Pacem in Maribus

International Ocean Institute

P.O. Box 524 Valletta - Malta Cables: Interocean

ANNUAL REPORT

SUMMARY

1. In accordance with the agreed plan of action, activities of the IOI during the year 1985 consisted of training, research, Pacem in Maribus, and the publication of Ocean Yearbook.

2. Training activities consisted of a ten-week programme, Class A, in Malta/FRG; a ten-week programme, Class B, at Dalhousie University, and a one-week programme on the law of the sea and marine policy, at the World Maritime University in Malmö, Sweden.

3. Research was carried out in connection with the training programmes and resulted in the preparation of teaching materials: two special "readers," of about 500 pages each, were prepared for the Mediterranean programme and the World Maritime University programme, respectively; a draft programme for the Indian Ocean, and a draft programme for China.

4. Pacem in Maribus XIV was held in the Soviet Union in May/June 1985.

5. Ocean Yearbook, Vol. 5 (600 pages) was published in October, 1985.

6. The Mediterranean programme was postponed to the following year as it was not possible to assure the full participation of the Arab States in time.

I. Training Programmes

1. Class A took place in Malta from April 1 to May 3, and in the Federal Republic of Germany from May 6 to June 7. The Director of the programme was Ambassador Reynaldo Galindo Pohl of El Salvador. There were 12 participants from nine developing countries. The course syllabus, the list of participants, and the statement of accounts are attached in

Anex 1.

2. Class B took place at Dalhousie University from June 17 to August 23. The Director of the programme was Dr. Velimir Pravdić of Yugoslavia. There were nineteen participants from thirteen developing countries. The course syllabus, the list of participants, and the statement of accounts are attached in Annex 2.

3. The programme on the law of the sea and marine policy took place at the World Maritime University in Malmö, Sweden, from October 9 to 14. The programme director and chief lecturer was Ambassador Christopher Pinto of Sri Lanka. He was assisted by the Chairman of the Planning Council and by Professor Edgar Gold of Dalhousie University. There were 102 participants. In the afternoons, they were divided into five working groups. Each group was responsible for a final report. The course syllabus and the statement of accounts are attached in Annex 3.

4. A meeting took place in Tunis, at the headquarters of the League of Arab States and of ALECSO (the Arab League's Organization for Education, Culture, and Science) on December 16 and 17, to discuss the participation of Arab States in the Mediterranean training programme. The Director General of ALECSO, and the Director of the Science Department; the Executive Director of the Red Sea and Gulf of Aden Environment Programme, and the Deputy Secretary General for Social and Economic Affairs of the League of Arab States took part in the meeting, together with the President of the Board and the Chairman of the Planning Council of the IOI. It was agreed that there would be at least ten participants from Arab countries in each of the three Mediterranean programmes, and that they would be provided with full scholarships; which means a contribution of approximately CA$ 300,000 over the next three years. It also was agreed that ALECSO would coordinate the nomination of these participants and their scholarships. Furthermore, there will be a number of experts from Arab countries who will participate as lecturers and discussion leaders.

Finally, one of the three programmes will take place in an Arab country which will provide the venue and a number of services in kind. The formal proposal, which was drafted in accordance with the result of the discussions, is attached in Annex 4.

II. Pacem in Maribus

5. Pacem in Maribus XIV took place in the Soviet Union from May 25 to June 6. The conference opened in Moscow, and then moved to Odessa to board the cruise ship Konstantin Simonov. Working sessions were held every morning while the ship cruised the Black Sea from Odessa to Yalta, Sochi, Batumi and back to Odessa again. There were about 500 participants in Moscow, including the Secretary General of IMO; the Special Representative of the Secretary General of the United Nations for the Law of the Sea, and representatives of UNCTAD, INMARSAT and Regional Commissions; about 200 on the ship. The topic of the conference was shipping: technological, economic, legal, and environmental aspects. The Conclusions and Recommendations of the Conference are attached in Annex 5, together with a statement of accounts.

III. Ocean Yearbook

OceanYearbook Vol. 5 was published in October, 1985. The table of contents is attached in Annex 6. Ocean Yearbook is used as background reading material in all training programmes. Whenever possible, it is given free of charge to participants as part of the teaching materials, and it is sent free of charge to institutions in developing countries. The CIDA contribution was used for editorial costs not covered by the University of Chicago Press.

IV. Summary Statement of Accounts

1. Training Programmes

	Budgeted	Actual	CIDA Contribution	Total Receipts
(a) Class A*	166,939	164,620.34	25,000	106,141.50
(b) Class B	216,450	194,740.27	100,000	141,887.92
(c) WMU	10,000	10,000.00	- 0 -	10,000.00
(d) Mediterrn.**	200,000	- 0 -	- 0 -	- 0 -
Subtotal	593,389	369,360.61	125,000	258,029.42
2. Pacem in Mribus XIV***	180,810.76	182,681.20	15,000	180,810.76
3. Ocean Yearbook	10,000	10,000.00	10,000	10,000.00
TOTAL	784,199.76	562,041.81	150,000	448,840.18

* Approved budget itemized only $25,000 CIDA contribution

** Programme postponed. See narrative

*** Approved budget itemized only $15,000 CIDA contribution. Other Dalhousie administered contributions are itemized in Annex 5. Other contributions were: UNEP, $100,000; Government of the USSR, $60,000.

Annex 1

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Annex V

CLASS A

OCEAN MINING

Malta Syllabus: 1 April - 3 May 1985
Course Director: Dr. Reynaldo Galindo Pohl

WEEK 1

General Introduction to the entire programme
Scientific and environmental background

1 April
A.M.

Inauguration at the
Mediterranean Congress Centre

Welcoming Address by C.F. Vanderbilt
Executive Director of the IOI

"Background and Scope of the IOI"

Welcoming Address by Dr. Reynaldo Galindo Pohl
Class A Course Director

Welcoming Address and Official Inauguration by
H.E. Miss Agatha Barbara
President of the Republic of Malta

Keynote Address by H.E. Ambassador Layachi Yaker
President, Board of Trustees
International Ocean Institute

P.M. Discussion

Overview of the Class A Ocean Mining Programme

2-3 April Introduction to Oceanography

Note:

In the following set of four lectures and discussion sessions, an attempt will be made to define terms and describe large-scale phenomena, i.e., to show the various interrelationships existing across the globe. This will be followed by a narrowing of the view so as to focus on processes which operate close to shore or on the continental shelves. The goal will be to give some basic principles and examples which would be useful to the non-scientist as a means of putting potential problems dealing with resource exploitation or conservation and pollution in their proper oceanic context.

Lecture 1

2 April
A.M.

The oceanography lectures begin with an overview of the major features of the ocean basins. This is a descriptive look at the sea floor showing the relationship of various important features such as the position of the mid-ridges, continental margins and other topographic features. Any future consideration of ocean dynamics (e.g. circulation) requires a knowledge of the basin in which the liquid resides. Also consideration of various resources depends on some knowledge of their location.

Following this descriptive overview, consideration will be given to the dynamics of sea floor spreading, continental drift and plate tectonics. This will not be an attempt to provide detail on these processes but rather to show how over the past 150 million years they have contributed and continue to contribute to the discovery of marine resources valuable to man (e.g. oil on the continental shelves or metal deposits at hydro-thermal vents). Finally a brief review of sedimentary processes will be important as a means of understanding river input to continental shelves, sediment transport along coastlines and deep sea deposits such as manganese nodules. In general, this initial consideration should provide a basic overview of that part of the earth which must be considered in the context of the new United Nations Convention on the Law of the Sea.

P.M. Lecture 2

The second lecture and discussion will deal with sea water itself, as a premise to understanding both physical and biological processes. Attention will be devoted to residence in time in the context, e.g. of possibly following pollution, the heat capacity of water and the ocean/atmosphere link as a means of understanding

both atmospheric and oceanic circulation. The fundamentals of circulation are essential for anyone interested in understanding the dynamics of the oceans; the general pattern and rate of current movement, their temporal and spatial scales and how these affect coastal States. Finally, consideration will be given to energy in the sea in the form of waves and tides. These considerations are extremely important since they are generally perceived as the way in which energy is transferred from the ocean to the land. Specific examples are storm surges, tidal currents and tsunamis.

3 April
A.M. Lecture 3

The third lecture and discussion will concern the coastal regions including inland seas, estuaries and the coastline itself. Attention will be given to defining these regions on the basis of their physical differences and especially the way physical processes differ close to shore compared with the open ocean. Specifically, consideration will be given to temporal and spatial scales and the attention given to these when dealing with potential problems along a shoreline. Since estuaries play an important role in transportaion, food supply, waste disposal, etc., a short review of estuarine circulation will be considered.

P.M. Lecture 4

The final lecture and discussion will deal with life in the sea. Building on previous discussions, an attempt will be made to show which regions of the world ocean are productive. Attention will be given to the various factors which contribute to this production: including biological, physical and chemical factors. An important point that will be emphasized is that oceanic production is very heterogeneous and that a variety of local factors can have considerable importance, e.g. tidal mixing, local circulation, prevailing winds, orientation of the coastline, fronts, etc. Finally some attention will be paid to specialised situations such as reefs, upwelling situations, and deep vent communities.

Lecturer: Dr. Robert Fournier
Dalhousie University, Canada

4 April
A.M. Lecture 5

Ocean Energy. A presentation of various modes of extracting energy from the oceans. This includes energy from tides, waves, and currents; ocean thermal energy and salinity gradient energy conversion; extraction of energy from biological systems. The lecture includes technological as well as economic considerations.

Lecturer: Dr. P. Marchand

P.M. Malta Experience in Valletta.

5 April
A.M. Summary of the Week

P.M. Library work

WEEK 2 Introduction to the Law of the Sea

8 April
A.M. Lecture 6

The Convention on the Law of the Sea. A General Introduction.

Lecturer: Dr. Reynaldo Galindo Pohl
Course Director

P.M. Film and Discussion: The Law of the Sea.
The film features Ambassador Tommy Koh, President, UNCLOS III.

9 April
A.M. Lecture 7

The Convention: Part V. Implications for the exploitation of nonliving resources.

Lecturer: Dr. Reynaldo Galindo Pohl

P.M. Workshop: Boundary Delimitation

Workshop Leader: Dr. G. Arrangio Ruiz
Faculty of Law, University of Rome

10 April
A.M. Lecture 8

The Convention: Part XI. Structure and Functions of the International Seabed Authority. Annexes III and IV.

Lecturer: Dr. Reynaldo Galindo Pohl

P.M. Lecture 9

Resolutions I and II. The Preparatory Commission for the International Seabed Authority and for the International Tribunal for the Law of the Sea. Review of its work and prospects.

Lecturer: Dr. Reynaldo Galindo Pohl

11 April
A.M. Lecture 10

The Law of the Sea, the concept of the Common Heritage, and the New International Economic Order.

Lecturer: Dr. Reynaldo Galindo Pohl

P.M. Discussion: The Role of developing countries in ocean mining. India. The Saudi-Sudanese Red Sea Commission

12 April
A.M. Lecture 11

Joint Enterprises. The Jaenicke Model as proposed to the Preparatory Commission. JEFERAD.

Lecturer: Dr. Reynaldo Galindo Pohl

P.M. Summary of the Week

WEEK 3 The Economy of Oil and Gas and Ocean Minerals

15 April
A.M. Lecture 12

The geology of oil, its origin and formation.

Lecturer: Dr. Casper Cronk
Ridan Corporation, UK

P.M. Lecture 13

Problems of tanker traffic. Tanker separation schemes. Navigational safety at sea. IMO and its Conventions.

Lecturer: Capt. A. N. Cockcroft

16 April

A.M. Lecture 14

Origin and evolution of OPEC. Its role in the development of the concept of a New International Economic Order

Lecturer: Prof. Robert Meagher
Fletcher School of Law and Diplomacy

P.M. Lecture 15

The oil and gas industry: Future Trends. World oil gas map. Energy demand projecstions.

Lecturer: Prof. Robert Meagher

17 April

A.M. Lecture 16

Evolution of petroleum contracts; royalty expenses; participation agreements; service contracts.Maximising Third-World countries' participation in management, processing, and marketing.

Lecturer: Mr. R.J.P. Ross
British National Oil Corporation

P.M. Fieldtrip: Visit to UNEP/IMO Regional Oil Combatting Centre

18 April

A.M. Lecture 17

Mineral resources of the oceans. Distribution of mineral resources on the continental margins of coastal States.

Lecturer: Dr. Walter Plüger
Aachen Technical University

P.M. Lecture 18

The Mineral Market; includes consideration of the difficulties of forecasting demand curves and examines the reason for instability of prices.

Lecturer: OETB, U.N. Secretariat.

Participants' presentations: Country Reports

Summary of the Week

Introduction to Management

Lecture 19

The changing environment

The monetary system. Banking, credit and debt financing. International Trade. Transnational enterprises.

Lecturer: Dr. Anton Vratusa
Government of Yugoslavia

Lecture 20

The changing environment of the enterprise: technological, socio-economic, political, ecological, international aspects.

Resistance to change, and how to cope with it.

Lecturer: Dr. Paulo Moura
Brazil

Lecture 21

Strategic Planning and Management in the Private Sector

Relations with Governments, community and social responsibilities, unions, environmental responsibilities.

Investment policy; financial management and resource allocation; budgeting for productive R & D

Lecturer: Dr. Paulo Moura

Lecture 22

Strategic Planning in the Public Sector

Relations with the Private Sector, International relationships. Community and Social responsibilities; Unions; environmental policies.

The planning, programming, budgeting system; budgeting for productive R & D

Lecturer: Prof. Dr. Miran Mejak
International Centre for Public Enterprises
Developing Countries

24 April

A.M. Lecture 23

The Joint Venture Enterprise

Goal and policy frameworks; programme management financial management and production policy. Marketing policy.

Lecturer: Prof. Dr. Miran Mejak

P.M. Lecturer 24

Planning, financing and controlling productive R & D; technology managemtn; productivity and employment. Automation, technology transfer; co-development of technology; environmental policy.

Lecturer: Dr. Paulo Moura

25 April

A.M. Lecture 25

Human Resources Policy

Negotiating skills (behavioral aspects and attitudes; Management of culturally diverse expectations and resources.

Lecturers: Dr. Paulo Moura and Prof. Dr. Miran Mejak

P.M. Conclusions

26 April

A.M. Summary of the week

P.M. Library Research and Report Writing

WEEK 5 Contract negotiation and simulation exercise

29 April
A.M. Lecture 26

Detailed examination of various types of contracts and how they can be adapted to seabed mining.

Lecturer: Prof. G. Winham
Dalhousie University

P.M. Lecture 27

Examination of different kinds of ownership and their consequences; majority vs. equal vs. minority participation of the investor.

Lecturer: Prof. G. Winham

30 April
A.M. Lecturer 28

Meaning and elements of negotiation as a technique to achieve results; what kind of knowledge and expertise is needed to strengthen developing countries in contract negotiations.

Lecturer: Prof. G. Winham

P.M. Workshop:

Computer-aided negotiation

Workshop leader: Dr. Mike Staley
IIASA

1 May Simulation Exercise: A Contract Negotiation

2 May Simulation Exercise, continued

3 May Evaluation of Results

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Annex VIII

CLASS A

OCEAN MINING

Aachen Syllabus: 6 May - 24 May 1985
3 June - 7 June 1985

WEEK 6

6 May
A.M.

Opening Session

Opening Address by the
Pro-Rector of the Aachen Technical University

Opening Remarks by Dr. Peter Arndt,
Head of Section Geology and Mining,
Carl Duisberg Gesellschaft e.V. (CDG)

"Activities of the Carl Duisberg Gesellschaft"

Interim Report on the Training Programme by
Dr. Reynaldo Galindo Pohl, Course Director

Opening Remarks by Prof. Dr. Dr. Werner Gocht
Research Institute for International Technical
and Economic Cooperation (FIZ)

"The Future Importance of Ocean Mining"

Opening Remarks by Prof. Dr. Günther Friedrich
Institute for Mineralogy and Economic Geology

"Exploration of Inorganic Marine Mineral Resources"

Opening Remarks by Prof. Dr. Joachim Krüger
Institute for Non-ferrous and Electrometallurgy

"Metal Production and Environmental Control"

P.M. Lecture 1

Exclusive Economic Zone - Calculation of Mine Sites I

Lecturer: Mr. Franz Diederich
F.I.Z.

7 May
A.M. Lecture 2

The Evolution of Polymetallic Sulphides

Lecturer: Dr. Alexander Malahoff
National Undersea Research Programme
University of Hawaii

P.M. Lecture 3

Position of the U.S.A. on the Law of the Sea Convention

Lecturer: Prof. Dr. Willy Feuerlein
Florida Atlantic University

8 May
A.M. Lecture 4

Genesis and Occurrence of Manganese Nodules

Lecturer: Prof. Dr. Günther Friedrich
Inst. for Mineralogy and Economic Geology

P.M. Field Trip: Visit to the Rhenish Lignite District (Rheinische Braunkohlenwerke AG); Opencast Mines Fortuna Garsdorf and Hambach

9 May
A.M. Lecture 5a

Genesis and Occurrence of Mineral Placer Deposits

Lecturer: Prof. Dr. Günther Friedrich
Inst. for Mineralogy and Economic Geology

Lecture 5b

Prospecting and Exploration of Mineral Placer Deposits

Lecturer: Mr. Joachim Martin
Inst. for Mineralogy and Economic Geology

P.M. Lecture 6

Cobalt-rich Ferromanganese Deposits in Sea Areas of the Central Pacific

Lecturer: Prof. Dr. P. Halbach
Inst. for Mineralogy and Mineral Raw Materials, Clausthal University

10 May
A.M. Lecture 7

Mining of Heavy Mineral Placers

Lecturer: Prof. Dr. Dr. Werner Gocht
F.I.Z.

P.M. Lecture 8

Manganese Nodules: Systems of Exploitation

Lecturer: Mr. David Pasho
Canada Oil and Gas Lands Administration

/EEK 7

.3 May Laboratory Work

Practical and Theoretical Course in Pyrometallurgy and Hydrometallurgy

Lecturer: Prof. Dr. Joachim Krüger
Inst. for Nonferrous and Electrometallurgy

4 May Laboratory Work

Practical and Theoretical Course in Pyrometallurgy and Hydrometallurgy cont.

Lecturer: Prof. Dr. Joachim Krüger

5 May
A.M. Laboratory Work

Analytical Methods: Determination of Metal Contents of Manganese Nodules

Lecturer: Dr. Walter Plüger
Inst. for Mineralogy and Economic Geology

P.M. Lecture 9

Aspects of Dressing Marine Mineral Resources

Lecturer: Prof. Dr. Heinz Hoberg
Inst. for Mineral Processing, Coking and Briquetting

16 May PUBLIC HOLIDAY

17 May
A.M. Field Trip: Visit to Jülich Nuclear Research Centre

P.M. Lecture 10

Hydrocarbon Exploration in Offshore Areas - Methods, Concepts, and Future Development

Lecturer: Prof. Dr. Detlev Leythaeuser
Jülich Nuclear Research Centre

WEEK 8

20 May
A.M. Lecture 11

Mining Aspects of the International Tin Agreement

Lecturer: Prof. Dr. Dr. Werner Gocht

P.M. Lecture 12

German Development Policy

Lecturer: Dr. Hubertus Seifert
F.I.Z.

21 May Laboratory Work

Practical and Theoretical Course in Pyrometallurgy and Hydrometallurgy: Presentation and Discussion of Results

Lecturer: Prof. Dr. Joachim Krüger

22 May
A.M. Lecture 13

Activities of German Industry in the Field of Marine Technology

Lecturer: Mr. K. O. Steinbrinck
Association of German Oceanic Industries

P.M. Lecture 14

Development and Design of Marine Mining Machines

Lecturer: Prof. Dr. Alfred Welte
Lübeck

23 May Lecture 15

Technical Aspects of Offshore Oil and Gas Production

Lecturer: Dr. Hans E. Kolb
Inst. for Petroleum Engineering
Clausthal University

24 May
A.M. Lecture 16

Offshore Structures, State-of-the-Art, Engineering Problems

Lecturer: Prof. Dr. Konstantin Kokkinowrachos
Inst. for Shipbuilding, Design & Dynamics

P.M. Lecture 17

Exclusive Economic Zone - Calculation of Mine Sites II

Lecturer: Mr. F. Diederich

WEEK 9 Visits to Hannover and Hamburg. See Annexes IX and X

WEEK 10

3 June Preparation of Final Report

4 June Field Trip: Visit to the Colliery "Emil Mayrisch"
Eschweiler Bergwerks-Verein AG, Aldenhoven

5 June Preparation of Final Report

6 June Preparation of Final Report

7 June Symposium: "Ocean Mining '85"

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Pacem in Maribus

Annex IX

CLASS A

OCEAN MINING

Field Trip to Hannover in Cooperation with Preussag AG

WEEK 8
27 May
A.M.

Opening Session

Welcome at Preussag's Marine Technology Department by

Dr. Erich Blissenbach, Director

Overview of Marine Resources Exploration and Development and Related Technologies.

Activities of Preussag AG in Phosphorite Exploration Off the Coast of New Zealand

by Dr. Kurt W. Meyer

Preussag AG's Exploratory Work on Mineral Sediments of the Atlantis II Deep in the Red Sea by

Dr. Herbert Grill

P.M.

Visit to Preussag's Marine Technology Laboratories in Berkhöpen accompanied by Dr. Hulmut Wetzel

Visit to Clausthal University

Coordinated by Dr. Peter Winter

28 May
A.M.

Visit to the Federal Institute for Geosciences and Natural Resources (BGR)

Coordinated by Dr. Beiersdorf and Dr. von Stackelberg

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Annex V

CLASS A

OCEAN MINING

Field Trip to Hamburg in Cooperation with the Institute of Hydrobiology and Fisheries Research University of Hamburg

WEEK 8
30 May
14.15 Opening Session

Welcoming Address by

Member of the Hamburg Government, Senator for Science and Research, Prof. Dr. Klaus-Michael Meyer-Abich

Short Note: Marine Research and Training in the Field of Ocean Affairs at Hamburg University

Discussion with Prof. Meyer-Abich and Representatives of Hamburg University

15:15 Shore Note: German Attitudes Toward the Law of the Sea Conference by

Prof. Dr. Rainer Lagoni, Law of the Sea and Maritime Law Institute, Hamburg University

Discussion

31 May
09.15 Seminar: Environmental Research Related to Risks of Deep Seabed Mining by

Dr. Ludwig Karbe and Dr. Horst Weikert

* General approaches and strategies for the protection of the marine environment
* Environmental effects of deep sea mining and tailings disposal

* Risk assessment and analysis of use conflicts
* Monitoring of effects resulting from experimental, pilot and economic mining activities
* Case studies

13.15 Operation of Research Vessels by

Dr. Dieter Strohm

14.00 Tour of Hamburg Harbour

1 June
09.15 Seminar continued

12.00 Afternoon free

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Annex XI

Symposium

OCEAN MINING '85

Friday, 7 June 1985

Senatssitzungssaal, Auditorium Maximimum Building
Aachen Technical University

Introduction

- Prof. Dr. Dr. Werner Gocht, Director, FIZ

The Sixth Training Programme on Ocean Mining

- Dr. Reynaldo Galindo Pohl, Course Director
- Miss C.F. Vanderbilt, Executive Director, IOI

Presentation of Participants' Final Report

- Dr. S. Bhandari (India)
- Mr. P.J. Kabudi (Tanzania)

Break

Discussion of Final Report

- Chairman: Prof. Dr. Dr. W. Gocht, Director, FIZ

Presentation of Certificates to Course Participants

Closing Remarks

- Course Participants
- Carl Duisberg Gesellschaft
- International Ocean Institute

ANNEX I

List of Participants

Dr. S. Bhandari
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Jodhpur 342001
India

Mr. D. A. Brown
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Mr. E. Cachia
Technical Officer
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Mr. Saimone Pita Helu
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Mr. P. J. Kabudi
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Miss E. A. Ojoo
Environment Protection Officer
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Assistant, Faculty of Law
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Mr. V. R. Reddy
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Sri Lanka

Mr. Gebriel Tamiru
Geologist
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Mr. Davor Vidas
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Institute of International Law and International Relations
University of Zagreb
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FINANCIAL BREAKDOWN

The total cost of the 1985 Class A course was US$118,526.65. This includes $21,533.15 spent on air travel for Participants (twelve tickets averaging $1794 each). The total sum raised for this course was $80,373.58. US$38,153 has still to be raised to cover the costs of the 1985 Class A course.

Funding for the 1985 Class A course came through the following grants:

Carl Duisberg Gesellschaft e.V.	US20,484.00
Commonwealth Secretariat	21,221.00
IOC through Unesco	10,000.00
IOI General Funds	28,668.58
	US80,373.58

The breakdown of expenses for one Participant is as follows:

Accommodation		
Malta: $18.68/day x 7 days (FB)	$130.76	
Malta: $14.46/day x 28 days (HB)	404.88	
Aachen: $7.92/day x 29 days (BB)	229.68	
Hannover: $23.33/day x 3 days (BB)	69.99	
Hamburg: $21.67/day x 3 days (BB)	65.01	
		$ 900.32
Pocket Allowance		
Malta: $5.00/day x 35 days	175.00	
FRG: $5.00/day x 35 days	175.00	
		$ 350.00
Food Allowance		
Malta: $4.40/day x 28 days	123.20	
FRG: $10.00/day x 35 days	350.00	
		$ 473.20
Local Transport		
Airport transfers, buses, taxis, etc.		
Malta:	63.92	
FRG:	307.86	
		$ 371.78
Social and Cultural Programme		
Malta:	60.76	
FRG:	87.18	
		$ 147.94
Teaching Materials and Laboratory Costs		
Malta:	244.56	
FRG:	222.57	
		$ 467.13
		$2710.37
Course Fee (includes costs of lecturers telecommunications, administrative overheads, etc.)		5372.42
		US$8082.79

Breakdown of Course Fee

Lecture Fees		
Malta:	US$ 2,950.00	
FRG:	3,666.67	
		US$ 6,616.67
Travel Costs for Lecturers		
Malta:	11,068.19	
FRG:	4,074.82	
		15,143.01
Accommodation Costs		
Lecturers in Malta (FB)	1,237.86	
Course Director in Malta (FB)	971.40	
Course Director in FRG (FB)	1,113.33	
IOI Staff in FRG (FB)	588.43	
Lecturers in FRG (FB)	330.00	
		4,241.02
Staff		
Course Director	20,000.00	
IOI Admin. Personnel	6,057.68	
IOI Staff per Diem in FRG	350.00	
FIZ Staff	4,166.67	
		30,574.35
Telecommunication and Postage		
Malta:	2,489.58	
FRG:	1,640.50	
		4,130.08
Promotion		
Course announcement, posters, application forms, etc.		1,686.94
Printing of Final Report		800.00
Miscellaneous		1,276.99
		64,469.06
Plus $2710.37 x 12 Participants		32,524.44
Plus Participants' Air Fares		21,533.15
		US$118,526.65

$64,469.06 - 12 Participants = $5372.42
+ 2710.37
$8082.79

FINAL FINANCIAL REPORT (DALHOUSIE PROCESSED FUNDS)

I.O.I. A-Class Program 1985

Malta April-May 1985

SUMMARY:

REVENUES	$ 25,000.00
OUTLAYS	$ 33,224,77
DEFICIT	$ (8,224.77)

A-85 I.O.I. DALHOUSIE PROCESSED FUNDS

Detail Report

A. REVENUE

CIDA	$ 25,000.00

B. OUTLAYS

B.1 Expenses:

Travel	(CANADIAN $)	
Brown	$3,603.00	
Fournier	2,178.05	
Meagher	1,629.15	
Malahoff	2,064.20	
Moura	3,556.00	
Pasho	2,200.00	
Telex, telegrams & postage	134.89	
Aachen for RIITEC	6,859.48	
Winham Fees	1,000.00	
Total Expenses	23,224.77	
B.2 Block Transfer to Malta	10,000.00	
Total Outlays		$ 33,224.77
	DEFICIT	$ (8,224.77)

Annex 2

TRAINING PROGRAMME FOR THE MANAGEMENT AND CONSERVATION OF MARINE RESOURCES

CENTRE FOR FOREIGN POLICY STUDIES
DALHOUSIE UNIVERSITY

INTERNATIONAL OCEAN INSTITUTE
MALTA

TRAINING PROGRAMME

IN THE

MANAGEMENT AND CONSERVATION OF MARINE RESOURCES

CLASS B: THE EXCLUSIVE ECONOMIC ZONE

Activity Brief

Title:	Training Programme, Class B 1985
Collaborating Institutes:	International Ocean Institute (IOI) The Lester Pearson Institute The Centre for Foreign Policy Studies, Dalhousie University
Duration:	Ten weeks: June 17 - August 23, 1985.
Arrival:	June 16, 1985
Departure:	August 24, 1985
Venue:	Halifax, Nova Scotia, Canada
Language:	English
Course Director:	Dr. Velimir Pravdic
Assistant Director:	Anita M. Coady
Executive Director:	F.C. Vanderbilt

DEPARTMENT OF POLITICAL SCIENCE
DALHOUSIE UNIVERSITY
HALIFAX, N.S. CANADA
B3H 4H6

SYLLABUS

Week 1: Introduction to the Programme. The United Nations Convention on the Law of the Sea.

Monday, June 17

9 A.M. Registration; collection of documents and materials

10 A.M. Inauguration at the McMechan Auditorium, Killam Library, Dalhousie University

Welcome. President Andrew MacKay, Dalhousie University

The Lester Pearson Institute
Professor Ian McAllister

The Centre for Foreign Policy Studies
Professor Gil Winham

The International Ocean Institute
Professor Elisabeth Mann Borgese

The Training Programme
Professor Velimir Pravdic

Keynote Address: The United Nations Secretariat and the Implementation of the Convention on the Law of the Sea.
H.E.Ambassador Satya Nandan,
Special Representative of the Secretary General for the Law of the Sea

1 P.M. Luncheon

3 PM - 5 PM discussion with participants. the Syllabus: Questions and suggestions. Organisational and administratie questions.

Tuesday, June 18

9 A.M. - 12 noon: A brief overview of developments leading up to UNCLOS III.

Speaker: Ambassador Christopher W. Pinto.

2 P.M. - 5 P.M. Roundtable discussion.

Wednesday, June 19

9 A.M. - 12 Noon: Analysis of the main provisions of the Convention: Maritime zones: Territorial sea, contiguous zone, exclusive economic zone, continental shelf, hih seas, international seabed area; limits of maritime ones.

Speaker: Ambassador Christopher W. Pinto.

2 P.M. - 5 P.M. Workshop on boundary delimitation.

Workshop leader: Aldo Chircop.

Thursday, June 20

9 am - 12 noon: Provisions concerning the resources of the sea: fisheries oil anad gas; polymetallic nodules; sulphides and crusts.

Speaker: Ambassador Christopher Pinto.

2 P.M. - 5 P.M. Provisions concerning the other uses of the sea. Navigation, energy, artificial islands and installations, etc. - Other provisions: Archipelagic States, landlocked States; geographically disadvantaged States; islands;

Friday, June 21

9 A.M. - 12 Noon. Marine scientific research; conservation of the marine environment; transfer of marine technology.

Speaker: Professor Alexander Yankov, Bulgaria.

2 P.M. - 5 P.M. Settlement of disputes

Speaker: Ambassador Christopher Pinto.

Week 2: UNCLOS (continued) and Introduction to Oceanography

Monday, June 24

9 A.M. - 12 Noon. Preparatory Work after signing of the Convention.

1983-1985: Preparatory Commission for the International Seabed Authority; Implementation of the Resolution on pioneer activities, and the establishment of the International Tribunal for the Law of the Sea.

Speaker: Professor Elisabeth Mann Borgese.

2 P.M. - 5 P.M. Access to marine information. Visits to Killam Library, Law Library.

Tuesday, June 25 and
Wednesday, June 26 Introduction to Oceanography

Coordinator: Professor Robert Fournier, Vice President for Research, Dalhousie University.

Note

In the following set of four lectures and discussion sessions, an atempt will be made to define terms and describe large-scale phenomena, i.e., to show the various interrelationships that exist across the globe. This will be followed by a narrowing of the view so as to focus on processes which operate close to shore or on the continental shelves. The goal will be to give some basic principles and examples which would be useful to the non-scientist as a means of putting potential problems dealing with resource exploitation or conservation and pollution in their proper oceanic context.

Tuesday, June 25

9 A.M. - 12 noon: The oceanography lectures begin with an overview of the major features of the ocean basins. This is a descriptive look at the sea floor showing the relationship of various important features such as the position of mid-ocean ridges, continental margins and other topographic features. Any future consideration of ocean dynamics (e.g., circulation) requires a knowledge of the basin in which the liquid resides. Also, consideration of various resources depends on some knowldge of their location. Following this descriptive overview, consideration will be given to the dynamics of sea floor spreading, continental drift and plate tectonics. This will not be an attempt to provide detail on these processes but rather to show how over the past 150 million years they have contributed and continue to contribute to marine resources valuable to man (e.g., oil on the continental shelves or metal deposits at hydrothermal vents). Finally a brief review of sedimentary processes will be

important as a means of understanding river input to continental shelves, sediment transport along coastlines and deep sea deposits such as manganese nodules. In general, this initial consideration of the sea floor should provide a basic overview of that part of the earth which must be considered in the context of the new United Nations Convention on the Law of the Sea.

2 P.M. - 5 P.M. The second series of lectures and discussions will deal with sea water itself, as a precondition to understanding both physical and biological processes. Attention will be devoted to residence in time in the context, e.g., of possibly following pollution, the heat capacity of water and the ocean-atmosphere link as a means of understanding both atmospheric and oceanic circulation. The fundamentals of circulation are essential for anyone interested in understanding the dynamics of the oceans: the fact that they are all interconnected, the general pattern and rate of current movement, their temporal and spacial scales and how these affect coastal States. Finally, consideration will be given to energy in the seas in the form of waves nad tides, These considerations are extremely important since they are generally perceived as the way in which energy is transferred from the ocean to the land. Specific examples are storm surges, tidal currents and tsunamis.

A.M. an overview of the operation of a major institution devoted to the development of research in all aspects of oceanography and its application to industry and government management.

(a) The nature of marine scientific research, the required support facilities, communications and associations, the international nature of scientific research and its effect on the study of local marine systems and problems, the question of balance between basic and applied research.

(b) Introduction to currently important scientific and management problems seen within the major oceanographic disciplines.

(c) Discussion of ways in which administrators can best utilize scientific expertise to solve problems in the context of both changing social objectives and new scientific insights.

P.M. Participants will visit laboratories to review and discuss particular projects. Attention will be directed to identification of the social motivations and the scientific context of the project, the technologies involved and the expected applications in increased scientific knowledge and effective management. Participants should have a better chance to appreciate the cost of marine scientific rsearch and both the necessity and possibilities for international cooperation.

Speakers and Discussants:

Dr. Alan Longhurst, Director-General of BIO, and members of his staff.

Wednesday, June 26

9 A.M. - 12 noon. The third series of lectures and discussions will concern the coastal regions including inland seas, estuaries and the coastline itself. Attention will be given to defining these regions on the basis of their physical differences and especially the way physical processes differ close to shore compared with the open ocean. Specifically, consideration will be given to temporal and spatial scales and their importance when dealing with potential problems along a shoreline. Since estuaries play an important role in transportation, food supply, waste disposal, etc., a short review of estuarine circulation will be attempted.

2 P.M. - 5 P.M. The final set of lectures and discussions will deal with life in the sea. Building on previous discussions, an attempt will be made to show which regions of the world ocean are productive. Attention will be given to the various factors which contribute to this production: including biological, physical and chemical factors. An important point that will be emphasized is that oceanic production is very heterogeneous and that a variety of local factors can have considerable importance, e.g., tidal mixing, local circulation, prevailing winds, orientation of the coastline, fronts, etc. Finally, some attention will be paid to specialized situations such as reefs, upwelling situations, and deep vent communities.

Thursday, June 27

All-day visit to the Bedford Institute of Oceanography.

Friday, June 28

9 .M. - 12 noon: .Visit to Dalhousie Ocean Studies Programme. Short address by Professors Gold and Johnston.

P.M. Free for work in the library

2 P.M. - 5 P.M. Free for work in the library

Week 3: National Experience

Case studies. Discussion will cover: national legislation; national institutional arrangements; national ocean policy, and, in each case, an appraisal of achievements, shortcomings, needs (technology; funds; data; personnel, ecc.)

Monday, July 1: National holiday.

Tuesday, July 2:

9 A.M. - 12 noon: Introduction to nationl infrastructure

Speaker: Dr. Jean-Pierre Levy, OETB, United Nations

2 P.M. - 5 P.M.: Workshop. Project Planning.

Workshop leader: Dr. Jean Pierre Levy.

Wednesday, July 3

9 A.M. - 12 noon: Coastal Management

Speaker: Dr. Velimir Pravdic

2 P.M. - 5 P.M. Coastal Management, continued.

Speaker: Dr. Velimir Pravdic.

Thursday, July 4

9 A.M. - 12 noon: National experience in ocean management: the case of Mexico and the Caribbean

speaker: Dr. Alberto Szekely, Legal Adviser, Ministry for Foreign Affairs, Mexico.

2 P.M. - 5 P.M. The case of Indonesia

Speaker: Ambassador Hasjim Djalal of Indonesia.

Friday, July 5

9 A.M. - 12 noon: The case of Sierra Leone

Speaker: Ambassador Abdul Koroma, Sierra Leone

2 P.M. - 5 P.M.: the case of Canada

Speaker: Professor Douglas Johnston

Week 4: Regional Cooperation. The Role of the "Competent International Organisations."

Monday, July 8

9 A.M. - 12 noon: The Regional Seas Programme

Part XII of the Convention provides, for the first time in history, a global comprehensive

framework for legislation on the protection and conservation of the marine environment. It does not yet provide an institutional infrastructure for the realisation of the principles and standards established by the Convention. It is left to the specialized agencies (in particular UNEP and IMO) and to regional cooperation to "put teeth" into the general provisions of the Convention. The Regional Seas Programme has begun to articulare the global law in regional terms, responsive to local conditions and needs. since environmental policy must be conceived within the context of ocean management and development, the Regional Seas Programme deals with all uses of the seas in an integrated manner.

Overview of developments until now. Future trends.

Speaker: Dr. Stjepan Kećkeś, Director Regional Seas Programme

2 P.M. - 5 P.M. The role of IMO. the IMO Conventions on safety of navigation and the protection of the environment against ship-borne pollution

Speaker: Mr. Tom Busha, IMO

Tuesday, July 9

9 A.M. - 12 noon: The Role of UNESCO and IOC. International cooperation in marine scientific research

Speaker: Dr. Mario Ruivo, IOC

2 P.M. - 5 P.M.The Role of the World Bank. The World Bank has made a series of studies on

development strategies, including ocean development, and it assists developing countries in financing ocean development projects. This discussion will focus on the ways and means of organising ocean development projects for possible world Bank Financing.

Speaker: The World Bank

The Management of Living Resources

Wednesday, July 10

Fisheries science

9 A.M. - 12 noon: Biological dynamics of the resource: the concept of renewable natural resources, the food chain, relation of fishery production to primary production, the concepts of maximum and optimum sustainable yield, fluctuating yield, the stock-recruitment problem and the influence of climate.

Speaker: Dr. Lloyd Dickie, BIO.

2 P.M. - 5 P.m. Sustainable levels of yield. Multispecies fisheries, the stock concept and fisheries assessment, abundance vs. availability, yield vs employment. the development of new methods of assessment and prediction, the relation of yield and catch per boat to the level of technology and the total fishing intensity.

Speaker: Dr. Lloyd Dickie, BIO.

Thursday, July 11

Fisheries Economics.

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Speaker: Dr. Lloyd Dickie, BIO.

Thursday, July 11

Fisheries Economics.

9 A.M. - 12 noon: The social and economic setting of fisheries: The value of landings, the value of exports. the costs of fishing: ownership the resource and the problem of allocation of fishing rights in relation to costs and benefits, inshore fishermen vs. industrial fisheries, national fisheries vs. international quotas, national use vs. foreign exchange, products, storage, transportation and markets.

2 P.M. to 5 P.M. The economic structure of the fishing industries: Independent fishermen vs. cooperative systems, vertical integration, national and international companies. the role of government in maintaining the balance, introducing new methods, products and standards. The development of national fisheries policy and international relations.,

Speaker: Dr. James Crutchfield

Friday, July 12

Monitoring and Surveillance

9 A.M. - 12 noon: Security and surveillance. New problems arise in the EEZ with regard to security, monitoring and surveillance. Technologies and methodologies.

Speaker: Col. Creelman, Deputy Chief of Staff Operations, Marine Command, Dept. of National Defense.

2 P.M. - 5 P.m.: Maritime Surveillance and Enforcement Units.

A tour of the facilities of Canada'r Maritime command and its major units. Air, surface, and

subsurface platforms and the associated support structures. Depth of involvement and sophistication required to maintain control of the EEZ.

To what extent can developing countries afford the investment in manpower and resources necessary to create and sustain a credible maritime surveillance & enforcement organisation? What are the peripheral benefits of establishing such a force?

Week 5: Management of Living Resources, continued.

Monday, July 15

Fisheries Management

9 A.M. - 12 noon: Stock assessment: Introduction

Speaker: Mike Staley, IIASA

2 P.M. - 5 P.M. Stock and Recruitment: Building an Apple Stock-Recruitment Model

Tuesday, July 16

9 A.M. - 12 noon: Catch effort Analysis

Speaker: Mike Staley

2 P.M. - 5 P.M. Adaptive Management: Feedback Control; Forecasting; Why Stock Assessment won't Work: Myths of Fisheries Management

Speaker: Mike Staley

Wednesday, July 17

Fisheries technology

9 A.M. - 12 noon: Detecting
Catching
Processing
Storage & Transport

Speaker: Dr. Gunnar Saetersdal, Norway.

2 P.M. - 5 P.M. Fish Protein and Human Nutrition

Speaker: Dr. Gunnar Saetersdal, Norway.

Thursday, July 18

Aquaculture

8:30 A.M. - 11 A.M.: Aquaculture. Evolution of aquaculture systems, geographic and species diversity, biological and economic productivity, simple and complex systems; sources of nutrients, waste disposal, special problems in operation and management, social acceptance and economic viability, government incentives, relation to traditional fishing; basic nutrition vs. luxuty markets.

Speakers: Professor E.M. Borgese
Dr. Art Hanson

11 A.M. - 12:30 P.M. Visit to Dalhousie University Shellfish Hatchery

2 P.M. - 4 P.M. Visit to Fisheries Department

5:30 P.M. Visit to Sambro Oyster Project. Demonstration of European Flat Oyster culture.

Speaker: Dr. Cathy Enright

Friday, July 19

Round Table discussion with Provincial and Federal officials, representatives of Industry and of Fishermen's organisations on the Canadian Experience; Achievements and problems. Lessons for developing countries.

Saturday, July 20

Trip on a fishing boat.

Week 6 and 7: Oil and Gas

Monday, July 22

General introduction: Worldwide energy demand and supply; energy use projections; the prospects of offshore oil; historical background of oil industry developmpent.

Basic oil and gas accumulation concepts; origin of oil and gas; sedimentary rock accumulation: geological concepts and principles; source rocks, migrations and traps; geophysical exploration methods; gravity, magnetic, seismic operations and equipment; manpower requirements for geophysical activities.

Tuesday, July 23

Geological exploration methods; sedimentary deposition, lithology; dating, fossils, trends; cores and cuttings analysis; correlations and exploration; introduction to land-based drilling operations; drilling fundamentals; drilling rig components and equipment, cuttings, retrieval, cores; core analysis.

Basic drilling procedures; drill bits, pipe;

drilling muds: casing and cementing; logging and testing.

Wednesday, July 24

Field trip to Bedford Institute to review core and cuttings storage area and cataloguing procedures; geological evaluations; manpower requirements.

Basic offshore drilling: vessel types; mooring systems; guideline systems; basic drilling differences to landbased drilling.

specialized offshore equipment: subsea wellhead systems; subsea blow-out preventors; emergency disconnect systems.

Well completions; completion methods; specialised operations and equipment; perforating, packers, tubing; wellheads; emergency shut-downs; specialised services; logging, cementing, testing, safety. Blow-outs and blow-out prevention.

Thursday, July 25

Offshore rig supply and support systems; rig operations; marine crew; drilling crew; computer operations; catering, housekeeping, maintenance; crane operators; supply base; logistics, loading; warehouse; forklifts; cranes; containers; fuel; parts.

Supply vessels and workboats; cargo area; anchor handling; loading, offloading.

Field trip to oil company offshore supply base and supply boat.

Friday, July 26

Communications: rig positioning logistics; navigational; ship to shore, telecommunications; weather broadcasts; production facilities; telemetry. Other offshore support manpower and skills requirements to operate and support an offshore drilling operation.

Field production operations; seperators, treaters, dehydrators, compressors, pumps; production platforms, selection criteria, costs, economics.

Transportation and refining; crude oil transportation by pipelines and tankers; refinery consideration and basic process.

Field trip to refinery facilities.

Saturday, July 27

A field trip to an offshore rig (weather permitting and arrangements successful).

Cor-ordinators
July 22-27

Mr.B.N.McLean
N.S. Inst.of Technology

Mr. G.D. Sutherland
Geofossil Canada Ltd.
Calgary, Alberta

Monday, Tuesday and Wednesday, July 29,30 and 31

Environmental Control and Considerations

- Introduction fo environmental considerations
- Petroleum hydrocarbon chemistry, toxicity
- Effects of pollutants in oceans
- Impact of oil pollution on fisheries
- Remedial measures to combat oil spills; dispersants; sinkants; clean-up apparatus, applications
- Contingency Plans
- Regulations, impact assessments
- Case histories
- Coastal Management: Environmental control model participation exercise

Co-ordinators:

Dr. J.H. Vandermeulen
Marine Ecology Lab.

BIO

Mr. C.W. Ross
Senior Environmental
Co-ordinator
Mobil Oil Canada Inc.
Halifax, N.S.

Thursday, August 1

9 A.M. - 12 noon: The Social impact of oil on coastal communities

Identification and measurement of socio-economic impact, desired objectives; financial balance sheets and the quality of life; the cycle of on-shore impacts; national and local strategies for responses to offshore developments; coping with impacts -- reactions of the offshore operators. Case study: Offshore production and small coastal communities.

Speaker: Professor Leonard Kasdan, Dalhousie University

2 P.M. - 5 P.M. Films and discussion.

Friday, August 2

9 A.M. - 12 noon: The structure of the industry The role of the multinational oil companies, methods of operation, internal organisation, patterns of relations with host countries. ownership and payment arrangements with host countries, nationalisation and its effects; employment and training of host-country nationals; the evolution of OPEC and its interaction with the oil companies.

What are the costs and benefits to a developing country for developing an association with a multinational oil company to exploit offshore economic zone petroleum resources? How can this economic, political, and contractual relationship be structured to maximize benefits to the host country?

Speaker: Professor Robert Meagher
Fletcher Shool of Law &
Diplomacy

2 P.M. - 5 P.M. Alternative models.

Controlled vs. maximal production development; internalization of technology vs. continued dependence on foreign companies. The British, the Norvegian, the Venezuelan, the Indian model.

Speaker: Professor Robert Meagher.

Week 8: Offshore Minerals, Shipping & Navigation

Monday, August 5

9 A.M. - 12 noon: The Economics of Ocean Mining. the mining of metals and minerals from the ocean --whether in areas under national jurisdiction or in the international area -- may, in the future, have a major impact on mineral markets and on the economy of developing countries which produce, on land, the same minerals that will be extracted from the oceans. the U.N. Convention on the Law of the Sea has tried to cope with these problems in various ways. The Preparatory Commission, established by UNCLOS III, has to adjust the measures prescribed by the Convention to the changing reality.

Speaker: Mr. Ni Odunton, OETB

2 P.M. - 5 P.M. Project preparation, Library work.

Tuesday, August 6

9 A.M. - 12 noon: Offshore minerals. A survey of mineral exploration, near shore and on the deep sea floor. The polymetallic nodules. Recent discoveries of polymetallic sulphides. Scientific, economic and legal implications.

Speaker: Dr. Alexander Malahoff, NOAA.

2 P.M. -5 P.M. Offshore minerals: Technology. The state of the art. Keeping pace with the offshore oil production technology, ocean mining technology has made dramatic steps forward, during the past decade, into deeper waters farther from shore. While deep-sea mining technology is still in an R&D stage, the offshore mining of tin, especially in Southeast Asia, has become a major economic factor. Technologies range from fairly simple to highly sophisticated.

Speaker: David Pasho. Energy & Mines, Canada.

Wednesday, August 7

9 A.M. - 12 noon: The Economics of shipping.

Sea-borne trade is a factor of crucial importance in development strategy. The current dramatic changes in the shipping industry may offer possibilities for a restructuring increasing the participation of developing countries.

Speaker: Awny Behnam, UNCTAD

2 P.M. - 5 P.M.: Vessel Traffic Management. Navigational Aids. Traffic congestion near ports, in straits and crowded sea lanes, require traffic safety regulations, in accordance with the provisions of the U.N. Convention on the Law of the Sea.

Legal, institutional, and technical aspects of traffic regulation will be discussed.

Speaker: Professor Edgar Gold

Thursday, August 8

9 .M. - 12 noon: Field trip: The Halifax-Dartmouth Port Complex -- Modern Vessel Control and Cargo Handling.

(1) Visit to the ECAREG Control Centre, vessel status & pollution control in the EEZ; (2) a tour of the Port Cargo Handling facilities for vehicle traffic at Autoport and Container Cargo, Halterm; (3) Visit to Halifax Traffic Control, a modern port vessel traffic management (VTM) centre.

2 P.M. - 5 P.M. Port Management. Technological, economic, environmental aspects.

Inefficiency in port management; lack of up-to-date loading and unloading technology; failure to adjust to new integrated multi-modal systems of transportation have led to port congestion in many developing countries entailing tremendous losses in time and money and often spoilage of perishable goods. UNCTAD has developed audio-visual material to demonstrate deficiencies and remedies.

Speaker: Awny Bahman, UNCTAD.

Friday, August 9

9 A.M. - 12 noon: Flags of Convenience. Liner Conferences. Code of Conduct.

The United Nations Convention on a Code of Conduct for Liner Conferences entered into force in October, 1983. This has a number of implications for, and offers new opportunities to, developing countries. An institutional machinery will have to be established to implement article 46 of this Convention. Developing countries will have to increase substantially their shipping tonnage in order to carry their equitable share of liner cargoes generated by their trade. Developing countries need more technical assistance to implement the provisions of the Convention. The implications of the Code of Conduct will be analysed from the point of view of the participants' home countries.

Speaker: Awni Behnam, UNCTAD

P.M. Free for Project work and Library

Week 9: Offshore Labour. Health and Safety Simulation Exercise

Monday, August 12

9 A.M - 12 noon: The protection of offshore labour. In many countries, the rights of offshore workers are not protected the same way as they are on land, while hazards and hardships are greater than on land. The offshore working environment; types of labour required:

recruitment; training needs; compensation; Labour organizations and relations with management; national regulations and standards; utilization of foreign nationals; international organisation. The International Labour Office (ILO) has begun to elaborate international standards for the regulation of offshore labour. the implementation of such standards requires national legislation as well as international cooperation and is an essential component of a New International Economic Order.

Speaker: P. Gopinath, ILO

2 P.M. - 5 P.M.: Offshore Labour: Health and Safety

Dangers to the work force in marine environments; the SOLAS Convention; standards for equipment and life-saving devices; deep=sea diving safety problems; accident investigations; injury compensations.

How may the developing nations protect the health and welfare of the offshore workers:

Speaker: Dr. James Holland
Offshore Medical Advisor.

Tuesday, August 13

9 A.M. - 12 noon: Contract Negotiations. The intensification and diversification of ocean uses generates new relationships with foreign and multinational entities. To maximize benefits for their own populations, developing countries must develop new skills in contract negotiation.

Briefing for simulation exercise.

Speaker: Professor Gilbert Winham
Dalhousie University

Wednesday, August 14 and
Thursday, August 15

All day: Simulation Exercise

Friday, August 1

Free for preparation of Reports

Week 10: Reports and Awards

Monday, August 19 and
Tuesday, August 20

All day: Country Reports by participants

Wednesday, August 21 and
Thursday, August 22

Special Reports: Research Projects by Participants

2 P.M. - 5 P.M. Programme Evaluation by Participants. Suggestions for future programmes

Friday, August 23

10 A.M. - 12 noon: Closing Ceremony at McMechan Auditorium, Killam Library.

Award of Certificates.

TRAINING PROGRAMME FOR THE MANAGEMENT AND CONSERVATION OF MARINE RESOURCES

CENTRE FOR FOREIGN POLICY STUDIES
DALHOUSIE UNIVERSITY

PEARSON INSTITUTE
DALHOUSIE UNIVERSITY

INTERNATIONAL OCEAN INSTITUTE
MALTA

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TRAINING PROGRAMME
MANAGEMENT AND CONSERVATION OF MARINE RESOURCES
CLASS B85
17 JUNE - 23 AUGUST, 1985
THE ECONOMIC ZONE

FINANCIAL REPORT

EXPENDITURES	BUDGET		TOTAL ACTUAL	
I. Project Preparation				
IOI Chairperson	CA$ 3,000.00		3,000.00	
Administr. Assistant	720.00		720.00	
Secretary	1,680.00		1,680.00	
Communications	3,000.00		2,209.99	
Supplies (printing, equipment)	1,500.00		1,874.11	
Subtotal		9,900.00		9,484.10
II. Project Implementation				
Staff				
Director	22,200.00		20,244.15	
Coordinator	5,550.00		5,240.71	
Admin. Assistant	1,080.00		600.00	
Secretary	2,520.00		2,467.35	
Lecturers' honoraria	12,000.00		9,981.80	
Subtotal		43,350.00		38,534.01
Travel				
Participants	46,000.00		36,256.79	
Lecturers	25,000.00		20,517.00	
Subtotal		71,000.00		56,773.79

EXPENDITURES	BUDGET		TOTAL ACTUAL	
Participant support				
Accommodations	25,550.00		25,767.50	
Meals	26,500.00		-	
Allowances	8,750.00		25,573.05	
Medical Insurance	3,000.00		1,425.00	
Subtotal		63,800.00		52,765.55
Other				
Field trips	5,750.00		3,408.70	
Public relations	2,000.00		2,886.48	
Communications	1,000.00		1,831.98	
Supplies, Printing, Equipment	2,000.00		906.56	
Teaching materials	2,000.00		4,805.71	
Subtotal		12,750.00		13,839.43
III. Project Follow-up				
IOI Chairperson	5,250.00		12,500.00	
Admin. Assistant	2,520.00		2,520.00	
Secretary	5,880.00		1,500.00	
Communications	4,000.00		3,500.00	
Supplies, printing, equipment	8,000.00		3,323.39	
Subtotal		25,650.00		23,343.39
GRAND TOTAL		**226,450.00**		**194,740.27**

INCOME	BUDGET		TOTAL ACTUAL	
CIDA	100,000.00		100,000.00	
Commonwealth Secretariat	40,000.00		37,998.77	
ICOD (4 scholarships)	40,000.00		0	
Dalhousie Lawschool	20,000.00		0	
UNDP	26,450.00		0	
Air Canada	0		300.00	
Province of N.S.	0		450.00	
TOTAL INCOME		226,450.00		138,748.77
DEFICIT		($55,991.50)		

ANNEX 3

WORLD MARITIME UNIVERSITY

Proposed programme of lectures on
the UN Convention on the Law of the Sea.

Monday, 21 October 1985 - Friday 25 October 1985

M.C.W. Pinto

Monday, 21 October

1. Resources of the sea.
2. History of the Law of the Sea.

Tuesday, 22 October

1. Determining the physical limits of national jurisdiction.
2. Legal regimes within areas of national jurisdiction.

Wednesday, 23 October

1. Legal regime of the high seas.
2. Regimes governing special situations or activities:
   - protection and preservation of the marine environment.
   - marine scientific research.
   - development and transfer of marine technology.

Thursday, 24 October

1. The sea-bed beyond national jurisdiction.
2. Settlement of disputes and the Final Provisions of the Convention on the Law of the Sea.

Friday, 25 October

1. The Law of the Sea and the New International Economic Order.
2. Future developments in the Law of the Sea.

Annex 3

I. Preparation

Trip to London (IMO) and Malmö (WMU) for planning of the course	$500
Preparation of teaching materials	4,000

2. Programme Execution

Air fares	2,404
Fee for Ambassador Pinto	2,816
Per diems, Pinto, Borgese	280
TOTAL	10,000

Receipts

II. Revenues

Private contrtibutions	$6,500
IMO	3,500
Total	10,000

ANNEX 4

International Ocean Institute
P.O. Box 524 Valletta - Malta Cables: Interocean

PROPOSAL

I. Summary proposal

1. The International Ocean Institute (IOI) is organising a series of three training programmes on the management and conservation of marine resources and development and cooperation in the Mediterranean basin. The IOI invites the States Members of the League of Arab States and ALECSO to participate in this programme (a) by sending at least ten participants to each of the three 10-week programmes; (b) by contributing experts from Arabic countries to the teaching staff; (c) by hosting one of the three programmes in an Arabic country, either on the Mediterrean or the Red-Sea coast.

II. Background

2. The IOI was formally established in 1972 with the assistance of UNDP and the Government and the University of Malta. The IOI is an international nongovernmental organization, governed by a Board of Trustees and a Planning Council. The Statutes of the IOI are annexed in Annex I. The members of the governing bodies are listed in Annex II. The first President of the IOI was the late Ambassador Hamilton Shirley Amerasinghe, President of the Third United Nations Conference on the Law of the Sea. The second President is Ambassador Layachi Yaker of Algeria. the Chairman of the Planning Council is Professor Elisabeth Mann Borgese of Canada.

3. The activities of the IOI consist of (a) research; (b) international conferences and seminars; (c) publication; and (d) training.

(a) Research: The IOI undertakes research projects either on its own initiative or on commission by other organizations (UNESCO, UNIDO, the World Bank, the Government of the Netherlands, IFDA, etc.). Research has focused on all

major issues emerging from the Third United Nations Conference on the Law of the Sea and on issues of marine resource management. The IOI has published a series of studies on the New International Economic Order and the Law of the Sea, and on regional cooperation and development. The IOI published, in 1971, the first international study on environment and development in the Mediterranean. UNEP has always been generous enough to acknowledge this initiative of the IOI, at the very beginning of a process that culminated in the adoption of the Barcelona Convention.

A list of major research projects completed by the IOI is attached in Annex III.

(b) Conferences: The IOI has conducted a series of international conferences ("Pacem in Maribus," or "Peace in the Oceans") bringing together diplomats and legal experts, marine scientists and representatives of marine industries, from all parts of the world to discuss all aspects of the ongoing penetration of the industrial revolution into the oceans. Fourteen Pacem in Maribus conferences have been held thus far. The latest took place in the Soviet Union and was attended by about 500 experts, including U.N. Under-secretary General Satya Nandan and the Secretary General of IMO, Mr. C.P. Shrivastava. A list of all Pacem in Maribus conferences and a sample list of personalities who attended are attached in Annex IV.

(c) Publications: IOI's major publication is the Ocean Yearbook, published for the IOI, by the University of Chicago Press. Five volumes have been published thus far. Volume VI is in preparation. Reflecting the interdisciplinary approach of the IOI, the Yearbook covers all major uses of ocean space and resources. It includes essays, tables, reports from other ocean related organisations, and major documents. It is a useful research instrument as it brings together materials otherwise dispersed in a great number of publications which often are inaccessible in developing countries. The IOI also publishes a newsletter Across the Oceans, designed to maintain

contacts with training programme alumni and marine activities in their home countries. A series of IOI Occasional Papers, presenting the results of IOI research, and Pacem in Maribus Proceedings, concludes the list of IOI publications. The tables of contents of the five published volumes of Ocean Yearbook are attached in Annex V.

(d) Training: During the past six years, the IOI has completed sixteen training programmes for civil servants from developing countries in the management and conservation of marine resources. It has graduated about 300 participants from developing countries, and raised about $3 million for scholarships. Each programme consists of ten weeks intensive training: About 300 hours of lectures and discussions, field trips, laboratory and simulation exercises and library work. The programmes are of three types: Class A deals with all aspects of ocean mining (scientific/technological; economic; environmental; managerial; legal). It is usually held in Malta and, for the technical part, in the Federal Republic of Germany (Technical University of Aachen, Preussag AG, Hannover, University of Hamburg). Future courses will be organised in closer cooperation with the Preparatory Commission in Jamaica. - Class B deals with all aspects of Economic Zone Management, including the need for national legislation and the building of national infrastructure. Class B is held annually at Dalhousie University, Halifax, Canada. Class C is devoted to issues of regional cooperation and development. Its venue varies from year to year. Class C courses have been held in Goa, India; Fiji; Algeria; Trinidad & Tobago. The proposed Mediterranean series is of the Class C type; so is another series which will be initiated this year in the Indian Ocean.

Three sample syllabi and a sample newsletter are attached in Annex VI.

4. The IOI is funded by voluntary contributions. The annual budget ranges from $700,000 to 1,000,000 (depending on the number of training courses per year). The main contributor is CIDA (Canada), covering approximately

twenty-five percent of the budget. The next largest contributor is the Commonwealth Secretariat; other contributions come from UNESCO, UNEP, UNU, UNDP, from the Governments of host countries, and from private foundations and individuals.

III. The Mediterranean Programme

5. Purpose: The purpose of the Mediterranean training programme is to assist participants and their governments in the formation of a cadre of civil servants with the required expertise

. to frame national legislation for the utilization of marine space and resources;

. to create appropriate national infrastructure;

. to generate and implement a comprehensive, coherent ocean policy;

. to harmonize national and regional policies;

. to acquire or develop necessary technology for the exploration and exploitation of marine resources and the development of marine industries;

. to understand the linkages between economics and ecology;

. to represent their governments in international organisations, dealing with marine affairs;

. to negotiate with foreign or multinational companies or enterprises;

. to foster international cooperation in marine affairs;

. to contribute to the implementation and further development of the Law of the Sea as an essential building block of a new international order.

The Mediterranean programme is different from all other programmes completed thus far in that it brings together participants from developed as well as from developing countries. This will enhance its quality as a dialogue, not only between lecturers and participants, but between the participants. It will increase the potential of North-South dialogue to explore the possibilities of new forms of industrial/scientific cooperation.

6. Target Group: Candidates for participation should be mid-career civil servants from government departments engaged in marine activities (foreign affairs; agriculture & fisheries; mines & energy; shipping & navigation; ports & harbours; science & technology; navy & coast guards; environment & tourism; industrial development; economic planning), preferably between the ages of 25 and 35, holding at least one academic degree or its equivalent, and having a work experience of at least two years. All applications must be endorsed by the applicant's government department. Twenty-five participants will be accepted.

7. Venue: Each of the three programmes will be conducted in a different sub-region. The first one will be held in Yugoslavia, in cooperation with the International Center for Public Enterprises in Developing Countries (ICPE) in Ljubljana, Yugoslavia. The second one will be held in Malta, at the headquarters of the IOI and in cooperation with the University of Malta; the third one will be held in one of the countries members of the League of Arab States, to be determined by ALECSO. It might be a country on the Mediterranean or on the Red-Sea shore.

8. Teaching Staff: Each of the three programmes will be co-directed by a local expert and an IOI appointed academic programme director. The IOI Executive Director will serve as logistics co-ordinator. The teaching staff consists of 20-30 experts over the ten-week period. Most of these will come from the Mediterranean region; some will come from the U.N. agencies and institutions.

9. Mehodology: Participatory, action-oriented, with a maximum involvement of participants. Participant-led discussions, group exercises, simulations, and field trips will complement the lectures.

10. Performance Reuirements: Participants will be responsible for a "country report," describing resource base, utilization of marine space and resources, legal framework and institutional infrastructure, contribution of the marine sector to GNP, issues and problems, in their own countries. Participants are also required to present a final report based on their experience in the programme. There will be a final symposium for the presentation and discussion of this group report.

11. Follow up: Participants receive an IOI diploma certifying that they have satisfactorily completed all course requirements. The group report, together with the country reports, will be published by the IOI. The IOI keeps a register of all alumni, and contact with them is maintained through the IOI Newsletter, Across the Oceans, which is published twice a year. All alumni are invited to send reports on their activities and on developments in the marine sector in their countries. Alumni are invited to subsequent IOI regional programmes or conferences, frequently as lecturers or discussion leaders.

12. Budget: The total cost for each of the three programmes is roughly as follows:

I. Prepartion, including curriculum workshop and logistics preparation	$5,000.00
Subtotal	5,000.00

II. Execution		
1. Salaries		
Course Directors Executive Director Secretaries, three months	30,000.00	
2. Lecture fees	10,000.00	
3. Teaching materials	5,000.00	
Subtotal		45,000.00
III. Participants		
1. Air fares	7,500.00	
2. Room & Board	87,500.00	
3. Medical insurance	3,000.00	
4. Pocket allowance	8,750.00	
Subtotal		106,750.00
IV. Lecturers		
1. Air fares	7,500.00	
2. Room & Board	9,000.00	
Subtotal		16,500.00
V. Conference room	4,000.00	
Field trips	10,000.00	
Subtotal		14,000.00

VI. Follow up

Editing & printing of reports	5,000.00	
Subtotal		5,000.00
Grand Total		$192,250.00

Total cost per student (including air fare) $8,000.00

IV. ALECSO/Arab League Participation

13. It is proposed that ALECSO/Arab League participation should have three components:

(a) There should be at least ten participants in each of the three programmes. These should be chosen by their Governments. It was agreed that ALECSO will co-ordinate this selection process and arrange for scholarships.

(b) IOI would like to avail itself as much as possible of existing expertise in Arabic countries for the composition of the teaching staff. This could be in the legal, economic, scientific or technological sector. It is proposed that ALECSO put together a roster of names and qualifications. The subjects to be covered during the first programme will be, basically, those listed in the Ljubljana syllabus (see Annex VI).

(c) One of the three programmes (presumably, the third) should take place in an Arabic country. Tunis has been mentioned as a possible venue. Kuwait or Jeddha might be alternatives. The choice of this venue is left to ALECSO. The programme could focus on the Red Sea. Considering the great importance of ocean mining to Arabic countries, both in the Red Sea and in the International Area, one could also consider the possibility of having a Class A programme as an alternative. Whatever the venue and the subject, it is

proposed that, as in the other cases, there shall be a minimum of ten Arab participants in the programme (they could be more), provided with scholarships. It is also proposed that, for this third programme, the host country should provide facilities and logistic support (conference room, audio-visual equipment, xeroxing facilities, secreterial assistance, reduced prices in a hotel or university dormitory; field trips).

V. Time frame

14. If the programme were to start in 1986, the only available date for the IOI would be from the second half of May to the end of July. The only available venue, in this case, would be Malta.

The second programme, then, could be March/May, 1987, in Yugoslavia; the third, March/May, 1988 in an Arabic country.

If the target of May, 1986, for the beginning of the programme were not attainable, the entire programme should be moved up by one year, to begin in Yugoslavia in March/May, 1987.

V. Conclusion

The importance of the marine sector for development strategy and industrial diversification is rapidly growing. A number of studies exist on this subject. Suffice it to mention those undertaken by the Commonwealth Secretariat for the Pacific and Indian Oceans. Industrialized countries are making huge investments in deep-sea exploration technologies, in introducing bio-industrial technologies into the production of living resources, in generating ocean energy resources and improving communication systems. Many developing countries are responding by creating the necessary institutional and legal infrastructure and intensifying international cooperation to catch up with these developments. The penetration of the industrial

revolution into the oceans is part and parcel of the new phase ("the third wave") of the industrial revolution which is shaking the economic systems of the indusrialized countries and will inevitably affect international economic relations. The non-industrialized world must join this new phase of the industrial revolution now, at its beginning, when the price for joining is relatively low. If this point in time is missed, the gap between the non-industrialized and the industrialized world will grow and become unbridgeable. Marginalization will be the price to be paid for non-action.

It is hoped that the IOI training programme may contribute to the necessary conscience-raising. Due to particular historical circumstances -- the establishment of a new order for the seas and oceans through the U.N. Convention on the Law of the Sea -- the marine sector offers an unprecedented opportunity for joining the "third wave" and building for the future.

ANNEX 5

Pacem in Maribus

International Ocean Institute

P.O. Box 524 Valletta - Malta Cables: Interocean

CONCLUSIONS AND RECOMMENDATIONS OF THE XIV INTERNATIONAL CONFERENCE "PACEM IN MARIBUS," USSR, 27 MAY - 5 JUNE 1985

Introduction

The XIVth International Convocation "Pacem in Maribus" took place in the USSR on May 27 - June 5, 1985. It was organised by the International Ocean Institute (IOI) and the Soviet Maritime Law Association with the active collaboration of the United Nations Environment Programme (UNEP). Among the participants were Under-Secretary General of the United Nations Satya Nandan, the Secretary-General of the International Maritime Organization (IMO) C.P. Srivastava, the Deputy Executive Director of UNEP S. Lemos, leading officials of the United Nations Conference on Trade and Development (UNCTAD), the United Nations Economic Commission for Western Asia (ECWA), the International Maritime Satellite Organisation (INMARSAT), political leaders, government officials, scholars, diplomats, lawyers, economists, and oceanographers, numbering 400 from more than 30 countries. Over sixty reports were presented to the conference.

Dr. Anatoly Kolodkin, President of the Soviet Maritime Law Association, and Professor Elisabeth Mann Borgese, Chairman of the Planning Council of the International Ocean Institute, acted as co-Chairmen of the Convocation.

The Conference participants were greeted at the inaugural session by the Council of Ministers of the USSR. The greeting was read by the Minister of the Merchant Marine of the USSR, T.B. Guzhenko. A message was also received from the Secretary General of the United Nations, Mr. Javièr Pérez de Cuéllar.

The Conference was organised in two parts: the first in Moscow, May 27 and 28; and the second part on board the steamship Konstantin Simonov from May 29 to June 5, cruising the Black Sea between Odesssa and Batumi.

For the practical accomplishment of its work, the Conference divided into two Working Groups which reported to the Plenary sessions of the Convocation. One Working Group examined legal and institutional issues and the other economic and commercial matters. The Chairmen of these Working Groups were Professor E. Gold and Dr. R. Vogel, respectively.

Rapporteurs assisted each Working Group. Professor P. Slot served as Rapporteur for the Economic Working Group and Mr. T. Busha acted as Rapporteur for the Legal Group and also served as the Convocation Rapporteur.

The participants noted that this Conference was convened in the year of the Fortieth Anniversary of the United Nations Organization, whose work on the codification and progressive development of the Law of the Sea is of fundamental importance for peace and international cooperation.

It was also noted that this was the Fortieth Anniversary of the victory of the United Nations over fascism, a victory which contributed to much to world peace, and that Pacem in Maribus XIV convened in the USSR on the eve of the International Year of Peace.

Pacem in Maribus symbolises the aspirations of peoples to peace and cooperation. There can be no peaceful uses of seas and oceans without peace, no ocean development without the reservation of the oceans for peaceful purposes, through progressive demilitarisation and the establishment of zones of peace in the context of general and complete disarmament.

Pacem in Maribus XIV was dedicated to the legal,

economic, environmental and technical aspects of navigation and shipping. The Convocation ended its work with the following conclusions and recommendations.

I. Legal Aspects

1. The 1982 United Nations Convention on the Law of the Sea, described as a "Constitution for the Oceans," should be brought into force at the earliest possible date, and all States and other entities which have signed it in accordance with Article 305, as well as such States and entities to which the Convention is now open for accession, are urged to ratify it or accede to it with the minimum possible delay.

2. Pacem in Maribus XIV stressed the importance of the early beginning of the registration of the first applications for the deep sea-bed mining sites in the Preparatory Commission for the International Sea-bed Authority and for the International Tribunal for the Law of the Sea, which would signify the beginning of effective functioning of the regime for the international sea-bed area ("the Area") as a Common Heritage of Mankind provided for in the 1982 Convention and the Resolutions of the Third United Nations Conference on the Law of the Sea; the Convocation considered it also important to elaborate rules, regulations and procedures of the Authority in such a way as to enable all States to become Parties to the Convention.

3. It is recommended that States, as provided in the United Nations Convention on the Law of the Sea, should harmonise their legislation and international agreements with the provisions of that Convention with regard, inter alia, to the breadth of the territorial sea, transit passage through straits used for international navigation and archipelagic sea lanes passage, as well as their laws and regulations concerning the exercise of rights and obligations in the exclusive economic zone. In the spirit of Art. 18 of the 1969 Vienna Convention on the Law of

Treaties, States which have signed but have not ratified the 1982 Convention should comply with its terms in the period prior to becoming Parties. It is also recommended that States, when ratifying or acceding, should refrain from statements and declarations inconsistent with the object and purpose of the 1982 Convention.

4. In adopting laws and regulations concerning international shipping, all States should ensure that such laws and regulations shall be in accordance with the 1982 Convention and international rules and standards adopted through or under the auspices of the competent international organisation or diplomatic conferences. In this connection, States which are not yet Parties to the 1982 Convention but which are Members of the competent international organisation or which attend the diplomatic conferences convened by such organisation are urged to refrain from gratuitous obstruction to or deliberate interference with the entry into force of the 1982 Convention and to contribute in good faith to the creation or amendment of rules and standards by the competent international organisation in compliance with the provisions of the 1982 Convention.

5. The Convocation acknowledged the interests of landlocked States in developing their merchant fleets and enjoying rights of access to and from the sea. It considered, on the other hand, that landlocked States and coastal States should share in marine environmental responsibilities and recommended that landlocked States be entrusted with responsibilities in this regard in the context of regional and global arrangements for environmental conservation as appropriate.

6. Contemporary maritime transportation requires ever more uniform procedures to ensure that ships are not delayed in ports by unnecessarily protracted judicial, quasijudicial, and administrative measures. Work within the United Nations system to establish up-to-date international standards regarding the arrest of sea-going

vessels should not be delayed and should take all needed account of articles on the jurisdiction of States in the 1982 Convention.

7. Enforcement of environmental standards also calls for measures of international cooperation and reciprocity, to ensure that vessels are not unduly delayed and that costs both to ship-owners and maritime administrations are equitably apportioned when one administration acts for another. Such costs should be kept to the minimum consistent with the need for effective enforcement, in the spirit of Article 221 of the 1982 Convention.

8. Subject to such reasonable procedures and costs as are recommended in paragraphs 6 and 7 above, port States should assume their full responsibility for enforcement procedures and control practices provided for under international Conventions presently in force, as well as the 1982 Convention on the Law of the Sea.

9. States should ensure that special-purpose vessels for the particular purpose of marine scientific research are not hampered or impeded by laws and administrative practices when such vessels are in compliance with the provisions set out in Part XII, Sections 3 and 4, of the 1982 Convention on the Law of the Sea.

10. Coastal States should ensure in their exclusive economic and fishing zones that fishing vessels of all States enjoy freedom of navigation in the same way as vessels of other categories according to the 1982 Convention.

11. A Convention on Ocean Data Acquisition Systems (ODAS) which would contribute both to the safety of international navigation and to the legal basis for the deployment of such systems should be completed as soon as possible.

12. Pacem in Maribus XIV was informed of the increase of acts of piracy and armed robbery committed against merchant

ships, and recommended that Governments confronted with such incidents should take necessary action to suppress such piracy and armed robbery in or adjacent to their national waters. it noted that the International Maritime Organization (IMO) and other bodies were aware of growing concern with this problem and that IMO had passed a resolution inviting Governments to take the above-mentioned measures and to report such acts to IMO when committed against ships of their flag.

13. Pacem in Maribus XIV noted that IMO would in due course decide whether or not to continue its work on the elaboration of a Convention on Liability and Compensation in Connection with the Carriage of Noxious and Hazardous Substances by Sea. If this decision were to be positive, the new convention should be based on the principle that liability and compensation would be equitably apportioned between the ship-owner and the shipper of such substances.

II. Economic Aspects

14. The shipping industry, international by its very nature, fosters the international division of labour and thereby promotes the welfare of all nations. It can perform these functions only in an atmosphere of mutual understanding and cooperation. Thus embargoes and other hostile action should normally be excluded except when taken pursuant to the Charter of the United Nations.

15. There was general agreement that the participation in trade of developing countries is still lagging behind their share in world sea-borne trade. However, the development of merchant fleets in developing countries requires technical assistance and training by developed nations as well as enlarged cooperation among developing countries, particularly on a regional basis. Furthermore it was pointed out that it is desirable to formulate a national and regional shipping policy which is in line

with over-all developing planning. For this policy the following elements are inter alia to be considered:

. volume and composition of cargo as well as the role of shipping in promoting foreign trade;

. geographical position;

. dependency on foreign transport services and the actual amount of foreign exchange involved which has to be generated by the national economy;

. available technical assistance, including possibilities of establishing joint ventures;

. the necessity to develop infrastructure such as ports and hinterland transportation;

. allocation of available financial resources between the development of shipping and that of other industries of primary importance, such as agriculture;

. establishment of joint ventures which transfer technology.

16. The imbalance between demand and supply is one of the most pressing current problems of world shipping. It was generally acknowledged that there is a surplus of tonnage which will continue for the foreseeable future. Although overtonnage is not caused by all countries participating in world shipping, it nevertheless affects the world economy as a whole and in particular the development of merchant fleets in developing countries. It was felt that collective measures to remedy the resulting disorder in sea transport are required. Among such measures the following were recommended:

. establishment of a comprehensive information system to improve trade projections and to facilitate investment policies;

. critical examination of national policies on subsidies, taking into account real transport demand;

. establishment of international mechanisms fostering the transfer of tonnage from surplus shipping countries to deficit countries, taking into account ongoing improvements in technology;

. provision of advisory services on a regional basis to assist in the chartering and buying of vessels;

. examination of the possibility of a regulatory agreement on the apportionment of tonnage taking into consideration the experiences of other existing international agreements on trade relations.

17. It was noted that the Code of Conduct for Liner Conferences is an important instrument for the orderly development of liner trades and is as important for the development of liner shipping in developing countries. It is therefore highly desirable that governments which are not yet Parties become so in the future. Although it took a long time for the Code of Conduct to come into force, it affected the liner trade almost immediately after its adoption. It has given developing countries leverage to enlarge their participation in sea-borne trade and has brought about changes in the relations between shippers and conferences. It was pointed out that the economic environment in which the Code is to operate has changed substantially since 1973. This has given rise to several problems of implementation. The share of cargo carried by outsiders has increased, thereby decreasing the share available for the national lines. This led some developing countries to extend the scope of the Code of Conduct to outsiders. Containerization and establishment of transnational consortia and around-the-world service have complicated the operation of the Code. The delayed entry into force of the Code and changing shipping environment have also

led some countries to modify the cargo sharing formula. These problems need further study in the period of preparation for the review conference which is foreseen five years after the coming into force of the Code.

18. Pacem in Maribus XIV discussed the subject of open registry, which has an important bearing on the orderly development of the world shipping in particular for the developing countries. It was felt that the debate presently being held on the subject can only be solved if the governments involved show a political will to come to agreement. It is recommended that all governments participate actively in the resumed session of the United Nations Conference of Plenipotentiaries on Conditions for Registration of Ships in order to arrive at an international agreement.

19. Multi-modal transport is increasingly influencing shipping. It also embodies the latest technology in transport. The discussion on multi-modal transport showed that there is an important information gap. The concept of multi-modal transport is still not adequately understood in many developing countries. Training and information activities, as well as the progressive development of all other regimes for the carriage of goods should therefore be further promoted.

III. Institutional Aspects

20. The United Nations Convention on the Law of the Sea is based on the recognition "that the problems of ocean space are closely interrelated and need to be considered as a whole." The interdependence of all problems of the oceans requires an integrated approach to ocean policy, within States and among intergovernmental institutions, which the Conference recommended should be adopted. The problems of shipping and navigation must be considered in this broader context. International shipping presents problems of economic, commercial, environmental,

technical and legal character that are inextricably linked, and the Convocation firmly endorses all steps taken on the international and the national level to harmonise the policies of all intergovernmental bodies concerned with shipping. At the international level such steps should be taken at the policy-making level and in concerned with shipping. At the international level such steps should be taken at the policy-making level and in cooperation with the Secretariat of the United Nations; steps to be taken on the national level might include, inter alia, better co-ordination of national representation in international fora and restructuring, if necessary, of national maritime administrative machinery.

21. The Convocation stressed the important role of IMO in the field of development of shipping and the protection of the marine environment; the Conventions adopted under IMO auspices enhance the safety of international navigation and the prevention of pollution of the marine environment. Pacem in Maribus XIV recommended that all States should become parties to the relevant IMO Conventions and co-operate, through IMO, in complying with the provisions of the Convention on the Law of the Sea with regard to sea lanes and traffic separation schemes, and assistance to developing countries in training and the transfer of nautical technology.

22. Revolutionary changes in marine communication services, including distress and other safety-at-sea communications, have been achieved by the International Maritime Satellite Organization (INMARSAT) through the use of the most advanced space technology for communications facilities available to ships of all nations. The Convocation recommended that the maximum possible use be made of the INMARSAT system to improve distress/safety-at-sea communications, efficiency of ship management, and maritime public correspondence services. In connection with distress/safety-at-sea

communications, Pacem in Maribus XIV supports the principles of the Future Global Maritime Distress and Safety System (FGMDSS) elaborated by the International Maritime Organization (IMO) and recognizes and supports the vital role assigned to INMARSAT in that System in significantly improving safety at sea, particularly in providing instantaneous, reliable, and high-quality space communication facilities for maritime distress alerting in connection with co-ordinated search and rescue operations.

23. Pacem in Maribus XIV stressed the important role of the United Nations Environment Programme (UNEP) and its successful Regional Seas Programme now covering eleven "regions" of the world. The Conference also noted the importance of the further development of the Global Ocean Monitoring System for the marine environment, technical assistance to developing countries, and dissemination of information on oil-spill combating techniques as well as techniques for dealing with other kinds of pollution. In connection with shipping, it was recommended that global and regional provisions on vessel-source pollution should continue to be properly co-ordinated, taking account of the 1982 Convention. In carrying out this recommendation governments are urged to ensure improved co-ordination and co-operation between their authorities and those of other States in all planning for environmental emergencies. The Conference also urges UNESCO/IOC, FAO, and IMO, and all other bodies assisting States through programmes of technical assistance to continue to promote such coordination and cooperation.

24. It was proposed that efforts should be resumed to establish a regional treaty regime for environmental conservation of the Black Sea. It was also proposed to further develop other fields of maritime cooperation such as fishing and marine scientific research in the Black Sea area.

25. The United Nations Regional Economic Commissions should, according to their mandates, follow up and promote the implementation of international conventions pertaining to maritime transport in their respective regions. The Regional Commissions should also identify, prepare and implement regional and interregional projects in the field of maritime transport as well as promote and coordinate their implementation.

26. Paçem in Maribus XIV recognized that many organisations and other bodies, both inside the United Nations system and outside of it, were making valuable contributions to the world of shipping. Inevitably the work of many of these bodies and the problems they face could not be considered owing to constraints of time . Accordingly, discussions of certain subjects could not arrive at concrete institutional proposals. As an instance, the Conference took note of suggestions for the improvement in health care of mariners which could involve a draft Medical Standard Convention, an enhancement of health services for coastal vessels and ferries, and a greater use of "telemedicine." Such measures would have relevance to the World Health Organization, the International Labour Organization, the International Telecommunications Union, IMO, INMARSAT, and many mariners' organisations. Another example, at the nongovernmental level, it was noted, is the pioneering effort of the Hellenic Marine Environment Protection Association (HELMEPA), which is an institution founded by the Greek shipping industry under the auspices of the Club of Rome, IUCN, WWF, the International Ocean Institute, and supported by UNEP and IMO. HELMEPA's work is devoted to the raising of environmental consciousnes of all levels of the Greek shipping industry through a voluntary commitment to reduce operational marine pollution through training seminars, technical instructions and other methods. Pacem in Maribus warmly endorses this imaginative initiative by one of the world's great shipping States and recommends that other shipping States might wish to consider similar

initiatives.

IV. Dispute Settlement Aspects

27. Pacem in Maribus XIV emphasized that States should resolve their disputes with regard to activities in the world ocean exclusively by peaceful means in accordance with the United Nations Charter and the provisions of the 1982 United Nations Convention on the Law of the Sea,

28. The Convocation noted that commercial arbitration is highly valued in many countries for the settlement of disputes by reason of its economy and utility, but this practical alternative to judicial settlement is often unavailable to developing countries for reasons which could easily be rectified. The Convocation recommended that wider use of both conciliation and arbitration in matters involving maritime disputes be considered by interested developing countries and that, in particular, the governments of such countries should consider adopting national laws incorporating international procedures, specifically, the UNICTRAL Rules of Conciliation and Arbitration, and should also ensure that arbitral awards are enforceable in other jurisdictions by adhering to the appropriate conventions providing for such recognition.

Closing Remarks

29. This summary of Conclusions and Recommendations cannot fully reflect the complexity of the issues and the richness of the discussions during this memorable meeting on the Black Sea. It may be sufficient, however, to indicate the range of activities in legislation, institutional arrangements, economic and environmental forecasting and planning, and policy making required for the implementation of the 1982 United Nations Convention

on the Law of the Sea, and for the realization of the benefits that can be derived from it.

30. The adoption of the Convention marks the beginning of a new chapter not only in the history of maritime law but in the evolution of international cooperation and organization as a whole. Peace is indivisible. If the international community succeeds in enhancing peace in the oceans, which covers over two-thirds of our planet, and in benefiting from marine resources on the basis of cooperation rather than conflict, of communication rather than confrontation, this will undoubtedly strengthen global peace. The orderly development of navigation and shipping, in accordance with the 1982 United Nations Convention on the Law of the Sea and other international law, will significantly contribute to this process.

ANNEX 6

OCEAN YEARBOOK 5

Sponsored by the
International Ocean Institute

Edited by
Elisabeth Mann Borgese and
Norton Ginsburg

Assistant Editors

Joshua C. Baylson
Nicholas Dunning
Daniel J. Dzurek

The University of Chicago Press

Chicago and London

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CENTRE FOR FOREIGN POLICY STUDIES
DALHOUSIE UNIVERSITY

INTERNATIONAL OCEAN INSTITUTE
MALTA

PEARSON INSTITUTE
DALHOUSIE UNIVERSITY

February 20 1987

Dr. Ronald Léger
Director, International NGO Division
CIDA
200 Promenade du Portage
Hull P.Q. K1A OG4

Dear Dr. Léger:

Please find enclosed the Annual Report for the International Ocean Institute for 1986.

If you have any questions please do not hesitate to contact this office.

Yours truly,

Anita Coady for
Professor Elisabeth Mann Borgese

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Pacem in Maribus

International Ocean Institute

P.O. Box 524 Valletta - Malta Cables: Interocean

ANNUAL REPORT

SUMMARY

1. In accordance with the agreed plan of action, activities of the IOI during the year 1986 consisted of training, research, seminars, and the publication of Ocean Yearbook.

2. Training activities consisted of a ten-week programme, Class B, at Dalhousie University, and a one-week programme on the Law of the Sea and Marine Policy, at the World Maritime University in Malmo, Sweden. A report on Class B 86, including a Financial Statement, is attached in Annex I. The WMU programme, including a Financial Statement, is attached in Annex II.

3. Research was carried out in connection with the trainig programmes and seminars and resulted in the updating of teaching materials, the compiling of background material on the security of the Mediterranean, the elaboration of detailed syllabi and teaching materials for the China and Indian Ocean training programmes (see Annexes III and IV), and studies commissioned by UNEP, UNIDO, and the Governments of Colombia (Annex V) and Malta (Annex VI). The proposal for an ongoing training programme in the Indian Ocean was officially approved and endorsed by the Indian Ocean Intergovernmental Conference IOMAC III, held in Colombo in January, 1987.

4. A seminar on Training was held for the Delegates to the Preparatory Commission of the International Seabed Authority and for the International Tribunal for the Law of the Sea, in Jamaica in April, 1986. This was in response to a Resolution introduced by the Government of Malta and sponsored by 17 Delegations. The result of the seminar was an updated and reorganized Class A programme to be conducted in Malta, the Federal Republic of Germany and France, in the spring of 1987, and the introduction of a special programme of four weeks, Class A bis, to be held in Jamaica in March-April, 1987, in conjunction with the Preparatory Commission. For the Maltese proposal, the Resolution, and the syllabi for Class A87 and A 87 bis, see Annexes VII and VIII.

5. A seminar was held in February, 1986, in Malta, in cooperation with the Foundation for International Studies, the United Nations University and attended by members of the Planning Council and the Board of Trustees of the IOI and representatives of UNU, UNEP, FAO, IMO, UNESCO/IOC and UNCTAD. The purpose of the seminar was the adoption of a plan of work for the preparation of Pacem in Maribus XV which will be held in Malta in September 1987. A second seminar was scheduled for February, 1987, to discuss the progress made in the plan of research. The programme of Pacem in Maribus XV is attached in Annex IX.

6. In the spring of 1986, IOI was granted consultative status by UNCTAD. It now enjoys consultative status with UNCTAD and UNESCO and observer status with the Preparatory Commission and the International Whaling Commission. UNEP has informed us that it will designate the IOI as a "Centre of Excellence" this year.

7. A summary financial statement is attached in Annex X.

Pacem in Maribus

International Ocean Institute
P.O. Box 524 Valletta - Malta Cables: Interocean

ANNEX I

Pacem in Maribus

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ANNEX II

Pacem in Maribus

International Ocean Institute

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the U.N. Convention on the Law of the Sea, 1982

A one-week training programme organised by the International Ocean Institute in cooperation with the World Maritime University

Malmö, Sweden, September 29 - October 3, 1986

Academic Director: Dr. S.P. Jagota, India.

Guest Lecturers: Mr. Thomas Busha, IMO (ret.)

Dr. Alberto Szekely, Legal Adviser
Ministry of Foreign Affairs, Mexico

Dr. Elisabeth Mann Borgese, Chairman
International Ocean Institute

Note: This programme follows in the wake of a previous programme on marine affairs, organized by the International Centre for Ocean Development (ICOD) of Canada. Since that programme included an introduction to UNCLOS III and the Convention on the Law of the Sea, introductory material in this course has been kept to a minimum, and the course concentrates on the essence of the Convention and on post-Conference developments.

This programme emphasizes maximum participants' involvement and will be carried out largely in seminar style. More formal lectures are restricted to the morning hours, except for Monday, when there will be lectures also in the afternoon. Tuesday, Wednesday, and Thursday afternoon are reserved for workshops in four working groups. Friday afternoon is reserved for the presentation and discussion of workshop reports.

PROGRAMME OUTLINE

Monday, September 29

9:00 - 10:30 Introduction to Convention, with reference to Marine Affairs course. Analysis of the main provisions of the Convention: Maritime zones -- Territorial Sea, contiguous zone, EEZ, Continental Shelf, high seas, international sea-bed area; limits of maritime zone. This introductory lecture will illucidate the basic importance of shipping and navigation for all uses of the oceans, and, therefore, the basic importance of the Convention and the new order it creates, for shipping and the government departments and institutions responsible for the management of shipping.

Speaker: Dr. S.P. Jagota

10:45 - 12:15 Delimitation between States with adjacent or opposite coasts

Speaker: Dr. S.P. Jagota

14:00 - 15:30 Provisions concerning the resources of the sea: Fisheries, oil and gas; polymetallic nodules, sulphides and crusts. The International Seabed Authority. The Common Heritage of Mankind

Speaker: Dr. S.P, Jagota

15:45 - 17:15 Provisions concerning other uses of the sea. Navigation; energy; artificial islands and installations. Other provisions: archipelagic states, landlocked states, geographically disadvantaged states; islands; enclosed and semi-enclosed seas.

Speaker: Dr. S.P. Jagota

Tuesday, September 30

9:00 - 10:30 Marine scientific research under the Convention

Speaker: Dr. Alberto Szekely

10:45 - 12:15 Technology transfer under the Convention

Speaker: Dr. Alberto Szekely

14:00 - 15:30 and
15:45 - 17:15 WORKSHOPS

Participants will divide into four groups. Each group will elect its chairperson and rapporteur. Each group will be assisted by the IOI group and WMU staff who will function as "resource persons" during the discussions. Each group will be responsible for the drafting and adoption of a report which will be presented and discused on Friday afternoon.

Workshop 1: The Economic Zone.

Does it benefit the developing countries as a group? Would there have been alternatives to a system benefiting some countries more than others? Do the benefits to coastal States outweigh the disadvantages? List the main problems involved for developing countries in the EEZ, and discuss some possible solutions.

Workshop 2: Marine Scientific Research and the Transfer of Technology

Discuss the advantages and disadvantages of providing for freedom of marine scientific research on the high seas, and a relatively liberal regime for it within the EEZ and on the Continental Shelf.

Describe the regime for technical cooperation and the transfer of technology emerging from the Convention. Do you think the approach to transfer of technology adopted in the Convention (mandatory co-operation as a general rule, and "compulsory transfer" for seabed mining technology) is beneficial and practical? What alternative approach could have been taken? List some methods for the transfer of marine technology.

Workshop 3: The Common Heritage of Mankind and the International Sea-Bed Authority

Define the concept of Common Heritage of Mankind. Do you think it is a viable and practical concept that should serve as a model for dealing with other areas and resources not recognized as subject to State sovereignty? Is it applicable to science? Is it applicable to technology? Or is it a utopian concept?

Does the Convention define the concept adequately?

Give a brief description of the functions and structure of the International Seabed Authority. What are the main difficulties

with this novel institution? What are its main merits? What is its importance for the future of international organisation and cooperation? How can the Authority be improved in the future?

Workshop 4: Regional co-operation

Enumerate and discuss some issues which transcend the limits of national jurisdiction and cannot be dealt with successfully by any one State acting on its own. Discuss regional co-operation in resolving developing countries' problems in managing marine areas and resources under their jurisdiction. When does the will to co-operate arise spontaneously? What difficulties do you foresee in "organising" co-operation? Does the Regional Seas Programme provide an adequate institutional framework for regional cooperation? How can this framework be improved?

What could be done to maintain regional cooperation on the conservation of the marine environment and its resources in times of econmic recession or armed conflict?

Discuss the possibilities of establishing Regional Centres for the advancement of marine scientific research and the transfer of technology as prescribed in Articles 276 and 277 of the Convention. How can they be realised? What would be the advantage for developing countries?

Wednesday, October 1

9:00 - 10:30 The impact of the Convention on shipping and navigation. Interactions between the Convention on the Law of the Sea and other Conventions dealing with shipping. The role of the International Maritime Organisation (IMO) in the new order established by the Convention. IMO's new responsibilities in technical cooperation, training, designation of sea-lanes, etc., and dispute settlement.

Speaker: Mr. Tom Busha

10:45 - 12:15 The Impact of the Convention on Shipping, continued

14:00 - 15:30 and
15:45 - 17:15 Workshops, continued

Thursday, October 2

9:00 - 10:30 Introduction to international dispute settlement. Analysis of the provisions of the Convention. The Convention as the most advanced international instrument for the peaceful settlement of disputes.

Speaker: Dr. S.P. Jagota

10:45 - 12:15 Dispute settlement, continued

14:00 - 15:30 and
15:45 - 17:15 Workshops, continued

Friday, October 3

9:00 - 10:30 The Preparatory Commission for the International Sea-Bed Authority and for the International Tribunal for the Law of the Sea. History; functions; structure; and main issues

Speakers: Dr. S.P. Jagota and Dr. Elisabeth Mann Borgese

10:45 - 12:15 Prospects for the future

Speakers: Round table discussion

14:00 - 15:30 and
15:45 - 17:15 Presentation and discussion of Participants' Reports. Closing of Programme

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Law of the Sea Seminar 29 September - 03 October 1986

Workshop 1 Room 401

"The Economic Zone"

Name	Course
Ali Yerima, N J M	GMA$_1$-87
Atanga, P	GMA$_1$-87
Azamah, A T	GMA$_1$-87
Bebiano, J P	GMA$_1$-87
Bouhi, M	GMA$_1$-87
Bropleh, N J	GMA$_1$-87
Al-Mahmoud, A R	GMA$_2$-87
Bosquez Poveda, O	GMA$_2$-87
Cissoko, A	GMA$_2$-87
Athari Anaraki, S M	MSA(N)-87
Attuquayfio, V	MSA(N)-87
Bernou, O	MSA(N)-87
Boss Ahmed, M	MSA(E)-87
Ahmadi, P B	MET(N)-87
Aquino Chavez, L A	MET(N)-87
Louis-Marie, Y J	MET(E)-87
Anifrani, K K	TMS-87
Azwar, A	TMS-87
Convener: Pia, L	GMA$_1$-87
Rapporteurs: Seebaaluck, P	TMS-87
Shafaat, K	GMA$_2$-87

Law of the Sea Seminar 29 September - 03 October 1986

Workshop 2 Room 407

"Marine scientific research and the transfer of technology"

Name	Course
Gonzalez Solis, S	GMA$_1$-87
Habonimana, M	GMA$_1$-87
Ly, S C	GMA$_1$-87
Manullang, D	GMA$_1$-87
Moore, J	GMA$_1$-87
Morales Silva, O D	GMA$_1$-87
Edokpayi, N K	GMA$_2$-87
Greenfield, R	GMA$_2$-87
Gurein, A H	GMA$_2$-87
Custodio, R	MSA(N)-87
Daniel, G E	MSA(N)-87
Estay Varela, G	MSA(E)-87
Filinich Espinoza, J	MSA(E)-87
Delgado, J V	MET(N)-87
Diedhiou, G	MET(N)-87
Mukhopadhyay, N	MET(E)-87
Basita, B	TMS-87
Chaban, H	TMS-87
Convener: El-Hamalawy, M	MET(N)-87
Rapporteurs: Biswas, B K	MSA(E)-87
Tahri, L	MET(E)-87

Law of the Sea Seminar 29 September - 03 October 1986

Workshop 3 Room 408

"The common heritage of mankind and the international sea-bed authority "

Name	Course
Moster, F	GMA 1-87
Mouffok, M	GMA 1-87
Muindi, J P	GMA 1-87
Quiros, S	GMA 1-87
Quiroz, C A	GMA 1-87
Pickersgill, C J	GMA 1-87
Illia, A J	GMA 2-87
Kudwoli, G M	GMA 2-87
Oluoch, E S R	GMA 2-87
Diallo, M S	MSA(N)-87
Ha, W J	MSA(N)-87
Garcia Rodriguez, F R	MSA(E)-87
Iraqi, M T O	MSA(E)-87
Frias, E S	MET(N)-87
Hamedani, B O	MET(N)-87
Maqsood, A	MET(N)-87
Hamad, H A	TMS-87
Heumann Bauer, J E	TMS-87
Convener: Dhir, A K	TMS-87
Rapporteurs: Jordan, C	MET(N)-87
Chan, S F	GMA 2-87

Law of the Sea Seminar 29 September - 03 October 1986

Workshop 4 Room 410

"Regional co-operation"

Name	Course
Rageh, S H	GMA 1-87
Rupen, C	GMA 1-87
Sheik Ahmed, M	GMA 1-87
Smart, H	GMA 1-87
Yusof, Z	GMA 1-87
Ouro-Sama, M	GMA 2-87
Sugiono, F	GMA 2-87
Thioub, Y	GMA 2-87
Tipis, A W	GMA 2-87
Koshin, A S	MSA(N)-87
Min, K R	MSA(N)-87
Sidahmed Ali, A	MSA(N)-87
Mahgoub, H	MSA(E)-87
Salem Ghandourah, H M	MSA(E)-87
Mokiwa, G	MET(N)-87
Senanayake, E S M	MET(N)-87
Izua, M T	TMS-87
Kapinga, L	TMS-87
Lopengo, F	TMS-87
Convener: Cabrera, F	MSA(N)-87
Rapporteurs: Su, X	GMA 1-87
Amoako, A K	MSA(N)-87

WORLD MARITIME UNIVERSITY
WMU

UNIVERSITE MARITIME MONDIALE
UMM

UNIVERSIDAD MARITIMA MUNDIAL
UMM

GZ1669/ac

07 October 1986

Professor Dr. Elisabeth Mann Borgese
International Ocean Institute
c/o Dalhousie University
HALIFAX
Nova Scotia
Canada

Dear Elisabeth,

I would like to thank you, also on behalf of all our students of the class of 1987 and on behalf of my colleagues for the excellent Seminar on Law of the Sea.

The feedback from the students is unanimously positive. They all think it was a most interesting and even thrilling week that has opened their minds to something of which the importance had not been clear to many of them before. All students whom I talked to have also stated that they have greatly benefited from the week and would not have liked to miss it.

Thus, please accept our sincere appreciation for the success of the Seminar and be so kind as to forward our gratitude and good wishes to Dr. S.P. Jagota who was extremely well chosen as Academic Director of the Seminar. I should, however, not underestimate the valuable contribution made by Tom Busha and Ambassador Andres Rosental. Not only the quality of all four experts has made the Seminar a success but also their number. Students were given more opportunities than last time to have individual talks with such eminent experts.

You may know what can be improved in the Seminar. I am not in the position this time to make any proposals. The reason is not only that I was out of Malmö for the first three of the five days of the Seminar but also that my colleagues told me that they cannot suggest any major improvements. Nevertheless, I have asked Carlos to go a bit deeper in the assessment than I have been able to. If - against my expectations - anything would result from this by which the Seminar could be further improved then we shall certainly inform you.

./..

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There remains one wish: Be so kind as to repeat the Seminar next year and, if possible, agree well in advance on a week in September or October.

With my warm personal regards, my colleagues', our students' and my renewed thanks.

Yours sincerely,

Günther Zade
Vice Rector

Copy: R
PH
CMM

WORLD MARITIME UNIVERSITY
WMU

UNIVERSITE MARITIME MONDIALE
UMM

UNIVERSIDAD MARITIMA MUNDIAL
UMM

GZ1773/ac

30 October 1986

Professor Dr. Elisabeth Mann Borgese
International Ocean Institute
c/o Dalhousie University
HALIFAX
Nova Scotia
Canada

Dear Elisabeth,

Many thanks for your kind letter of 17 October 1986. It was good to hear that you are as satisfied with the Seminar as we are.

Carlos has interviewed many students and has concluded the following:

Professors:	Very good and able to present lectures.
Lecture notes:	Some students mentioned that they would like to receive all lectures printed.
Time table:	Very appropriate in the opinion of students.
Comprehension:	The students unanimously believe that they have understood all lectures.
Working groups:	Some students suggested whether it could be considered to increase the opportunities for their involvement in the discussions by asking the professor to take a more passive role then.
Suggestions:	Some students requested that all of their colleagues should be in the class room when lectures begin in order to avoid unnecessary delays and disturbances.
Overall results:	Very good, fully satisfactory

Thus, Carlos has not been able to identify weaknesses.

I find it very interesting that some student would like to receive all lectures in print and that they feel disturbed by late-comers.

Thanks for the exam questions: We agree that the students should be allowed to use the text of the Convention in the exam.

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Citadellsvägen 29	P.O. Box 500	Nat 040-700 50	UNIVMAR Malmoe	8305018 WMU	2401-8305018=WMU
Malmö-Sweden	S-201 24 Malmö	Int +46 40 700 50			

We had an exchange of views in the faculty today and have agreed to propose to you one of the two weeks 28 September - 02 October or 12 October - 16 October 1987. We would appreciate if you could let us know as early as possible which of the two weeks is convenient for you so that we can continue with the detailed planning.

With my warm personal regards and renewed thanks.

Yours sincerely,

Günther Zade.

Günther Zade

Copy: R
PH
CMM

INTERNATIONAL MARITIME ORGANIZATION

ORGANISATION MARITIME INTERNATIONALE

SECRETARY-GENERAL

IMO

LE SECRETAIRE GENERAL

Telegrams: INTERMAR-LONDON, SE1
Telex: 23588

4 ALBERT EMBANKMENT,
LONDON SE1 7SR

Telephone: 01-735 7611

29 October 1986

Dear Mrs. Borgese,

I am very grateful to you for your letter of 12 October 1986 with its highly favourable report on the second training programme on the U.N. Convention on the Law of the Sea given by the International Ocean Institute at the World Maritime University from 29 September to 3 October 1986.

Your own personal interest in the WMU and the valuable support extended to the University by the International Ocean Institute and the International Centre for Ocean Development are very much appreciated. I am immensely thankful to you.

With highest regards,

Yours sincerely,

C.P. SRIVASTAVA
Secretary-General

Mrs. Elisabeth Mann Borgese
Pearson Institute
1321 Edward Street
Dalhousie University
Halifax
Nova Scotia
Canada B3H 3H5

Pacem in Maribus

International Ocean Institute
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ANNEX III

Pacem in Maribus

International Ocean Institute

P.O. Box 524 Valletta - Malta Cables: Interocean

TRAINING PROGRAMME IN THE MANAGEMENT AND CONSERVATION OF MARINE RESOURCES

Class B2: The Economic Zone

Beijing, October 5 - December 12, 1987

SYNOPSIS AND DRAFT SYLLABUS
(Third Draft)

Course Directors

Dr. John Vandermeulen
Canada

Ms. Zou Deci
China

Assistant Directors

Ms C.F. Vanderbilt
International
Ocean Institute,
Malta

Mr. Li Haiquing
State
Oceanic Administration
Beijing

SYNOPSIS

Week 1:	The Sea Around us. Introduction to Oceanography.
Week 2:	Introduction to the U.N. Convention on the Law of the Sea.
Week 3&4:	The Management of Living Resources: Fisheries and the Development of Aquaculture.
Week 5:	National experience in marine affairs. Case studies. Regional Cooperation and Development. International Institutions
Week 6&7:	The Management of Offshore Oil Production.
Week 8:	Field Trip
Week 9:	Offshore and nearshore nonfuel minerals. Shipping and Navigation.
Week 10:	Negotiation skills. Simulation exercise. Presentation and discussion of Participants' reports and group report. Award of Certificates. Closing of programme.

WEEK 1: Introduction to Programme. Introduction to Oceanography

Monday, October 5

10:00 Inauguration of Programme

Welcome by H.E. the Minister of Foreign Affairs of the PRC

Introduction by sponsoring organisations

Keynote address: The United Nations Convention on the Law of the Sea.

Speaker: H.E. Ambassador Satya Nandan, Special Representative of the Secretary General for the Law of the Sea

Key-note address: Man and the Oceans in the Year 2000.

Speaker: Ambassador Christopher Pinto, Sri Lanka

14:00-16:00: Discussion with participants on course content and organisational questions.

Tuesday, October 6, and
Wednesday, October 7

Introduction to Oceanography

Coordinator: Professor Robert Fournier, Vice President for Research, Dalhousie University.

Note: In the following set of four lectures and discussion sessions, an attempt will be made to define terms and describe large-scale phenomena, i.e., to show the various

interrelationships that exist across the globe. This will be followed by a narrowing of the view so as to focus on processes which operate close to shore or on the continental shelves. The goal will be to give some basic principles and examples which would be useful to the nonscientist as a means of putting potential problems dealing with resource exploitation or conservation and pollution in their proper oceanic context.

Tuesday, October 6

9:00-12:15. The oceanographic lectures begin with an overview of the major features of the ocean basins. This is a descriptive look at the sea floor showing the relationship of various important features such as the position of mid-ocean ridges, continental margins and other topographic features. Any future consideration of ocean dynamics (e.g., circulation) requires a knowledge of the basin in which the liquid resides. Also, consideration of various resources depends on some knowledge of their location. Following this descriptive overview, consideration will be given to the dynamics of sea-floor spreading, continental drift and plate tectonics. This will not be an attempt to provide detail on these processes but rather to show how over the past 150 million years they have contributed and continue to contribute to marine resources valuable to man (e.g., oil on the continental shelves or metal deposits at hydrothermal vents). Finally a brief review of sedimentary processes will be important as a means of understanding river input to continental shelves, sediment transport along coastlines and deep-sea deposits such as manganese nodules. In general, this initial consideration of the sea floor should provide a basic overview of that part of the earth which must be considered the common heritage of mankind in the context of the new United Nations Convention on the Law of the Sea.

14:00-17:15. The second series of lectures and dis-

cussions will deal with sea water itself, as a precondition to understanding both physical and biological processes. Attention will be devoted to residence in time in the context, e.g., of possibly following pollution, the heat capacity of water and the ocean-atmosphere link as a means of understanding both atmospheric and oceanic circulation. The fundamentals of circulation are essential for anyone interested in understanding the dynamics of the oceans: the fact that they are all interconnected, the general pattern and rate of current movement, their temporal and spatial scales and how these affect coastal States. Finally, consideration will be given to energy in the seas in the form of waves and tides. These considerations are extremely important since they are generally perceived as the way in which energy is transferred from the ocean to the land. Specific examples are storm surges, tidal currents and tsunamis.

Wednesday, October 7

9:00-12:15. The third series of lectures and discussions will concern the coastal regions including inland seas, estuaries and the coastline itself. Attention will be given to defining these regions on the basis of their physical differences and especially the way physical processes differ close to shore as compared with the open ocean. Specifically, consideration will be given to temporal and spatial scales and their importance when dealing with potential problems along a shoreline. Since estuaries play an important role in transportation, food supply, waste disposal, etc., a short review of estuarine circulation will be attempted.

14:00-17:15. The final set of lectures and discussions will deal with life in the sea. Building on previous discussions, an attempt will be made to show which regions of the world ocean are productive. Attention will be given to the various factors which contribute

to this production: including biological, physical and chemical factors. An important point that will be emphasized is that oceanic production is very heterogeneous and that a variety of local factors can have considerable importance, e.g., tidal mixing, local circulation, prevailing winds, orientation of the coastline, fronts, etc. Finally some attention will be paid to specialized situations such as reefs, upwelling situations, and deep-vent communities.

Thursday, October 8

The Oceanography of the Seas around China

Dr. Prong Wong
President, Shanghai College of Oceanography

Friday, October 9

The environmental conditions of the region.

Speaker: Professor Zhou
Director, Inst. of Marine Environmental Protection, Dalian

There will be some time allotted for the participants to review and summarise the results of the first week's work.

WEEK 2: The United Nations Convention on the Law of the Sea, 1982.

Monday, October 12

9:00 - 12:15. A brief overview of developments leading up to UNCLOS III.

Speaker: Ambassador Christopher W. Pinto

14:00 - 17:15. Analysis of the main provisions of the

Convention: Maritime zones. Territorial sea, contiguous zone, exclusive economic zone, continental shelf, high seas, international seabed area; limits of maritime zones.

Speaker: Professor Wong, University of Beijing

Tuesday, October 13

9:00 - 12:15. Provisions concerning the resources of the sea: fisheries, oil and gas; polymetallic nodules; sulphides and crusts. The International Sea-bed Authority. The Common Heritage of Mankind.

Speaker: Ambassador Christopher W. Pinto

14:00 - 17:15. Provisions concerning the other uses of the sea. Navigation, energy, artificial islands and installations, etc. Other provisions: Archipelagic States, landlocked States; geographically disadvantaged States; Islands; Enclosed and Semi-enclosed Seas.

Speaker: Ambassador Christopher W. Pinto

Wednesday, October 14

9:00 - 12:15. Marine Scientific Reseach; Conservation of the Marine Environment.

Speaker: Ambassador Christopher W. Pinto

14:00 - 17:15. Transfer of Marine Technology.

Speaker: Ambassador Christopher W. Pinto

Thursdy, October 15

9:00 - 12:15. Workshop on Boundary Delimitation

Workshop leader: Dr. Aldo Chircop, Malta

14:00 - 17:15. Maritime Boundaries in Asia: State Practice.

Speaker: Professor Zhang

Friday, October 16

9:00 - 12:15. Dispute Settlement

Speaker: Ambassador Christopher W. Pinto

14:00 - 17:15. New concepts emerging from the Convention.

Speaker: Ambassador Christopher W. Pinto

Saturday, October 17

9:00 - 12:15. The Preparatory Commission for the International Seabed Authority and for the International Tribunal for the Law of the Sea

Speaker: Professor Zhang

Summary of the week.

WEEKS 3 and 4: The Management of Living Resources

WEEK 3: The Development of Aquaculture

Monday, October 19

9:00 - 12:15. Historical introduction. Global survey. Reasons for and anthropological importance of rapid development of modern aquaculture. Introduction of genetic engineering and bio-industrial processes.

14:00 - 17:15. The culture of sea weeds. Technology.

Economics. Nutritional, industrial, and pharmaceutical uses of sea weeds.

Speaker: Mme. Cao, Institute of Yellow Sea

Tuesday, October 20

9:00 - 12:15. Integration of aquaculture and agriculture. Complementarities. Planning. Pond construction and maintenance. Hatcheries; nurseries; rearing ponds; seed production; feeding the fish. Fish veterinary medicine. The economics of pond culture.

Speaker: Shanghai University, Aquaculture Production

14:00 - 17:15. Integrated water management. Utilisation of lakes, rivers, canals, reservoirs, for fish culture.

Speaker: Shanghai University, Aquaculture Production

Wednesday, October 21

Field trip to fish farm near Beijing

Thursday, October 22

Field trip to lake or reservoir with aquaculture installation.

Friday, October 23

9:00 - 12:15. Mariculture: Cage culture

14:00 - 17:15. Mariculture: Ocean ranching.

Speaker: Mme. Cao

Conclusions for the week.

WEEK 4: Fisheries

Monday, October 26

9:00 - 12:15. Introduction to Fisheries. Overview of global resources. Historic development.

Speaker: Dr. Jean-Louis Gaudet.

14:00 - 17:15. Introduction fo Fisheries biology. Stock assessment. Optimum sustainable yield.

Speaker: Dr. Geoffrey Kesteven, Australia

Tuesday, October 27

9:00 - 12:15. Fisheries Economics. Complex models, synthesizing ecology and economics. Inshore and offshore fisheries. Industrialized vs. artisanal fisheries. fishing for food vs. fishing for foreign currency.

Speaker: Dr. Geoffrey Kesteven

14:00 - 17:15. Fisheries technology: Boats and gear. The impact of technical innovation.

Speaker: Dept. of Agriculture and Fisheries, PRC

Wednesday, October 28

9:00 - 12:15. Introduction to Management. Mesh size regulation; closed areas; closed seasons; limited entrance.

Speaker: Dept. of Agriculture and Fisheries, PRC

14:00 - 17:15. The Management of "straddling resources." Resource allocation.

Speaker: Dr. Geoffrey Kesteven

Thursday, October 29

9:00 - 12:15. Shrimp fisheries and the problem of by-catch. Post-harvest conservtion. Storage. Fish processing.

Speaker: Dr. Geoffrey Kesteven

14:00 - 17:15. The management of coral reefs and mangrove swamps.

Speaker: Dr. Geoffrey Kesteven

Friday, October 30

Workshop: Planning a national fishery.

Workshop leader Dr. Geoffrey Kesteven

WEEK 5: National Case Studies in Ocean Affairs. Regional Cooperation. International Institutions

Monday, November 2

9:00 - 12:15. National legislation and infrastructure: General introduction. discussion will cover legislational requirements, institutional framework, arrangements for policy-making and planning.

Speaker: Dr. Jean-Pierre Levy, United Nations.

14:00 - 17:15. Case study: Mexico.

Speaker: Dr. Alberto Szekely, Mexico

Tuesday, November 3

9:00 - 12:15. Case Study: India

Speaker: Dr. S.P. Jagota

14:00 - 17:15. Case Study: Sri Lanka

speaker: Dr. Hiran Jayawardene

Wednesday, November 4

9:00 - 12:15. Case Study: The Netherlands

Speaker: Dr. Boss

14:00 - 17:15. Case Study: China

Speaker: Mme Zou Deci.

Thursday, November 5

9:00 - 12:15. Regional Cooperation. Reasons for. Forms of. Future developments.

Speaker: Dr. Stjepan Keckes

14:00 - 17:15. The role of FAO under the new ocean regime. The Rome Conference, 1984, and its plans of action.

Speaker: Dr. Jean Louis Gaudet, FAO.

Friday, November 6

9:00 - 12:15. The role of IOC under the new ocean regime.

Speaker: Dr. Mario Ruivo, IOC.

14:00 - 17:15. The role of IMO under the new ocean regime

Speaker: Mr. Thomas Busha, IMO

Saturday, November 7

9:00 - 12:15. The role of the World Bank is assisting ocean development.

Speaker: Dr. Loayza, Fisheries Adviser, World Bank

Summary of the week.

WEEKS 6 and 7: The Management of Offshore Oil and Gas

Coordinators for Week 6: Mr.Barry McLean and Dr. George Sutherland, Canada.

Monday, November 9

General introduction: statistical information. Worldwide energy demand and supply; energy use projections; the prospects of offshore oil; historical background of oil industry development.

Basic oil and gas accumulation concepts; origin of oil and gas; sedimentary rock accumulation; geological concepts and principles; source rocks, migrations and traps; geophysical exploration methods; gravity, magnetic, seismic operations and equipment; manpower requirement for geophysical activities.

Tuesday, November 10

Geological exploration methods; sedimentary deposition, lithology; dating, fossils, trends; cores and cuttings analysis; correlations and exploration; introduction to land-based drilling operations; drilling fundamentals; drilling rig components and equipment, cuttings retrieval, core analysis.

Speaker: Ministry of Geology & Meteorology, PRC

Basic drilling procedures; drill bits, pipe; drilling muds; casing and cementing; logging and testing.

Wednesday, November 11

Basic offshore drilling; vessel types; mooring systems; guideline systems; basic drilling; difference between land-based and offshore drilling. specialized offshore equipment; subsea wellhead systems; subsea blow-out preventors; emergency disconnect systems. Well completions; completion methods; specialized operations and equipment; emergency shutdowns.

Thursday, November 12

Blow-outs and blow-out prevention.

Communications: rig positioning logistics; navigational aids; ship to shore telecommunications; weather broadcasts, production facilities; telemetry.

TV cameras; diving bells, diver assist systems.

General discussion of manpower and skills requirements to operate and support an offshore drilling operation.

Friday, November 13

Field production operation; separators, treaters, dehydrators, compressors, pumps; production platforms, selection criteria, costs, economics.

Transportation and refining; crude oil transportation by pilelines and tankers; refinery consideration and basic process; storage; gas liquids and natural gas liquefaction; equipment and process.

Field trip to refinery facilities.

Monday, November 16, and
Tuesday, November 17

Environmental Control and Considerations

- Introduction to environmental considerations

-Petroleum hydrocarbon chemistry, toxicity

- Effects of pollutants in oceans

-Impact of oil pollution on fisheries

Remedial measures to combat oil spills, dispersants, sinkants; clean-up apparatus; applications

- Contingency plans

- Regulations, impact assessments

- Case histories

- Environmental control model participation exercise.

Co-ordinator: Dr. J.H. Vandermeulen, Marine Ecology Lab. Bedford Institute of Oceanography, Canada.

Wednesday, November 18

The Social Impact of Oil on Coastal Communities.

Speaker: United Nations University

Thursday, November 19

9:00 - 12:15. The politics of oil. The structure of the industry. The role of the multinational oil companies, methods of operation; internl organisation; patterns of relations with host countries; ownership and payment arrangements with host countries; nationalisation and

its effects; employment and training of host-country nationals; the evolution of OPEC and its interaction with the oil companies.

What are the costs and benefits to a developping country for developing an association with a multinational oil company to exploit offshore EEZ petroleum resources? How can this economic political, and contractual relationship be structured to maximize benefits to the host country?

Speaker: Professor Robert Meagher, Fletcher School of Law and Diplomacy, USA

14:00 - 17:15. The politics of oil continued.

Friday, November 20

9:00 - 12:15. Case study: the development of offshore oil in India.

Speaker: Dr. Malhotra, India; World Bank Adviser

14:00 - 17:15. Case Study: Oil development in Venezuela.

Speaker: Ambassador Andres Aguilar, Venezuela

Evening: Departure by train to Quindao.

WEEK 8: Field Trip

Saturday, November 21

P.M. Visit to Institute of Oceanography

Sunday, November 22

Sight-seeing

Monday, November 23

A.M. Visit to Research Institute of of the Chinese Academy of Science and to Sea College of Oceanography

P.M. Visit to Yellow-Sea Institute

Tuesday, November 24

A.M. Visit to Port & Harbour facilities

P.M. Visit to Fishing village.

Wednesday,November 25

A.M. Visit to fish processing plant

P.M. Visit to Maritime Monitoring and Surveillance Facilities

Thursday, November 26

A.M.The group will board a Research Vessel , cruise along the coast and observe its operations, until

Friday, November 27

P.M. Arrival in Tanggu

Saturday, November 28

A.M. Travel by bus to Tianjin

P.M. Visit to data center (marine sciences)
Visit to Desalination Institute

Sunday, November 29

Return to Beijing by train

WEEK 9: Nonfuel Minerals. Shipping and Navigation

Monday, November 30

9:00 - 12:15. The economics of ocean mining. The mining of metals and minerals from the oceans, whether in areas under national jurisdiction or in the international area, may, in the future, have a major impact on mineral markets and on the economy of developing countries which produce, on land, the same minerals that will be extracted from the oceans. The U.N. Convention on the Law of the Sea has tried to cope with these problems in various ways. The Preparatory Commission, established by UNCLOS III, has to adjust the measures prescribed by the Convention, to the changing reality.

Speaker: Mr. Nii Odunton, OETB, United Nations.

14:00 - 17:15. Offshore minerals. A survey of mineral exploration, nearshore and on the deep-sea floor, under national and international jurisdiction. The polymetallic nodules. Recent discoveries of polymetallic sulphides and crusts.

speaker: Dr. Alexander Malahoff, University of Hawaii, USA

Tuesday, December 1

9:00 - 12:15. Ocean mining technology: the state of the art. Keeping pace with the offshore oil production technology, ocean mining technology has made dramatic steps forward, during the past decade, into deeper waters farther from shore. While deep-sea mining technology is still in an R&D stage, the offshore mining of tin, especially in Southeast Asia, has become a major economic factor. Technologies range from fairly simple to highly sophisticated.

Speaker: David Pasho, Energy & Mines, Canada

14:00 - 17:15. Processing technology. Plant siting, environmental impact.

speaker: David Pasho.

Wednesday, December 2

9:00 - 12:15. Assessment methodology and resource classification (nearshore minerals).

14:00 - 17:15. Application. Informatin requirements. Design of research programmes.

Speaker: David Pasho

Thursday, December 3

9:00 - 12:15. The economics of shipping. Sea-borne trade is a factor of crucial importance in development strategy. The current dramatic changes in the shipping industry may offer possibilities for a restructuring increasing the participation of developing countries.

Speaker: Awni Behnam, UNCTAD

14:00 - 17:15. Port management. Technological, economic and environmental aspects. Inefficiency in port management, lack of up-to-date loading and unloading technology, failure to adjust to new integrated multi-modal systems of transportation, have led to port congestion in many developing countries entailing tremendous losses in time and money and often spoilage of perishable goods. UNCTAD has developed audio-visual materials to demonstrate deficiencies and remedies.

Speaker: Awni Behnam, UNCTAD

Friday, December 4

9:00 - 12:15. Flags of Convenience, Registration of Ships. Liner Conferences. Code of Conduct. The U.N. Convention on a Code of Conduct for Liner Conferences entered into force in October, 1983. The U.N. Convention on the Registration of Ships was signed in February, 1986. The implications of these Conventions will be analysed from the point of view of the participants' home countries.

Speaker: Awni Behnam, UNCTAD

14:00 - 17:15. Vessel Traffic Management. Navigational Aids. Traffic congestion near ports, in straits and crowded sea lanes, require traffic safety regulations, in accordance with the provisions of the U.N. Convention on the Law of the Sea.
Legal, institutional, and technical aspects of traffic regulations will be discussed.

Speaker: Ministry of Transportation, PRC.

WEEK 10: Contract Negotiation. Simulation Exercise. Award of Certificates. Closing of Programme

Monday, December 7

9:00 - 12:15. Meaning and elements of negotiation as a technique to achieve results; what kind of knowledge and expertise is needed to strengthen developing countries in contract negotiations?

Speaker: Dr. Gilbert Winham, Canada

14:00 - 17:15. Workshop: Computer-aided negotiation.

Workshop leader: Dr. Michael Staley, Canada/IIASA

Tuesday, December 8 and
Wednesday, December 9

Simulation exercise: a Contract Negotiation.

Thursday, December 10 and
Friday, December 11

Presentation and discussion of country reports and group report.

Saturday, December 12

Award of certificates. Closing session.

Keynote address: The Law of the Sea and the New International Economic Order

Speaker: Dr. E.M. Borgese

TRAINING PROGRAMME

CLASS B2

BUDGET

A. Expenditures

I. Preparation

Preparatory Visit to Beijing	CA$ 5,000.00

II. Execution

1. Salaries: Course Director Ac. Assistance Director Executive Director	30,000.00
2. Lecture fees	10,000.00
3. Teaching materials	5,000.00
4. Participants:	
Air fares, 13 foreign participants	26,000.00
Room & Board, 25 participants @$49, 60 days, Beijing	73,500.00
pocket allowance	8,750.00
medical insurance	3,000.00
5. Lecturers	
Air fares	50,000.00

Room & Board 20 lecturers, 3 days average	3,000.00
6. Lecture room,$38 per day, 45 days	1,710.00
Office room, $32 per day 60 days	1,920.00
7. Local transportation, $48 @day 3 times per week, 9 weeks	1,296.00
8. Field trip	
30 persons, train @$28	840.00
hotel, $49x30x7	10,290.00
Reserch Vessel	20,000.00
III. Follow up	
Editing, printing of Report	5,000.00
Grand total	255,306.00

B. Revenues

I. Chinese contribution	
Reserch ship	20,000.00
Student Support	39,280.00
Field trip contribution	5,985.00
Subtotal	65,265.00
II. IOI contribution	190,041.00
Total	255,306.00

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ANNEX IV

International Ocean Institute
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CLASS C-87

ARUSHA, TANZANIA

2 February - 10 April 1987

Syllabus Synopsis

Week 1		GENERAL OVERVIEW
2-6 February	i	Introduction to the programme
	ii	Introduction to oceanography: physical
	iii	Introduction to oceanography: biological and chemical
	iv	Oceanography of the Indian Ocean
	v	Alternative sources of energy
Week 2		THE UNITED NATIONS CONVENTION ON THE LAW OF THE SEA
9-13 February	i	Introduction to UNCLOS III and the U.N. Convention on the Law of the Sea
	ii	The new spacial organisation of the oceans boundary delimitation
	iii	Ocean management in the areas under national jurisdiction
	iv	Ocean management in the international area
Week 3		THE MANAGEMENT OF LIVING RESOURCES
16-20 February	i	Fisheries biology (population dynamics, MSY, OSY) post-harvest conservation
	ii	Fisheries technology (boats, gear, processing, monitoring and surveillance)
	iii	Fisheries economics (trade, inshore/offshore; artisanal/industrialized; joint ventures)
	iv	Aquaculture
	v	Country Reports
Week 4		THE MANAGEMENT OF NONLIVING RESOURCES
23-27 February	i	Basic concepts of oil and gas (what; where; how)
	ii	Ocean mining (nearshore, offshore, international waters)
	iii	Economics (oil industry, international metal markets present/future situation
	iv	Social impact of oil on coastal communities
	v	Country Reports

Week 5		SHIPPING, PORTS AND HARBOURS, ENVIRONMENTAL PROTECTION AND INFORMATION/DATA EXCHANGE
2-6 March	i	Economics of shipping; liner conferences, registration of ships
	ii	Vessel traffic management (legal, technical aspects
	iii	Pollution in the I.O., prevention; clean-up; E.I.A.: cost/benefit analysis; integrated coastal zone use;
	iv	Tourism. Environmental, social and economic effects of tourism.
	v	Present status of information/data exchange (scientific, legal, economic, technological)
	vi	Country Reports
Week 6		NATIONAL AND REGIONAL INFRASTRUCTURE
9-13 March	i	National legislation, infrastructure, policy-making and planning
	ii	Case studies (Mexico, India, Sri Lanka, Sierra Leone)
	iii	Regional institutions in the I.O.: cooperation in marine scientific research, environmental control, enforcement and surveillance, etc.
	iv	Linkages with national, subregional, international organisation; designation of focal points for internal, external/international activities.
Week 7		SIMULATION EXERCISE
16-20 March	i	Contract negotiation theory and technique
	ii	Computers and negotiations
	iii	Simulation Exercise
	iv	Simulation Exercise
Weeks 8 and 9		FIELD TRIPS
23 March 3 April		
Week 10		SUMMING UP AND FINAL REPORT
6-10 April		

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DRAFT SYLLABUS

CLASS C-87

ARUSHA, TANZANIA

2 February - 10 April 1987

WEEK 1 INTRODUCTION TO THE PROGRAMME,
INTROUDCITON TO OCEANOGRAPHY

Monday, 2 February:

A.M. Inauguration at....

Welcome by Representative of Tanzanian Government

Inaugural Address by Dr. Costa R. Mahalu
Course Director

Inaugural Address by Ms. C.F. Vanderbilt
Executive Director, IOI

Keynote Address by .....

Luncheon

P.M. Introduction to Oceanography

Speaker: Professor Robert Fournier
Vice President for Research
Dalhousie University, Canada

Note: In the following set of four lecture and discussion sessions, an attempt will be made to define terms and describe large-scale phenomena, i.e. show the various interrelationships that exist across the globe. This will be followed by a narrowing of the view so as to focus on processes which operate close to shore or on the continental shelves. The goal will be to give some basic principles and examples which would be useful to the non-scientist as a means of putting potential problems dealing with resource exploitation or conservation and pollution in their proper oceanic context.

Unit 1: The oceanography lectures begin with an overview of the major features of the ocean basins. This is a descriptive look at the sea floor showing the relationship of various important features such as the position of mid ocean ridges, continental margins and other topographic features. And future consideration of ocean dynamics (e.g. circulation), requires a knowledge of the basis in which the liquid resides. Also, consideration of various resources depends on some knowledge of their location.

Following this descriptive overview, consideration will be given to the dynamics of sea floor spreading, continental drift and plate techtonics. This will not be an attempt to provide detail on these processes but rather to show how over the past 150 billion years they have contributed and continue to contribute to marine resources valuable to man (e.g. oil on the continental shelf or metal deposits at hydrothermal vents.).

Finally, a brief overview of sedimentary processes will be important as a menas of understanding river input to continental shelves, sediment transport along coast lines, and deep sea deposits such as manganese nodules. In general, this initial consideration should provide a basic overview of that part of the earth which must be considered in the context of the new U.N. Convention on the Law of the Sea.

Tuesday, 3 February:

A.M. Introduction to Oceanography (Cont'd)

Speaker: Professor Robert Fournier

Unit 2: The second series of lectures and discussions will deal with sea water itself as a premise to undertanding both physical and biological processes. Attention will be devoted to residence in time in the context, e.g. of possibly following pollution, the heat capacity of water and the ocean/atmosphere link as a means of understanding both atmospheric and oceanic circulation. The fundamentals of circulation are essential for anyone interested in understanding the dynamics of the oceans; the general patterns and rate of current movement, their temporal and spatial scales, and how these affect coastal states.

Finally, consideration will be given to energy in the sea in the form of waves and tides. These considerations are extremely important since thy are generally perceived as the way in which energy is transferred from the ocean to the land. Specific examples are storm surges, tidal currents, and tsunamis.

P.M. Unit 3: The third series of lectures and discussions will conern the coastal regions including inland seas, estuaries, and the coastline itself. Attention will be given to defining these regions on the basis of their physical differences and especially the way physical processes differ close to shore compared with open ocean. Specifically, consideration will be given to temporal and spatial scales and the attention given to these when dealing with potential problems along the shoreline. Since estuaries play an important role in transportation, food supply, waste disposal, etc. a short review of estuarine circulation will be considered.

Wednesday, 4 February:

Introduction to Oceanography (Cont'd)

Speaker: Professor Robert Fournier

Unit 4: The final set of lectures and discussion will deal with life in the sea. Building on previous discussion, an attempt will be made to show which regions of the world ocean are productive. Attention will be given to the various factors which contribute to this production; including biological, physical, and chemical factors. An important point that will be emphasized is that oceanic production is very heterogeneous and that a variety of local factors can have considerable importance, e.g. tidal mixing, local circulation, prevailing winds, orientation of the coastline, fronts. etc.

Finally, some attention will be paid to specialised phenomena such as reefs, upwelling situations, and deep vent communities.

P.M. Free for library/research work

Thursday 5 February:

A.M. An overview of the oceanography of the Indian Ocean Basin: physical, chemical, geological, and biological.

Speaker: Dr. W.M. Kudoja
Zoology & Marine Biology Dept.
Univeristy of Dar es Salaam

Mr. Jude Petro Shunula
Institute of Marine Sciences
University of Dar es Salaam

P.M. Oceanography of the East African coastline and nearshore islands. Present state of coastal and offshore research in the field of oceanography and hydrography.

Speaker:

Friday, 6 February:

A.M. Energy from the oceans. Alterntives sources of energy: wind, tidal, wave, OTEC, etc. Exploitation techniques; economic and environmental implications. Appropriate technology. Future developments (initial capital costs, running costs, cost/benefit).

Speaker:

P.M. Summary of the Week

WEEK 2: THE UNITED NATIONS CONVENTION ON THE LAW OF THE SEA

Monday, 9 February:

Note: This week will serve as a general introduction to the 3rd United Nations Law of the Sea Convention. However, in their examination of each subject area, it is envisaged that the lecturers will begin with a general overview and then focus on those aspects of history, application, or questions relevant to the Indian Ocean in general and the Western Indian Ocean in particular.

A.M. A brief overview of developments leading up to the United Nations Convention on the Law of the Sea (UNCLoS III).

Speaker: Dr. Costa R. Mahalu
Dean, Law School
University of Dar es Salaam
and
Course Director

P.M. Analysis of the main provisions of the Convention. Maritime zones: Territorial sea, contiguious zone, exclusive economic zone, continental shelf, high seas, international seabed area.

Speaker: Dr. Costa R. Mahalu

Tuesday, 10 February

A.M. Provisions concerning the resources of the sea: fisheries, oil and gas, polymetallic nodules, sulphides and crusts. The International Seabed Authority. The Comon Heritage of Mankind.

Speaker:

P.M. Other provisions: archipelagic states, landlocked states, goegraphically disadvantaged states, islands. Provisions concerning other uses of the sea: marine scientific research, navigation, energy, artificial islands and installations. Marine environment, transfer of marine technology, settlement of disputes, the International Tribunal for the Law of the Sea.

Speaker:

Wednesday, 11 February

A.M. Focus on Part X of Law of the Sea Convention and related Articles dealing with the rights and duties of landlocked States and the mechanisms for exercising these.

Speaker:

P.M. Boundary delimitation in the Indian Ocean. Agreements which have been reached; disputed areas. Practical cartographic exercise in boundary delimitation.

Speaker:

Thursday, 12 February

A.M. Ocean management in areas under national jurisdiction. Rights and duties of the coastal State.

Speaker:

P.M. Ocean management in the international area (navigation, pollution, nuclear dumping, fisheries, etc.). Rights and duties of States. International organisations: activities and cooperation with.

Speaker:

Friday, 13 February

A.M. Free for research and report writing.

P.M. Weekly Summary

WEEK 3 MANAGEMENT OF LIVING RESOURCES

Note: Although marine fishery resources are of very great importance in the Western Indian Ocean, the inland freshwater resources also deserve serious consideration. This is obviously the case for landlocked nations but also for coastal States (e.g. according to FAO statisitics, freshwater catches represent 78% of Tanzania's total aquatic landings and 80% of Kenya's total aquatic landings). For this reason, consideration of freshwater species is included in each subject area dealt with under the overall examination of the management of living resources.

Monday, 16 February

A.M. Biological dynamics of marine resources. The concepts of renewable natural resources, food chain, relation of fishery production to primary biological production, MSY, OSY, TAC, fluctuating yield; stock-recruitment; and influence of climate. Similarities and differences with regard to freshwater fisheries.

Speaker:

P.M. New methods of assessment and prediction. Sustainable levels of yield. Multispecies fisheries, the stock concept and fisheries assessment; abundance vs availablility; yield vs employment. The relation of yield and catch per boat to the level of technology and the total fishing intensity.

Speaker:

Tuesday, 17 February

A.M. Fisheries technology (artisanal, inland [lakes & rivers], reef, nearshore, offshore, high seas): boats, gear, transport, storage, processing. Appropriate technology. Abuses.

Speaker:

P.M. Structure of the industry: artisanal vs industrial, inland vs inshore vs offshore; national vs international; freshwater vs marine (pelagic & demersal); fixed vs mobile gear.

Speaker:

Wednesday, 18 February

A.M. Fisheries economics. The social and economic setting of fisheries; the value of landings, the value of exports. The costs of fishing; ownership of resources and the problem of allocation of fishing rights in

relation to costs and benefits, inshore fishermen vs industrial fisheries, national fisheries vs international quotas, national use vs foreign exchange, products, storage, transportion, and markets. Impact of foreign fishing vessels in the I.O. region.

Speaker:

P.M. The economic structure of fishing industries. Independent fishermen vs cooperative systems; vertical integration, national and international companies; the role of Government in maintaining the balance, introducting new methods, products, and standards. The development of national fisheries policy and international relations.

Speaker:

Thursday, 19 February

A.M. The economic structure of fishing industries, continued. Bilateral and multilateral fishing agreements. Closed vs open registry of fishing vessles. Enforcement and surveillange of international fishing vessels. Monitoring of vessels in national and international zones. Access negotiations and agreements. Joint ventures: negotiation and monitoring (case studies).

Speaker: Mr. Dave Evans

P.M. Other marine and freshwater resources: Coral reefs; seaweed; etc. Economics, management, exploitation, and conservation.

Speaker:

Friday, 20 February

A.M. Aquaculture. Evolution of freshwater and marine aquaculture systems; geographic and species diversity; biological and economic productivity; simple vs

complex systems. Basic nutrition vs luxury markets. Special problems in operation and management, social acceptance and economic viability. Government incentives; relation to traditional fishing.

Speaker:

P.M. Weekly Summary.

WEEK 4 MANAGEMENT OF NONLIVING RESOURCES

Note: The nations of the Indian Ocean region have a long tradition of nonliving resource exploration and exploitation, although the main thrust of this has been onshore. In recent years, however, several countries have developed their offshore mineral resources. Of particular signficance today is oil and gas. In offshore areas in the I.O. under national jurisdiction lie approximately 87% of all known and estimated marine hydrocarbons and most of the future petroleum resources. The production of offshore hydrocarbons, although concentrated in a few countries, is a very important industry. In 1983, for example, the region contributed about 36% of the world offshore oil production, and accounted for 80% of the world total of both onshore and offshore production. This will be reflected in the areas of consideration for this week.

Monday 23 February

A.M. Introduction to mineral geology in the Indian Ocean region. Traditional landbased mineral resources (gypsum, magnetite, gold, nickel, platinum, mica, tin, iron, lime, diamonds and other gemstones, phosphates, etc.), their location and uses. Near shore resources (salt, sand and gravel, building aggregates, rutile, ilmenite, etc.). Offshore resources (calcium carbonates, phosphorites, oil and gas). Deep seabed resources (metalliferous muds, manganmese nodules, cobalt crusts).

Speaker: Mr. Seif M. Hakika
UNDP Mineral Exploration Project, Arusha
or
Mr. Benedikt Mitti
Ministry of Minerals, Dodoma

P.M. Geology of offshore oil and gas: accumulation concepts; sedimentary rock, source rock, migration and entrapment. Rate of accumulation, Brief description of research development, exploration, and measurement techniques.

Speaker:

Tuesday, 24 February

A.M. Technological aspects of nearshore exploration and exploitation: bathymetric mapping of coastal areas; correlations between onshore and offshore statigraphy for identification of potential mine sites. Ancient reef systems as potential hydrocarbon reservoirs; determination and assessment of organic carbon in reef and associated areas. Sediment mapping, stratigraphic coring, shallow vibrocoring, etc.

Speaker:

P.M. Technology of hydrocarbon extraction: drilling equipment and procedures (different types and classifications); blowout prevention; transfer to processing site (onshore or offshore). Environmental considerations.

Speaker:

Wednesday, 25 February

A.M. Technology of deep seabed mineral exploration and exploitation (manganese nodules, metalliferous muds). Multipurpose deepsea mining vessel; SEABEAM (multibeam

bathymetric mapping technique); technological equipment for gathering, lifting, transporting, processing. CCOP research and activities in the region.

Speaker: Rep. of Saudi-Sudanese Joint Venture

P.M. Economics of nonliving resources. The international mineral market. World supply and demand of metals and minerals from land-based vs marine sources. Producer and consumer countries. Control of market (supply, demand, instability); substitution, recycling, new uses. Processing costs. Present and potential role of I.O. countries.

Speaker: OETB

Thursday, 26 February

A.M. Economics of nonliving resources (cont'd). Evolution of petroleum contracts; multinationals; OPEC. Ownership of the resources: royalties, taxes, profit sharing, participation agreements, service contracts. Possible commodity policies and agreements. Maximizing Third World countries participation in management, processing, and marketing.

Speaker: Prof. R. Meagher
Tufts University

P.M. Economics of nonliving resources (cont'd). Present status of marine mineral resource industry. Future trends and predictions.

Speaker: Prof. R. Meagher

Friday, 27 February

A.M. Environmental considerations of offshore mineral exploitation: sand and gravel, building aggregates, oil and gas, etc. Social impact of oil on coastal community.

Speaker:

P.M. Weekly Summary

WEEK 5 SHIPPING, PORTS & HARBOURS. ENVIRONMENTAL PROTECTION. INFORMATION/DATA EXCHANGE.

Monday, 2 March

A.M. The economics of shipping. Sea-borne trade is a factor of crucial importance in the development strategy. The current dramatic changes in the shipping industry may offer possiblityies for a restructuring increasing the participation of developing countries.

Speaker: Dr. Awni Behnam
UNCTAD

P.M. Flags of Convenience, Registration of Ships. Liner Conferences. Code of Conduct. The UN Convention on a Code of Conduct for Liner Conferences entered into force in October 1983. The UN Convention on the Registration of Ships was signed in February 1986. The implications of these Conventions will be analysed from the perspective of the Indian Ocean region.

Speaker: Dr. Awni Behnam

Tuesday, 3 March

A.M. Port Management. Inefficiency in port management. Lack of up-to-date loading and unloading technology; failing to adjust to new integrated multi-modal systems of transportation have led to port congestion in many developing countries entailing tremendous losses in time and money and often spoilage of perishable goods. UNCTAD has devloped audio-visual material to demonstrate deficiences and remedies.

Speakers: Dr. Awni Behnam
and
Rep. of UNCTAD/Dar es Salaam
Rep. of UNCTAD/Mombassa

P.M. Vessel Traffic Management. Navigational aids. Traffic congestion near ports, in straits, and crowded sea lanes require traffic safety regulations, in accordance with the provisions of the UN Convention on the Law of the Sea.

Speaker: UNCTAD

Wednesday, 4 March

A.M. Environmental protection in the I.O. region. At any given time there are estimated to be 224 tankers in the E. African waters. They transport some 475 million metric tons of oil a year from the Middle East to consumers in Europe. As a result oil pollution is a serious problem for the region. Soil erosion, chemical wastes, and untreated sewage are also having an increasingly negative effect. Short- and long-term effects. Examination of environmental protection in the context of development.

Speaker: UNEP

P.M. Prevention, control, and clean-up of marine areas. Coastal development and Environmental Impact Assessment (EIA). Methodology and problems associated with application of results. Cost/benefit analysis. Integrated coastal use. Advantages of regional cooperation. The East African Regional Seas Programme.

Speaker: UNEP

Thursday, 5 March

A.M. Tourism in the Indian Ocean region. Environmental, social, and economic effects of tourism. How to enhance benefits while reducing environmental and social costs. Types of tourism: short-term vs long-term visitors; high income vs low income tourism; mass tourism. Impact of tourism on the environment; interaction of coastal zone uses, conflicts and control mechanisms.

Speaker: Rep. of Ministry of Environment & Tourism

P.M. Present status of information/data exchange. Producers and sources of information on marine resource management relevant to the I.O. region (scientific, technological, economic, legal). Access through publications, abstracting services, computer link-up, consultations, workshops and seminars. Interpretation of information; dissemination. Importance for policy development and planning guildelines.

Speaker:

Friday, 6 March

A.M. Presentation of Country Reports by Participants

P.M. Weekly Summary

WEEK 6 NATIONAL AND REGIONAL INFRASTRUCTURE

Monday, 9 March

A.M. National management tools. Examination of present legislation governing the management of marine resources (living and nonliving) in coastal zone, nearshore, offshore. Management responsibilities found in ministries or departments of justice, foreign affairs, fisheries, minerals, internal affairs, environment, health, finance, etc. Segmented vs integrated approach of marine resource management.

Speaker:

P.M. Implications of the LoS Convention on national legislation of I.O. nations (vis-a-vis living and nonliving resources, environment, etc.). Future trends, needs, options. Adapting existing legislation and drafting new. Interaction of government ministries and departments on ocean resource management policy. Linkages between scientific, economic, legislative, and administrative sectors of national governments in terms of ocean resources management and policy development.

Speaker:

Tuesday, 10 March

Note: National experience has differed in approaches to ocean management and marine resources management policy. Here several case studies will be presented in order to illustrate some options. Discussion will cover: national legislation; national institutional arrangements; national ocean policy; and, in each case, an appraisal of achievements, shortcomings, needs (technology; funds; data; personnel, etc.).

A.M. The Case of Mexico and the Caribbean

Speaker: Dr. Alberto Szekely
Legal Adviser
Ministry of Foreign Affairs, Mexico

P.M. The case of Sierra Leone

Speaker: H.E. Ambassador Abdul Koroma

Wednesday, 11 March

A.M. The case of India

Speaker: Dr. S.Z. Qasim, Secretary
Dept. of Ocean Development (DOD), India

P.M. The case of Sri Lanka

Speaker: Dr. Hiran Jayewardene
Chairman, National Aquatic Resources Agency, Sri Lanka

Thursday, 12 March

A.M. Regional institutions and projects in the Indian Ocean and their role in management. ASEAN, CCOP, ESCAP, IIOE, IOFC, INFOFISH, SACEP, Bay of Bengal project, etc. Their mandates and areas of expertise in resource assessment, management, monitoring. Services offered. Interactions betweeen each other (if any); areas of

overlap; interactions with governments in the I.O. region. Future direction, future needs for other regional bodies.

Speaker:

P.M. Regional activities of international bodies (UNDP/FAO, IOC, CFTC, UNCTC, UNEP, etc.) in the Indian Ocean. Interactions between national/governmental management bodies and regional, subregional, and international organisations. Coordinating mechanisms. Designation of focal points for internal, external/international activities. The need for coordination and cooperation on all levels.

Speaker:

Friday, 13 March

A.M. Presentation of Country Reports

P.M. Weekly Summary

WEEK 7 SIMULATION EXERCISE

Monday, 16 March

A.M. Contract negotiations. The intensification and diversification of ocean use generates new relationships with foreign and multinational entities. To maximize benefits for their own populations, developing countries must develop new skills in contract negotiation. Briefing for simulation exercise.

Speaker: Prof. Gilbert Winham
Dalhousie Univeristy

P.M. Introduction to the use of computers in contract negotiation. Demonstration of computer models for resource assessment, etc.

Speaker: Mr. Mike Staley
University of British Columbia

Tuesday, 17 March

ALL DAY Simulation Exercise

Wednesday, 18 March

ALL DAY Simulation Exercise

Thursday, 19 March

A.M. Completion of exercise.

P.M. Debriefing

Friday, 20 March

ALL DAY Research & Report Writing

WEEK 8

23-27 Mar. FIELD TRIPS

WEEK 9

29 Mar.-
3 April FIELD TRIPS (Cont'd)

WEEK 10 SUMMING UP AND FINAL REPORT

6-10 Apr.

A. PROJECT PREPARATION		6,000
B. PROJECT IMPLEMENTATION		
1. STAFF		
COURSE DIRECTOR X 2	40,000	
IOI STAFF X 1.5	15,000	
LECTURE FEES	8,000	
SUPPORT STAFF X 3	3,750	
		66,750
2. TRAVEL		
LECTURERS	56,000	
PARTICIPANTS (+ FIELDTRP)	32,941	
		88,941
3. ACCOMMODATION		
LECTURERS	4,000	
STAFF (ARUSHA)	6,000	
STAFF (FIELDTRIP)	977	
PARTIC (ARUSHA)	33,000	
PARTIC (FIELDTRIP)	8,238	
		52,215
4. FOOD AND POCKET ALLOWANCE		
PARTIC - FOOD	18,175	
PARTIC - ALLOWANCE	13,400	
STAFF/LECTRS - FOOD	5,100	
		36,675
5. ADMINISTRATIVE COSTS		
TELECOM AND POSTAGE	5,000	
COURSE MATERIALS	4,000	
STATIONERY + XEROXING	6,250	
RENTAL TEACHING EQUIP	1,500	
RENTAL ADMIN/SEC EQIP	1,000	
		17,750
6. OTHER COSTS		
LOCAL TRAVEL	2,000	
LECTR RM + OFFICE	2,400	
OPEN/CLOSING CEREM.	2,000	
MEDICAL INSUR (PARTS ONLY)	900	
PROMOT, PR, ENTRTNMT	3,500	
		10,800
C. PROJECT FOLLOW-UP		
EDITING, PRINTING FINAL REPT (INCL. STATIONERY, POSTAGE)		5,000
TOTAL		284,131

Pacem in Maribus

International Ocean Institute
P.O. Box 524 Valletta - Malta Cables: Interocean

ANNEX V

A JOINT VENTURE FOR THE ENTERPRISE

EXECUTIVE SUMMARY

This study was undertaken pursuant to the proposal made by the Delegation of Colombia to Special Commission 2 during the Fourth Session of the Preparatory Commission and the acceptance of the proposal by the Commission. The study has been carried out by the Ministry of Foreign Affairs of Colombia in co-operation with the International Ocean Institute and the Ministry of Foreign Affairs of Austria.

The study is divided into two parts.

Part I contains the theoretical justification for the Joint Venture. The viability of the Joint Venture is examined in the context of future prospects for ocean mining; and these prospects are analysed in the wider context of High Technology developments and their impact on the economies of both developed and developing countries. Important changes in the management and financing of R&D in high technologies are noted, and an attempt is made to incorporate the new trends in the structure of the Joint Venture.

Part I covers the pre-investment period of the Joint Venture, including exploration, R&D, and Training. Three options for the implementation of Para.12 of Resolution II and Para. 14 of the Understanding of September, 1986, are proposed and costs and benefits are calculated.

1. The Pioneer Investors proceed individually. Assistance to the Prep. Com. in the exploration of the Enterprise's first mine site, in training, and the preparation of a Plan of Work, could take various forms, from providing these services free of charge, to interest-free charges, to 50 percent or any other percentage of charges, with or without interest.

2. The Pioneer Investors form a R&D Joint Venture, reducing the cost to themselves and, accordingly, the charges to the Enterprise.

3. The Pioneer investors form an R&D Joint Venture, with public international support to be made available on behalf of the Preparatory Commission and the Enterprise. This third option appears to offer the highest benefits at the lowest cost. It is the only one of the three options that offers to the Prep.Com. and to developing countries the possibility to participate, from the outset, in the R&D, which would enable the Enterprise to "keep pace with States and other entities."

Part II covers the production phases of the Joint Venture, including mining, transporation, processing and marketing.

Both parts must be considered as a whole, although it is necessary to provide for a de-linkage mechanism between the pre-investment phase and the subsequent phases, because the first phase should precede the coming into force of the Convention while the latter will follow it.

Finally, possible linkages with other mechanisms for the development of marine industrial technologies, mandated by the Convention, are explored.

PART I

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REFERENCES

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A JOINT VENTURE FOR THE ENTERPRISE

INTRODUCTION

During the Fourth Session of the Preparatory Commission for the International Sea-bed Authority and for the International Tribunal for the Law of the Sea, the Delegation of Colombia proposed to undertake a study on a Joint Venture Enterprise, covering the whole range of an integrated mining project, from prospecting and exploration, financing, research and development, (including environmental impact assessment and training) to mining, transportation, processing and marketing.

The proposal met with wide-spread approval and appreciation in the Second Special Commission, and, in fact, it could not have been more timely. The Prep.Com. was on the verge of a major breakthrough, which became reality at the very end of the Session, when an Understanding on the mechanism for resolving overlapping claims of mine sites in the Northeast Pacific was adopted and a timetable and procedures were set for the registration of the applications of France, India, Japan and the U.S.S.R. as Pioneer Investorsat the next session of the Prep.Com. in March/April 1987. The Understanding also addressed the problem of overlapping claims with the U.S.-based consortia and provided a formula for their resolution. Roy Lee's Introductory Note, prepared for International Legal Materials (Vol.XXV, Nu.4, July, 1986), makes the following assessment:

> The Understanding is the most significant development in the Law of the Sea since the Convention was adopted....It was achieved with the full participation of all interest groups, signatories and

non-signatories, and all expressed satisfaction with it. If the Understanding is successfully implemented at the next session, it would pave the way for dialogue with States for whom difficulties now exist with the deep sea-bed mining part of the Convention and hopefully lead to eventual reconciliation.

Once this Understanding is implemented and the first group of Pioneer Investors is registered, a new phase begins for the work of the Prep.Com., which at that point must find practical ways of implementing para.12 of Resolution II, with regard to the exploration of at least one mine site for the Enterprise, the acquisition or development of the necessary technology, and the training of personnel for the Enterprise.

The Joint Enterprise has been a favorite theme of UNCLOS III throughout. A survey of the proposals and studies made during the time of the Sea-bed Committee and UNCLOS III was contained in the first Austrian Working Paper on JEFERAD. For reasons of space, it was not included by the Secretariat in Doc. LOS/PCN/SCN.2/L.2, but it is available on request from the Delegation of Austria.

The Prep.Com. has issued other studies and proposals pertinent to the present study. Among these one should mention in particular

the Secretariat's "Information Note on elements of Joint Ventures (LOS/PCN/SCN.2/WP3) and the study on Project Profile (LOS/PCN/SCN.2/ WP6 and Add 1) as well as the Draft Rules on Prospecting and Exploration;

the working paper on a Model Joint Venture Agreement for Sea-bed Mining (WP5) submitted by the Delegation of the FRG;

the Proposal on Joint Venture submitted by the Delegations of Belgium, France, FRG, Italy, Japan, the

Netherlands and the U.K. (WP.4);

the three Working papers on JEFERAD submitted by the Delegation of Austria (L.2, Add. 1, and Rev.1);

the two memoranda submitted by the Asian-African Legal Consultative Committee;

the Australian Working Paper (L.10); and, finally,

the Understanding adopted by the Prep.Com. on September 5, 1986 (LOS/PCN/L.41/Rev.1, Annex, September 11,1986).

The purpose of the present study is to re-examine the joint venture proposal in the light of this new information, with particular emphasis on the first and imminent phase of exploration, research & development and training. However, for the sake of perspective and completeness, the study will present options for a Joint Venture covering the whole range of activities from prospecting through marketing because, obviously, all stages interact, and if there really were serious doubts about the eventual economic viability of the enterprise in the long term, it would be futile to undertake the first phase of exploration, research and development.

Three points, should, however, be kept in mind.

(a) Predictions and calculations with regard to the later phases of production and marketing are necessarily more speculative;

(b) Whether and when ocean mining will become operational is not a purely economic , but a political/ economic question. The outcome will depend on the political decision makers of today. As far as the Prep.Com. is concerned, it must abide by its mandate of implementing Resolution II by ensuring that the Enterprise keeps pace with States and other entities, and by assuring the early entry into effective operation of the Enterprise.

(c) The Enterprise, once it comes into existence, must be free to make its own choices and decisions, and nothing that happens during the first phase, prior to the coming into force of the Convention, must be made binding or prejudicial for the Enterprise.

I. THE UNDERSTANDING OF THE PREP.COM. FOR PROCEEDING WITH DEEP SEA-BED MINING APPLICATIONS AND RESOLVING DISPUTES OF OVERLAPPING CLAIMS OF MINE SITES

The Understanding of September 1986 contains a paragraph (14) which provides:

> Notwithstanding the provisions of paragraph 12 (a) (i) of resolution II, the first group of applicants will assist the Preparatory Commission and the Authority in the exploration of a mine site for the first operation of the Enterprise and in preparing a plan of work in respect to such a mine site. The conditions and extent of this assistance will be discussed and agreed to following registration, applying mutatis mutandis the rovisions of paragraph 7 (c) of resolution II.

This constitutes a significant development of para. 12 (a) (i) of Resolution II, which provided that

> every registered pioneer investor shall carry out exploration, at the request of the Commission, in the area reserved, pursuant to paragraph 3 in connection with its application, for activities in the Area by the Authority through the Enterprise or in association with developing States, on the basis that the costs so incurred plus interest thereon at the rate of 10 per cent per annum shall be reimbursed;

In particular, three points should be noted:

(1) Resolution II refers to "every registered pioneer

investor," whereas para. 14 of the Understanding refers to "the first group of applicants."

Could this be interpreted to mean that the first group of four pioneers (France, India, Japan, and USSR), as members of an identifiable group which applied prior to 9 December 1984, are considering to render this service as a group?

(2) An equally important difference between the two paragraphs is that para.12 of Resolution II provides for a reimbursement of the cost for the exploration, plus interest, while para.14 does not provide for any such reimbursement, "notwithstanding the provisions of paragraph 12 (a) (i). Perhaps paragraph 14 is part of the practical arrangements made pursuant to which the pioneer investors were given the option to designate part of the area to be allocated to them as pioneer area. In any case, the conditions and extent of this assistance will have to be discussed and agreed to, and during these discussions, various options may be examined, including, inter alia, the question of "assistance" vs co-operation through a joint venture.

The present study offers some calculations on the costs and benefits of various options, ranking them according to a variety of weighting systems.

(3) Finally, it is significant that para.14 of the Understanding refers to assistance both to the Prep.Com. and to the Authority whereas para.12 of Resolution 2 merely refers to work carried out "at the request of the Commission." Could this be interpreted to mean that, under Para. 14 of the Understanding, assistance will extend over two phases, the first phase beginning upon registration and ending with the coming into force of the Convention and the establishment of the Authority, and the second phase beginning with the submission of a Plan of Work and extending through the duration of the first mining project?

Costs and benefits, again will be an important consideration in determining the form this cooperation may take. Purely financial yardsticks are too narrow for a reasonable appraisal of such ventures.

The present study attempts to place the issues raised into the general context of contemporary trends in the management of high technology development.

II. THE PROSPECTS FOR OCEAN MINING: IMPACT ON THE ENTERPRISE

The Australian study (LOS/PCN/SCN 2/WP 10 and Add.a) came to the following conclusions:

1. At the present metal prices, the mining of polymetallic nodules for cobalt, copper, nickel and manganese from the deep sea-bed is not a viable proposition, either for an Australian company or for the Enterprise: increases in aggregate metal prices, to as high as twice their present level, would be required to make the mining venture viable.

2. Even if the metal prices rise significantly for a 3Mt/year operation, the volume of output of cobalt especially, and also of ferromanganese and nickel, would have a significant effect on the market. The metal prices would probably go down and it would be doubtful whether all output could be sold at market price.

3. The technology of mining nodules from the deep sea-bed has not yet been proved. For this reason, the venture must be considered high-risk and therefore a high discounted cash flow rate of return would be necessary in order to attract capital.

[4. With the present metal price levels and regions between the prices, the Cuprion process is more attractive than pyrometallurgical process and the

reduction ammonia leach process.]

These conclusions are based on an impressive array of facts and figures, and the Prep.Com. owes a debt of gratitude to the Delegation of Australia for having assembled them. Some comments, however, on the premises for the calculations and conclusions may be in order.

Para. 1 states that "for an Australian company or for the Enterprise," the mining of polymetallic nodules for cobalt, copper, nickel and manganese, at the present metal prices, is not a viable proposition. The assumption underlying this conclusion is (a) that the Australian company proceeds on its own, within the private sector; the Enterprise as well is treated as if it were a commercial company, operating on sound commercial principles within the private sector; (b) that the technology to be used is roughly the presently existing technology, which still needs quite a bit of research and development to be "proved" and applicable at a commercial level. Further R&D, generating, perhaps, new mining concepts, is not considered. The discussion of the paper revealed that productivity gains in the technology, which would be an alternative to an increase in prices as a factor to make sea-bed mining economically feasible, are not considered: It is in fact not expected that technology improvements will be made because the cost of R&D is too high for a company to engage in; furthermore, there may be equal or more important improvements in land-based mining technologies which, again, would leave sea-bed mining as an economically unviable proposition. And yet, forecasts of supply and demand for marine resources and alternative land resources which do not take into account the rate of evolutionary changes in the maturation of technologies, or the likely emergence of new technologies, overlook important factors which would affect the profitability of private R&D investments in the marine science field. (Milner Spangler)

Para.2 is based on different assumptions: Here we must assume that sea-bed mining is indeed economically feasible,

but if it were done successfully, it would, so to speak, saw the branch it is sitting on: It would cause a glut in certain minerals, especially cobalt and manganese, which would bring down prices to a level which, again, would make sea-bed mining uneconomical. This forecast confirms earlier forecasts by the Secretariat as well as by UNCTAD on the impact of ocean-mining on the export earnings of land-based producers. Given the proportions between the minerals within the nodules, on the one hand, and the proportions of the demand for these minerals, on the other, these conclusions are ineluctable.

Para. 3 points out that, because technology has not yet been proved, deep sea-bed mining is a high-risk venture and therefore a high discounted cash flow rate of return would be necessary in order to attract capital. This argument, again, applies only to the private sector, where investment decisions are entirely, or almost, based on the classical formula

$$A = PxR/C$$

where A is the probability or appraisal ratio to be used in the investment decision; P is the probability that the Research will be successful; R is the value, or net returns to the company if the R&D is successful; and C is the cost of the R&D and the implementation of its results. (Robert E. Wilson, "The Attitude of Management Toward Industrial Research," Mechanical Engineering, Jan., 1950; and D.W. Hill, Cooperative Research in Industry, New York: Hutchinsons's Scientific and Technical Publications, as quoted in New Technology and Marine Resource Development by Miller B. Spangler, New York: Praeger, 1970).

Miller Spangler, who is Director of the Center for Techno-Economic Studies of the National Planning Association in the USA and, under the sponsorship of the National Science Foundation, the National Council on Marine Resources and Engineering Development, and the U.S. Coast Guard, has conducted technology assessment studies and forecasts of

marine resource developments, offers, in this book (1970), a flow diagram of research and development (see Figure 1). He points our that "In the case of R&D aimed at "modest short reach" improvements, most of the projects do not involve great technical risks. Yet most of the important potential developments in marine resources apparently will require basically new products or process technologies rather than incremental improvements." The rate of failure, in these cases is very high and has been estimated variously at between 7 to one and 20 to 1 or even 40 to 1.. *"The farther back in the process of invention we go, the more overwhelming the rate of failure."*

> It is important to understand successive stages of research..., since sponsorship by the federal government of an early stage of research may encourage privately funded R&D at a later stage

And Spangler gives us equations for the probability rate of failure for each successive stage.

Thus,

> If, through federal sponsorship of basic research studies or fundamental engineering research, a theoretical or technological solution is attained, then there will be a substantial reduction of risk in attaining an economic solution through additional R&D performed by the private sector. This could provide a strong stimulus to induce private enterprise to invest substantial sums to develop commercial marine technologies.

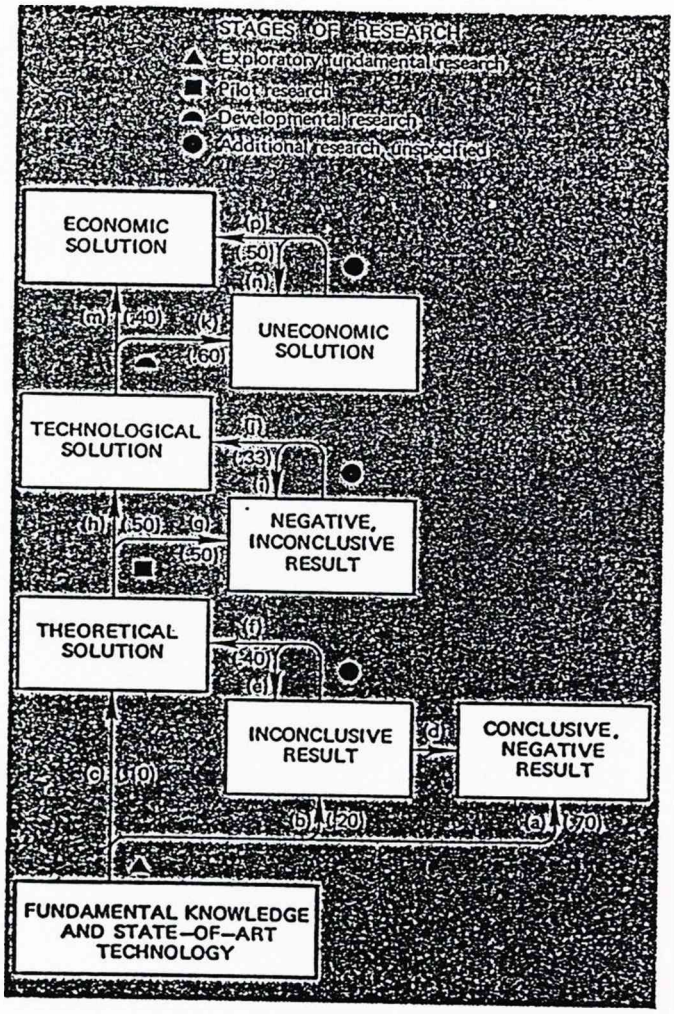
It also appears that the public sector, in this case,

> the federal government is better able to assume the risks of projects of an early stage of the R&D chain than private enterprise.

For, among other things, the criteria for investment

Figure 1

Flow Diagram of Research and Development



Source: Adapted from Miller B. Spangler, New Technology and the Supply of Petroleum: The Treatment of Uncertainty in Resource Planning, Research Paper No. 2, The University of Chicago, Program of Education and Research in Planning (published by the author, 1956), pp. 90-94.

decision-making differ considerably as between the public and the private sector. At the national level, decisions by the public sector are usually determined by national interest more than purely financial considertions. In the case of marine technology in the United States, according to Spangler, these include:

1. Weighing potential benefits and costs to the U.S. economy that is promoting the national economic well-being [including balance of payments considerations].

2. Enhancement of national security.

3. Co-operation with other nations and groups of nations and international organisations in marine science activities that is promoting the quality of international relations and promoting other benefits of international cooperation.

4. Preservation of the role of the United States as a leader in marine science and resource development that is securing technological leadership.

5. Expansion of human (or scientific) knowledge of the marine environment.

6. Advancement of education and training in marine science.

7. Protection of health and property.

8. Conservation of the resources of the marine environment and avoidance of unnecessary duplication of effort, facilities, and equipment; that is, the conservation and efficient management of natural, human, and capital resources.

9. Promotion of benefits for mankind and enhancement of human welfare.

10. Enhancement of the national image.

Spangler points out that private enterprise investment in oceanic R&D have so far been relatively limited in project size, because of the high risk associated with large marine ventures. While the appraisal ratios of R&D as estimated by business firms are proprietary, he concludes, it would ap- pear from external evidence of corporate activity and the high degree of risk involved that *many fields of potential marine resource developments are very much in need of special measures of government encouragment or support.* This, he says, *is particularly important for marine mining ventures* with initial investments ranging from $10 million to $100 million.

A similar list could be drawn up for criteria determining investment policy in R&D in the public sector at the international level. The overriding criterion for public international investment in R&D in marine technologies may in fact be *the establishment of new forms of scientific/ industrial cooperation, reducing investment costs for the industrial states, bringing developing countries into the process of technology development, and thus contributing to the bridging of the development gap.*

Without public support, *"private investment in a number of fields of marine R&D can, on balance, be expected to languish -- and, more importantly, to proceed at a slower pace than national interests would apparently indicate."*

The Australian study seems provide a case study to test and confirm the thesis put forward by Spangler. Manganese nodule mining is a high-risk undertaking, relying on Big Technology requiring large investments in research and development. Considering the high risk involved, particularly in the initial stage, and the low return, or lack of return, to be expected in the short range, no Australian, or other company would reach a positive investment decision. This is as valid today as it was sixteen years ago, when Spangler wrote his book.

It is equally as true today as it was sixteen years ago that the situation would change dramatically if, during the early stage of research and development, some public funding were available. This would reduce the risk at the later stage and increase the probability of making the undertaking profitable for the company even at a lower rate of return.

The implication of all this for the Enterprise is that it must structure its activities in such a way as to ensure a certain amount of public funding for the first phase of R&D to encourage companies, such as the Australian, to invest, in view of the higher probability of financial feasibility at a later stage. The Joint Venture proposed in this study would provide a most suitable framework. It thus would not only assure "the early entry into effective operation of the Enterprise," but it would, at the same time accelerate the private sector's entry into effective operation in sea-bed mining: It would help to get the sea-bed mining industry off the ground.

One might of course ask: why should we get the ocean mining industry off the ground so long as market conditions do not warrant it? Even if, through public/private international cooperation, the technology could be developed, would there be a market for the minerals? -- And if a market could be conquered, what would be the effect on the land-based producers? Why not leave the common heritage for future generations?

There are two reasons for proceeding now: As far as the market is concerned, it is most unlikely that even future generations will see it return to its pristine buoyancy.

During this new phase of the industrial revolution, technology has drastically reduced the demand for raw materials for which it produces substitutes, particularly in the form of new materials and through recycling. The consequences of this change for developing countries still dependent on the export of these commodities is obvious and

well known. It is aggravated by the fact that this new phase of the industrial revolution reduces the demand for cheap labour just as it reduces the demand for commodities.

The displacements caused in the international market are analogous to the displacements caused by High Tech within national economies. The landbased producers have their counterpart in the unemployed in the industrialised countries. Clearly, the problem of unemployment in the industrialized states cannot be solved by halting or turning back the development of high technologies. What is needed, instead, is a new and creative approach to the whole issue of employment and the distribution of wealth. At the international level, the only solution is to bring developing countries as quickly as possible into the High Tech. economy -- and a few of them are indeed already pioneering in this direction. Given the institutional infrastructure provided by the Law of the Sea Convention, sharing in the development of seabed mining technology may provide an efficient means of achieving this purpose which then could be applied in other sectors of the economy as well. Metal prices will not rise sufficiently to make seabed mining economical: A reduction in the cost of technology may do so.

Secondly, if it were left to "the market," there would be no High Tech. at all: no nuclear industry, no space industry; no laser industry, no micro electronics, no bio-industry. Even in the United States,with its commitment to "free enterprise," over fifty percent of all high tech research and development is paid for by the Government. The emerging "R&D consortia," now exempt from antitrust legislation through the Joint Research and Development Act of 1984, reflect a development that can be traced back to the World War II years and the public-funding initiatives taken by the Roosevelt Administration. Again, the question might be raised whether this is what ought to have been done, and the answer is: It has in fact been done, and we have no choice. what is left to us to do is to try to maximise the benefits and reduce the problems generated by

the new technologies as far as possible through a restructuring of the market, national and international.

III. THE CHANGING STRUCTURE OF FINANCING R&D

Up until, and throughout the nineteenth century, the typical inventor was an individual, a scientific genius, sometimes a crackpot. It was he who was the engine of technological innovation. Typically, he took his invention to an industrial entrepreneur who, more often than not, exploited it for his own gain. Patent laws were made to protect the poor inventor and let him enjoy some of the fruits of his genius and labour.

In the twentieth century, this structure began to change. The modern corporation began to hire teams of scientists; the crackpot more or less disappeared and the result of the salaried scientists' genius and labour was owned by the corporation. The corporation, national and later increasingly multinational, was seen as the engine of technological progress. But during the second half of this century, the situation began to change again. With the cost of R&D in high technology continuing to rise, even the mighty Corporation appeared to be approaching its limit. The Banks were drawn into the process as financiers of research and development, and, behind the banks, eventually, the governments. Discoveries, made and developed with public funding, in many countries are public domaine ("common heritage of mankind").

Clearly, the patent laws, designed to protect the individual inventor in a far simpler economic setting, no longer applied, and the whole field of intellectual property, under the impact of changes in the scientific/ industrial system as well as undermined by the technologies themselves which it generated (xerox, audio- and video-taping, etc.) is in disarray.

Clearly, also, these fundamental changes in the increasingly important R&D sector of the corporate structure

must necessariy have their effect on the rest of the system. The age of the classical, centralised, autocratic private-sector corporation, national or multinationl, has come to an end. The structure into which the corporation is evolving will involve a great deal more of social responsibility, of public participation and of public control: an evolution that is determined by technological and financial as well as by environmental and social developments.

The latest stage in these developments is the internationalisation of R&D in high technologies through new forms of international private/public cooperation, since the cost of this R&D is now too high not only for the private sector, but for most national governments as well. The EUREKA and ESPRIT projects of the European Community are an excellent example of this new development.

EUREKA has a simple organisational structure, consisting of three elements: National co-ordinators, the meeting of National Co-ordinators, and a Conference of Ministers. Industrial enterprises submit joint project proposals to their own national co-ordinators. The Co-ordinators make a first selection which is then submitted for discussion and refinement to the meeting of all national co-ordinators. A final selection goes to the Conference of Ministers. Once they are accepted by that Conference, half of the necessary investment is made by the industrial enterprises that made the proposal, half by the Governments of participating States and through the EEC. Technologies resulting from research and development undertaken under EUREKA auspices and financed jointly are the property of the EC and accessible to all participating States and industries.

At the time of this writing, EUREKA includes three marine industrial projects: One is a high-tech project to develop technologies needed for the design and construction of boats for industrial fisheries. The second one, called EUROMAR, is devoted to the development and application of modern technologies for the exploration of ecological

relations and cause-and-effect chains in the Seas of Europe. "In cooperatiaon of marine researchers, designers and industry, EUROMAR will formulate the scientific problems of monitoring natural and man-made changes in the physical, chemical and biological characteristics of the Seas of Europe, and will identify research strategies and technological solutions."

The third project, finally, will develop an acoustic control system for purse seines.

The problem with this phase of research and development in high technologies is that, practically without exception, it is limited to industrialised countries. EUREKA is for the members of the European Community. There are other R&D Joint Ventures or Consortia; a considerable portion of U.S. R&D is in fact being carried out in other countries: But they are all industrialized countries. Less than 3 percent of all money spent on R&D is spent in developing countries while over 90 percent of all scientists and technologists live in industrialized countries and 93 percent of all patents are held in developed countries. In Marine industrial technologies this imbalance is even more pronounced than in other sectors. Clearly, the R&D gap is the worst of all development gaps, and considering the enormous importance of R&D for industrial development and national security: considering, also, its impact not only on the present but on the future, it is essential that this gap be closed.

IV. A JOINT VENTURE FOR THE ENTERPRISE: FIRST PHASE

It is in this context that we now want to examine the purpose and the modalities of establishing a Joint Venture for the Enterprise.

In accordance with the Colombian proposal, this Joint Venture should cover an integrated mining project, from prospecting to marketing. Undoubtedly it would be more interesting to establish this Venture for the exploration and exploitation of the first mine site. To consider future

mine sites would move the scenario too far into the future to be interesting.

If it is the first mine site that is under consideration, the joint venture would have to be organised in two distinct phases: one from the time of registration of the first group of pioneer investors to the time of the Convention's coming into force; for, it will be recalled, the exploration of the first mine site for the Enterprise, making technology available, and training a pool of staff, is the responsibility of the Prep.Com. The second phase will run from the time of submission of a plan of work to the Authority to the end of the mining project. During that phase, of course, the Enterprise will be free to make whatever arrangements it may choose to make for the development of its second mine site.

It also will be recalled that para.14 of the Understanding adopted on September 5, 1986, undertakes that "the first group of applicants" will assist the Prep.Com as well as, later, the Authority in the exploration of a mine site for the first operation of the Enterprise.

The "group" now has a number of options which we shall compare, assuming, in each case, that it will be the site in the Central Pacific that will be explored for the Enterprise since it would be far more economical for all members of the group, except India, to do exploration work near their own sites, where prospecting has already been completed.

India, of course, has the option of either cooperating with the other pioneers in assisting the Prep.Com. in the Central Pacific area, thus gaining new experience; or to offer to the Prep.Com. to assist in the exploration of a site for the Enterprise in the Indian Ocean area, which the prep.Com. may welcome for now or for a later date.

In the Central Pacific area, then, the options would be:

1. Option 1. The members of the "group" proceed individually, each one exploring the part of the Enterprise's mine site that is adjacent to his own.

The Australian working paper estimates (on the basis of Hillman & Gosling, 1985) the cost for the exploration of the site for the Enterprise as U.S.$21.1 million. The paper points out that

> detailed exploration of the resource will be required before a decision is taken to build the mining ships, transport ships and process plant. This will require ship charter for a survey by marine geologists to make a detailed evaluation of reserves. The exploration will have to determine (a) the areal variations in the abundance of the nodules, (b) the areal variability of the grade of all four metals and (c) the topography of the mining surface.

The figure given in JEFERAD is somewhat higher, at $32.4 million, while the Secretariat's WP6 gives $27 million. However, for our purpose, it does not really matter what the exact figure is: we might as well asume it to be X. The point is that 3 x X/3, or 4 x X/4 as the case may be, will be considerably higher than x. There will be an overrun of at least 30 percent due to duplication of efforts. Probably there will be more than one ship involved; there will also be duplication of personnel and administration. When all is done, moreover, data from three or four different sources will have to be assembled, collated, interpreted.

Assuming, by way of illustration, that negotations between the pioneer investors and the Prep.Com. lead to an agreement under which the Enterprise will refund half the cost plus 10 percent interest after the six year exploration programme is completed, this will cost the Enterprise roughly $35 million. The total flow of funds for exploration thus comes to $75 million instead of $30 million had the Enterprise been able to undertake its own exploration. (This figure is somewhat misleading, since the $35 million

constitute a refund, and the total actually spent for exploration be about $40 million.

With regard to R&D and training, redundancy would probably be considerably worse as each of the pioneer investors would have to carry out his full programme independently.

The cost for R&D in the Australian paper is estimated as $167.8 million over seven years or $83.9 million the first five years. JEFERAD has $167.6 million over a five year period. This figure is intentionally on the high side because it is assumed that technological innovation and the development of new mining concepts is the key to lowering production costs at a later stage. WP6 gives $123 million between the years 1988 and 2000.

In any case, if one wanted to project three or four independent R&D operations, the total cost, for the first five years, might well triple, rising to $250 million. (It is not to be excluded that competitive R&D might be more productive, but this is hard to quantify.)

The cost for training the same number of personnel in three or four independent training programmes, finally, would be 50-100 percent more expensive than training them in one unified, site-specific programme.

Clearly, this is not the most cost/effective way of exploring the site for the Enterprise and planning an R&D and training programme. This takes us to option No. 2.

2. Option 2. The pioneer investors form a joint venture for the exploration of the first mine site for the Enterprise, for research and development as well as for the training of personnel for the Enterprise.

TABLE 1

PRE-INVESTMENT COSTS FOR DEVELOPING

A FIRST MINE SITE FOR THE ENTERPRISE

(in millions of $)

	Exploration Cost		R&D Cost		Training		Total	
	Pioneers	Enterprise	Pioneers	Enterprise	Pioneers	Enterprise	Pioneers	Enterprise
Option 1	40 (1)	35.43 (2)	250 (3)	442.89 (4)	36 (5)	--	326	478.32
Option 2	30	26.57 (6)	167	295.85 (7)	24	--	221	322.42
Option 3 (8)	15	15	83.5	83.5	12	12	110.5	110.5

(1) A 30 percent overhead increase is assumed on the basic $30 million cost for exploration.
(2) It is assumed that the Enterprise refunds half the exploration cost plus 10 percent interest for 6 years.
(3) A 50 percent increase on the basic $167 million is assumed due to duplication of efforts.
(4) It is assumed that the Enterprise buys the technology developed by the Pioneers at a fair commercial price, calculated on the basis of the cost to the pioneers plus a ten percent profit over 6 yers.
(5) The basic cost for training is assumed to be $24 million over six years. A 50 percent cost increase is assumed, due to duplication of efforts, personnel, facilities, etc.
(6) It is assumed that the Enterprise refunds half the cost of exploration plus a 10 percent interest for 6 years.
(7) It is assumed that the Enterprise purchases the technology as above, under (4).
(8) It is assumed that half the pre-investment cost is raised from a public international funding agency to be repaid by the Enterprise free of interest or at a very low interest rate.

See explanation on p. 18/19.

Here a number of sub-options are available (equity joint ventures, contractual joint ventures, etc.), all discussed in the Secretariat's Papers WP3 and WP6, and, obviously, it would be up to the Pioneer Investors themselves to make their choices and decisions. It will be remembered, however, that this first phase of R&D is the one that involves the highest risk of failure. In a recent article, "Strategic Financial Planning in Public Enterprises in Developing Countries: The Capital Structure Issue," in Public Enterprises, (Vol.6 No.4, 1986) Riyaz H. Bokhari, Auditor- General of Pakistan, has the following observations:

> The greater the risk attached to a venture,the more desirable is it to find the finances from equity sources. A heavy investment of loan funds in a research project which is unsuccessful can have a much more serious effect on the enterprise than a similar loss of risk (equity) capital.

Assuming, therefore, merely for purposes of illustration, that the Pioneer Investors chose to form an equity joint venture, this further observation by the same author may be of some interest:

> ...the operational and strategic financial planning processes require that the needs of the enterprise be financed through a suitable combination of debt and equity. When more debt is used, the enterprise incurs higher interest expense, which is a fixed charge....The less risk involved in an enterprise, the higher its debt-equity ratio can be.

One might therefore envisage a scenario in which the Pioneer investors divide among themselves the cost (both capital and operational) of one unified exploration project which might be estimated somewhere between $21 million and $31 million as well as the cost for R&D and training, to which we shall assign, for the reason mentioned above, the highest possible figure, i.e., $167.6 million over a five

year period. Training, for the pre-investment period, is estimated as $24 million. One might also assume that the total investment of each investor would be divided between the Government and the company or companies, since, as was pointed out earlier, it would be most unlikely that private companies (where they exist) would assume the high risk involved.

During a second stage, after the coming into force of the Convention, the Enterprise would become a partner of this joint venture, or it might form another one, or it might decide to operate on its own. To start with, however, it might have to refund half of the cost of exploration, let us assume the maximum, $15 million, which, at an interest rate of 10 percent over a period of six years, would amount to $26.5 million. Since the Enterprise, just coming into existence, could not have undertaken any R&D itself, it would also have to acquire, from its joint-venture partners, the technology brought by them singly or developed by them jointly during the past five years. If the Enterprise chose to proceed alone or to form another joint venture, this cost would, as a minimum, probably equal the cost of R&D undertaken by the pioneers, plus 10 percent interest over six years. This would amount to as much as $295.85 million. Suppose instead, the Enterprise chose to become a partner of the joint venture of pioneer investors, it might be half the cost of the R&D or $80 million, plus interest, which, at 10 percent over six years, would amount to $141.7.

Clearly, option 2 would appear more favourable for the pioneer investors as the over-all cost for exploration, research and development, which would have to be undertaken during the years preceding the coming into force of the Convention, is considerably lower. It also would be more favourable for the Enterprise, which, upon the coming into force of the Convention, would find itself saddled with a debt considerably lower than under option 1. Yet, the cost is still high for the individual States and companies involved, considering the very high risk of failure during this first stage. This would appear to be an argument in

favour of Option 3.

3. Option 3. In this scenario, there would be an equity joint venture among the pioneer investors, with an injection of public international funds.

Assuming a pre-investment cost of roughly $200 million over five years -- and the Australian study as well as WP6 and JEFERAD approximate this amount --one should attempt to raise half this amount from public international sources -- the World Bank or any of its Funds or UNDP or any of its Funds. An alternative would be to float shares on the market for small investors. There would be plenty of enthusiasts in all parts of the world who would pay for a a share in the Common Heritage of Mankind. If the World Bank or UNDP route were chosen, funds could be made available either on a refundable basis with long-term, low-interest rates; or it could be risk capital. As was pointed out in JEFERAD, this is not a large amount, in comparison with other enterprises in mining or energy. But it is exactly this kind of input that would make the joint venture immensely attractive to any private or state investor. It would get the industry "off the ground." It would decisively increase the probabilities of commercial viability in subsequent stages.

Supposing there were four investors, the pre-investment cost to each over a five year period $25 million or $5 annually while the World Bank contribution of $100 million, or $20 million annually, would be made to the joint venture (which would have legal personality) "on behalf of the Prep.Com," in order to enable it to ensure "the early entry of the Enterprise into effective operation," with the full participation of developing countries. As suggested in the revised version of JEFERAD, on the basis of proposals made by the Asian-African Legal Consultative Committee (AALCC), a Commission could then be formed by the Prep.Com. and the pioneer investors to supervise the implementation of para. 12 of Resolution II and para.14 of the Understanding adopted on September 5, 1986. The Joint Venture would explore the mine site for the Enterprise; it would train the personnel;

it would conduct research and development on the scale necessary to develop new mining concepts: It would attempt to develop a new generation of mining technology (conceivably in the direction of subsea completion systems and remote controlled sea-bed processing); and it would prepare a plan of work for the Enterprise. All this is covered by its pre-investment budget.

When, upon the coming into force of the Convention, this first phase of the Joint Venture is completed, the Enterprise, in the worst hypothesis, would be burdened with a minimal debt repayment charge on the exploration cost: Suppose, an arrangement similar to those followed by the UNDP Revolving Fund for Mineral Resources were adopted: the Enterprise might have to repay 1 percent of the annual value of produced commodities for a period of 15 years. That would not be an unbearable burden. In the best hypothesis, it would owe nothing for the exploration of its first mine site. And in any case, it would be co-owner of all technologies developed by the Joint Venture, since this R&D was 50 percent financed by public international funding on behalf of the Prep.Com and the Enterprise.

Clearly, option 3 is by far the most favourable for the investors, for the Enterprise, and for developing countries who would be enabled to participate as beneficiaries of this public funding. The financial implications of all three options are compared in Table 1.

No matter what form the joint venture may take, clearly the joint enture agreement must include, or be in conformity with, the rules and regulations adopted by the Prep.Com. with regard to prospecting and exploration.

It should also be clear that, no matter what form this cooperative venture would take -- as a development of para.14 of the Understanding or of JEFERAD 1, 2, or 3 -- if, in accordance with all of these documents -- because on this they all agree, -- if activities are to begin prior to the coming into force of the Convention, there must be the

possibility of de-linking this first phase of exploration, R&D and training from the subsequent phases of production, processing and marketing, even if the Joint Venture were planned in view of an integrated mining project. This raises the issue of the redistribution of assets and liabilities, and, above all the ownership of the technology that was developed in common.

Here, again, there are several options.

If the partners to the Joint Venture decide to stay together and to include the Enterprise as a partner, there is no problem, and the new entity would submit a Plan of Work, which it would have elaborated in accordance with para.14 of the Understanding, and it would assume the liabilities, if any, and assets of the former phase. Article 5 of Annex 3 of the Convention contains very detailed provisions about the transfer of technology that is to take place at the time of submitting a plan of work. It is well known that it was above all this Article that made it difficult for a few industrialized States to sign the Convention.If the applicant is an R&D Joint Venture including the Enterprise, the application of this article is greatly simplified, and the difficulties that some of the industrialized States had with the transfer of technology provisions of the Convention, would no longer exist.

If the partners should decide to terminate the arrangement for whatever reason (one conceivable reason would be failure) the following possibilities could be examined:

(a) The Joint Venture has failed to produce technologies of any value; the remaining assets and liabilities are distributed in proportion to investments and the arrangement terminates.

(b) Inventions have been made, patents have been taken out, and technologies have been developed, by the Joint Venture. There are large numbers of examples as to how inventions

made by an R&D Consortium or patents held by such a Consortium are disposed of upon the termination of the contract or arrangement. These may include "fundamental research, applied R&D, prototype development, pilot plant demonstration, standards research, and testing and measurement in natural science and engineering." ("Cooperative R&D for competitors, by Herbert I Fusfeld and Carmela S. Haklisch, Harvard Business Review, November-December, 1985).

> "The newer groups emphasize the development of a stronger technical base to improve productivity and enhance international competitiveness. Their thrust is 'precompetitive,' or more accurately, "procom-petitive'."

What has been developed collectively becomes the property of each one of the participants who, after a certain time, will also be free to license these technologies to third parties.

Another option would be to consider this whole effort in the broader context of bridging the R&D gap and enhancing North-South cooperation in the development of marine industrial technology.

This could best be done by implementing Articles 276 of the Convention prescribing the establishment of Regional Centres for Marine Science and Technology. It is curious, incidentally, that, although these Centres clearly are new institutions created by the Convention, the Prep.Com. has no mandate to do anything to "ensure their early entry into effective operation." Other institutions will undoubtedly have to fill this lacuna. UNEP is already examining the possibility of establishing such Centres within the framework of its Regional Seas Programme; and a feasibility study is presently being undertaken for the Mediterranean. UNIDO has published a paper on trends and developments in marine industrial technology which leads up to a proposl for the establishment of such Centres. UNIDO has now commissioned a second study, focusing on the establishment

of the Centres.

The problems of establishing these Centres are quite analogous to those encountered in establishing the Authority, including a joint venture for the Enterprise. At a time when the United Nations system is passing through a profound financial crisis, it appears futile to propose the establishment of yet another slew of international organisations. Governments are unable or unwilling or both to put up the necessary funding.

What is needed is not just new institutions: It is a new approach to international scientific/industrial cooperation: an approach that will stimulate private investments and directly enhance industrial productivity. In other words, the Centres, just like the R&D Joint Venture for the Enterprise, should be organised on the basis of the EUREKA principles, articulating the financial cooperation between industry, governments, and international organisations.

Supposing that a network of Centres for Marine Industrial Technology were put into place, the Ocean Mining Joint Venture -- presumably incorporated in Jamaica as the seat ot the Enterprise -- could be considered as part of this network, and if its project were to be terminated, any patents held by this Venture might simply be transferred to the other Centres, one of which most certainly should be established in the Caribbean, in the context of the Caribbean Regional Seas Programme.

This scenario takes us somewhat into the future -- perhaps to the beginning of the next century. It also takes us to effective implementation of important parts of the Convention: parts of special interest to developing countries and for the building of a new international economic order that is needed for the developed as well as the developing countries.

The remaining part of this study will cover the later

phases of the Joint Venture, beginning upon the coming into force of the Convention.

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ANNEX VI

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DRAFT PROPOSAL

FOR THE ESTABLISHMENT OF A

MEDITERRANEAN CENTRE FOR RESEARCH AND DEVELOPMENT

IN MARINE INDUSTRIAL TECHNOLOGY

This paper discusses ways and means for the establishment of the Centre.

If successful, the Mediterranean Centre for Research and Development in Marine Industrial Technology could become a model for other Centres in other Regional Seas Programmes. This would be a first element for the bridging of the R&D gap between developed and developing countries which, considering the fundamental importance of R&D for economic development and national security, is the worst of all development gaps as it determines not only the present but, to a large extent, the future as well.

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EXECUTIVE SUMMARY

Marine industrial technology is going to play an increasingly important role in the world economy. Presently there are very few States with the capability of developing this type of technology which relies heavily on micro-electronics, bio-technology, remote sensing, robotics and other advanced forms of high tech. The establishment of Regional Centres for Research and Development in Marine Industrial Technologies would contribute to spreading these technologies among all interested countries, developed as well as developing.

The United Nations Convention on the Law of the Sea provides for the creation of such Centres but fails to specify where and how they should be established. UNIDO has begun to study these questions. It would appear that the UNEP-initiated Regional Seas Programme could provide a most suitable framework.

Within this framework, the Barcelona Convention and the Mediterranean Action Plan would offer a most promising starting point. A Mediterranean Centre for Research and Development in Marine Industrial Technology could be structured along the lines of the EC's EUREKA projects and cooperate with EUREKA in the marine sector (EUROMAR), expanding the model so as to include both developed and developing countries in the Mediterranean basin.

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DRAFT PROPOSAL

1. Proposal

We wish to propose the establishment of a

MEDITERRANEAN CENTRE FOR RESEARCH AND DEVELOPMENT IN MARINE INDUSTRIAL TECHNOLOGY

2. Purpose

The purpose of establishing such a Centre would be

. to promote regional cooperation in the peaceful uses of the Mediterranean Sea;

. to promote the implementation of Articles 276 and 277 of the 1982 United Nations Convention on the Law of the Sea which prescribes the establishment of regional centres for marine scientific and technological research, to stimulate and advance the conduct of marine scientific research by developing States and foster the transfer of marine technology;

. to encourage ne forms of scientific-industrial cooperation between the developed and the developing countries in the Mediterranean region.

3. Background

(a) The Mediterranean Action Plan

The Mediterranean Action Plan, adopted in Barcelona in 1975, called for, inter alia, a socio-economic programme that would reconcile vital development priorities with a healthy Mediterranean environment. Subsequent documents, such as the Long-Term Programme (MED POL II), the Blue Plan, the

Priority Actions Programme, and the Protocol dealing with Pollution from Land-based Sources, have spelled out this goal in concrete terms. The Parties are to explore the long-term evolution of the relationship between development and the environment in the Mediterranean; to improve technologies required to provide a better understanding of processes and phenomena involved in the complex mechanisms of pollution; to stimulate technological co-operation and exchange of know-how among member States, and their scientific and industrial institutions; to explore potential applications of renewable sources of energy, with particular emphasis on solar energy; to design improved methods of disposing of solid and liquid waste; and to implement the Long-Term Pollution Monitoring and Research programme of MED POL II and III.

While the role of UNEP is, above all, one of co-ordinating and harmonising, the responsibility for executing these activities now rests almost entirely with the States Parties to the Barcelona Convention and its Protocols. The cost to States Parties of implementing the Protocol on Pollution from Land-based Sources is estimated to be up to 15 billion dollars over the next 10-15 years.

This cost could conceivably be reduced quite considerably if States Parties, their industries and scientific organisations agreed to join their efforts and carry out jointly projects of research and development in marine industrial technologies, with a built-in component of environmental impact assessment at the R&D stage. The establishment of a Centre for Research and Development in Marine Industrial Technology would enhance both development and environmental quality in the Mediterranean and promote the implementation of the Mediterranean Action Plan.

(b) The United Nations Convention on the Law of the Sea, 1982.

The United Nations Convention on the Law of the Sea, 1982, contains two articles, Art. 276 and 277, which mandate the

establishment of Regional Centres which should be effected through States, in co-ordination with the competent internationl organisations, and national marine scientific and technological research institutions. The purpose of the Centres would be to stimulate and advance the conduct of marine scientific research by developing States and foster the transfer of marine technology.

Article 277 provides that the functions of such regional centres should include, inter alia:

(a) training and educational programmes at all levels on various aspects of marine sacientific and technological research, particularly marine biology, including conservation and management of living resources, oceanography, hydrography, engineering, geological exploration of the sea-bed, mining and desalination tehnologies;

(b) management studies;

(c) study programmes related to the protection and preservation of the marine environment and the prevention, reduction and control of pollution;

(d) organisation of regional conferences, seminars and symposia;

(e) acquisition and processing of marine scientific and technological data and information;

(f) prompt dissemination of results of marine scientific and technological research in readily available publications;

(g) publicizing national policies with regard to the transfer of marine technology and systematic comparative study of those policies;

(h) compilation and systematisation of information on

the marketing of technology and on contracts and other arrrangements concerning patents;

(i) technical cooperation with other States of the region.

These functions could well be assumed by a Mediterranean Centre for Research and Development in Marine Industrial Technology which thus could be considered as an effective implementation of the two Articles of the Convention. It should also be stressed that joint research and development is probably the most efficient way to foster the transfer of marine technology.

(c) Research and Development in the European Economic Community

To stimulate research and development in high technologies, to reduce risks and share costs and make European high-tech industries competitive on the world market, The European Community has deviced new forms of pooling its scientific/ industrial strength in projects such as ESPRIT or EUREKA.

EUREKA has a simple organisational structure, consisting of three elements: National co-ordinators, the meeting of National Co-ordinators, and a Conference of Ministers. Industrial enterprises submit joint project proposals to their own national C-ordinators. The Co-ordinators make a first selection which is then submitted for discusion and refinement to the meeting of all national co-ordinators. A final selection goes from there to the Conference of Ministers. Once a project has been accepted by that Conference, half of the necessary investment in R&D is made by the industrial enterprise that made the proposal, half by the Governments of participating States and through the EC. Technologies resulting from research and development undertaken under EUREKA auspices and financed jointly are the property of the EC and accessible to all participating States and industries.

EUREKA includes three marine industrial projects:

One is a high-tech project to develop technologies needed for the design and construction of boats for industrial fisheries. The initiators of the project were France, through IFREMER and MANCHE, and Spain, through DCN-INI

There will be a number of other participants.

The French subscribed 40 percent of the cost, Spain, 60 percent.

Eight areas of technology will be investigated:

. Detection systens: R&D in technologies facilitating better species identification and localisation of stock;

. autommmatisation and robotisation of fishing maneuvres;

.fish processsing on board: automatisation; improvement of production and distribution of ice on board.

These developments should improve product quality.

Equipment and systems integration; development of new concepts apt to reduce energy requirements and the cost of fishing.

. Navigational aids and communications: application of telematic systems to improve information availability on board; data processing and utilisation in order to increase operational efficiency and safety on board.

. Ship and human safety: Automatic management of ship security parametres and of fishing equipment.

. Ship's quarters and energy efficiency: improvement of qualitity of life of crew,

The results of these technological developments will be applied to new ship prototypes so as to make them:

- safer;

-better performing;

- more profitable;

- more comfortable.

The total cost of R&D is estimated as 120 million FF, plus the cost of three prototype ships (one in France, two in Spain) for FF 210 million.

The second project, entitled EUROMAR, is devoted to the development and application of modern technologies for the exploration of ecological relations and cause-and-effect chains in the Seas of Europe.

In cooperation with marine researchers, designers and industry, EUROMAR will formulate the scientific problems of monitoring natural and man-made changes in the physical, chemical, and biological characteristics of the Seas of Europe, and will identify research strategies and technological solutions.

EUROMAR addresses the problems relatead to the vertical flux of matter between atmosphere, sea, and sea-bed in the Seas of Europe. It also takes into account the lateral exchange between the open ocean, the shelf sea and the coastal zone. EUROMAR shall further provide the scientific and technological basis for identifying and monitoring biological changes caused by natural oscillations and man-made pollution.

EUROMAR means a cooperative activity for the development of new technologies or adaptation of otherwise exiting technologies for remote-sensing or direct recordings

of physical, chemical and biological parameters at sea and their variability in space and time.

Participating in the project are: Belgium, Denmark, Finland, France, FR of Germany, Greece, Ireland, Italy, Netherlands, Norway, Spain, Turkey, United Kingdom, and the EC.

The technological development ensisaged include development and improvement of new technologies to determine physical, chemical and biological quantities from space, aircraft and land with remote-sensing techniques; moored systems for continuous recordings of nutrients, gases, dissolved and particulate organic and inorganic pollutants.

The time scale for the project is 1986 - 1995.

The third project, finally, is devoted to research and development of acoustic control systems for trawlers for

. the position of the trawl in relation to the ship;

. The depth capacity of the instruments;

. the water temperature;

. the opening of the trawl

. the speed of the trawl:

. The rope tension of the trawl;

. The length of the trawl ropes

. the number of captors

. the visualisation of the trawl, the images obtained through acoustic signals.

The French partners of the project will be: ALMA

Marine; OCEANO Instrument; CNRS, and IFREMER; the Spanish partners will be HYCOM; SA E. VIERAA and Pescanova, as well as the State Secretariat for Fisheries. The French partners are underwriting 62.96 of the cost; the Spanish, 37.04 percent of the total budget of 21,600,000 FRS.

A Protocol of agreement among all the participants is being elaborated; it will determine the roles of each and the division of labour of the whole programme.

Obviously, these are immensely useful projects and they do include a part of the Mediterranean countries; but, like practically all existing R&D consortia, they exclude the South. They are restricted to industrialised countries. Less than 3 percent of all money spent globally on R&D is spent in developing countries while over 90 percent of all scientists and technologists live in industrialised countries and 93 percent of all patents are held in developed countries. In mrine industrial technologies this imbalance is even more pronounced than in other sectors. Clearly, the R&D gap is the worst of all development gaps, and considering the enormous importance of R&D for industrial development and national security: considering, also, its impact not only on the present but on the future, it is essential that this gap be closed. With its built-in training component, and the assurance that the technology thus developed will be appropriate, the sharing of R&D is the most effective and least costly method of "technology transfer." It is a way to extend the principle of the Common Heritage of Mankind, not to existing technologies whose ownership is determined by past investments, but to future technologies to be developed and owned in common. And it is the principle of the Common Heritage that may give rise to economic theories harmonising economics and ecology and reconciling vital development priorities with a healthy Mediterranean environment.

The Mediterranean basin, bordered by developed as well as developing countries: countries of different social and economic systems, provides an ideal setting for a pilot

project in the sharing R&D. The Regional Seas Programme with its Action Plan offers a concrete framework.

4. Project Structure

The most modern and most cost-effective design for R&D is undoubtedly that of EUREKA or ESPRIT, providing, as it does, the broadest basis for cost and risk sharing. It is suggested that the Mediterranean Centre for Research and Development in Marine Industrial Technology be constructed on similar principles, with the cost to be shared between Industry, States and regional institutions.

Each member State would appoint its own national Co-ordinator, to whom industrial enterprises would submit their project proposals. The national Co-ordinators would meet probably up to 4-6 times a year to discuss these projects and make a semi-final selection. As the technical/advisory body, they would propose this selection to the Conference of Ministers which would be the decision-making organ and make the final selection. The Conference of Ministers would also appoint the Director General of the Centre and determine its general policy. Projects adopted by the Conference of Ministers would be financed half by the industrial enterprises that made the proposal, and half by the Governments of participating States with the assistance of regional organisations (Trust Fund for the Mediterranean Action Plan) or regional divisions of international organisations (UNEP, UNIDO, Regional Economic Commissions and Banks, etc.): It is these latter that should facilitate the participation of the developing countries of the Southern Mediterranean in the projects.

5. Project Scope

The Centre itself, when fully developed, should be spacious enough to accommodate 300 professionals and support staff most of whom would be seconded by their firms or Governments. The Centre's indirect effect on local industry

could be in terms of 500-1000 jobs in all manufacturing and service sector industries. The Centre should be furnished with some basic equipment such as a deep, free surface diving tank for development and testing of underwater equipment; a pressurized diving tank for deep water system developmepnt; a large cavitation tunnel for propellor research and instrument calibration, ship construction facilities, etc.

The Centre might specialise, inter alia in the following sectors of R&D:

. aquaculture technologies;

. biotechnology applied to aquaculture, marine-based pharmaceuticals, protection of marine vessels and structures from biodeterioration, and clean-up of chemical and microbial pollution;

. alternative energy technologies;

. production and utilisation of by-products and wastes from fish and macroalgae processing (e.g., chitin from shellfish wastes);

. technologies concerned with and development of new products such as unusual sugars, polysacchharides, carotenoids and algl lipids;

. Desalination technologies;

. design, construction and operation of transportation systems;

. technologies concerned with the land/sea interface, including port and harbour development, erosion protection and near-shore engineering;

. measurement and instrumentation development, coastal engineering and data acquisition, ship operation and

engineering, computer-aided ship design and manufacture; ship and structure model tests, and performance evaluation.

This list is merely illustrative. Initially, the Centre would concentrate on some of these aspects, as determined by the Conference of Ministers.

Training, information and publication as well as the organisation of regional conferences and symposia, in accordance with Art. 277 of the U.N. Convention on the Law of the Sea would be part of the responsibilities of the Centre. These activities can in fact best be carried out in conjunction with research and development.

The basic facilities would be offered by the host country; All projects would be financed in accordance with the scheme described above.

6. Project Procedure

The first step would be a feasibility study. It is suggested that one of the marine-oriented EUREKA projects be used for the purpose. Particularly suitable for the purpose might be EUROMAR as it deals with technologies directly relevant for the Mediterranean Action Plan: technologies that are to be applied in all the Seas of Europe. These seas, undoubtedly include the Mediterranean; but it is impossible to deal with the Mediterranean marine environment without the partipation of non-European countries. It might therefore be practical to organise one sector of EUROMAR with the participation of non-European Mediterranean States. The feasibility study thus could utilize a completely ready framework: The Mediterranean Plan of Action; EUROMAR; and the United Nations Convention on the Law of the Sea.

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ANNEX VII

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MANAGEMEMT AND CONSERVATION OF MARINE RESOURCES

CLASS A: OCEAN MINING

Activity Brief

Title:	Training Programme, Class A 1987
Collaborating Institutes:	International Ocean Institute (IOI) Friedrich Ebert Foundation Hamburg University Preussag AG IFREMER
Duration:	Ten weeks: April 27-July 3, 1987
Venue:	Malta, plus field trips
Language:	English
Course Director:	Dr. Reynaldo Galindo Pohl, El Salvador
Executive Director:	C.F. Vanderbilt, Malta
Assistant Director:	M.C. Sammut, Malta

TRAINING PROGRAMME, CLASS A, 1987

INTRODUCTION

Technological change and political and legal developments during the second half of the twentieth century have basically transformed the uses of the oceans and the role of ocean space and resources in the political and economic life of the world ommunity and of every State. The new marine sciences have opened new perspectives of our planet and of man's place in it. The penetration of the industrial revolution into the oceans has added a new dimension to development strategy, and the United Nations Convention on the Law of the Sea, adopted in 1982 and signed by 159 States and entities, could, if properly implemented and utilised, constitute the first building block of a new international order, including a new international economic order.

New concepts such as "integrated ocean management," new methodologies to calculate the contributions of the marine sector to GNP; new economic theories, aiming at a synthesis between economy and ecology, are emerging. The concept of the Common Heritage of Mankind potentially changes the relationship between poor and rich nations.

All this requires a new type of civil servant and a new type of manager, at home both in the natural and the social sciences, in the management of high technology, the management of the environment, and the management of multinational human resources.

It is in this context that the IOI has been organising a series of training programmes in the management and conservation of marine resources, designed especially for civil servants and managers from developing countries. Three types of programmes have been conducted: Class A deals with all forms of ocean mining (including offshore oil); Class B is devoted to the issues of Economic Zone management; and Class C covers all uses of the sea in a particular oceanic region, for participants only from that region.

This programme is designed to give participants an overview of the many and varied aspects of the management both of the EEZ and the seabed area beyond the limits of national jurisdiction. It attempts to increase awareness of the fact that ocean management adds a new dimension to development strategy; that it requires broadly interdisciplinary skills, new institutional and legal infrastructures, and new forms of local, national, international, intergovernmental and nongovernmental organisation and cooperation.

After six years, the programme is being re-organised so as to take into account the latest scientific and economic developments as well as the ongoing work of the Preparatory Commisssion for the International Sea-Bed Authority and for the International Tribunal for the Law of the Sea. A special curriculum workshop has been organised to assist the IOI in redesigning the programme in accordance with the special needs of the Delegates.

The programme devotes the first week to an introduction to oceanography, the idea being to show the interrelationships that exist across the globe and the relevance of the marine sciences to resource exploration and exploitation. During the second week, participants will examine the U.N. Convention on the Law of the Sea, beginning with a general overview and continuing with analyses of the provisions relevant to the course, i.e., the management of nonliving resources of the sea. This includes scientific research, technology transfer, the protection of the environment, navigational problems, boundary delimitation, information technology, etc. Subsequent weeks examine competent international organisations, the management of oil and gas, shipping and navigation as well as health and safety measures offshore.

OBJECTIVES

The basic purpose of the programme is to improve the analytic competence of the participants on issues relating

to ocean management, performance improvement, approaches, and strategic management techniques. specifically, the objectives of the programme are the following:

(a) to familiarize the participants with all the major uses of the marine environment and its mineral resources in their interaction and with a systems approach to management;

(b) to assist participants in the ongoing process of harmonizing national legislation and integrating the policies of national and international institutional structures to maximize the contribution of the marine sector to GNP, with due consideration for the conservation of marine resources and the marine environment.

The programme will therefore present a blend of policy-making and managerial concerns, with emphasis on the economic/ecological, legal and technological macro-environment in which marine resource management has to function, as well as on the different managerial processes and alternatives at the micro-level.

METHOLOLOGY

The programme structure itself will reflect the methodology it attempts to convey to the participants on marine resource management and marine policy making. This methodology will be based on

participative and problem-oriented lecturing;

case method;

case presentation;

group sessions;

field trips;

simulation exercises;

report presentation by participants.

Participative and problem-oriented lectures

Lecturers/discussion leaders will be drawn from both developed and developing countries. Many come from international organisations including the United Nations and its many related bodies.

Participants will be organised in discussion groups. Each group by rotation will select the chairman and a discussant for each discussion session.

Case Method

Case studies from various countries will be presented to analyse marine policy and management practices in countries of different stages of development and with different economic interests, to assist participants in the preparation of their own presentations.

Country Reports

Each participants is requested to prepare a country report related to (a) marine legislation in his or her country; (b) institutional infrastructure: How are marine resources managed and regulated? Which Government Department is responsible? How is marine policy formulated? (c) resource basis; (d) regional cooperation mechanisms; (e) contribution of the marine sector to GNP. These reports will be presented and discussed during the final week of the programme.

Participants should bring with them the necessary background material such as national legislation, national development plan, and statistical data on marine resources.

Group Sessions

A "resource person" from faculty will be assigned to each group to facilitate the discussion of topics and issues.

Group discussions will be linked to the subject(s) of the week's programme and should result in the drafting of a weekly summary of the issues, information and recommendations.

Field Trips

Participants will visit the most important sites of marine enterprises in offshore oil and nonfuel mineral mining, etc., and have the opportunity for discussions with managerial personnel. There will be organised tours of scientific institutions, the Port of Malta, an offshore oil rig, a research ship, etc.

Report Presentations

In addition to the individual country reports, participants will be required to prepare one group report incorporating the information presented during the entire programme, raising the major issues that have emerged, drawing conclusions and attempting some policy recommendations of their own.

Simulation Exercise

An exercise simulating a contract negotiation or boundary negotiation in which participants will be assigned the roles of various negotiators will be conducted towards the end of the programme. Participants will be shown the use of computers as aids in negotiation.

Reading materials

A reading list will be distributed at the beginning of the course, and every Friday, the papers to be studied for the following week will be handed out.

Participants

The programme is intended for mid-career civil servants from all government branches involved in one way or another in ocean mining (Foreign Affairs, Mines & Energy, Science & Technology, Shipping & Navigation; Ports & Harbours; Coastguards & Navy; Environment, etc.). The preferred age is between 25 and 35. Candidates should have at least one academic degree or equivalent and at least two years of working experience.

Daily Schedule

There will be four sessions of one and a half hours each, Mondays through Fridays. There may be some evening lectures on selected days. The discussion leader will be given about 45 minutes for his or her presentation in each of the sessions; the discussant, about 10-15 minutes, and the remaining time will be reserved for general discussion.

The daily schedule will be as follows:

Session 1:	09:00 - 10:30
Break:	10:30 - 10:45
Session 2:	10:45 - 12:15
Lunch:	12:30 - 14:00
Session 3:	14:00 - 15:30
Break:	15:30 - 15:45
Session 4:	15:45 - 17:15

Evaluation

An appropriate questionnaire will be distributed to the

participants before the closing session for programme evaluation and feedback.

SYNOPSIS

Week 1:	The Sea Around us: an Introduction to Oceanography
Week 2:	The United Nations Convention on the Law of the Sea
Week 3:	National Experience in Ocean Management: Oil and Gas
Week 4:	Oil and Gas, continued
Week 5	Mineral deposits in the EEZ
Week 6:	The minerals of the deep sea-bed
Week 7:	Field trip to research stations and company headquarters in continental Europe
Week 8:	Economics and Management
Week 9:	Contract negotiation and simulation exercise
Week 10:	Presentation of participants' Reports, evaluation; award of certifiates. Closing session.

SYLLABUS

Week 1: Introduction to the Programme. Introduction to Oceanography

Monday, April 27

10:00 - 12:00. Inauguration at the Mediterranean Congress Centre

Keynote address: Man and the Oceans, 2000

14:00 - 16:00. Discussion with participants on the Class A Ocean Mining programme. Organisational matters.

Tuesday, April 28, and
Wednesday, April 29

Introduction to Oceanography

Coordinator: Professor Robert Fournier, Vice President for Research, Dalhousie University

Note

In the following set of four lectures and discussions sessions, an attempt will be made to define terms and describe large-scale phenomena, i.e., to show the various interrelationships that exist across the globe. This will be followed by a narrowing of the view so as to focus on processes which operate close to shore or on the continental shelves. The goal will be to give some basic principles and examples which would be useful to the nonscientist as a means of putting potential problems dealing with resource exploitation or conservation and pollution in their proper oceanic context.

Tuesday, April 28

09:00 - 12:15. The oceanography lectures begin with an overview of the major features of the ocean basins. This is a descriptive look at the sea floor showing the relationship of various important features such as the position of mid-ocean ridges, continental margins and other topographic features. Any future consideration of ocean dynamics (e.g., circulation) requires a knowledge of the basin in which the liquid resides. Also, consideration of various resources depends on some knowledge of their location. Following this descriptive overview, consideration will be given to the dynamics of sea floor spreading, continental drift and plate tectonics. This will not be an attempt to provide detail on these processes but rather to show how over the past 150 million years they have contributed and continue to contribute to marine resources valuable to man (e.g., oil on the continental shelves or metal deposits at hydrothermal vents). Finally a brief review of sedimentary processes will be important as a means of understanding river input to continental shelves, sediment transport along coastlines and deep sea deposits such as manganese nodules. In general, this initial consideration of the sea floor should provide a basic overview of that part of the earth which must be considered the common heritage of mankind in the context of the new United Nations Convention on the Law of the Sea.

14:00 - 17:15. The second series of lectures and discussions will deal with sea water itself, as a precondition to understanding both physical and biological processes. Attention will be devoted to residence in time in the context, e.g., of possibly following pollution, the heat capacity of water and the ocean/atmosphere link as a means of understanding both atmospheric and oceanic circulation. The fundamentals of circulation are essential for anyone interested in understanding the dynamics of the oceans: the fact that

they are all interconnected, the general pattern and rate of current movement, their temporal and spatial scales and how these affect coastal States. Finally, consideration will be given to energy in the seas in the form of waves and tides. These considerations are extremely important since they are generally perceived as the way in which energy is transferred from the ocean to the land. Specific examples are storm surges, tidal currents and tsunamis.

Wednesday, April 29

o9:00 - 12:15. The third series of lectures and discussions will concern the coastal regions including inland seas, estuaries and the coastline itself. Attention will be given to defining these regions on the basis of their physical differences and especially the way physical processes differ close to shore as compared with the open ocean. Specifically, consideration will be given to temporal and spatial scales and their importance when dealing with potential problems along a shoreline. Since estuaries play an important role in transportation, food supply, waste disposal, etc., a short review of estuarine circulation will be attempted.

14:00 - 17:15. The final set of lectures and discussions will deal with life in the sea. Building on previous discussions, an attempt will be made to show which regions of the world ocean are productive. Attention will be given to the various factors which contribute to this production: including biological, physical and chemical factors. An important point that will be emphasized is that oceanic production is very heterogeneous and that a variety of local factors can have considerable importance, e.g., tidal mixing, local circulation, prevailing winds, orientation of the coastline, fronts, etc. Finally, some attention will be paid to specialized situations such as reefs, upwelling situations, and deep-vent communities.

Thursday, April 30

Field trip: Cruise on oceanographic research ship if available.

Friday, May 1

Holiday

WEEK 2: The U.N. Convention on the Law of the Sea

Monday, May 4

09:00 - 12:15. The Convention as a whole: Introduction and overview.

Speaker: Dr. Reynaldo Galindo Pohl

14:00 - 17:15. The Convention as a whole, continued

Tuesday, May 5

09:00 - 12:15. Film with Tommy Koh, and discussion

14:00 - 17:15. Boundary Delimitation workshop

Workshop leader: Dr. Aldo Chircop, Malta

Wednesday, May 6

09:00 - 12:15. Regime for the management of nonliving resources: The Exclusive Economic Zone

14:00 - 17:15. Regime for the management of nonliving resources: the International Area. Part XI and pertinent Annexes of the Convention.

Speaker: Dr. Reynaldo Galindo Pohl

Thursday, May 7

09:00 - 12:15: The Preparatory Commission; Resolutions I and II

14:00 - 17:15 The Provisional Understanding. The Arusha Understanding. Understanding on the Implementation of Resolution II adopted by the Fourth Session of the Prep.Com.

Speaker: Dr. Reynaldo Galindo Pohl

Friday, May 8

09:00 - 12:15 Working Papers 6, 7, and 8 of Special Commission II

14:00 - 17:15. The Australian Working Paper. The Austrian Working Papers. The Columbian Working Paper. Conclusions and Summary.

WEEK 3: Offshore Oil Production

Monday, May 11

General introduction: statistical information. Worldwide energy demand and supply; energy use projections; the prospects of offshore oil; historical background of oil industry development.

Basic oil and gas accumulation concepts; origin of oil and gas; sedimentary rock accumulation; geological concepts and principles; source rocks, migrations and traps; geophysical exploration methods; gravity, magnetic, seismic operations and equipment; manpower requirements for geophysical activities.

Tuesday, May 12

Geological exploration methods; sedimentary deposition, lithology; dating, fossils, trends; cores and cuttings analysis; correlations and exploration; introduction to land-based drilling operations; drilling fundamentals; drilling rig components and equipment, cuttings, retrieval, core analysis.

Basic drilling procedures; drill bits, pipe; drilling muds; casing and cementing; logging and testing.

Wednesday, May 13

09:00 - 12:15: Field trip to Oil Pollution Combatting Centre

14:00 - 17:15: Basic offshore drilling; vessel types; mooring systems; guideline systems; basic drilling; differences between landbased and offshore drilling. Specialized offshore equipment: subsea wellhead systems; subsea blow-out preventors; emergency disconnect systems. Well completions; completion methods; specialised operations and equipment; emergency shutdowns.

Thursday, May 14

Field production operations; separators, treaters, dehydrators, compressors, pumps; production platforms, selection criteria, costs, economics.

Transportation and refining; crude oil transportation by pipelines and tankers; refinery consideration and basic process; storage; gas liquids and natural gas liquefaction; equipment and process.

Field trip to refinery facilities.

Friday, May 15

Blow-outs and blow-out prevention.

Field trip to oil company offshore supply base and supply boat (if available).

Communications: rig positioning logistics; navigational; ship to shore, telecommunications; weather broadcasts; production facilities; telemetry;

TV cameras; diving bells; diver assist systems.

General discussion of manpower and skills requirements to operate and support an offshore drilling operation.

Saturday, May 16

A field trip to an offshore rig (weather permitting and arrangements successful).

Co-ordinators:

Mr. B.N. McLean
Consultant

Mr. G.D. Sutherland
Geofossil Canada Ltd.
Calgary, Alberta

WEEK 4: Oil and Gas, continued

Monday, May 18, and
Tuesday, May 19 Environmental Control and Considerations

- Introduction to environmental considerations
- Petroleum hydrocarbon chemistry, toxicity
- Effects of pollutants in oceans
- Impact of oil pollution on fisheries

- Remedial measures to combat oil spills; dispersants; sinkants; clean-up apparatus; applications.

- Contingency plans

- Regulations, impact assessments

- Case histories

- Environmental control model participation exercise.

Co-ordinators:

Dr. J.H. Vandermeulen
Marine Ecology Lab. BIO

Mr. C.W. Ross
Senior Environmental Co-ordinator, Mobil Oil Canada Inc., Halifax, N.S.

Wednesday, May 20

09:00 - 12:15: the social impact of oil on coastal communities.

Identification and measurement of socio-economic impact, desired objectives; financial balance sheets and the quality of life; the cycle of on-shore impacts; national and local strategies for responses to offshore developments; coping with impacts -- reactions of the offshore operators. Case study: Offshore production and small coastal communities. Conflicts between oil production and fisheries.

Speaker: ALECSO

14:00 - 17:15. Social impact, continued.

Evening: Film and discussion

Thursday, May 21

9:00 - 12:15. The politics of oil. The structure of the industry. The role of the multinational oil companies, methods of operation; internal organisation; patterns of relations with host countries; ownership and payment arrangement with host countries; nationalisation and its effects; employment and training of host-country nationals; the evolution of OPEC and its interaction with the oil companies.

What are the costs and benefits to a developing country for developing an association with a multinational oil company to exploit offshore economic-zone petroleum resources? How can this economic, political and contractual relationship be structured to maximise benefits to the host country?

Speaker: Professor Robert Meagher, Fletcher School of Law and Diplomacy.

14:00 - 17:15. The politics of oil, continued.

Friday, May 22

09:00 - 12:15. Case study: Oil production in India

Speaker: Dr. Malhotra, India

14:00 - 17:15. Case study: Oil production in Venezuela

Speaker: Ambassador Andres Aguilar, Venezuela

Summary and Conclusions of the two weeks.

WEEK 5: Unconsolidated Mineral Deposits in the EEZ

Monday, May 25

09:00 - 12:15. Exploration technology and strategy

14:00 - 17:15. Mining and processing

Tuesday, May 26

09:00 - 12:15. Assessment methodology. Terminology and resource classification.

14:00 - 17:15. Assessment Methodology, continued. Exploitability. Resource assessment.

Wednesday, May 27

09:00 - 12:15. Application. Information requirements. Design of research programmes.

14:00 - 17:15. Resource managaement.

Thursday, May 28

09:00 - 12:15.Participants' workshop. Adaptation of course material to specific regional and national situations.

14:00 - 17:15. Workshop continued.

Friday, May 29

09:00 - 12:15. Presentation of reports. Overview of regional course outline.

14:00 - 17:15. Review of trial assessment.

Coordinator: David Pasho, Canada

WEEK 6: The Minerals of the Deep Sea-Bed

Monday, June 1

09:00 - 12:15. A survey of mineral exploration on the deep sea floor. The polymetallic nodules. Recent discoveries of polymetallic sulphides and cobalt crusts.

Speaker: Dr. Alexander Malahoff, USA

14:00 - 17:15. Films. Discussion.

Tuesday, June 2

09:00 - 12:15. Exploration technology and strategy.

14:00 - 17:15. Mine siting and resource assessment.

Wednesday, June 3

09:00 - 12:15. Mining technology. Hydraulic and air lifts. Continuous line buckets. Remote controlled shuttles. Research and development. New mining concepts.

14:00 - 17:15. Transport logistics.

Thursday, June 4

09:00 - 12:15. Processing technologies. Pyrometallurgy and hydrometallurgy.

14:00 - 17:15. Analytical methods: Determination of metal contents of manganese nodules.

Friday, June 5

09:00 - 12:15. Processing plant siting. The role of land-based producers in processing. Environmental

impact of processing.

14:00 - 17:15. Industrial uses of nickel, copper, cobalt, and manganese. Substitutions. New materials.

WEEK 7: Field Trip to Research Centres and Company Headquarters in continental Europe

This will include Bremerhaven, with visits to the Alfred Wegener Institute (marine geology), port and drydock facilities and other marine-industrial establishments; Hamburg University and its laboratories for environmental studies and pollution control; Hannover, with the headquarters of Preussag AG. If arrangements can be made, a two-day visit to IFREMER in Brest (France) will be added.

WEEK 8: The Economics of Mineral Mining

Monday, June 15

09:00 - 12:15. The mineral market; includes consideration of the difficulties of forecasting demand curves and examines the reasons for instability of prices.

14:00 - 17:15. The mineral miners: structure of the industry.

Tuesday, June 16

09:00 - 12:15. The changing environment. The monetary system. Banking , credit and debt financing. International trade.

14:00 - 17:15. The changing environment of the enterprise: technological, socio-economic, political, ecological, international aspects. Resistance to change, and how to cope with it.

Wednesday, June 17

09:00 - 12:15. Strategic planning and management in the private sector. Relations with Governments, community and social responsibilities; unions, environmental responsibilities. investment policy; financial management and resource allocation; budgeting for productive R&D.

14:00 - 17:15. Strategic planning in the public sector. Relations with the private sector, international relationships. Community and social responsibilities; Unions; environmental policies. The planning, programming, budgeting system; budgeting for productive R&D.

Thursday, June 18

09:00 - 12:15. The Joint Venture Enterprise. Goal and policy frameworks; programme management, financial management and production policy. Marketing policy.

14:00 - 17:15. Planning, financing and controlling producive R&D; technology management; productiity and employment. Automation, technology transfer; co-development of technology; environmental policy.

Friday, June 19

09:00 - 12:15. Workshop. Integrated project design.

14:00 - 17:15. Workshop, continued.

WEEK 9: Contract negotiation and simulation exercise

Monday, June 22

09:00 - 12:15. Detailed examination of various types of

contracts. Contracts with the Authority and the Enterprise.

14:00 - 17:15. Examination of different kinds of ownership and their consequences; majority vs. equal vs. minority participation of the investor.

Tuesday, June 23

09:00 - 12:15. Meaning and elements of negotiation as a technique to achieve results; what kind of knowledge and expertise is needed to strengthen developing countries in contract negotiations.

14:00 - 17:15. Workshop: Computer-aided negotiation.

Wednesday, June 24,
Thursday, June 25, and
Friday, June 26

Simulation exercise: a contract negotiation

WEEK 10:

Monday, June 27, through
Friday, July 3

Presentation and discussion of country reports. Presentation and discussion of group report. Award of certificates. Closing of programme. Key-note address: The International Sea-bed Authority, the Common Heritage of Mankind, and the New International Economic Order. Prospects for the Future.

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ANNEX VIII

Pacem in Maribus

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IOI TRAINING PROGRAMME

ON SEA-BED MINING

ACTIVITY BRIEF AND SYLLABUS

Title:	Training Programme, Class A2, 1987
Collaborating Institutes:	International Ocean Institute (IOI) University of the West Indies (UWI)
Duration:	Four weeks, March 9- April 3,1987.
Venue	UWI, Kingston, Jamaica
Language:	English
Course Director:	Dr. Krishnan Saigal, India
Assistant Director	Ms Anita Coady, Canada

TRAINING PROGRAMME, CLASS A2, 1987

INTRODUCTION

The IOI has been organising a series of training programmes in the management and conservation of marine resources, designed especially for civil servants and managers from developing countries. Three types of programmes have been conducted: Class A deals with all forms of ocean mining (including offshore oil); Class B is devoted to the issues of Economic Zone management; and Class C covers all uses of the sea in a particular oceanic region, for participants only from that region.

Class A2, 1987 is especially designed for civil servants, above all, from developing countries although it is open to industrialized countries as well, who will be in charge of arrangements for ocean mining and relations with the International Seabed Authority and the Enterprise.

The theme of the training programme is:

Seabed Mining: Prospects.Position of the Enterprise

OBJECTIVES

The basic purpose of the programme is

(a) to sensitise the participants to the multi-disciplinary aspects (Law, Economics, Marine Science and Technology; Management; Negotiating Skills and Diplomacy) of decision making in high technology areas such as deep-sea mining;

(b) to make participants develop some of the attributes of "group think" involved in ocean technology;

(c) to familiarize participants with the organisation, functions, and major technical working documents of

the Prep.Com.

(d) to develop skills in project design, management, and evaluation in deep-sea mining.

METHODOLOGY

The programme structure itself will reflect the methodology it attempts to convey to the participants on ocean mining management and policy. This methodology will be based on

participative and problem-oriented lecturing;

group sessions

workshops in project design

Simulation exercise

attendance of Prep.Com. sessions.

Lecturers

Lecturers/discussion leaders will be drawn from both developed and developing countries. They will include leaders in the work of the Preparatory Commission.

Group sessions

A "resource person" from faculty will be assigned to each group to facilitate the discussion of topics and issues. Group discussions will be linked to the subject(s) of the week's programme and should result in the drafting of a weekly summary of the issues, information, and recommendations.

Workshops

Working groups of 4-6 participants will be in charge of preparing model project designs and evaluations for

discussion by the class as a whole.

Simulation exercise

An exercise simulating a contract negotiation will be conducted towards the end of the programme. Participants will be assigned the roles of various negotiators. They will be shown the use of computers as aids in negotiation.

Attendance of Prep.Com. Sessions

During the fourth week, which will coincide with the first week of the Fifth Session of the Prep.Com., classes will be held in the evenings, giving to Participants the occasion to attend Prep.Com. sessions as observers. During that week, evening classes will be open to Delegates who may want to attend as observers.

READING MATERIALS

A reading list will be distributed in advance. The Law of the Sea Library, the UWI Library, plus some material especially assembled by the IOI, will be available to participants.

PARTICIPANTS

The programme is intended for mid-career civil servants from all government branches involved in one way or another in ocean mining (Foreign Affairs, Mines & Energy, Science & Technology; Shipping & Navigation; Ports & Harbours; Navy; Environment; Economic Planning.) The preferred age is between 25 and 35. Candidates should have at least one academic degree or equivalent and at least two years of working experience.

SCHOLARSHIPS

Scholarships for participants from developing countries are available and should be requested through the UNDP Resident

Representative in the participant's home country. The cost of the scholarship is U.S.$2,700 plus overseas air fare. The scholarship covers 30 days room and board, tuition fee, teaching materials, pocket allowance, and medical insurance. Scholarships must be paid to the IOI, Lester Pearson Institute, Dalhousie University, Halifax, N.S. Canada not later than February 28.

DAILY SCHEDULE

During weeks 1 through 3, there will be four sessions of one and a half hours each, Mondays through Fridays. There may be some evening lectures or discussion groups or films on selected days. During the morning sessions, discussion leaders will be given about 45 minutes for his or her presentation in each of the sessions; one or two discussants should comment for about 10-15 minutes, and the remaining time will be reserved for general discussion.

Beginning with week 2, afternoon sessions will be reserved for group sessions and workshops.

The daily schedule will be as follows:

Session 1:	09:00 - 10:30
Break:	10:30 - 10:45
Session 2	10:45 - 12:15
Lunch:	12:30 - 14:00
Session 3:	14:00 - 15:30
Break:	15:30 - 15:45
Session 4:	15:45 - 17:15

During week 4, the working schedule will be the schedule of the Prep.Com.:

Morning session:	10:00 - 13:00
Lunch:	13:00 - 15:00
Afternoon session:	15:00 - 18:00

Classes will be held in the evenings, from 20:00 to 22:30.

EVALUATION

An appropriate questionnaire will be distributed to the participants before the closing session for programme evaluation and feedback.

SYNOPSIS

Week 1:	The United Nations Convention on the Law of the Sea
Week 2:	Scientific and technological aspects of deep-sea mining
Week 3:	Economic and managerial aspects of deep-sea mining.
Week 4:	Prep.Com., exercises and simulations.

SYLLABUS

Week 1: The United Nations Convention on the Law of the Sea.

Monday, March 9

9:00 - 10:30. The 1982 Convention and the International Seabed Area. Background.

10:45 - 12:15. An overview of the provisions of the Convention (Articles 133-191). The Concept of the Common Heritage of Mankind.

14:00-15:30. Annexes III, IV and VI (Seabed Dispute Chamber.

15:45-17:15. Resolution I (Preparatory Commission) and Resolution II (Preparatory Investment in Pioneer Activities)

Speaker: Dr. Lennox Ballah, Trinidad and Tobago

Tuesday, March 10

09:00 - 10:30. The International Regime and Machinery. The parallel system of exploitation. Special provisions for he Enterprise.

(a) under the Convention: financing of one reserved mine site, transfer of technology, training of personnel, reservation for production authorisation for two mine sites, priority, etc.

(b) under Resolution I (para. 5(h), 6, and 8) and Resolution II (preamble, paragraph 3(b), reserved areas, and para. 12).

10:45 - 12:15. Discussion continued

Speaker: Dr. Lennox Ballah

14:00 - 15:30. The work of the Preparatory Commission, 1983-1986. The Land-based producers (Special Commission I)

15:45 - 17:15. The Mining code: Prospecting and Exploration (Special Commission III)

Speaker: Dr. Felipe Paolillo

Wednesday, March 11

09:00-10:30. The International Tribunal for the Law of the Sea (Special Commission IV)

10:45- 12:15. The rules and regulations for the Authority (Plenary.)

14:00--15:30. Rules and Regulations for the Enterprise (Special Commission II)

15:45-17:15. Work relating to implementation of Resolution II. (Preparatory Investment in Pioneer Activities. Resolution of conflicts on overlapping claims. Arusha Understanding of February 1986. Decision of 5 September 1986 by Preparatory Commission).

Speaker: Dr. Felipe Paolillo

Thursday, March 12

09:00 - 10:30. Work of Special Commission II on Enterprise. Studies on Project Profile -- Assumptions and Options (LOS/PCN/SCN.2/WP6 and Add 1).

10:45 - 12:15. Training needs of the Enterprise (DocumentsWP 7&8)

Speaker: Dr. Lennox Ballah and Dr. K. Saigal

14:00 - 15:30. Studies on economic feasibility. The MIT study. The Hawaiian Study. The Australian Study.

Speaker: Dr. K. Saigal

15:45 - 17:15. Studies on Joint Ventures, from the Seabed Committee (Trinidad, Sri Lanka), through UNCLOS III (Austria, Netherlands, FRG) to Prep.Com. (Austria, JEFERAD, 1984-86; Colombia (1986-).

Speaker: Dr. Lennox Ballah and Dr. E.M. Borgese

Friday, March 13

09:00 - 10:30. Looking ahead. Trends:

Activities of pioneer investors (first category);
Activities of potential/prospective applicants;
Activities outside the Convention.

10:45 - 12:15. Options for the Preparatory Commission:

JEFERAD. The Colombian proposal. Proposal by Pioneer Investors pursuant to paragraph 14 of the decision of 5 September 1986 adopted by the Preparatory Commission. A combination of the above.

Speaker: Dr. E.M. Borgese

14:00 -15:30 and
15:45 - 17:15. Summing up and conclusions.

Week 2: Scientific and Technological Aspects of Deep-Seabed Mining

Monday, March 16

09:00 - 10:30. The mineral resources of the deep sea-bed.

Speaker: Dr. Alexander Malahoff

10:45 - 12:15. The mineral resources of the deep seabed, continued.

14:00 - 15:30. Group Session: Interests of Participants' home countries in sea-bed mining.

15:45 - 17:15. Group Sessions, continued.

Tuesday, March 17

09:00 - 10:30. Prospecting and Exploration. Technology and Methodology.

Speaker: Dr. Krishnan Saigal

10:45 - 12:15. Mining concepts and technologies.

Speaker: Dr. Krishnan Saigal

14:00 - 15:30. Workshop 1. Compare MIT, Hawaiian, and Australian Studies. Note similarities and differences in assumptions and outcomes.

15:45 - 17:15. Workshop 1, continued

Wednesday, March 18

09:00 - 10:30. Transportation: technology and logistics. Port facilities requirements.

Speaker: Dr. Krishnan Saigal

10:45 - 12:15. Processing technology

14:00 - 15:30 Workshop 1, continued

15:45 - 17:15 Workshop 1, concluded

Thursday, March 19

09:00 - 10:30. Processing technology, continued.

10:45 - 12:15. Environmental implications.

14:00 - 15:30 Group Session 2: Does your country want a processing plant? Discuss conditions for, and implications of, plant siting.

15:45 - 17:15. Group session 2 continued

Friday, March 20

09:00 - 10:30. Data storage and retrieval. Access to information on science and technology.

10:45 - 12:15. Research & Development: New mining concepts. Project design.

Speaker: Dr. K Saigal

14:00 -15:30. Group Session 3. Discussion of the week's work. Writing of Report

15:45 - 17:15. Group Session 3, concluded.

Week 3: Economic and Managerial Aspects of Deep-sea Mining.

Monday, March 23

09:00 - 10:30. The metal market. The market mechanisms. Determination of metal prices.

Speaker: Mati Pal

10:45 - 12:15. Demand, supply,and pricing projections. Methodology and uncertainties

Speaker: Mati Pal

14:00 - 15:30. Workshop 2. Design a Plan of Work for the Enterprise. Phase 1: Exploration, Research & Development.

15:45 - 17:15. Workshop 3, continued

Tuesday, March 24

09:00 - 10:30. Investment policy: the private sector

10:45 - 12:15. Investment policy: the public sector

Speaker: Dr. K. Saigal

14:00 - 15:30. Workshop 3. Plan of Work for the Enterprise. Phase 2. Mining and Transportation

15:45 - 17:15. Workshop 3, continued

Wednesday, March 25

09:00 - 10:30. Joint Ventures. Equity Joint Ventures and Contractual Joint Ventures. Financing structure; management structure.

10:45 - 12:15. Transfer of Technology

Speaker: Dr. K Saigal

14:00 - 15:30. Group Session 4. Discuss options for Enterprise: Independent integrated project vs. Joint Venture.

15:45 - 17:15. Calculate costs and benefits for both cases.

Thursday, March 26

09:00 - 10:30. Financial planning: Allocation of funds within mining project.

10:45 - 12:15. Financial planning, continued

Speaker: Dr. K. Saigal

14:00 -15:30. Workshop 4. Plan of work for the Enterprise: Phase 3.Processing

15:45 - 17:15. Workshop 4 continued.

Friday, March 27.

09:00 - 10:30. Training and Personnel

10:45 - 12:15 Training and Personnel, continued

Speaker: Dr. K. Saigal

14:00 - 15:30. Workhop 5. Plan of Work for the Enterprise: Phase 4. Marketing.

15:45 - 17:15. Workshop 5, concluded. Summary of the week.

Week 4: Prep.Com, Exercises, simulation.

Monday, March 30

10:00 - 13:00. Prep.Com.

15:00 - 18:00. Prep.Com.

20:00 - 22:30. The issues before the Fifth Session

Speaker: Dr. Jean-Pierre Lévy

Tuesday, March 31

10:00 - 13:00. Prep.Com.

15:00 - 18:00 Prep.Com.

20:00 - 22:30 Negotiating techniques

Speaker: Professor Gilbert Winham, Canada

Wednesday, April 1

10:00 - 13:00. Prep.Com.

15:00 - 18:00. Prep.Com.

20:00 - 22:30. The use of computers as negotiating aids

Speaker: Dr. Michael Staley, Canada

Thursday, April 2

10:00 - 13:00. Prep.Com.

15:00 - 18:00. Prep.Com.

20:00 - 22:30. Simulation exercise: Negotiating a Joint Venture contract.

Friday, April 3

10:00 - 13:00. Prep.Com.

15:00 - 18:00. Prep.Com.

20:00 - 22:30. Simulation Exercise concluded. Conclusion of programme.

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ANNEX IX

Pacem in Maribus

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PACEM IN MARIBUS XV

MALTA, SEPTEMBER 1987

First Draft

The International Ocean Institute announces

PACEM IN MARIBUS XV

which will be held in Malta in September 1987.

SPONSORS

Pacem in Maribus XV is co-sponsored by the IOI, The Government of Malta, the United Nations University, and the United Nations Environment Programme.

BACKGROUND

Pacem in Maribus is the annual conference of the International Ocean Institute. Pacem in Maribus I was held in Malta in July, 1970, to discuss the implications of the Maltese initiative in proposing to the United Nations a new ocean regime based on the concept of the Common Heritage of Mankind. Pacem in Maribus I was attended by about 300 leading personalities expert in the Law of the Sea, the marine sciences and the marine industries, including the major figures of what was to be UNCLOS III. Pacem in Maribus I dealt with the legal aspects of the future ocean regime ("A Constitution for the Oceans"), with the military uses of the sea ("Quiet Enjoyment"), with the protection of the marine environment; with international cooperation in the marine sciences; with ocean enterprises; and with Planning and Development in the Oceans.

Subsequent Pacem in Maribus Convocations were held in Malta, Japan, Cameroon, Mexico, Algeria, Sri Lanka, Austria, and Sweden. Pacem in Maribus XIV was held in the Soviet Union, in Moscow and on board the Konstantin Simonov cruising the Black Sea. Pacem in Maribus XIV dealt with the technical,

legal, environmental and economic aspects of shipping and navigation.

PURPOSE & SCOPE

Pacem in Maribus XV is to commemorate the 20th anniversary of the Maltese initiative which led to UNCLOS III.

Pacem in Maribus XV is to draw renewed attention and generate renewed commitment to the United Nations Convention on the Law of the Sea.

Pacem in Maribus XV will be both retrospective and prospective. It will review and analyse what has happened during the two decades since the Maltese initiative, and it will attempt to project future trends.

Pacem in Maribus will issue an appeal, emphasizing the fundamental importance of the new Law of the Sea and trying to mobilize public opinion in favour of early ratification and effective implementation of the Convention.

Pacem in Maribus XV is being planned during the Year of Peace, and it should emphasize that Peace on the Oceans, Pacem in Maribus could make a significant contribution to Pacem in Terris, Peace on Earth.

PARTICIPATION

Participants in Pacem in Maribus will be prominent persons in UNCLOS III, in the Preparatory Commission for the International Seabed Authority and for the International Tribunal for the Law of the Sea; Judges of the International Court of Justice; representatives of the United Nations and its Specialized Agencies and other international and regional organisations; diplomats; legal experts executives of ocean enterprises; marine scientists.

PREPARATION

Seven study projects have been commissioned in preparation for Pacem in Maribus XV. These will be ready, in draft form, in February, 1987. At that time, a preparatory seminar will be held in Malta, under the joint auspices of the IOI and the United Nations University. The Preparatory Seminar will be attended by about thirty experts. It will examine the draft projects, which will be completed, incorporating any changes suggested by the Seminar. The study projects will form the basis of discussion for Pacem in Maribus XV.

The Study Projects will deal with the following subjects:

Project I

The United Nations Convention on the Law of the Sea in Perspective and Development.

Coordinator: Dr. Arvid Pardo

co-operating institutions: the IOI; the United Nations Law of the Sea Secretariat; the Afro-Asian Legal Consultative Committee; the Organisation for African Unity; The Economic Commission for Latin America; ALECSO; the European Economic Community.

Scope:

Fifteen years of hard negotiations, of changing perspectives and shifting interests, of economic, political, and technological transformations, have passed between November 1, 1967, when Malta presented its proposal for a new ocean regime to the United Nations, and the adoption of the United Nations Convention on the Law of the Sea, in December, 1982. How much of the Maltese dream lives forth in the Convention? How much of it had to yield to political compromise and changing circumstances? The Convention is a product as well as a process: a document of achievement as well as of inspiration: for ever unfinished business. What are the trends of further evolution of the Law of the Sea during the next twenty years?

Contents:

1. Introduction

2. Codification of traditional law of the sea. Innovations in Parts I-X of the Convention.

3. Part XI of the Convention: The International Sea-bed Authority: A Critical analysis

4. Parts XII-XIV of the Convention: The Protection of the Marine Environment; Marine Scientific Research; The Transfer of Technology: Critical analysis.

5. Part XV: Dispute Settlement. Critical Analysis

6. Transitional Provisions. The Preparatory Commission. Unfinished Business.

PORJECT II

The Impact of the New Law of the Sea on National Institutions

Co-ordinators: Dr. Anton Vratusa; Dr. Geoffrey Kesteven

Scope:

This project will have two major components.

The first part will examine the "focal points" for marine policy making in the national institutional infrastructures in ocean affairs. Many States are establishing Departments for Ocean Development, Ministries for Ocean Affairs, etc., or otherwise attempting to co-ordinate, at the Ministerial level, the activities of the many government departments involved in one way or another in ocean affairs (Foreign Affairs, Agriculture & Fisheries; Mines & Energy; Commerce;

Navy & Coastguards; Ports & Harbours; Coastal Management; Environment; Tourism; Science & Technology; Economic Development; etc.) The characteristics of this emerging institutional infrastructure varies, depending on the basic structure of the State itself, the stage of economic development, and the degree of involvement in marine affairs. This part of the project will attempt a comparative study of institutional arrangements.

The second part of the study will deal with the economic aspects of national development. A number of coastal States have had an Exclusive Economic Zone for a long period of time; some of them for over a decade. What effect has it had on their GNP? On the nutrition of their people? On employment? What difficulties have they encountered? How have they dealt with foreign fishing fleets and oil companies? How have they confronted the problems of surveillance and enforcement? What can they do, during the next twenty years, to improve access to information and data and increase benefits from marine resources?

Contents:

Part I

1. Selective Country profiles

2.Comparative analysis

Part II

1. The Economic Zone

2. Contribution to GNP. Comparative study

3. Arrangements with foreign States and companies

4. Development cooperation arrangements, regional and other

5. Development and environment

6. surveillance and enforcement

7. Integrated EEZ Management

PROJECT III

The Impact of the New Law of the Sea on International Institutions.

Co-ordinators: Dr. Mario Ruivo; U.N. Secretariat for the Law of the Sea; Miss Lee Kimball.

Scope:

The evolution of institutional infrastructure at the national level is parallelled by a corresponding evolution of infrastructure at the international level. The Convention makes new demands and imposes new responsibilities on the international organisations involved in marine affairs: the Specialised Agencies of the United Nations, other intergovernmental organisations, as well as nongovernmental organisations, referred to by the Convention as "the competent international organisations." These organisations are in the process of assessing their new tasks and responsibilities, which range from training and technical assistance to developing countries to facilitating international cooperation in the management of living resources, the marine environment or the development of marine sciences and technologies; from assisting in the establishishment of boundaries, shipping lanes, or standards, to facilitating dispute settlement. If the Convention is to be implemented effectively, these international institutions need to be strengthened, and mechanisms for the coordination of their functions and integration of their policies within the United Nations system will have to be re-inforced to enhance the role of the United Nations in preparatory work, in coordination, in monitoring developments, disseminating information on the

Law of the Sea and promote acceptance of and respect for the Convention.

The future of the International Sea-bed Authority, in the light of changing economic, scientific, and technological circumstances, will be a sub-project of this project on the future of international organisations.

Contents:

1. The role of the U.N. and other organisations involved in marine affairs: structure and functions. New tasks and their implications.

2. Funding requirements

3. Integration mechanisms.

PROJECT IV

The Impact of the Convention on Regional Cooperation and Development

Coordinators: Dr. Stjepan Keckes and Dr. Norton Ginsburg.

Co-operating organisations:IOI, UNEP, FAO,

Scope: Even the largest Economic Zones are not closed ecological systems. Economic management thus is impossible without regional cooperation. The transition from a laissez-faire system to a system of management in the marine environment is giving impetus to regional cooperation on an unprecedented scale. Regional cooperation in marine affairs offers new possibilities for South-South and North South cooperation. A part of this study will be devoted to ways and means to establish the Regional Centers for the enhancement of marine sciences and technologies, mandated by the U.N. Convention on the Law of the Sea.

Contents:

1. Criteria for determining "regional seas."

2. The Regional Seas Programme

3. FAO, IOC, IMO, and regional cooperation; the 19984 World Fisheries Conference and follow-up action

4. Linkages between land-oriented and sea-oriented regional cooperation.

5. Regional institutional infrastructure

6. The "Regional Centers."

7. Regional Funding requirements and potentials

PROJECT V

The Impact of the Convention on Scientific/industrial cooperation.

Coordinator: Elisabeth Mann Borgese

Scope:

Each one of the previous Projects deals in one way or another with the need for scientific/industrial cooperation arrangements. Within the context of economic zone management, cooperation agreements for the exploration and exploitation of living and nonliving resources will have to be developed in such a way as to assure developing countries not only profit sharing, training, and the transfer of technology in the traditional sense, but full participation in research and development, an aspect which, until now has been almost totally neglected and which, instead, is of fundamental importance if the development gap is to be bridged. At the regional level, the Regional Centers for

Marine Industrial Technologies would offer new scope for South-South and North South industrial cooperation and the co-development of technologies. At the international level, the International Sea-bed Authority provides a unique framework for this new type of cooperation in high technology.

Contents:

1. Model for cooperation agreement in fisheries.

2. Model for cooperation agreement in offshore oil.

3. Regional Centers for Marine Industrial Technology.

4. Joint Enterprise for Exploration, Research and Development (JEFERAD)

PROJECT VI

Reservation for Peaceful Purposes

Coordinators: Rear Admiral F.W. Crickard (Rt) and Mr. Hugh Williamson

Cooperating organisations:

IOI, SIPRI, International Peace Academy

Scope:

The Convention declares that the High Sea, as well as marine scientific research, shall be reserved for peaceful purposes, while the international sea-bed area ("the Area") is reserved for exclusively peaceful purposes. The interpretation and development of these concepts will be a challenging task for international lawyers during the coming twenty years. This project will give a succinct survey of the state of the art of military uses of the sea; it will

deal with the conflicts between military and economic uses; it will examine the modalities of "conversion" as applicable to the marine sector of the arms race; it will deal with the peaceful resolution of conflicts and the establishment of zones of peace, and it will examine the potential contribution of the concept of the common heritage of mankind to peace in the oceans.

Contents:

1. Reservation for peaceful purposes.

2. The state of the arms race in the oceans

3. The role of the oceans in global strategy

4. Surveillance and Enforcement: Regional multi-purpose forces;

5. Zones of Peace

6. Peaceful resolution of conflicts;

7. Common Heritage of Mankind

PORJECT VII

The Common Heritage of Mankind: Shrinking or Expanding?

Co-ordinator: Dr. Nicolas M. Matte

While the economic value of the common heritage in the oceans -- though still substantial -- has been reduced by national claims codified in the U.N. Convention on the Law of the Sea and likely to continue to escalate through state practice, the concept of the Common Heritage has been advancing in other areas, such as outer space and celestial bodies or Antarctica. The concept of the common heritage of mankind has been proposed as the basis for a new

international economic order in general, and, looking forward over the next twenty years, new forms of applying it to the technologies required for the exploration and exploitation of the common heritage will have to be examined.

Contents:

1. The economic value of the common heritage, 1967-87

2. The Common Heritage and Outer Space

3. A World Organisation for the Peaceful Uses of Outer Space.

4. The Future of Antarctica

5. Common Heritage and Technology

CONFERENCE DRAFT AGENDA

Day 1: 10 A.M. - 12:30 P.M. Official inauguration. Debussy, "La Mer," played by the Orchestra of the Manoel Theater, Malta.

Opening of the Conference by H.E. the Prime Minister of Malta.

Statement: H.E. Ambassador Satya Nandan, Special Representative of the Secretary General of the United Nations for the Law of the Sea

Statement: H.E. Ambassador Layachi Yaker, President, Board of Trustees, IOI

Statement: Prof. Dr. Elisabeth Mann Borgese, Chairman, Planning Council, IOI.

Statement: Dr. H. Mushakoji, Vice Rector, United Nations University

Statement: Dr. Stjepan Keckes, United Nations Environment Programme

Statement: Dr. Mario Ruivo, Secretary, Intergovernmental Oceanographic Commission

Statement: Dr. Armin Lindquist, Assistant Director-General, FAO

Statement: Dr. Shrivastava, Secretary General, IMO

"And God Created the Great Whale." by Alan Hovannes. Orchestra of the Manoel Theater, Malta.

Visit to Pacem in Maribus Poster Exhibit. There will be a poster competition for Maltese grade

school and high school students for the best poster on the theme "The importance of the Oceans to Human Life and Society". The first price will be a complete scuba diving equipment and a grant for a course in scuba diving.

3:00 P.M. - 6:00 P.M. Presentation of Project I Discussion

Presentation of Project II: Discusion

Coffee break

Presentation of Project III. Discussion.

Public Dinner. Award of Pacem in Maribus essay prize. There will be a contest for University Students,and junior civil servants on the themes "The U.N.Convention on the Law of the Sea and the New International Economic Order," or "Co-operation and Development in the Mediterranean." The first prize will be a full scholarship for one of the 10-week IOI Training Programmes in Marine Resource Management and Conservation. The second prize will be a full set of Ocean Yearbook

Day 2 9:00 A.M. - 12:30 P.M. Presentation of Project IV. Discussion

Presentation of Project V. Discussion.

Coffee break

Presentation of Project VI. Discussion
Presentation of Project VII. Discussion

3 P.M. - 6 P.M. Sightseeing tour of Valletta and surroundings

Day 3	9:00 A.M. - 12:30 P.M. Working groups to consider Reports and draft recommendations.
	3:00 P.M. - 6:00 P.M. Working groups
	Evening: Films
Day 4	9 A.M. - 12:30 P.M. Presentation of group reports. Adoption of conslusions and recommendations. Closing of Pacem in Maribus XV
	P.M. Cruise to Gozo.
	Farewell dinner.

Pacem in Maribus

International Ocean Institute

P.O. Box 524 Valletta - Malta Cables: Interocean

PACEM IN MARIBUS XV

Malta

7 to 11 September, 1987

Budget

	Canadian Dollars
Average Air fare for 50 persons CAD2,000	100,000
Full board accommodation for 50 persons	12,500
Conference room including facilities and services	5,000
Interpreters	15,000
Two Gala Dinners	2,000
Welcome Cocktail	750
Sight-seeing tour	1,000
Concert	1,000
Transport	1,000
Telecommunications	3,000
Staff	5,000
Conference Organisation and Project Coordination	8,250
Organisation of Competitions and prizes	15,000
Publishing of Proceedings	5,000
	CAD175,000

Pacem in Maribus

International Ocean Institute

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PACEM IN MARIBUS XV

Malta

7 to 11 September, 1987

Budget

Contributions	
Government of Malta - In kind and in cash	**62,500**
IDRC	**20,000**
UNEP	**45,000**
United Nations University	**45,000**
Registration Fees	**2,500**
	CAD175,000