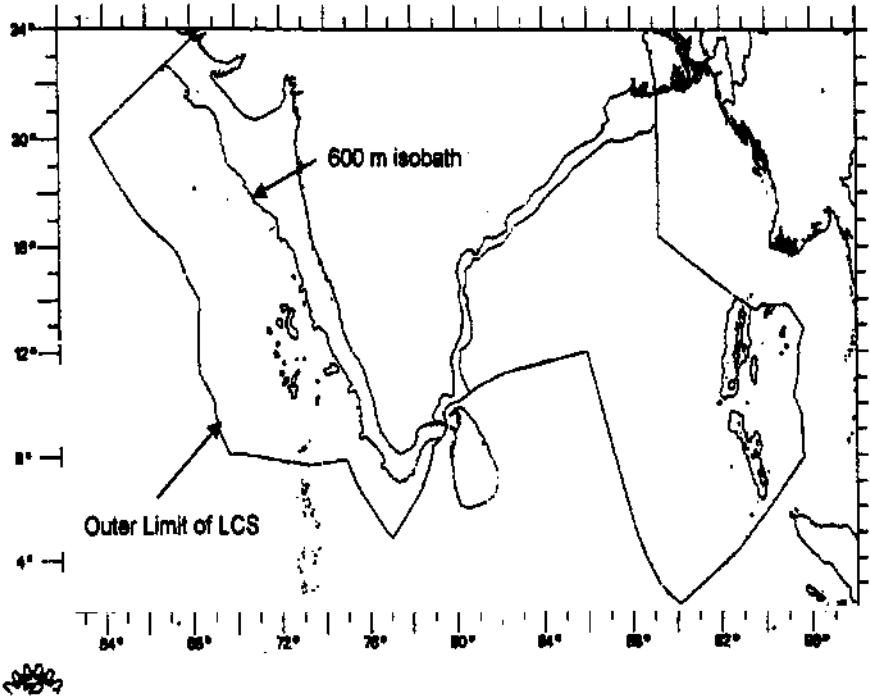
Appendix G

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INDIA'S EXCLUSIVE ECONOMIC ZONE



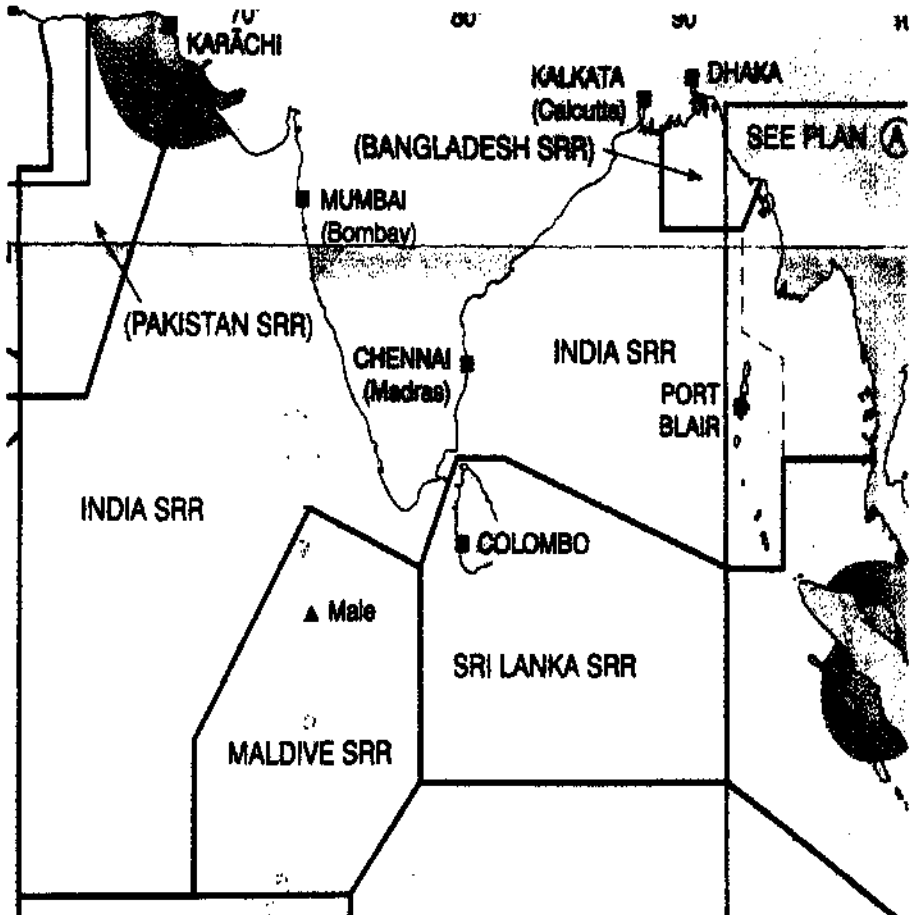
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INIDA'S LIKELY LEGAL CONTINENTAL SHELF

Appendix I

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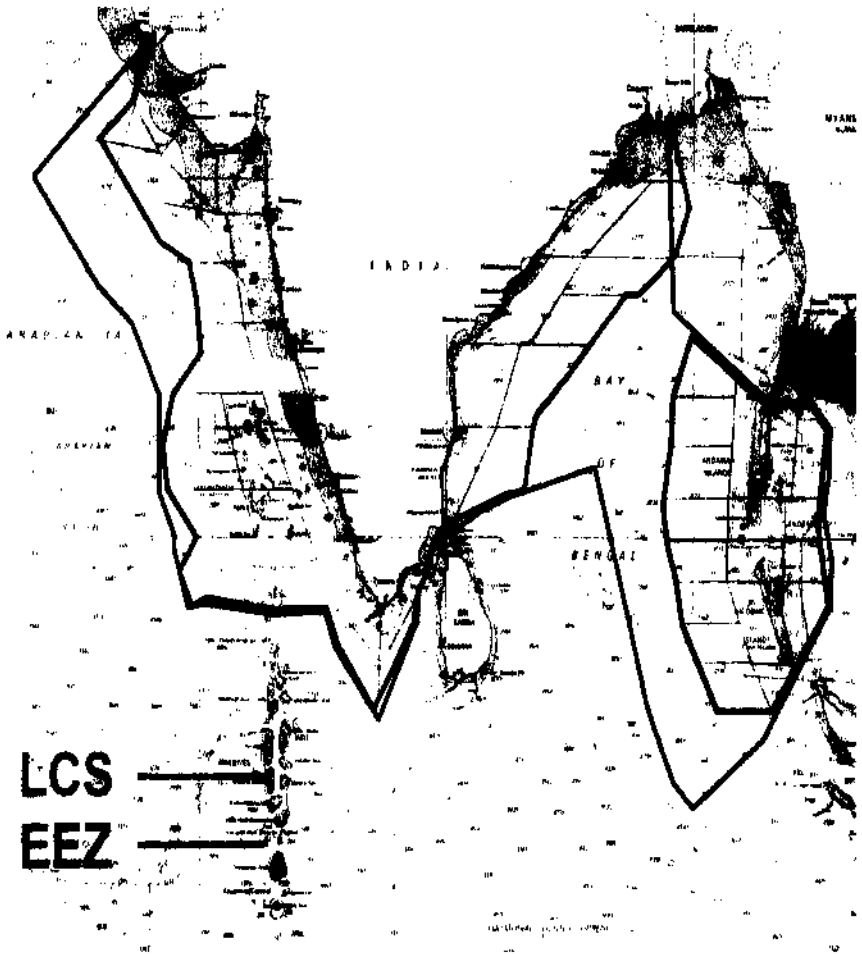
INDIAN SEARCH AND RESCUE REGION



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INDIAN LCS AND EEZ—GENERAL SUPERIMPOSITION

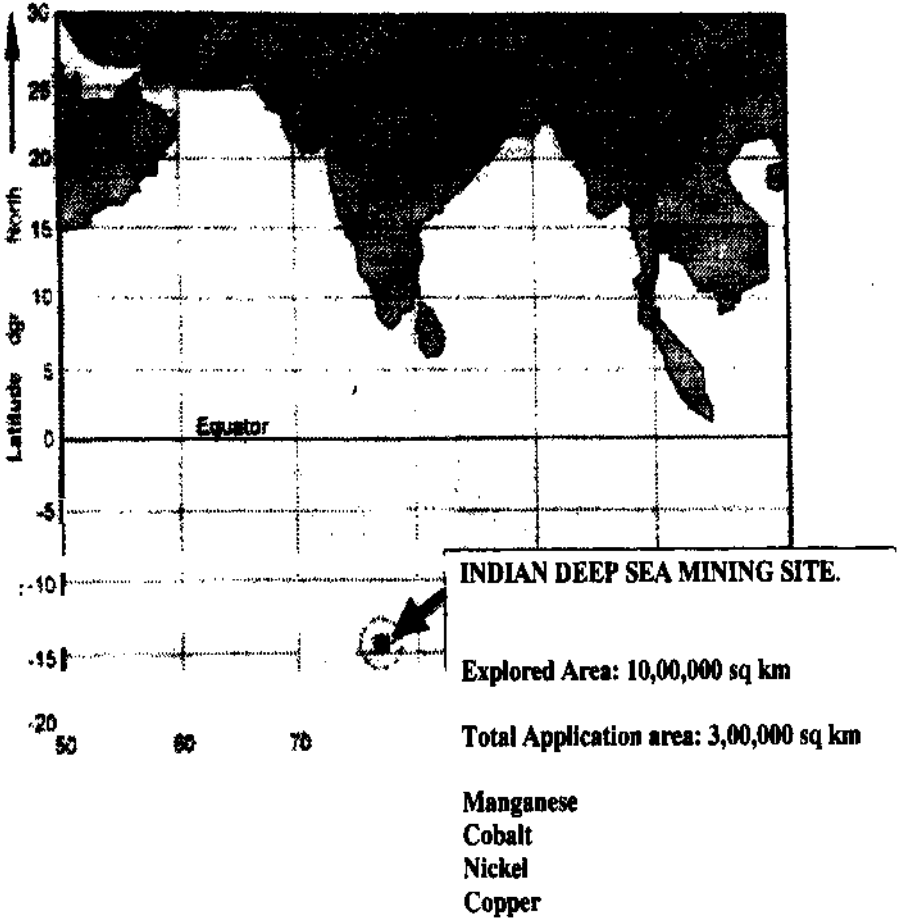
(Disclaimer: Boundaries of LCS are yet to be formalised. For general appreciation only)



Appendix K

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INDIA'S DEEP SEA MINING AREA



Appendix M

(Refers to Page 239)

HYPOTHETICAL CASE: FENCING THE BORDER AT SEA

